# **Double-Take**<sup>®</sup> Move<sup>™</sup>

Version 7.0 User's Guide



#### Notices

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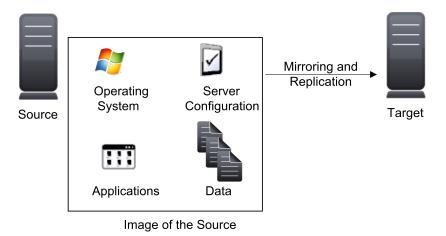
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## Chapter 1 Double-Take Move overview

Double-Take Move is a comprehensive migration solution. It allows you to move an entire server, known as a source, by mirroring an image of that source to another server, known as the target. The source and target servers can be physical or virtual. The image of the source contains the server's system state (the server's configured operating system and applications) and all of the source server's data. You can also migrate just a source's data, in which case the target's system state (the target's configured operating system and applications) will be used with the source's data.

Double-Take uses patented data replication technology that allows users to continue accessing and changing data during the migration. As changes are made on the source, replication keeps the image of the source stored on the target up-to-date. Double-Take replicates, in real-time, only the file changes, not the entire file, allowing you to more efficiently use resources. When you are ready to cutover to the new server, Double-Take applies the source system state and after a reboot, the source is available and running on what was the target server hardware.



## **Chapter 2 Requirements**

Your source server must meet the requirements below. In addition, each target server must meet certain requirements, however, they depend on the type of target server you will be using. See the specific requirements for each migration type for target server requirements. To see details on the migration type best suited for your environment, see *Selecting a migration type* on page 140.

Additionally, verify the machine where you are running the console meets the *Double-Take Console requirements* on page 41, and review the *Mirroring and replication capabilities* on page 10 to understand the type of data that Double-Take protects.

- **Operating system**—The source server can be a physical or virtual server running any of the following operating system editions.
  - Windows Server 2003 or 2003 R2 Datacenter, Enterprise (i386, x64), Standard (i386, x64), Web Server, Small Business Server, or Storage Server Edition. Each of the Windows 2003 operating systems require Service Pack 1 or later.
  - Windows Server 2008 or 2008 R2 Datacenter, Enterprise (i386, x64), Standard (i386, x64), Essential Business Server, Web Server, Foundation Server, Small Business Server (including SBS 2011), or Storage Server Edition
  - Windows 2012 Datacenter, Standard, Essentials, or Foundation Edition
- File system—Double-Take supports the NTFS and ReFS file system. FAT and FAT32 are not supported. For detailed information on other file system capabilities, see *Mirroring and replication capabilities* on page 10.
- **System memory**—The minimum system memory on each server should be 1 GB. The recommended amount for each server is 2 GB.
- Disk space for program files—This is the amount of disk space needed for the Double-Take program files. The amount depends on your operating system version and your architecture (32bit or 64-bit) and ranges from 350-500 MB.

The program files can be installed to any volume while the Microsoft Windows Installer files are automatically installed to the operating system boot volume.

Make sure you have additional disk space for Double-Take queuing, logging, and so on.

- Server name—Double-Take includes Unicode file system support, but your server name must still be in ASCII format. If you have the need to use a server's fully-qualified domain name, your server cannot start with a numeric character because that will be interpreted as an IP address. Additionally, all Double-Take servers and appliances must have a unique server name.
  - If you rename a server that has already has a Double-Take license applied to it, for example if you rebuild a server, you will have to perform a host-transfer to continue using that license. This includes changing the case (capitalization) of the server name (upper or lower case or any combination of case). See *Activating a single Double-Take server* on page 35 for details on completing a host-transfer.

- **Protocols and networking**—Your servers must meet the following protocol and networking requirements.
  - Your servers must have TCP/IP with static IP addressing. (Some job types allow you to add DHCP addresses for failover monitoring, although only after a job has already been created. Keep in mind that depending on your failover configuration, a source reboot may or may not cause a failover but having a new address assigned by DHCP may also cause a failover.)
  - By default, Double-Take is configured for IPv6 and IPv4 environments, but the Double-Take service will automatically check the server at service startup and modify the appropriate setting if the server is only configured for IPv4. If you later add IPv6, you will need to manually modify the DefaultProtocol server setting. See *Server and job settings* on page 83 for details.
  - For some job types, IPv4 is the only supported version. See the requirements for each job type.
  - IPv6 is only supported for Windows 2008 and 2012 servers.
  - If you are using IPv6 on your servers, your clients must be run from an IPv6 capable machine.
  - In order to properly resolve IPv6 addresses to a hostname, a reverse lookup entry should be made in DNS.
- **DNS updates**—Some job types allow you to update DNS at failover time. To be able to use DNS updates, your environment must meet the following requirements.
  - The source and target servers must be in the same domain.
  - At cutover time, the target must be able to reach the DNS servers that you want to update.
  - For workgroup environments, both the source and target server must be in the workgroup.
  - Each server's network adapter must have the DNS suffix defined, and the primary DNS suffix must be the same on the source and target. You can set the DNS suffix in the network adapters advanced TCP/IP settings or you can set the DNS suffix on the computer name. See the documentation for your specific operating system for details on configuring the DNS suffix.

DNS updates are not supported for Server Core servers or NAT environments.

- **Microsoft .NET Framework**—Microsoft .NET Framework version 3.5 Service Pack 1 is required. This version is not included in the .NET version 4.0 release. Therefore, even if you have .NET version 4.0 installed, you will also need version 3.5.1. For Windows 2008 and earlier, you can install this version from the Double-Take DVD, via a web connection during the Double-Take installation, or from a copy you have obtained manually from the <u>Microsoft web site</u>. For Windows 2008 R2 and later, you need to enable it through Windows features.
- Windows firewall—If you have Windows firewall enabled on your servers, there are two requirements for the Windows firewall configuration.
  - The Double-Take installation program will automatically attempt to configure ports 6320, 6325, and 6326 for Double-Take. If you cancel this step, you will have to configure the ports manually.
  - If you are using the Double-Take Console to push installations out to your servers you will have to open firewall ports for WMI (Windows Management Instrumentation), which uses

RPC (Remote Procedure Call). By default, RPC will use ports at random above 1024, and these ports must be open on your firewall. RPC ports can be configured to a specific range by specific registry changes and a reboot. See the <u>Microsoft Knowledge Base article</u> <u>154596</u> for instructions. Additionally, you will need to open firewall ports for SMB (server message block) communications which uses ports 135-139 and port 445, and you will need to open File and Printer Sharing. As an alternative, you can disable the Windows firewall temporarily until the push installations are complete.

See Firewalls on page 437 for instructions on handling firewalls in your environment.

### Mirroring and replication capabilities

For Windows source servers, Double-Take mirrors and replicates file and directory data stored on any NTFS or ReFS Windows file system. Mirrored and replicated items also include Macintosh files, compressed files, NTFS attributes and ACLs (access control list), dynamic volumes, files with alternate data streams, sparse files, encrypted files, and reparse points. Files can be mirrored and replicated across mount points, although mount points are not created on the target.

Double-Take does not mirror or replicate items that are not stored on the file system, such as physical volume data and registry based data. Additionally, Double-Take does not mirror or replicate NTFS extended attributes, registry hive files, Windows or any system or driver pagefile, system metadata files (\$LogFile, \$Mft, \$BitMap, \$Extend\\\$UsnJrnl, \$Extend\\\$Quota, and \$Extend\\\$ObjId), hard links, or the Double-Take disk-based queue logs. The only exception to these exclusions is for the full server job types. If you are protecting your system state and data using full server protection, Double-Take will automatically gather and replicate all necessary system state data, including files for the operating system and applications.

Note the following replication caveats.

- 1. FAT and FAT32 are not supported.
- You must mirror and replicate to like file systems. For example, you cannot use NTFS to ReFS or ReFS to NTFS. You must use NTFS to NTFS or ReFS to ReFS. Additionally, you cannot have ReFS volumes mounted to mount points in NTFS volumes or NTFS volumes mounted to mount points in ReFS volumes.
- 3. You cannot replicate from or to a mapped drive.
- 4. If any directory or file contained in your job specifically denies permission to the system account or the account running the Double-Take service, the attributes of the file on the target will not be updated because of the lack of access. This also includes denying permission to the Everyone group because this group contains the system account.
- 5. If you select a dynamic volume and you increase the size of the volume, the target must be able to compensate for an increase in the size of the dynamic volume.
- 6. If you select files with alternate data streams, keep in mind the following.
  - a. Alternate data streams are not included in the job size calculation. Therefore, you may see the mirror process at 99-100% complete while mirroring continues.
  - b. The number of files and directories reported to be mirrored will be incorrect. It will be off by the number of alternate streams contained in the files and directories because the alternate streams are not counted. This is a reporting issue only. The streams will be mirrored correctly.
  - c. Use the checksum option when performing a difference mirror or verification to ensure that all alternate data streams are compared correctly.
  - d. If your alternate streams are read-only, the times may be flagged as different if you are creating a verification report only. Initiating a remirror with the verification will correct this issue.
- 7. If you select encrypted files, keep in mind the following.
  - a. Only the data, not the attributes or security/ownership, is replicated. However, the encryption key is included. This means that only the person who created the encrypted file on the source will have access to it on the target.

- b. Only data changes cause replication to occur; changing security/ownership or attributes does not.
- c. Replication will not occur until the Windows Cache Manager has released the file. This may take awhile, but replication will occur when Double-Take can access the file.
- d. When remirroring, the entire file is transmitted every time, regardless of the remirror settings.
- e. Verification cannot check encrypted files because of the encryption. If remirror is selected, the entire encrypted file will be remirrored to the target. Independent of the remirror option, all encrypted files will be identified in the verification log.
- f. Empty encrypted files will be mirrored to the target, but if you copy or create an empty encrypted file within the job after mirroring is complete, the empty file will not be created on the target. As data is added to the empty file on the source, it will then be replicated to the target.
- g. When you are replicating encrypted files, a temporary file is created on both the source and target servers. The temporary file is automatically created in the same directory as the Double-Take disk queues. If there is not enough room to create the temporary file, an out of disk space message will be logged. This message may be misleading and indicate that the drive where the encrypted file is located is out of space, when it actually may be the location where the temporary file is trying to be created that is out of disk space.
- 8. If you are using mount points, keep in mind the following.
  - a. By default, the mount point data will be stored in a directory on the target. You can create a mount point on the target to store the data or maintain the replicated data in a directory. If you use a directory, it must be able to handle the amount of data contained in the mount point.
  - b. Recursive mount points are not supported. If you select data stored on a recursive mount point, mirroring will never finish.
- 9. Double-Take supports transactional NTFS (TxF) write operations, with the exception of TxF SavePoints (intermediate rollback points).
  - a. With transactional NTFS and Double-Take mirroring, data that is in a pending transaction is in what is called a transacted view. If the pending transaction is committed, it is written to disk. If the pending transaction is aborted (rolled back), it is not written to disk.

During a Double-Take mirror, the transacted view of the data on the source is used. This means the data on the target will be the same as the transacted view of the data on the source. If there are pending transactions, the Double-Take**Target Data State** will indicate **Transactions Pending**. As the pending transactions are committed or aborted, Double-Take mirrors any necessary changes to the target. Once all pending transactions are completed, the **Target Data State** will update to **OK**.

If you see the pending transactions state, you can check the Double-Take log file for a list of files with pending transactions. As transactions are committed or aborted, the list is updated until all transactions are complete, and the **Target Data State** is **OK**.

- b. During replication, transactional operations will be processed on the target identically as they are on the source. If a transaction is committed on the source, it will be committed on the target. If a transaction is aborted on the source, it will be aborted on the target.
- c. When cutover occurs any pending transactions on the target will be aborted.
- 10. Double-Take supports Windows 2008 and 2012 symbolic links and junction points. A symbolic link is a link (pointer) to a directory or file. Junction points are links to directories and volumes.

- a. If the link and the file/directory/volume are both in your job, both the link and the file/directory/volume are mirrored and replicated to the target.
- b. If the link is in the job, but the file/directory/volume it points to is not, only the link is mirrored and replicated to the target. The file/directory/volume that the link points to is not mirrored or replicated to the target. A message is logged to the Double-Take log identifying this situation.
- c. If the file/directory/volume is in the job, but the link pointing to it is not, only the file/directory/volume is mirrored and replicated to the target. The link pointing to the file/directory/volume is not mirrored or replicated to the target.
- d. Junction points that are orphans (no counterpart on the source) will be processed for orphan files, however, the contents of a junction point (where it redirects you) will not be processed for orphan files.
- 11. If you have the Windows NtfsDisable8dot3NameCreation setting enabled (set to 1) on the source but disabled (set to 0) on the target, there is a potential that you could overwrite and lose data on the target because of the difference in how long file names will be associated with short files names on the two servers. This is only an issue if there are like named files in the same directory (for example, longfilename.doc and longfi~1.doc in the same directory). To avoid the potential for any data loss, the NtfsDisable8dot3NameCreation setting should be the same on both the source and target. Note that the Windows 2012 default value for this setting is disabled (set to 0).
- 12. Double-Take can replicate paths up to 32,760 characters, although each individual component (file or directory name) is limited to 259 characters. Paths longer than 32760 characters will be skipped and logged.
- 13. If you rename the root folder of a job, Double-Take interprets this operation as a move from inside the job to outside the job. Therefore, since all of the files under that directory have been moved outside the job and are no longer a part of the job, those files will be deleted from the target replica copy. This, in essence, will delete all of your replicated data on the target. If you have to rename the root directory of your job, make sure that the job is not connected.
- 14. Keep in mind the following caveats when including and excluding date for replication.
  - a. Do not exclude Microsoft Word temporary files from your job. When a user opens a Microsoft Word file, a temporary copy of the file is opened. When the user closes the file, the temporary file is renamed to the original file and the original file is deleted. Double-Take needs to replicate both the rename and the delete. If you have excluded the temporary files from your job, the rename operation will not be replicated, but the delete operation will be replicated. Therefore, you will have missing files on your target.
  - b. When Microsoft SQL Server databases are being replicated, you should always include the tempdb files, unless you can determine that they are not being used by any application. Some applications, such as PeopleSoft and BizTalk, write data to the tempdb file. You can, most likely, exclude temporary databases for other database applications, but you should consult the product documentation or other support resources before doing so.
  - c. Some applications create temporary files that are used to store information that may not be necessary to replicate. If user profiles and home directories are stored on a server and replicated, this could result in a significant amount of unnecessary data replication on large file servers. Additionally, the \Local Settings\Temporary Internet Files directory can easily reach a few thousand files and dozens of megabytes. When this is multiplied by a hundred users it can quickly add up to several gigabytes of data that do not need to be replicated.

- d. Creating jobs that only contain one file may cause unexpected results. If you need to replicate just one file, add a second file to the job to ensure the data is replicated to the correct location. (The second file can be a zero byte file if desired.)
- 15. Double-Take does not replicate the last access time if it is the only thing that has changed. Therefore, if you are performing incremental or differential backups on your target machine, you need to make sure that your backup software is using an appropriate flag to identify what files have been updated since the last backup. You may want to use the last modified date on the file rather than the date of the last backup.
- 16. Keep in mind the following caveats when using anti-virus protection.
  - a. Virus protection software on the target should not scan replicated data. If the data is protected on the source, operations that clean, delete, or quarantine infected files will be replicated to the target by Double-Take. If the replicated data on the target must be scanned for viruses, configure the virus protection software on both the source and target to delete or quarantine infected files to a different directory that is not in the job. If the virus software denies access to the file because it is infected, Double-Take will continually attempt to commit operations to that file until it is successful, and will not commit any other data until it can write to that file.
  - b. You may want to set anti-virus exclusions on your source to improve replication performance. There are risks associated with making exclusions, so implement them carefully. For more information, see the Microsoft article <u>822158 Virus scanning</u> recommendations for Enterprise computers that are running currently supported versions of Windows.
  - c. If you are using avast! anti-virus software, it must be installed in its default installation location if you want to protect your sever with a full server protection job. If it is not in its default installation directory, failover will fail.
- 17. SQL Server 2005 or later may not initialize empty space when the database size increases due to the auto grow feature. Therefore, there is nothing for Double-Take to replicate when this empty space is created. When the empty space is populated with data, the data is replicated to the target. A verification report will report unsynchronized bytes between the source and target due to the empty space. Since the space is empty, the data on the source and target is identical. In the event of a failure, the SQL database will start without errors on the target.
- 18. If you are running Symantec version 10 or later, you may receive Event message 16395 indicating that Double-Take has detected a hard link. Symantec uses a hard link to recover from a virus or spyware attack. Double-Take does not support hard links, therefore, the Event message is generated, but can be disregarded.
- 19. If you have reparse points in your data set, Double-Take will replicate the tag, unless it is a known driver. If it is a known driver, for example Microsoft SIS, Double-Take will open the file allowing the reparse driver to execute the file. In this case, the entire file will be replicated to the target (meaning the file is no longer sparse on the target and has all the data).
- 20. Keep in mind if you have reparse points in your data set, you must have the reparse driver available on the target in order to access this data after cutover.
- 21. If you are using the Microsoft Windows Update feature, keep in mind the following caveats.
  - a. Schedule your Windows Update outside the times when a mirroring operation (initial mirror, remirror, or a restoration mirror) is running. Windows updates that occur during a mirror may cause data integrity issues on the target.
  - b. You must resolve any Windows Update incomplete operations or errors before failover or failback. (Check the windowsupdate.log file.) Also, do not failover or failback if the target is

waiting on a Windows Update reboot. If failover occurs before the required Windows Update reboot, the target may not operate properly or it may not boot. You could also get into a situation where the reboot repeats indefinitely. One possible workaround for the reboot loop condition is to access a command prompt through the Windows Recovery Environment and delete the file \Windows\winsxs\pending.xml file. You may need to take ownership of the file to delete it. Contact technical support for assistance with this process or to evaluate other alternatives. Before you contact technical support, you should use the Microsoft System Update Readiness Tool as discussed in <u>Microsoft article 947821</u>. This tool verifies and addresses many Windows Update problems.

- 22. If you are using Windows deduplication, keep in mind the following caveats.
  - a. Deduplicated data on the source will be expanded to its original size on the target when mirrored. Therefore, you must have enough space on the target for this expansion, even if you have deduplication enabled on the target.
  - b. If you are protecting an entire server, you must have the deduplication feature installed on both the source and target. It can be enabled or disabled independently on the two servers, but it must at least be installed on both of the servers.
  - c. After failover, the amount of disk space on the failed over server will be incorrect until you run the deduplication garbage collection which will synchronize the disk space statistics.
- 23. If you are using Windows storage pools on your source, you must create the storage pool on the target before failover.

## **Chapter 3 Installation and activation**

The installation and activation for Double-Take servers is a two-part process. First, you will have to install the software on your servers. Second, you will have to activate your licenses. Choose how you want to install and activate your servers using either of the following methods.

- Single server installation and activation—You can install and activate your servers one at a time. In this scenario, you will install Double-Take on one server and then you will activate the license on that server. You can repeat this process for other servers.
- Multiple server installation and activation—You can install and activate multiple servers at one time. In this scenario, you will need install Double-Take on all of your servers and then you will activate the licenses for all of the servers at once.

The term installation is being used generically to represent a new Double-Take installation or a Double-Take upgrade.

See *Installation* on page 16 and *License management and activation* on page 29 for details on the various installation and license and activation methods.

## Installation

Review the *Installation notes* on page 17 before beginning your installation. Then choose from one of the following installation methods.

- Installing Double-Take Move using the installation wizard on page 18—Use these instructions to install on a single Windows server using the installation wizard. The wizard will guide you step by step through the installation process.
- Installing Double-Take Move using the command line utility on page 21—Use these instructions to install on a single or multiple Windows server using the command line utility. This utility automates the installation process by running an unattended, or silent, installation. It allows you to pass parameters through to the installation program instead of entering information manually through the wizard.
- Installing Double-Take Move using the Double-Take Console on page 25—Once you have the Double-Take Console installed on a Windows machine, you can use it to push the installation out to your other servers. The push installation is a full, client and server installation.
- Installing Double-Take Reporting Service on page 28—Use these instructions if you will be using the Double-Take Reporting Service to gather and analyze data from your Double-Take servers. See Double-Take Reporting Service on page 427 for details on this tool.

### Installation notes

Review the installation notes below before beginning an installation or upgrade.

- Because Double-Take has operating system dependent files, if you are upgrading your operating system (to a new major version, not a service pack) and have Double-Take installed, you must remove Double-Take prior to the operating system upgrade. Uninstall Double-Take, perform the operating system upgrade, and then reinstall Double-Take.
- During installation, a file called DTInfo.exe is installed to the Double-Take installation directory. This program can be run to collect configuration data for use when reporting problems to technical support. It gathers Double-Take log files; Double-Take and system settings; network configuration information such as IP, WINS, and DNS addresses; and other data which may be necessary for technical support to troubleshoot issues. After running the executable, a zip file is automatically created with the information gathered. You can also collect this information from the Double-Take Console, storing the resulting zip file on the console machine . See *Managing servers* on page 45.
- Since Double-Take installs device drivers, it is recommended that you update your Windows Recovery Disk, before installing or making changes to your servers. For detailed instructions on creating a recovery disk, see your Windows reference manuals. Make sure that you select the option to back up the registry when building the repair disks.
- If you are installing to a drive other than the drive which contains your system TEMP directory, the Microsoft Windows Installer will still load approximately 100 MB of data to the TEMP directory during the installation. If you do not have enough disk space on the drive that contains the TEMP directory, you may need to change where it is located.
- If during the installation you receive the message that the wizard was interrupted before the
  installation could be completed, you will need to delete the registry value
  DefaultAccessPermissions under the HKEY\_LOCAL\_MACHINE\SOFTWARE\Microsoft\Ole
  key in order to install Double-Take. This registry setting denies permissions for retrieving and
  setting property values. Deleting this registry setting will not have a negative impact on your
  server.
- Double-Take Move is not interoperable between versions. Each source, target, and Double-Take Console must be running the same version of Double-Take Move.
- If you have upgraded the guest Windows operating system on a Hyper-V virtual machine that you intend to migrate, you must also upgrade Integration Services on that virtual machine.

### Installing Double-Take Move using the installation wizard

Make sure you have reviewed the *Installation notes* on page 17, and then use these instructions to install Double-Take Move or upgrade an existing Double-Take Move installation.

- 1. Close any open applications.
- 2. Start the installation program using the appropriate instructions, depending on your media source.
  - **Physical media**—If auto-run is enabled, the installation program will start automatically. To manually start the program, run autorun.exe from your physical media.
  - Web download—Launch the .exe file that you downloaded from the web.
  - If you are installing on Server Core, copy the physical media files or web download file to the Server Core machine using a UNC share, and then launch the installation program from the Server Core machine. The installation screens will display on the Server Core machine.
- 3. When the installation program begins, the Autorun appears allowing you to install software and view documentation and online resources. To install Double-Take Move, select the **Install Double-Take Move** link.
- 4. Depending on your version of Windows and the components you have installed, you may see an initial screen indicating that you need to install or enable Microsoft .NET Framework. If you do not see this screen, your server already has the appropriate version of Microsoft .NET. You must install or enable Microsoft .NET before installing Double-Take. Select **Yes** to install or enable Microsoft .NET and click **Continue**.
- 5. If you are upgrading from a previous version of Double-Take RecoverNow, and you have any Double-Take archived or deduplicated files, you will be prompted to recall and restore those files manually. Double-Take RecoverNow will automatically be uninstalled, however you must recall and restore those files first.
- 6. You will be given the opportunity to check for a more recent version of the software.
  - If you do not want to check for a later version, select **No** and click **Next**.
  - If you want to check for a later version, select **Yes** and click **Next**. The installation program will establish an Internet connection from your server to the Vision Solutions web site.
    - If later versions are found, they will be listed. Highlight the version you want and either download that version and install it automatically or download that version and exit the installation. (If you exit the installation, you can run the updated installation later directly from the location where you saved it.)
    - If no later versions are found, continue with the current installation.
    - If an Internet connection cannot be established, continue with the current installation or install a previously downloaded version.
- 7. If you are upgrading, review the upgrade note.
  - Any jobs that were created in legacy Double-Take consoles, including Replication Console, Full Server Failover Manager, Application Manager, Double-Take Move Console, or DTCL, will no longer function once the upgrade is complete.
  - Any jobs created in the version 5.3 Double-Take Console will be upgraded and will continue to function normally.

- 8. Click **Next** to continue.
- 9. If you are upgrading from Double-Take RecoverNow with TimeData, select if you want to uninstall the TimeData components. You can also remove Ontrack PowerControls if you have that installed. The uninstall may be time consuming while it removes the associated SQL instance and deletes the continuous data protection storage bins. Additionally, the TimeData uninstall may require a reboot. If you choose not to uninstall TimeData or Ontrack PowerControls, Double-Take RecoverNow will still be uninstalled, and these programs will no longer function after the upgrade. If you do not remove the products, you will have to manually remove them.
- 10. Review the Vision Solutions license agreement. You must scroll through and review the entire license agreement. You must accept the license agreement in order to continue with the installation program. Click **Next** to continue.
- 11. Review the activation notice. Most Double-Take licenses require activation after installation for full product functionality. Failure to activate licenses that require it will cause your Double-Take jobs to fail. See *License management and activation* on page 29 for more details.
- 12. Click **OK** to continue.
- 13. Select the type of installation you would like to perform on this machine.
  - Client and Server Components—This option installs both the client and server components. The server components are required for systems that will function as a source or target. The server requires an activation code for the service to run. The client does not require an activation code, but it is required to administer this and other Double-Take servers throughout the organization.
  - Client Components Only—This option installs only the client components. The client components do not require an activation code, but are required to administer Double-Take servers throughout the organization.
  - Server Components Only—This option installs only the server components. The server components are required for systems that will function as a source or target. The server requires an activation code for the service to run.

If you are installing on Server Core, you will only be able to select the **Server Components Only** installation. You will not be able to run the client components from the Server Core machine. The client will have to be run from another machine.

- 14. If desired, specify where the Double-Take files will be installed by clicking **Change**, specifying a location, and then clicking **OK**.
- 15. Click **Next** to continue.
- 16. If the machine where you are installing has Windows Firewall enabled, you will be given the opportunity to open and reassign any firewall ports for Double-Take use.
  - **Open only the ports that are not in use**—This option will open any firewall ports that are not in use. The ports that are opened will be assigned to Double-Take.
  - Open all ports, reassigning the ports in use to Double-Take—This option will open all necessary firewall ports, reassigning any to Double-Take as needed.
  - Do not configure the Windows Firewall at this time—This option will not modify any firewall ports. If you select this option, you will have manually modify your firewall settings for Double-Take processing.
- 17. Click **Next** to continue.



If you selected a client only installation, continue with step 24.

- 18. You will be prompted to enter your activation code information. Your **Activation Code** is a 24character, alpha-numeric activation code which applies the appropriate license to your installation. Enter your code and click **Add**.
  - If you are installing Double-Take for the first time, you will not be required to add an activation code, however the product will not work without one. If you are upgrading an existing version, you must have an activation code to continue the installation.
- 19. Click Next to continue.
- 20. Double-Take uses system memory for Double-Take processing. The maximum amount is dependent on the server hardware and operating system. **Specify the Amount of system memory to use**, which is the maximum amount of system memory that Double-Take can use.
- 21. When the allocated Double-Take system memory is exhausted, Double-Take will queue to disk. If you want to disable disk queuing, select **Do not use disk queue**. Ideally, you should use disk queuing. Specify the **Queue folder**, which is the location of the disk queue. By default, the size of the disk queue is set to **Unlimited disk queue**, which will allow the queue usage to automatically expand whenever the available disk space expands. If desired, you can select **Limit disk space for queue** and specify a fixed disk space amount. You can also specify the **Minimum free disk space**, which is the minimum amount of disk space in the specified **Queue folder** that must be available at all times. This amount should be less than the amount of physical disk space minus the disk size specified for **Limit disk space for queue**. (See *Double-Take queue* on page 65 for additional guidelines on selecting appropriate queue settings.)
- 22. Click **Next** to continue.
- 23. The Double-Take security information screen appears next. Review this information and click **Next** to continue with the installation.
- 24. If you are satisfied with the selections you have made and are ready to begin copying the Double-Take files, click **Install**.
- 25. After the files have completed copying, click **Finish** to exit the installation program.

### Installing Double-Take Move using the command line utility

The Double-Take installation program can accept command-line parameters which allow you to automate the installation process by running an unattended, or silent, installation. The automatic process allows you to pass parameters through to the installation program instead of entering information manually during the installation.

The automatic installation is only available for new installations. It does not support upgrades.

Since the automated process does not prompt for settings, the settings are manually defined in a configuration file called DTSetup.ini. By default, DTSetup.ini contains two sections. The second section can be duplicated as many times as necessary. The first section, [Config], applies to any server not defined in the second (or duplicate of second) sections. The second (or duplicate of second) section, [MachineName], allows you to specify unique settings for individual servers. You have to modify the heading name (case-sensitive) to identify the server.

Review the following table to understand the different parameters available in DTSetup.ini.

#### DTSetupType

- **DTNT**—Both the Double-Take server and client components will be installed.
- DTCO—Only the Double-Take client components will be installed.
- DTSO—Only the Double-Take server components will be installed.

If you are installing on Server Core or Windows Hyper-V Server (standalone), the setup type will be server components only regardless of your setting.

#### DTActivationCode

A 24 character, alpha-numeric activation code which applies the appropriate license to the server. Multiple activation codes can be separated by a semi-colon.

#### **DoubleTakeFolder**

Any valid path specifying the location of the Double-Take files

#### QMemoryBufferMax

Any integer representing the amount of system memory, in MB, that Double-Take can use

#### DiskQueueFolder

Any valid path to the location of the disk-based queue

#### DiskQueueMaxSize

Any integer representing the amount of disk space, in MB, to use for disk-based queuing or the keyword **UNLIMITED** which will allow the queue usage to automatically expand whenever the available disk space expands

#### DiskFreeSpaceMin

Any integer representing the amount of disk space, in MB, that must remain free at all times

#### DTServiceStartup

- Y or 1—Start the Double-Take service automatically
- N or 0-Do not start the Double-Take service automatically

This parameter is not applied if your **DTSetupType** is DTCO.

#### Port

Any integer between 1024 and 65535 that identifies the primary port used for Double-Take communications

#### Set\_FWPort

- Y or 1—Set the Double-Take Windows firewall port exclusions
- N or 0—Do not set the Double-Take Windows firewall port exclusions



You must have Microsoft .NET installed or enabled (depending on your operating system) on the server before starting the automatic installation.

If you are using Windows 2008 or 2012, but you are not using the built-in administrator account, User Access Control will prompt you to confirm you want to install Double-Take. To work around this issue, use the built-in administrator account when you are installing to each server. You may also disable User Access Control, if that is acceptable for your environment.

### Installing or upgrading automatically to a local machine

- 1. Create a temporary installation directory on the server. For example, create c:\temp\_install.
- 2. Use the following steps if you downloaded your software from the web.
  - a. Unzip the .exe file that you downloaded to another temporary directory.
  - b. Locate the subdirectory under \setup\dt that is appropriate for your architecture, either i386 or x64.
  - c. Copy the files from the \setup\dt\i386 or \setup\dt\x64 directory to your temporary installation directory.
- 3. Use the following steps if you have a DVD.
  - a. Locate the subdirectory under \setup\dt that is appropriate for your architecture, either i386 or x64.
  - b. Copy the files from the \setup\dt\i386 or \setup\dt\x64 directory to your temporary installation directory.
- 4. Remove the read-only attributes from the files in the temporary installation directory.
- 5. Make a backup copy of the default DTSetup.ini file in the temporary installation directory.
- 6. Edit DTSetup.ini as needed using the values described in the previous table.
- 7. Run the following case-sensitive command from the temporary installation directory.

setup /s /v"DTSETUPINI=\"c:\temp\_install\DTSetup.ini\" /qn"

The command must be run from the temporary installation directory as well as specifying the temporary installation directory for the .ini file.

Spacing is critical with this command. A space should precede /s, /v, and /qn but should not appear anywhere else for the command to work correctly.

### Installing or upgrading automatically to a remote machine

- 1. Create a temporary installation directory on the primary site server. For example, create z:\temp\_ install.
- 2. Share the temporary installation directory.
- 3. Use the following steps if you downloaded your software from the web.
  - a. Unzip the .exe file that you downloaded to another temporary directory.
  - b. Locate the subdirectory under \setup\dt that is appropriate for your architecture, either i386 or x64.
  - c. Copy the files from the \setup\dt\i386 or \setup\dt\x64 directory to your shared temporary installation directory.
- 4. Use the following steps if you have a DVD.
  - a. Locate the subdirectory under \setup\dt that is appropriate for your architecture, either i386 or x64.
  - b. Copy the files from the \setup\dt\i386 or \setup\dt\x64 directory to your shared temporary installation directory.
- 5. Remove the read-only attributes from the files in the shared temporary installation directory.
- 6. Make a backup copy of the default DTSetup.ini file in the shared temporary installation directory.
- 7. Edit DTSetup.ini as needed using the values described in the previous table.
- 8. From each server where you want to install Double-Take, map a drive to the shared temporary installation directory. For example, you might map your m: drive to the share.
- 9. Run the following case-sensitive command from the mapped drive.

setup /s /v"DTSETUPINI=\"m:\DTSetup.ini\" /qn"

The command must be run from the shared drive as well as specifying that shared drive for the .ini file.

Spacing is critical with this command. A space should precede /s, /v, and /qn but should not appear anywhere else for the command to work correctly.

C:\>net use m: \\server\_name\share The command completed successfully C:\>M: M:\>setup /s /v"DTSETUPINI=\"m:\DTSetup.ini\" /qn"

### Installing Double-Take Move using the Double-Take Console

You can use the Double-Take Console to install or upgrade Double-Take Move on your other servers. The installation is a full, client and server installation.

- If you are upgrading from Double-Take RecoverNow, you should manually remove it and any TimeData and OnTrack PowerControls components before upgrading. The uninstall may be time consuming while it removes the associated SQL instance and deletes the continuous data protection storage bins. Additionally, the TimeData uninstall may require a reboot. Make sure that you recall and restore any Double-Take archived or deduplicated files before you uninstall Double-Take RecoverNow. If you choose not to uninstall TimeData or Ontrack PowerControls, Double-Take RecoverNow will still be uninstalled, and these programs will no longer function after the upgrade. If you do not remove the products, you will have to manually remove them.
- 1. Add the servers where you want to install Double-Take to your console session. See *Adding servers* on page 50.
- 2. From the **Manage Servers** page, highlight all of the servers where you want to install Double-Take, and select **Install** from the toolbar.
- 3. Each server needs an activation code for the installation. If you are upgrading and your server already has an activation code that is valid for the current version, you can either skip this step to use the existing activation code or you can complete this step to replace the existing activation code.
  - a. If you have a single activation code that can be used on multiple servers, such as a site license or an evaluation code, highlight all of the servers where you want to apply the same activation code and click **Set Activation codes**. If you have unique activation codes for each of your servers, highlight just one server and click **Set Activation codes**.
  - b. Type in your activation code or click **Choose from inventory** to open the Activation Codes dialog box where you can select the activation code you want to apply. For more information on the license inventory, see *Managing the Double-Take license inventory* on page 30.
  - c. Click **OK** to configure the installation or upgrade for the selected activation code.
  - d. Repeat steps a-c for any additional servers that are using unique activation codes.
- 4. The **Default Installation Options** section contains the default settings from the console's **Options** page. These settings will be applied to all of the servers you are installing to or upgrading. If desired, modify any of the installation options. See *Console options* on page 42.

Options you modify when using the push installation will be replaced by the default values from the **Options** page each time you use the push installation.

Default Installation Options	
Location of <u>3</u> 2-bit installation package:	
C:\Program Files\Vision Solutions\Double-Take\i386	
Location of <u>6</u> 4-bit installation package:	
C:\Program Files\Vision Solutions\Double-Take\x64	
Location of .NET3.5 SP1 installation package:	
Temporary folder for installation package:	
C:\Temp	
Installation folder:	
Installation folder: C:\Program Files\Vision Solutions\Double-Take	
- C:\Program Files\Vision Solutions\Double-Take	
C:\Program Files\Vision Solutions\Double-Take Queue folder:	(MB):
C:\Program Files\Vision Solutions\Double-Take Queue folder: C:\Program Files\Vision Solutions\Double-Take	(MB):
C:\Program Files\Vision Solutions\Double-Take Queue folder: C:\Program Files\Vision Solutions\Double-Take Amount of system memory to use (MB): Minimum free disk space	(MB):
C:\Program Files\Vision Solutions\Double-Take Queue folder: C:\Program Files\Vision Solutions\Double-Take Amount of system memory to use (MB): Minimum free disk space 1024 250	(MB):
C:\Program Files\Vision Solutions\Double-Take Queue folder: C:\Program Files\Vision Solutions\Double-Take Amount of system memory to use (MB): Minimum free disk space 1024 Do not use disk queue	(MB):

- Location of 32-bit installation package—Specify the location of the setup file (on the local machine) that will be used to install on 32-bit servers. By default, this is in the \i386 subdirectory where you installed Double-Take.
- Location of 64-bit installation package—Specify the location of the setup file (on the local machine) that will be used to install on 64-bit servers. By default, this is in the \x64 subdirectory where you installed Double-Take.
- Location of .NET 3.5 SP1 installation package—If your servers are running Windows 2008 or earlier and do not have Microsoft .NET version 3.5.1, specify the location of the setup file (on the local machine) that will be used to install it. The setup file is available on the Double-Take DVD in the \NetFx\v3.5SP1\Full directory or from the Microsoft web site. For 2008 R2 or later, you need to enable it through Windows features.
- **Temporary folder for installation package**—Specify a temporary location (on the server where you are installing Double-Take) where the installation files will be copied and run. You need approximately 130 MB of space in the specified location.
- Installation folder—Specify the location where you want to install Double-Take on each server.
- **Queue folder**—Specify the location where you want to store the Double-Take disk queue on each server.
- Amount of system memory to use—Specify the maximum amount of memory, in MB, that can be used for Double-Take processing. For complete details on memory usage, see *Double-Take queue* on page 65.

- Minimum free disk space—This is the minimum amount of disk space in the specified Queue folder that must be available at all times. This amount should be less than the amount of physical disk space minus the disk size specified for Limit disk space for queue.
- **Do not use disk queue**—This option will disable disk queuing. When system memory has been exhausted, Double-Take will automatically begin the auto-disconnect process.
- Unlimited disk queue—Double-Take will use an unlimited amount of disk space in the specified Queue folder for disk queuing, which will allow the queue usage to automatically expand whenever the available disk space expands. When the available disk space has been used, Double-Take will automatically begin the auto-disconnect process.
- Limit disk space for queue—This option will allow you to specify a fixed amount of disk space, in MB, in the specified **Queue folder** that can be used for Double-Take disk queuing. When the disk space limit is reached, Double-Take will automatically begin the auto-disconnect process.
- 5. Specify when you want to perform the installations under the **Schedule** section.

The **Installation Schedule** section will not be available if you are using a proxied source server. See *Adding servers* on page 50 for more details on proxied source servers.

Install now				
Install later: (Ti	mes are local to t	this machine.)		
1/3/2012	15	12:00 AM		
	1			

- Install now—Select this option to complete the installation immediately.
- Install later—Select this option and specify a date and time to complete the installation then.
- **Reboot automatically if needed**—If selected, the server will automatically reboot after the installation, if a reboot is required.
- 6. After you have configured your installation options, click Install.

During an upgrade, any existing jobs on the **Manage Jobs** page may disappear and then reappear. This is expected while certain Double-Take files are updated.

If there are errors with the push installation before the installation is executed on the server, check the console log on the machine where you are pushing the installation from. Once the installation execution has started, then check the installation log on the server where you are installing.

### Installing Double-Take Reporting Service

Make sure you have reviewed the Double-Take Reporting Service requirements. See *Double-Take Reporting Service* on page 427.

- 1. Close any open applications.
- 2. Launch the Double-Take Reporting Service .exe installation file.
  - If you are installing on Server Core, copy the .exe file to the Server Core machine using a UNC share, and then launch the installation program from the Server Core machine. The installation screens will display on the Server Core machine.
- 3. At the Welcome page, click **Next** to continue.
- 4. Review and accept the Vision Solutions license agreement to continue with the installation program. Click **Next** to continue.
- 5. If desired, specify where the Double-Take Reporting Service files will be installed by clicking **Change**, specifying a location, and then clicking **OK**.
- 6. Click **Next** to continue.
- 7. If the server where you are installing has Windows Firewall enabled, you will be given the opportunity to open and reassign any firewall ports for Double-Take Reporting Service use.
  - Open only the ports that are not in use—This option will open any firewall ports that are not in use. The ports that are opened will be assigned to Double-Take Reporting Service.
  - Open all ports, reassigning the ports in use to Double-Take Reporting Service— This option will open all of the necessary firewall ports, reassigning any to Double-Take Reporting Service as needed.
  - **Do not configure the Windows Firewall at this time**—This option will not modify any firewall ports. If you select this option, you will have manually modify your firewall settings for Double-Take Reporting Service processing.
- 8. The Double-Take security information screen appears next. Review this information and click **Next** to continue with the installation.
- 9. If you are satisfied with the selections you have made and are ready to begin copying the files, click **Install**.
- 10. After the files have completed copying, click **Finish** to exit the installation program.

### License management and activation

• License management—You can manage your Double-Take licenses through the license inventory feature in the Double-Take Console. Ideally, you should select one machine in your organization where you want to maintain the license inventory because the license inventory does not communicate between machines.

From the license inventory, you can add and remove Double-Take licenses manually. You can import and export a Double-Take license file to handle groups of licenses. You can also activate the licenses in your inventory. See *Managing the Double-Take license inventory* on page 30 for details on using the license inventory.

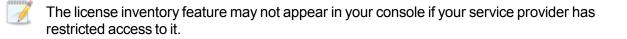
• Activation—There are different license types for different server types. Most likely, you will have one license with multiple quantities that will be used on your source servers. Once a source license is activated, you will have 60 days to complete your migration. You will also have another license which can be shared among your targets. You can use the license inventory to activate multiple licenses at once time, or you can activate your licenses one at a time on a per server basis.

### Managing the Double-Take license inventory

You can manage your Double-Take licenses through the license inventory feature in the Double-Take Console. Ideally, you should select one machine in your organization where you want to maintain the license inventory because the license inventory does not communicate between machines.

By default, the license inventory feature is enabled. You can, and should, disable it on machines that are not maintaining your license inventory. To disable the license inventory, select **Options** from the console toolbar, deselect **Enable license inventory**, and click **Save**.

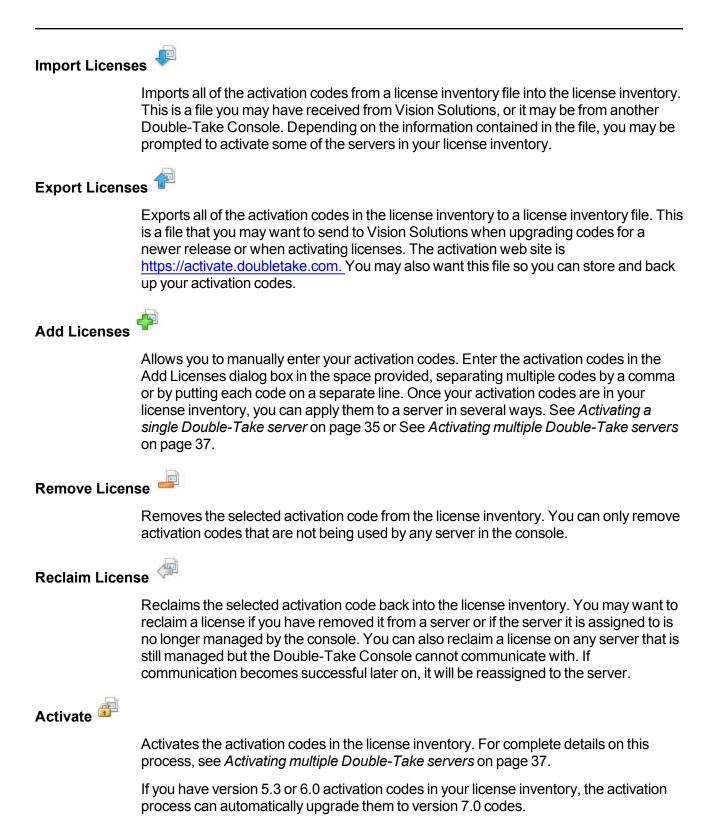
To manage your license inventory, select Go, Manage License Inventory.



You will see the following fields on the Manage License Inventory page.

Warning or err	or icon
	Warnings indicate the license has not been activated, or it is temporary and will expire. Errors indicate the license has expired.
Serial Number	
	The serial number associated with the license
Product	
	The Double-Take product associated with the license
License Type	
	A short description of the type of license, including any expiration date or quantity information
Version	
	The product version number associated with the license
Server	
	The name of the server the license has been applied to, if any. If the same activation code is used on multiple servers, for example with evaluation licenses, you will see multiple entries in the license inventory for each server that is using that activation code.

Use the following toolbar controls to manage your licenses.



### Licensing a server

If you did not license your server during the installation, you can apply a Double-Take license to a server using the console.

- 1. Make sure you have your server inserted in the console. See Adding servers on page 50.
- 2. From the Manage Servers page, double-click on the server to view the server's details.
- 3. From the View Server Details page, click on the Edit server properties link.
- 4. Expand the Licensing section.
- 5. Licensing identifies your Double-Take activation codes.

The fields and buttons in the **Licensing** section will vary depending on your Double-Take Console configuration and the type of activation codes you are using.

Add activation codes and activation ke	eys:		
	42 - 197		Choose from invent
Add			
Current activation codes:			
Product	Serial Number	Expiration	
A Double-Take Availability Advance	ced E	2/27/2012	
<b>(</b>		<u>)</u>	
A]		<u>)</u>	
<u>R</u> emove <u>Copy</u>		•	
<u>Remove</u> <u>Copy</u> Changes to activation are applied i	mmediately.	Þ	
	ses that require activation, -online feature to complete ternatively using the link be	To fully activat the activation slow, you may	process obtain
Changes to activation are applied i ctivation This server has one or more licent software you can use the activate using your internet connection. All activation keys from our activation	ses that require activation, -online feature to complete ternatively using the link be	To fully activat the activation slow, you may	process obtain

• Add activation codes and activation keys—The activation code and activation key are the Double-Take license which is required on every Double-Take server. They are a 24 character, alpha-numeric code. You can change your activation code without reinstalling, if

your license changes.

You will have two types of licenses for Double-Take Move.

- **Source license**—You will have one or more quantity based license that will be applied to your source servers. Each source will use one license from your available quantity. You can add more quantity based licenses to enable additional migrations. These licenses require activation before they can be used and have a built-in usage period that begins on activation.
- **Target license**—You will have one target license which can be shared across all of your targets. The target license does not need to be activated.

You can use Double-Take Availability codes for migrations, however the licensing is different. See the Double-Take Availability *User's Guide* for details on Double-Take Availability licensing.

To add an activation code and activation key, type in the code and click **Add**. If your console has been enabled to manage your license inventory, click **Choose from inventory** to open the Activation Codes dialog box where you can select the activation codes you want to apply. See *Console options* on page 42 for details on enabling the license inventory.



The license inventory feature cannot be enabled if your service provider has restricted access to it.

- Current activation codes—The server's current activation codes are displayed.
  - **Warning or error icon**—Warnings indicate the license is temporary and will expire. Errors indicate the license has expired.
  - Product—The product associated with the license
  - Serial Number—The serial number associated with the license
  - Expiration Date—The date the license expires, if there is one
  - Activation Code—The activation code

To remove a code, highlight it and click **Remove**. To copy a code, highlight it and click **Copy**.

- Activation—If your activation code needs to be activated, you will see an additional Activation section at the bottom of the Licensing section. To activate your code, use one of the following procedures.
  - Activate online—If you have Internet access, you can activate your license and apply the activated license to the server in one step. Select Activate Online.
  - Obtain activation key online, then activate—If you have Internet access, click the hyperlink in the Activation section to take you to the web so that you can submit your activation information. Complete and submit the activation form, and you will receive an e-mail with the activation key. Activate your server by entering the activation key in the Add activation codes and activations keys field and clicking Add.
  - Obtain activation key offline, then activate—If you do not have Internet access, go to <a href="https://activate.doubletake.com">https://activate.doubletake.com</a> from another machine that has Internet access.

Complete and submit the activation form, and you will receive an e-mail with the activation key. Activate your server by entering the activation key in the **Add activation codes and activations keys** field and clicking **Add**.

The permanent code is specific to this server. It cannot be used on any other server. If the activation code and server do not match, Double-Take will not run.

Once your license has been activated, you will have 60 days to complete your migration process.

If you rename a server that has already has a Double-Take license applied to it, for example if you rebuild a server, you will have to perform a host-transfer to continue using that license. This includes changing the case (capitalization) of the server name (upper or lower case or any combination of case).

6. Once you have completed your licensing, click **OK** to return to the **Manage Servers** page.

### Activating a single Double-Take server

You will need to have Double-Take installed on a single server, then you can activate the license on that server using the Double-Take Console. You can repeat this process for other servers individually.

- 1. Click Manage Servers in the toolbar.
- 2. Click Add Servers in the Manage Servers page toolbar.
- 3. Specify the name of your server and the credentials of the account used to install Double-Take, and click **Add**.
- 4. Click OK.
- 5. After you server has been added to the **Manage Servers** page, click **View Server Details** in the toolbar.
- 6. On the View Server Details page, click Edit server properties under Tasks.
- 7. Expand the Licensing section.

Add activation codes and activatio	n keys:		
			Choose from inventory
Add			
Current activation codes:			
Product	Serial Number	Expiration	
🛕 Double-Take Availability Adv	vanced E 334	2/27/2012	
<b>X</b>		<u>)</u>	
		•	
▲ <u>R</u> emove <u>Copy</u>			
<u>R</u> emove <u>Copy</u> Changes to activation are appli	ed immediately.	<u>)</u>	
	censes that require activation. vate-online feature to complet n. Alternatively using the link b	To fully activa e the activation pelow, you may	obtain
Changes to activation are appli     Changes to activation are appli     This server has one or more lik     software you can use the activ     using your internet connection     activation keys from our activation	censes that require activation. vate-online feature to complet n. Alternatively using the link b	To fully activa e the activation pelow, you may	oprocess obtain
<ul> <li>Changes to activation are applied</li> <li>Activation         This server has one or more like software you can use the activusing your internet connection activation keys from our activation software.     </li> </ul>	censes that require activation, vate-online feature to complet n. Alternatively using the link b ation website and add them at	To fully activa e the activation pelow, you may	process obtain

- 8. If your activation code needs to be activated, you will see an additional **Activation** section at the bottom of the **Licensing** section. To activate your code, use one of the following procedures.
  - Activate online—If you have Internet access, you can activate your license and apply the activated license to the server in one step. Select Activate Online.

- Obtain activation key online, then activate—If you have Internet access, click the hyperlink in the Activation section to take you to the web so that you can submit your activation information. Complete and submit the activation form, and you will receive an e-mail with the activation key. Activate your server by entering the activation key in the Add activation codes and activations keys field and clicking Add.
- Obtain activation key offline, then activate—If you do not have Internet access, go to <u>https://activate.doubletake.com</u> from another machine that has Internet access. Complete and submit the activation form, and you will receive an e-mail with the activation key. Activate your server by entering the activation key in the Add activation codes and activations keys field and clicking Add.

The permanent code is specific to this server. It cannot be used on any other server. If the activation code and server do not match, Double-Take will not run.

Once your license has been activated, you will have 60 days to complete your migration process.

If you rename a server that has already has a Double-Take license applied to it, for example if you rebuild a server, you will have to perform a host-transfer to continue using that license. This includes changing the case (capitalization) of the server name (upper or lower case or any combination of case).

## Activating multiple Double-Take servers

You will need to have Double-Take installed on multiple servers, then you can activate the licenses on those servers all at once.

- 1. On the **Manage Servers** page, verify that all of the Double-Take servers that you want to activate have been added to your Double-Take Console. See *Adding servers* on page 50.
- 2. Select Go, Manage License Inventory.
- 3. Click **Activate** in the toolbar.

💽 Activa	te Licenses				×
6	To activate your lice get activation keys a Activate online	automatically over			
	C Activate using on	nly my current loca	il inventory.		
				ОК	Cancel

- Activate online—Select this option on an Internet connected machine to contact the Vision Solutions activation web site to automatically activate all of the licenses in your license inventory. If you have version 5.3 activation codes in your license inventory, the activation process will automatically upgrade them to version 7.0 codes.
- Enter activation keys—Select this option on a non-Internet connected machine to manually enter activation keys. You can obtain these keys from <a href="https://activate.doubletake.com">https://activate.doubletake.com</a> by entering the server information for each server manually or by uploading an export file of your license inventory. See Activating a single Double-Take server on page 35 for details on gathering the server information or Managing the Double-Take license inventory on page 30 for details on creating an export file.
- Activate using only my current local inventory—Select this option to activate all of the licenses in your inventory based on the inventory's current local settings. For example, if a server was offline when you performed activate online, you can perform the activation process again when the server is available. You may also need to perform this option if you selected not to activate the servers when you imported a license inventory file.
- 4. Click OK to begin the activation process.

After your servers have been activated, you will have permanent codes that are specific to each server. They cannot be used on any other server. If the activated code and server do not match, Double-Take will not run.

Once your license has been activated, you will have 60 days to complete your migration process.

If you rename a server that has already has a Double-Take license applied to it, for example if you rebuild a server, you will have to perform a host-transfer to continue using that license. This includes changing the case (capitalization) of the server name (upper or lower case or any combination of case).

# **Chapter 4 Double-Take Console**

After you have installed the console, you can launch it by selecting **Double-Take**, **Double-Take Console** from your **Programs**, **All Programs**, or **Apps**, depending on your operating system.

The Double-Take Console is used to protect and monitor your servers and jobs. Each time you open the Double-Take Console, you start at the **Home** page. This page provides a high-level overview of the status of your jobs.

The appearance of the **Home** page is the same for all users. However, other console pages may have variances in the appearance depending on the Double-Take products that you have installed, the Double-Take activation codes on your servers, and the type of job you are working with.

Double-Take Console			
e <u>E</u> dit <u>V</u> iew <u>G</u> o <u>T</u> ools <u>H</u>	<u>t</u> elp		
🎅 💮 🥎 🞯 Get Sta	arted 🗾 Manage Ser	vers 🔛 Manage Jobs 📝	♣ VISION.
Home			
Velcome to Double-Take Cons	ole.		
Headlines			Tasks
These jobs require attention			Add servers
Source Server 🔺	Target Server	Activity	Create a job
🙆 alpha	beta	Failover condition met	Import servers from a file
			Choose external tools
			Resources
			) Get help
Vie <u>w</u> T <u>o</u> ols ▼			Visit Vision Solutions on the web
	1.05		Automatic Updates
Servers Summary			Get the latest update
Total number of servers:	5		Change automatic updates
View all servers			
Jobs Summary			
Total number of jobs:	2		
View jobs with errors			
View jobs with warnings			
View all jobs			
ady			⚠ Jobs with warnings: 0 3 Jobs with errors: 1

- **Headlines**—The top section gives a quick overview of any jobs that require attention as well as providing quick access buttons.
  - These jobs require attention—Any jobs that require attention (those in an error state) are listed. You will see the source and target server names listed, as well as a short description of the issue that requires your attention. If the list is blank, there are no jobs that

require immediate attention.

- Tools—Select this drop-down list to launch other Vision Solutions consoles.
- Servers Summary—The middle section summarizes the servers in your console.
  - **Total number of servers**—This field displays the number of servers that you have been added to the console.
- Jobs Summary—The bottom section summarizes the jobs in your console.
  - **Total number of jobs**—This field displays the number of jobs running on the servers in your console.

# **Double-Take Console requirements**

You must meet the following requirements for the Double-Take Console.

- **Operating system**—The Double-Take Console can be run from a Windows source or target. It can also be run from a 32-bit or 64-bit physical or virtual machine running Windows 8, Windows 7, Windows Vista, or Windows XP Service Pack 2 or later.
- **Microsoft** .**NET Framework**—Microsoft .NET Framework version 3.5 Service Pack 1 is required. This version is not included in the .NET version 4.0 release. Therefore, even if you have .NET version 4.0 installed, you will also need version 3.5.1. For Windows 2008 and earlier, you can install this version from the Double-Take DVD, via a web connection during the Double-Take installation, or from a copy you have obtained manually from the <u>Microsoft web site</u>. For Windows 2008 R2 and later, you need to enable it through Windows features.
- Screen resolution—For best results, use a 1024x768 or higher screen resolution.

The Double-Take installation prohibits the console from being installed on Server Core. Because Windows 2012 allows you to switch back and forth between Server Core and a full installation, you may have the console files available on Server Core, if you installed Double-Take while running in full operating system mode. In any case, you cannot run the Double-Take Console on Server Core.

# **Console options**

There are several options that you can set that are specific to the Double-Take Console. To access these console options, select **Options** from the toolbar.

- **Monitoring interval**—Specifies how often, in seconds, the console refreshes the monitoring data. The servers will be polled at the specified interval for information to refresh the console.
- Enable automatic retry—This option will have the console automatically retry server login credentials, after the specified retry interval, if the server login credentials are not accepted. Keep in mind the following caveats when using this option.
  - This is only for server credentials, not job credentials.
  - A set of credentials provided for or used by multiple servers will not be retried for the specified retry interval on any server if it fails on any of the servers using it.
  - Verify your environment's security policy when using this option. Check your policies for failed login lock outs and resets. For example, if your policy is to reset the failed login attempt count after 30 minutes, set this auto-retry option to the same or a slightly larger value as the 30 minute security policy to decrease the chance of a lockout.
  - Restarting the Double-Take Console will automatically initiate an immediate login.
  - Entering new credentials will initiate an immediate login using the new credentials.
- **Retry on this interval**—If you have enabled the automatic retry, specify the length of time, in minutes, to retry the login.
- **Default port for XML web services protocol**—Specifies the port that the console will use when sending and receiving data to Double-Take servers. By default, the port is 6325. Changes to the console port will not take effect until the console is restarted.
- **Default port for legacy protocol**—If you are using an older Double-Take version, you will need to use the legacy protocol port. This applies to Double-Take versions 5.1 or earlier.
- **Export Diagnostic Data**—This button creates a raw data file that can be used for debugging errors in the Double-Take Console. Use this button as directed by technical support.
- View Log File—This button opens the Double-Take Console log file. Use this button as directed by technical support.
- View Data File—This button opens the Double-Take Console data file. Use this button as directed by technical support.
- Automatically check for updates—By default, each time the console is started, it will automatically check the Vision Solutions web site to see if there is updated console software available. If there is updated console software available, an Automatic Updates section will appear on the Home page. Click Get the latest update to download and install the updated console software.

If you want to disable the automatic check for updates, click **Change automatic updates** or select **Options** from the toolbar. On the **Options** page, deselect **Automatically check for updates** to disable the automatic check.

You can also manually check for updates by selecting Help, Check for Updates.

• Update available—If there is an update available, click Get Update. The dialog box will close and your web browser will open to the Vision Solutions web site where you can download and install the update.

- No update available—If you are using the most recent console software, that will be indicated. Click Close.
- No connection available—If the console cannot contact the update server of if there is an error, the console will report that information. The console log contains a more detailed explanation of the error. Click **Check using Browser** if you want to open your browser to check for console software updates. You will need to use your browser if your Internet access is through a proxy server.
- Enable license inventory—This option allows you to use this console to manage the Double-Take licenses assigned to your organization. When this option is enabled, the Manage License Inventory page is also enabled. See *Managing the Double-Take license inventory* on page 30.

The license inventory feature may not appear in your console if your service provider has restricted access to it.

- Default Installation Options—All of the fields under the Default Installation Options section are used by the push installation on the Install page. See Installing Double-Take Move using the Double-Take Console on page 25. The values specified here will be the default options used for the push installation. Options you modify when using the push installation will be replaced by these default values each time you use the push installation.
  - Location of 32-bit installation package—Specify the location of the setup file (on the local machine) that will be used to install on 32-bit servers. By default, this is in the \i386 subdirectory where you installed Double-Take.
  - Location of 64-bit installation package—Specify the location of the setup file (on the local machine) that will be used to install on 64-bit servers. By default, this is in the \x64 subdirectory where you installed Double-Take.
  - Location of .NET 3.5 SP1 installation package—If your servers are running Windows 2008 or earlier and do not have Microsoft .NET version 3.5.1, specify the location of the setup file (on the local machine) that will be used to install it. The setup file is available on the Double-Take DVD in the \NetFx\v3.5SP1\Full directory or from the Microsoft web site. For 2008 R2 or later, you need to enable it through Windows features.
  - **Temporary folder for installation package**—Specify a temporary location (on the server where you are installing Double-Take) where the installation files will be copied and run. You need approximately 130 MB of space in the specified location.
  - Installation folder—Specify the location where you want to install Double-Take on each server.
  - **Queue folder**—Specify the location where you want to store the Double-Take disk queue on each server.
  - Amount of system memory to use—Specify the maximum amount of memory, in MB, that can be used for Double-Take processing. For complete details on memory usage, see *Double-Take queue* on page 65.
  - Minimum free disk space—This is the minimum amount of disk space in the specified Queue folder that must be available at all times. This amount should be less than the amount of physical disk space minus the disk size specified for Limit disk space for queue.

- **Do not use disk queue**—This option will disable disk queuing. When system memory has been exhausted, Double-Take will automatically begin the auto-disconnect process.
- Unlimited disk queue—Double-Take will use an unlimited amount of disk space in the specified Queue folder for disk queuing, which will allow the queue usage to automatically expand whenever the available disk space expands. When the available disk space has been used, Double-Take will automatically begin the auto-disconnect process.
- Limit disk space for queue—This option will allow you to specify a fixed amount of disk space, in MB, in the specified **Queue folder** that can be used for Double-Take disk queuing. When the disk space limit is reached, Double-Take will automatically begin the auto-disconnect process.

# **Chapter 5 Managing servers**

To manage the servers in your console, select **Manage Servers** from the toolbar. The **Manage Servers** page allows you to view, edit, add, remove, or manage the servers in your console.

You can also organize the servers that are in your console into groups, allowing you to filter the servers you are viewing based on your organization. The servers displayed in the right pane depend on the server group folder selected in the left pane. Every server in your console session is displayed when the **All Servers** group is selected. If you have created and populated server groups under **My Servers**, then only the servers in the selected group will displayed in the right pane.

If you have uninstalled and reinstalled Double-Take on a server, you may see the server twice on the **Manage Servers** page because the reinstall assigns a new unique identifier to the server. One of the servers (the original version) will show with the red X icon. You can safely remove that server from the console.

### Right pane display

The following table identifies the columns displayed in the right pane of the Manage Servers page.

#### Column 1 (Blank)

The first blank column indicates the machine type.

Double-Take source or target server which could be a physical server, virtual machine, or a cluster node

Double-Take source or target server which is a Windows cluster

Konstantiation of the server which could be a vCenter server or an ESX or ESX host.

- Double-Take controller appliance
- Double-Take replication appliance
- E Double-Take Reporting Service server
- In the console cannot communicate with this machine.

Server error which means the console can communicate with the machine, but it cannot communicate with Double-Take on it.

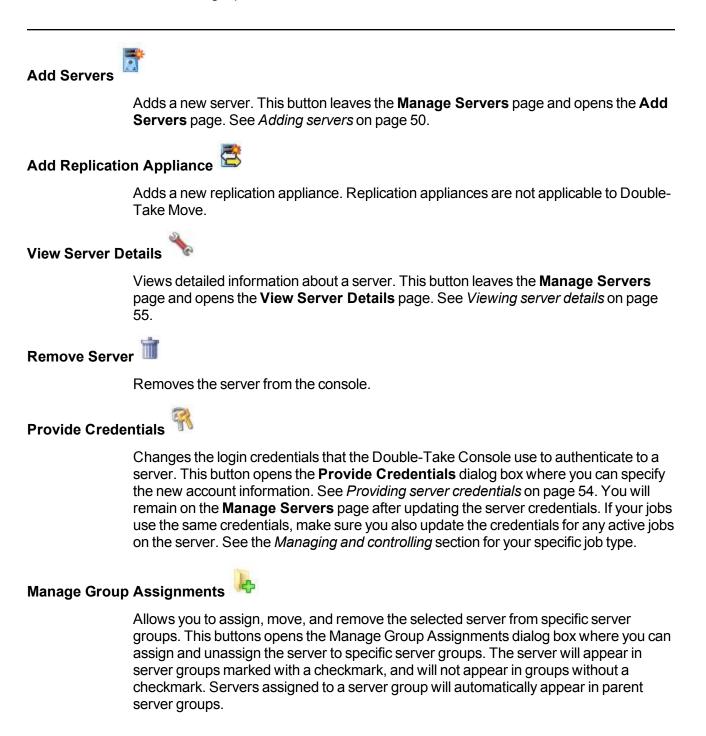
#### Column 2 (Blank)

The second blank column indicates the security level

	Processing—The console is attempting to communicate with machine.
	Administrator access—This level grants full control.
	Monitor only access—This level grants monitoring privileges only.
	No security access—This level does not allow monitoring or control.
Server	
	The name or IP address of the server. If you have specified a reserved IP address, it will be displayed in parenthesis.
Activity	
	There are many different <b>Activity</b> messages that keep you informed of the server activity. Most of the activity messages are informational and do not require any administrator interaction. If you see error messages, check the server details. See <i>Viewing server details</i> on page 55.
\/	
Version	
version	The product version information
Version Licensing Stat	
	us The status of the license on the server. If your license is expired, any jobs using that
Licensing Stat	us The status of the license on the server. If your license is expired, any jobs using that
Licensing Stat	us The status of the license on the server. If your license is expired, any jobs using that server will be in an error state. The Double-Take products licensed for the server or the Double-Take role for the server.
Licensing Stat	us The status of the license on the server. If your license is expired, any jobs using that server will be in an error state. The Double-Take products licensed for the server or the Double-Take role for the server.
Licensing Stat	<b>us</b> The status of the license on the server. If your license is expired, any jobs using that server will be in an error state. The Double-Take products licensed for the server or the Double-Take role for the server. <b>ie</b> The activation codes associated with the products licensed for the server. If your license is not valid for the operating system on your server, the activation code will be identified as Invalid Activation Code. There will be no activation code listed for those servers that are not licensed, like a VMware server.

### Main toolbar and right-click menu

The following options are available on the main toolbar of the **Manage Servers** page and the right-click menu. Some of the options are only available in the right-click menu. Each of the options control the server that is selected in the right pane.





Installs or upgrades Double-Take on the selected server. This button opens the **Install** page where you can specify installation options. See *Installing Double-Take Move* using the Double-Take Console on page 25.

Uninstall 🧯

Uninstalls Double-Take on the selected server.

View Server Events

Views event messages for a server. This button leaves the **Manage Servers** page and opens the **View Server Events** page. See *Viewing server events* on page 136.



Views the Double-Take logs messages for a server. This button opens the **Logs** window. This separate window allows you to continue working in the Double-Take Console while monitoring log messages. You can open multiple logging windows for multiple servers. When the Double-Take Console is closed, all logging windows will automatically close. See *Viewing the log files through the Double-Take Console* on page 313 for more details on this view.

#### Refresh

Refreshes the status of the selected servers.

#### **Gather Support Diagnostics**

Executes the diagnostic DTInfo utility which collects configuration data for use when reporting problems to technical support. It gathers Double-Take log files; Double-Take and system settings; network configuration information such as IP, WINS, and DNS addresses; and other data which may be necessary for technical support to troubleshoot issues. You will be prompted for a location to save the resulting file which is created with the information gathered. Because this utility is gathering several pieces of information, across the network to your console machine, it may take several minutes to complete the information gathering and sending the resulting file to the console machine.

#### **View Replication Service Details**

Views the replication service details for a server. This button opens the **Replication service view** window. This separate window allows you to continue working in the Double-Take Console while monitoring the replication service details. You can open multiple **Replication service view** windows for multiple servers. When the Double-Take Console is closed, all **Replication service view** windows will automatically close. If you do not want to open separate windows, you can switch between servers that are in your Double-Take Console from within the **Replication service view** window. See *Replication service view* on page 332 for more details on this view.

#### Overflow Chevron

Displays any toolbar buttons that are hidden from view when the window size is reduced.

### Left pane toolbar

Between the main toolbar and the left pane is a smaller toolbar. These toolbar options control the server groups in the left pane.

### Create New Server Group

Creates a new server group below the selected group

### Rename Server Group 🔍

Allows you to rename the selected server group

### Delete Server Group ×

Deletes the selected server group. This will not delete the servers in the group, only the group itself.

#### Overflow Chevron

Displays any toolbar buttons that are hidden from view when the window size is reduced.

# Adding servers

The first time you start the console, the **Manage Servers** page is empty. In order to migrate and monitor your servers, you must insert your servers and/or appliances in the console. You can insert servers and appliances during job creation, or you have three other methods for inserting servers into the console.

### Inserting servers manually

- 1. Select Get Started from the toolbar.
- 2. Select Add servers and click Next.
- 3. On the Manual Entry tab, specify the server information.
  - **Server**—This is the name or IP address of the server or appliance to be added to the console. See the following NAT configuration section if you have a NAT environment.
  - User name—For a server, specify a user that is a member of the Double-Take Admin or Double-Take Monitors security group on the server. For an appliance, specify the root user or another user that has the administrator role on the appliance.
  - Password—Specify the password associated with the User name you entered.
- 4. You can expand the More Options section to configure the following settings.
  - **Domain**—If you are working in a domain environment, specify the **Domain**.
  - Associate with Double-Take Linux Appliance—This field is not applicable to Double-Take Move.
- 5. After you have specified the server or appliance information, click Add.
- 6. Repeat steps 3 through 5 for any other servers or appliances you want to add.
- 7. If you need to remove servers or appliances from the list of **Servers to be added**, highlight a server and click **Remove**. You can also remove all of them with the **Remove All** button.
- 8. When your list of **Servers to be added** is complete, click **OK**.

### NAT configuration

If you are going to create a data migration or full server migration job, then your servers can be in a NAT environment. Other job types do not support a NAT environment.

The name or IP address you use to add a server to the console is dependent on where are you are running the console. Use the following table to determine what name or IP address to enter depending on the location where you are running the console.

In this table, public addresses are those addresses that are publicly available when a server is behind a NAT router. Private addresses are those addresses that are privately available when a server is behind a NAT router. An address that is not labeled as public or private are for servers that are not behind a NAT router. This is generally a public address but is not named as such in this table to try to more clearly identify when a public NAT address needs to be used.

Location of servers	Location of Double-Take Console	How to add the server to the Double-Take Console	
	and your Double-Take Console is located behind the NAT router with the source,	specify the name or private IP address of the source and the public IP address of the target (which is the public IP address of the target's NAT router).	
If your source and target are behind individual NAT routers,	and your Double-Take Console is located behind the NAT router with the target,	specify the public IP address of the source (which is the public IP address of the source's NAT router) and the name or private IP address of the target.	
	and your Double-Take Console is located between the two NAT routers,	specify the public IP address of the source (which is the public IP address of the source's NAT router) and the	
	and your Double-Take Console is located behind a third NAT router,	public IP address of the target (which is the public IP address of the target's NAT router).	
If your source is behind a	and your Double-Take Console is located behind the NAT router with the source,	specify the name or private IP address of the source and the name or IP address of the target.	
NAT router but your target is not,	and your Double-Take Console is located on the target network,	specify the public IP address of the source (which is the public IP address of the source's NAT router) and the name or IP address of the target.	

If your target is behind a	and your Double-Take Console is located behind the NAT router with the target,	specify the name or IP address of the source and the name or private IP address of the target.
NAT router but your source is not,	and your Double-Take Console is located on the source network,	specify the name or IP address of the source and the public IP address of the target (which is the public address of the target's NAT router).
If your source and target are both behind a single NAT router with multiple public NICs,	and your Double-Take Console is located outside of the router,	specify the public IP addresses for the source and the target.

### Inserting servers through Active Directory discovery

You can insert servers using Active Directory discovery.

- 1. Select Get Started from the toolbar.
- 2. Select Add servers and click Next.
- 3. Select the Automatic Discovery tab.
- 4. Click **Discover** to search Active Directory for servers running Double-Take.
- 5. If you need to remove servers from the list of **Servers to be added**, highlight a server and click **Remove**. You can also remove all of them with the **Remove All** button.
- 6. When your list of Servers to be added is complete, click OK.
- 7. Because the Active Directory discovery uses pass-through authentication, you will need to update the credentials for each server from the **Manage Servers** page, so that explicit credentials can be used when you go to create a job. Click **Provide Credentials** and provide credentials for a user that has privileges to that server and is a member of the Double-Take Admin security group.

### Importing and exporting servers from a server and group configuration file

You can share the console server and group configuration between machines that have the Double-Take Console installed. The console server configuration includes the server group configuration, server name, server communications ports, and other internal processing information.

To export a server and group configuration file, select **File**, **Export Servers**. Specify a file name and click **Save**. After the configuration file is exported, you can import it to another console.

When you are importing a console server and group configuration file from another console, you will not lose or overwrite any servers that already exist in the console. For example, if you have server alpha in your console and you insert a server configuration file that contains servers alpha and beta, only the server beta will be inserted. Existing group names will not be merged, so you may see duplicate server groups that you will have to manually update as desired.

To import a server and group configuration file, select **File**, **Import Servers**. Locate the console configuration file saved from the other machine and click **Open**.

# **Providing server credentials**

To update the security credentials used for a specific server, select **Provide Credentials** from the toolbar on the **Manage Servers** page. When prompted, specify the **User name**, **Password**, and **Domain** of the account you want to use for this server. Click **OK** to save the changes.

## Viewing server details

Highlight a server on the **Manage Servers** page and click **View Server Details** from the toolbar. The **View Server Details** page allows you to view details about that particular server. The top set of details are the same for each type of Double-Take server. The lower sets of details vary depending on the type of server or appliance you are viewing.

Server name	
	The name or IP address of the server. If you have specified a reserved IP address, it will be displayed in parenthesis.
Roles	
	The role of this server in your Double-Take environment. In some cases, a server can have more than one role.
	EngineRole—Source or target server
	ProxyRole—A Linux appliance for a full server to ESX appliance job
	ProxiedRole—A Linux source server for a full server to ESX appliance job
	ControllerRole—Controller appliance for an agentless vSphere job
	ReplicationApplianceRole     Replication appliance for an agentless vSphere job
	Reporting Service—Double-Take Reporting Service server
Status	
	There are many different <b>Status</b> messages that keep you informed of the server activity. Most of the status messages are informational and do not require any administrator interaction. If you see error messages, check the rest of the server details.
Activity	
	There are many different <b>Activity</b> messages that keep you informed of the server activity. Most of the activity messages are informational and do not require any administrator interaction. If you see error messages, check the rest of the server details.
Connected via	
	The IP address and port the server is using for communcations. You will also see the Double-Take protocol being used to communicate with server. The protocol will be XML web services protocol (for servers running Double-Take version 5.2 or later) or Legacy protocol (for servers running version 5.1 or earlier).
Version	
	The product version information
Access	
	The security level granted to the specified user

#### User name

The user account used to access the server

#### Licensing

Licensing information for the server

- Warning or error icon—Warnings indicate the license is temporary and will expire. Errors indicate the license has expired or it is invalid for the operating system on the server.
- Product—The product associated with the license
- Serial Number—The serial number associated with the license
- Expiration Date—The date the license expires, if there is one
- Activation Code—The activation code
- Licensing Status—The status of the license on the server. If your license is expired, any jobs using that server will be in an error state.
- License Type—The type of Double-Take license

#### Source jobs

A list of any jobs from this server. Double-clicking on a job in this list will automatically open the **View Job Details** page.

#### **Target jobs**

A list of any jobs to this server. Double-clicking on a job in this list will automatically open the **View Job Details** page.

# **Editing server properties**

Highlight a server on the **Manage Servers** page and click **View Server Details** from the toolbar. Under **Tasks**, select **Edit server properties**. The **Edit Server Properties** page allows you to view and edit properties for that server. Click on a heading on the **Edit Server Properties** page to expand or collapse a section of properties.

Server Properties Section	Description
See General server properties on page 58	Identifies the server
See Server licensing on page 59	Views, adds, and removes activation codes
See Server setup properties on page 62	Indicates how the server will act on startup and shutdown
See Double-Take queue on page 65	Configures the Double-Take queues
See Source server properties on page 69	Configures the source server
See Target server properties on page 72	Configures the target server
See <i>E-mail notification configuration</i> on page 74	Configures e-mail notification
See Script credentials on page 76	Specifies credentials to be used when executing custom scripts during mirroring or cutover
See Log file properties on page 77	Configures log files
Reporting Service properties on page 81	Configures a Double-Take Reporting Service server

## **General server properties**

The general server properties identify the server.

→ General	
Default address:	
(None)	
Port:	
6320	
Operating system:	Microsoft Windows NT 6.0.6002 Service Pack 2
Product:	Double-Take Availability Premium Edition 7.0.0.603.0
🔲 Enable automati	retry
Retry on this in	erval (minutes):
.30	× *

- **Default address**—On a server with multiple NICs, you can specify which address Double-Take traffic will use. It can also be used on servers with multiple IP addresses on a single NIC. If you change this setting, you must restart the Double-Take service for this change to take effect.
- **Port**—The server uses this port to send and receive commands and operations between Double-Take servers.
- Operating system—The server's operating system version is displayed.
- **Product**—The Double-Take version number is displayed.
- Enable automatic retry—This option will have the target server automatically retry server login credentials for a job, after the specified retry interval, if the server login credentials are not accepted. Keep in mind the following caveats when using this option.
  - Because server logins for a job are controlled by the target, this setting is only applicable to target servers.
  - This is only for server credentials, not job credentials.
  - Verify your environment's security policy when using this option. Check your policies for failed login lock outs and resets. For example, if your policy is to reset the failed login attempt count after 30 minutes, set this auto-retry option to the same or a slightly larger value as the 30 minute security policy to decrease the chance of a lockout.
- **Retry on this interval**—If you have enabled the automatic retry, specify the length of time, in minutes, to retry the login.

## **Server licensing**

Licensing identifies your Double-Take activation codes.

The fields and buttons in the **Licensing** section will vary depending on your Double-Take Console configuration and the type of activation codes you are using.

Add activation codes and activation	keys:		
			Choose from invento
		-	
Add			
Current activation codes:			
Product	Serial Number	Expiration	
A Double-Take Availability Adva		2/27/2012	
		•	
Remove Copy	1	×	
		<u>)</u>	
Changes to activation are applied	d immediately.	×	
Changes to activation are applied			VOUE
Changes to activation are applied Activation This server has one or more lice	enses that require activation.	To fully activate	
Changes to activation are applied Activation This server has one or more lice software you can use the activa using your internet connection.	enses that require activation. te-online feature to complete Alternatively using the link b	To fully activate the activation prelow, you may ob	rocess btain
Changes to activation are applied Activation This server has one or more lice software you can use the activa	enses that require activation. te-online feature to complete Alternatively using the link b	To fully activate the activation prelow, you may ob	rocess btain
<ul> <li>Changes to activation are applied</li> <li>Activation         Activation         An this server has one or more lice software you can use the activation using your internet connection. activation keys from our activation     </li> </ul>	enses that require activation. te-online feature to complete Alternatively using the link b	To fully activate the activation prelow, you may ob	rocess btain

• Add activation codes and activation keys—The activation code and activation key are the Double-Take license which is required on every Double-Take server. They are a 24 character, alpha-numeric code. You can change your activation code without reinstalling, if your license changes.

You will have two types of licenses for Double-Take Move.

• **Source license**—You will have one or more quantity based license that will be applied to your source servers. Each source will use one license from your available quantity. You can add more quantity based licenses to enable additional migrations. These licenses require activation before they can be used and have a built-in usage period that begins on

activation.

• **Target license**—You will have one target license which can be shared across all of your targets. The target license does not need to be activated.

You can use Double-Take Availability codes for migrations, however the licensing is different. See the Double-Take Availability *User's Guide* for details on Double-Take Availability licensing.

To add an activation code and activation key, type in the code and click **Add**. If your console has been enabled to manage your license inventory, click **Choose from inventory** to open the Activation Codes dialog box where you can select the activation codes you want to apply. See *Console options* on page 42 for details on enabling the license inventory.

1

The license inventory feature cannot be enabled if your service provider has restricted access to it.

- Current activation codes—The server's current activation codes are displayed.
  - Warning or error icon—Warnings indicate the license is temporary and will expire. Errors indicate the license has expired.
  - Product—The product associated with the license
  - Serial Number—The serial number associated with the license
  - Expiration Date—The date the license expires, if there is one
  - Activation Code—The activation code

To remove a code, highlight it and click **Remove**. To copy a code, highlight it and click **Copy**.

- Activation—If your activation code needs to be activated, you will see an additional Activation section at the bottom of the Licensing section. To activate your code, use one of the following procedures.
  - Activate online—If you have Internet access, you can activate your license and apply the activated license to the server in one step. Select Activate Online.
  - Obtain activation key online, then activate—If you have Internet access, click the hyperlink in the Activation section to take you to the web so that you can submit your activation information. Complete and submit the activation form, and you will receive an e-mail with the activation key. Activate your server by entering the activation key in the Add activation codes and activations keys field and clicking Add.
  - Obtain activation key offline, then activate—If you do not have Internet access, go to <u>https://activate.doubletake.com</u> from another machine that has Internet access. Complete and submit the activation form, and you will receive an e-mail with the activation key. Activate your server by entering the activation key in the Add activation codes and activations keys field and clicking Add.

The permanent code is specific to this server. It cannot be used on any other server. If the activation code and server do not match, Double-Take will not run.

Once your license has been activated, you will have 60 days to complete your migration process.

If you rename a server that has already has a Double-Take license applied to it, for example if you rebuild a server, you will have to perform a host-transfer to continue using that license. This includes changing the case (capitalization) of the server name (upper or lower case or any combination of case).

## Server setup properties

Server setup properties indicate how the server will act on startup and shutdown.

<ul> <li>Log statistics automatically</li> <li>Enable task command processing</li> <li>Advertise service with Active Directory</li> <li>Mirror only changed files when source reboots</li> </ul>	
<ul> <li>Automatically reconnect during source initialization</li> <li>Behavior when automatically remirroring:</li> </ul>	
Mirror different files using block checksum	
Time allowed to complete shutdown operations (seconds):	

- Log statistics automatically—If enabled, Double-Take statistics logging will start automatically when Double-Take is started.
- Enable task command processing—Task command processing is a Double-Take feature that allows you to insert and run tasks at various points during the replication of data. Because the tasks are user-defined, you can achieve a wide variety of goals with this feature. For example, you might insert a task to create a snapshot or run a backup on the target after a certain segment of data from the source has been applied on the target. This allows you to coordinate a point-in-time backup with real-time replication. Enable this option to enable task command processing, however to insert your tasks, you must use the Double-Take scripting language. See the *Scripting Guide* for more information. If you disable this option on a source server, you can still submit tasks to be processed on a target, although task command processing must be enabled on the target.
- Advertise service with Active Directory—If enabled, the Double-Take service registers with Windows Active Directory when the service is started.
- Mirror only changed files when source reboots—If enabled, Double-Take will use the Windows NTFS change journal to track file changes. If the source is rebooted, only the files identified in the change journal will be remirrored to the target. This setting helps improve mirror times.
- Automatically reconnect during source initialization—Disk queues are user configurable and can be extensive, but they are limited. If the amount of disk space specified for disk queuing is met, additional data would not be added to the queue and data would be lost. To avoid any data loss, Double-Take will automatically disconnect jobs when necessary. If this option is enabled, Double-Take will automatically reconnect any jobs that it automatically disconnected. These processes are called auto-disconnect and auto-reconnect and can happen in the following scenarios.
  - Source server restart—If your source server is restarted, Double-Take will automatically
    reconnect any jobs that were previously connected. Then, if configured, Double-Take will
    automatically remirror the data. This process is called auto-remirror. The remirror reestablishes the target baseline to ensure data integrity, so disabling auto-remirror is not
    advised.
  - Exhausted queues on the source—If disk queuing is exhausted on the source, Double-Take will automatically start disconnecting jobs. This is called auto-disconnect. The transaction logs and system memory are flushed allowing Double-Take to begin processing anew. The auto-reconnect process ensures that any jobs that were auto-disconnected are automatically reconnected. Then, if configured, Double-Take will automatically remirror the

data. This process is called auto-remirror. The remirror re-establishes the target baseline to ensure data integrity, so disabling auto-remirror is not advised.

- Exhausted queues on the target—If disk queuing is exhausted on the target, the target instructs the source to pause. The source will automatically stop transmitting data to the target and will queue the data changes. When the target recovers, it will automatically tell the source to resume sending data. If the target does not recover by the time the source queues are exhausted, the source will auto-disconnect as described above. The transaction logs and system memory from the source will be flushed then Double-Take will auto-reconnect. If configured, Double-Take will auto-remirror. The remirror re-establishes the target baseline to ensure data integrity, so disabling auto-remirror is not advised.
- Queuing errors—If there are errors during disk queuing on either the source or target, for example, Double-Take cannot read from or write to the transaction log file, the data integrity cannot be guaranteed. To prevent any loss of data, the source will auto-disconnect and auto-reconnect. If configured, Double-Take will auto-remirror. The remirror re-establishes the target baseline to ensure data integrity, so disabling auto-remirror is not advised.
- Target server interruption—If a target machine experiences an interruption (such as a cable or NIC failure), the source/target network connection is physically broken but both the source and target maintain the connection information. The Double-Take source, not being able to communicate with the Double-Take target, stops transmitting data to the target and queues the data changes, similar to the exhausted target queues described above. When the interruption is resolved and the physical source/target connection is reestablished, the source begins sending the queued data to the target. If the source/target connection is not reestablished by the time the source queues are exhausted, the source will auto-disconnect as described above.
- Target service shutdown—If the target service is stopped and restarted, there could have been data in the target queue when the service was stopped. To prevent any loss of data, the Double-Take service will attempt to persist to disk important target connection information (such as the source and target IP addresses for the connection, various target queue information, the last acknowledged operation, data in memory moved to disk, and so on) before the service is stopped. If Double-Take is able to successfully persist this information, when the Double-Take service on the target is restarted, Double-Take will pick up where it left off, without requiring an auto-disconnect, auto-reconnect, or auto-remirror. If Double-Take cannot successfully persist this information prior to the restart (for example, a server crash or power failure where the target service cannot shutdown gracefully), the source will auto-reconnect when the target is available, and if configured, Double-Take will auto-remirror is not advised.

If you are experiencing frequent auto-disconnects, you may want to increase the amount of disk space on the volume where the Double-Take queue is located or move the disk queue to a larger volume.

If you have manually changed data on the target, for example if you were testing data on the target, Double-Take is unaware of the target data changes. You must manually remirror your data from the source to the target, overwriting the target data changes that you caused, to ensure data integrity between your source and target.

- **Behavior when automatically remirroring**—Specify how Double-Take will perform the mirror when it is automatically remirroring.
  - **Do not mirror**—Do not automatically remirror any files. If you select this option, you will have to start a mirror manually to guarantee data integrity.
  - Mirror different files using block checksum—Any file that is different on the source and target based on date, time, and/or size is flagged as different. The mirror then performs a checksum comparison on the flagged files and only sends those blocks that are different.
  - Mirror all files—All files are sent to the target.
  - **Mirror different files**—Any file that is different on the source and target based on date, time, and/or size is sent to the target.
  - Mirror only newer files—Only those files that are newer on the source are sent to the target.

Database applications may update files without changing the date, time, or file size. Therefore, if you are using database applications, you should use the file differences with checksum or mirror all option.

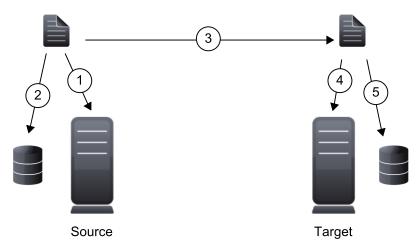
• Time allowed to complete shutdown operations—This setting indicates the amount of time, in seconds, for the Double-Take service to wait prior to completing a shutdown so that Double-Take can persist data on the target in an attempt to avoid a remirror when the target comes back online. A timeout of zero (0) indicates waiting indefinitely and any other number indicates the number of seconds. The timeout setting only controls the service shutdown caused by Double-Take. It does not control the service shutdown through a reboot or from the Service Control Manager.

## Double-Take queue

During the Double-Take installation, you identified the amount of disk space that can be used for Double-Take queuing. Queuing to disk allows Double-Take to accommodate high volume processing that might otherwise exhaust system memory. For example, on the source, this may occur if the data is changing faster than it can be transmitted to the target, or on the target, a locked file might cause processing to back up.

### Double-Take Queuing Diagram

The following diagram will help you understand how queuing works. Each numbered step is described after the diagram.



- 1. If data cannot immediately be transmitted to the target, it is stored in system memory. You can configure how much system memory you want Double-Take to use for all of its processing.
- 2. When the allocated amount of system memory is full, new changed data bypasses the full system memory and is queued directly to disk. Data queued to disk is written to a transaction log. Each transaction log can store 5 MB worth of data. Once the log file limit has been reached, a new transaction log is created. The logs can be distinguished by the file name which includes the target IP address, the Double-Take port, the connection ID, and an incrementing sequence number.
  - You may notice transaction log files that are not the defined size limit. This is because data operations are not split. For example, if a transaction log has 10 KB left until the limit and the next operation to be applied to that file is greater than 10 KB, a new transaction log file will be created to store that next operation. Also, if one operation is larger than the defined size limit, the entire operation will be written to one transaction log.
- 3. When system memory is full, the most recent changed data is added to the disk queue, as described in step 2. This means that system memory contains the oldest data. Therefore, when data is transmitted to the target, Double-Take pulls the data from system memory and sends it. This ensures that the data is transmitted to the target in the same order it was changed on the source. Double-Take automatically reads operations from the oldest transaction log file into

system memory. As a transaction log is depleted, it is deleted. When all of the transaction log files are deleted, data is again written directly to system memory (step 1).

- 4. To ensure the integrity of the data on the target, the information must be applied in the same order as it was on the source. If there are any delays in processing, for example because of a locked file, a similar queuing process occurs on the target. Data that cannot immediately be applied is stored in system memory.
- 5. When the allocated amount of system memory on the target is full, new incoming data bypasses the full system memory and is queued directly to disk. Data queued to disk is written to a transaction log. On the target, the transaction logs are identified with the source IP address, the Double-Take port, the connection ID, and an incrementing sequence number.

Like the source, system memory on the target contains the oldest data so when data is applied to the target, Double-Take pulls the data from system memory. Double-Take automatically moves operations from the oldest transaction log file to system memory. As a transaction log is depleted, it is deleted. When all of the transaction log files are deleted, data is again written directly to system memory (step 4).

The following memory and queue options are available for each Double-Take server.

Queue folder:		
C:\Program Files\Vision Solutions\Double-T	Take\	
A dedicated non-boot volume will offer the b	pest performance and reliability.	
Amount of system memory to use (MB):	Minimum free disk space (MB):	
1023	250	
O Do not use disk queue	Alert at this queue usage (%):	
Unlimited disk queue	50	
C Limit disk space for queue (MB):		
0		

• **Queue folder**—This is the location where the disk queue will be stored. Any changes made to the queue location will not take effect until the Double-Take service has been restarted on the server.

When selecting the queue location, keep in mind the following caveats.

- Select a location on a non-clustered volume that will have minimal impact on the operating system and applications.
- Select a location that is on a different volume as the location of the Windows pagefile.
- Select a dedicated, non-boot volume.
- Do not select the root of a volume.
- Do not select the same physical or logical volume as the data being replicated.
- On a Windows 2012 server, do not select a volume where deduplication is enabled.

Although the read/write ratio on queue files will be 1:1, optimizing the disk for write activity will benefit performance because the writes will typically be occurring when the server is under a high load, and more reads will be occurring after the load is reduced. Accordingly, use a standalone disk, mirrored (RAID 1) or non-parity striped (RAID 0) RAID set, and allocate more I/O adapter

cache memory to writes for best performance. A RAID 5 array will not perform as well as a mirrored or non-parity striped set because writing to a RAID 5 array incurs the overhead of generating and writing parity data. RAID 5 write performance can be up to 50% less than the write performance of a single disk, depending on the adapter and disk.

- Scanning the Double-Take queue files for viruses can cause unexpected results. If antivirus software detects a virus in a queue file and deletes or moves it, data integrity on the target cannot be guaranteed. As long as you have your anti-virus software configured to protect the actual production data, the anti-virus software can clean, delete, or move an infected file and the clean, delete, or move will be replicated to the target. This will keep the target from becoming infected and will not impact the Double-Take queues.
- Amount of system memory to use—This is the maximum amount of Windows system memory, in MB, that Double-Take will use. When this limit is reached, queuing to disk will be triggered. The minimum amount of system memory is 512 MB. The maximum amount is dependent on the server hardware and operating system. If you set this value lower, Double-Take will use less system memory, but you will queue to disk sooner which may impact system performance. If you set it higher, Double-Take will maximize system performance by not queuing to disk as soon, but the system may have to swap the memory to disk if the system memory is not available.

Since the source is typically running a production application, it is important that the amount of memory Double-Take and the other applications use does not exceed the amount of RAM in the system. If the applications are configured to use more memory than there is RAM, the system will begin to swap pages of memory to disk and the system performance will degrade. For example, by default an application may be configured to use all of the available system memory when needed, and this may happen during high-load operations. These high-load operations cause Double-Take to need memory to queue the data being changed by the application. In this case, you would need to configure the applications so that they collectively do not exceed the amount of RAM on the server. Perhaps on a server with 4 GB of RAM running the application and Double-Take, you might configure the application to use 1 GB and Double-Take to use 1 GB, leaving 2 GB for the operating system and other applications on the system. Many server applications default to using all available system memory, so it is important to check and configure applications appropriately, particularly on high-capacity servers.

Any changes to the memory usage will not take effect until the Double-Take service has been restarted on the server.

- **Do not use disk queue**—This option will disable disk queuing. When system memory has been exhausted, Double-Take will automatically begin the auto-disconnect process.
- Unlimited disk queue—Double-Take will use an unlimited amount of disk space in the specified Queue folder for disk queuing, which will allow the queue usage to automatically expand whenever the available disk space expands. When the available disk space has been used, Double-Take will automatically begin the auto-disconnect process.
- Limit disk space for queue—This option will allow you to specify a fixed amount of disk space, in MB, in the specified **Queue folder** that can be used for Double-Take disk queuing. When the disk space limit is reached, Double-Take will automatically begin the auto-disconnect process.
- Minimum free disk space—This is the minimum amount of disk space in the specified Queue

**folder** that must be available at all times. This amount should be less than the amount of physical disk space minus the disk size specified for **Limit disk space for queue**.

The Limit disk space for queue and Minimum free disk space settings work in conjunction with each other. For example, assume your queue is stored on a 10 GB disk with the Limit disk space for queue set to 10 GB and the Minimum free disk space set to 500 MB. If another program uses 5 GB, Double-Take will only be able to use 4.5 GB so that 500 MB remains free.

• Alert at this queue usage—This is the percentage of the disk queue that must be in use to trigger an alert message. By default, the alert will be generated when the queue reaches 50%.

## Source server properties

These properties are specific to the source server role.

Source		
Number of <u>r</u> e	eplication packets per one mirror packet:	
5		
Changing this	ratio does not affect current connections.	
🗌 Replicate <u>N</u>	TFS security attributes by name	
M <u>a</u> ximum pe	nding mirror operations:	
1000		
Size of mirror	r packets (bytes):	
65536		
🔽 Use block o	checksum during difference mirrors	

- Number of replication packets per one mirror packet—You can specify the ratio of replication packets to mirror packets that are placed in the source queue. The default value (5) allows Double-Take to dynamically change the ratio as needed based on the amount of replication data in queue. If you set a specific value other than the default (other than 5), the specified value will be used. Changes to this setting will take effect for future jobs. Existing jobs will have to be stopped and restarted to pick up the new ratio.
- Replicate NTFS security attributes by name—Double-Take allows you to replicate Windows permission attributes by local name as well as security ID (SID). By replicating Windows security by name, you can transmit the owner name with the file. If that user exists on the target, then the SID associated with the user will be applied to the target file ownership. If that user does not exist on the target, then the ownership will be unknown. By default, this option is disabled.
  - **Domain security model**—If you are using a Windows domain security model by assigning users at the domain level, each user is assigned a security ID (SID) at the domain level. When Double-Take replicates a file to the target, the SID is also replicated. Since a user will have the same SID on the source and target, the user will be able to access the file from the target. Therefore, this option is not necessary.
  - Local security model—If you are using a Windows local security model by assigning
    users at the local level (users that appear on multiple machine will each have different
    SIDs), you will need to enable this feature so that users can access the data on the target. If
    you do not enable this feature with a local security model, after a Double-Take file and SID
    is replicated, a local user will not be able to access the file because the user's SID on the
    target machine is different from the SID that was replicated from the source machine.

If you enable this option, make sure that the same groups and users exist on the target as they do on the source. Additionally, you must enable this option on your target server before starting a restoration, because the target is acting like a source during a restoration.

Enabling this option may have an impact on the rate at which Double-Take can commit data on the target. File security attributes are sent to the target during mirroring and replication. The target must obtain the security ID (SID) for the users and groups that are assigned permissions, which takes some time. If the users and groups are not on the target server, the delay can be substantial. The performance impact of enabling this option will vary depending on the type of file activity and other variables. For instance, it will not affect the overall performance of large database files much

(since there is a lot of data, but only a few file permissions), but may affect the performance of user files significantly (since there are often thousands of files, each with permissions). In general, the performance impact will only be noticed during mirrors since that is when the target workload is greatest.

Regardless of the security model you are using, if you create new user accounts on the source, you should start a remirror so the new user account information associated with any files in your job can be transmitted to the target.

- Maximum pending mirror operations—This option is the maximum number of mirror operations that are queued on the source. The default setting is 1000. If, during mirroring, the mirror queued statistic regularly shows low numbers, for example, less than 50, this value can be increased to allow Double-Take to queue more data for transfer.
- Size of mirror packets—This option determines the size of the mirror packets, in bytes, that Double-Take transmits. The default setting is 65536 bytes. You may want to consider increasing this value in a high latency environment (greater than 100 ms response times), or if your data set contains mainly larger files, like databases.
- Use block checksum during difference mirrors—This option allows a file difference mirror to check each block of data, regardless of the file attributes. If this option is disabled, Double-Take will assume files are synchronized if their attributes match.

Database applications may update files without changing the date, time, or file size. Therefore, if you are using database applications, you should enable Use block checksum during difference mirrors to ensure proper file comparisons.

If you are not using database applications, disabling this option will shorten mirror times.

### File Differences Mirror Options Compared

The following table will help you understand how the source server block checksum option works together with the various difference mirror job options. See the instructions for creating your job type to see which mirroring job options are available for that job type.

An X in the table indicates that option is enabled. An X enclosed in parentheses (X) indicates that the option can be on or off without impacting the action performed during the mirror.

Not all job types have the source newer option available.

Source Server Properties	Jo	ob Properties	;	Action Performed
Block Checksum Option	File Differences Option	Source Newer Option	Block Checksum Option	Action Performed
(X)	Х			Any file that is different on the source and target based on the date, time, size, and/or attribute is transmitted to the target. The mirror sends the entire file.
(X)	х	х		Any file that is newer on the source than on the target based on date and/or time is transmitted to the target. The mirror sends the entire file.
	Х		х	Any file that is different on the source and target based on date, time, size, and/or attributed is flagged as different. The mirror then performs a checksum comparison on the flagged files and only sends those blocks that are different.
×	х		x	The mirror performs a checksum comparison on all files and only sends those blocks that are different.
(X)	Х	Х	Х	Any file that is newer on the source than on the target based on date and/or time is flagged as different. The mirror then performs a checksum comparison on the flagged files and only sends those blocks that are different.

## **Target server properties**

These properties are specific to the target server role.

<ul> <li>Target system memory thresholds — Pause mirroring at this level (%):</li> </ul>	Bocumo n	nirroring at this level (%):	
Fause mirroring at this level (%):	Kesume n	informig at this lever (%):	
20	15	<b>±</b>	
Block target paths upon connection			
Block target paths upon connection Move deleted files to this folder: C:\Program Files\Vision Solutions	\Double-Take	Deleted Files	

- Pause mirroring at this level—You can specify the maximum percentage of Windows system memory that can contain mirror data before the target signals the source to pause the sending of mirror operations. The default setting is 20.
- Resume mirroring at this level—You can specify the minimum percentage of Windows system memory that can contain mirror data before the target signals the source to resume the sending of mirror operations. The default setting is 15.
- **Retry delay for incomplete operations**—This option specifies the amount of time, in seconds, before retrying a failed operation on the target. The default setting is 3.
- Block target paths on connection—You can block writing to the replica source data located on the target. This keeps the data from being changed outside of Double-Take processing. After cutover, any target paths that are blocked will be unblocked automatically during the cutover process so that users can modify data after cutover.

Z Do not block your target paths if you are protecting an entire server because system state data will not be able to be written to the target.

Be careful blocking target paths if you will be using Double-Take snapshots. You will have to unblock the paths before you can failover to a snapshot. Additionally, be careful when blocking target paths with backup software running on the target. You will need to unblock the paths to allow backup software to take snapshots or update archive bits.

• Move deleted files to this folder—This option allows you to save files that have been deleted, by moving them to a different location on the target. When a file deletion is replicated to the target, instead of the file being deleted from the target, the file is moved to the specified location. This allows for easy recovery of those files, if needed. If you enable this option, specify where you want to store the deleted files.



- If you are moving deleted files on the target and you have orphan files configured for removal (which is the default setting for most job types), do not move the deleted files to a location inside the replica data on the target. The deleted files that are moved will then be deleted by the orphan file functionality.
- Remove deleted files after this number of days—If you are moving deleted files, you can specify a length of time, in days, to maintain the moved files. A moved file that is older than the specified number of days will be deleted. Double-Take checks for moved files that should be deleted once daily at 8 PM. Only the date, not the time, of the file is considered when moved files are deleted. For example, if you specify to delete moved files after 30 days, any file that is 31 days old will be deleted. Because the criteria is based on days and not time, a file that will be deleted could have been moved anytime between 12:01 AM and 11:59 PM 31 days ago.
  - If deleted files are moved for long enough, the potential exists for the target to run out of space. In that case, you can manually delete files from the target move location to free space.

Do not include the Recycler directory in your job if you are moving deleted files. If the Recycler directory is included, Double-Take will see an incoming file deletion as a move operation to the Recycle Bin and the file will not be moved as indicated in the move deleted files setting.

Alternate data streams that are deleted on the source will not be moved on the target.

Encrypted files that are deleted on the source will only be moved on the target if the move location is on the same volume as the copy of the source data on the target.

Compressed and sparse files that are deleted on the source will be moved on the target, although the compression and sparse flags will only be retained on the target if the move location is on the same volume as the copy of the source data on the target.

# E-mail notification configuration

You can email Double-Take event messages to specific addresses, using an SMTP mail server. (SSL or TLS are not supported.) The subject of the e-mail will contain an optional prefix, the server name where the message was logged, the message ID, and the severity level (information, warning, or error). The text of the message will be displayed in the body of the e-mail message.

E-mail Notification	
Enable e-mail notifications	Test
E- <u>m</u> ail server (SMTP):	1
MailServer	
✓ Log on to e-mail server	
User name:	
administrator	
Password:	
•••••	
From <u>a</u> ddress:	
admin@domain.com	
Send to:	
admin@domain.com, ITSupport@domain.com	
Subject prefix:	
Double-Take Notification	
Add event description to subject	
Include these events:	
☐ Information ☑ Warning ☑ Error	
Exclude these event IDs:	

- Enable e-mail notification—This option enables the e-mail notification feature. Any specified notification settings will be retained if this option is disabled.
- E-mail server—Specify the name of your SMTP mail server.
- Log on to e-mail server—If your SMTP server requires authentication, enable this option and specify the User name and Password to be used for authentication. Your SMTP server must support the LOGIN authentication method to use this feature. If your server supports a different authentication method or does not support authentication, you may need to add the Double-Take server as an authorized host for relaying e-mail messages. This option is not necessary if you are sending exclusively to e-mail addresses that the SMTP server is responsible for.
- From address—Specify the e-mail address that you want to appear in the From field of each Double-Take e-mail message. The address is limited to 256 characters.

- Send to—Specify the e-mail addresses that each Double-Take e-mail message should be sent to. Enter the addresses as a comma or semicolon separated list. Each address is limited to 256 characters. You can add up to 256 e-mail addresses.
- Subject prefix and Add event description to subject—The subject of each e-mail notification will be in the format Subject Prefix : Server Name : Message Severity : Message ID : Message Description. The first and last components (Subject Prefix and Message Description) are optional. The subject line is limited to 255 characters.

If desired, enter unique text for the **Subject prefix** which will be inserted at the front of the subject line for each Double-Take e-mail message. This will help distinguish Double-Take messages from other messages. This field is optional.

If desired, enable **Add event description to subject** to have the description of the message appended to the end of the subject line. This field is optional.

- Includes these events—Specify which messages that you want to be sent via e-mail. Specify Information, Warning, and/or Error. You can also specify which messages to exclude based on the message ID. Enter the message IDs as a comma or semicolon separated list. You can indicate ranges within the list.
  - When you modify your e-mail notification settings, you will receive a test e-mail summarizing your new settings. You can also test e-mail notification by clicking **Test**. By default, the test will be run from the machine where the console is running. If desired, you can send the test message to a different e-mail address by selecting **Send To** and entering a comma or semicolon separated list of addresses. Modify the **Message Text** up to 1024 characters, if necessary. Click **Send** to test the e-mail notification. The results will be displayed in a message box.

E-mail notification will not function properly if the Event logs are full.

If an error occurs while sending an e-mail, a message will be generated. This message will not trigger another e-mail. Subsequent e-mail errors will not generate additional messages. When an e-mail is sent successfully, a message will then be generated. If another e-mail fails, one message will again be generated. This is a cyclical process where one message will be generated for each group of failed e-mail messages, one for each group of failed messages, and so on.

If you start and then immediately stop the Double-Take service, you may not get e-mail notifications for the log entries that occur during startup.

By default, most anti-virus software blocks unknown processes from sending traffic on port 25. You need to modify the blocking rule so that Double-Take e-mail messages are not blocked.

## Script credentials

These credentials will be used when executing custom scripts for mirroring and cutover.

These credentials will be used when ex	ecuting custom scripts, such as during mirroring or failover
<u>U</u> ser name:	
administrator	8
Password:	
•••••	
Domain:	
domain.com	

Specify a **User name**, **Password**, and **Domain** to use when running the scripts. If you do not specify any security credentials, the account running the Double-Take service will be used. After you have specified credentials, you can click **Test** to confirm the credentials can be used for a successful login. It the credentials cannot be authenticated, you will receive an error. You will need to manually test that credentials you supply have appropriate rights to execute any scripts you may be running.

# Log file properties

These settings allow y	ou to specify y	our log file o	configuration.

Logging folder:		
C:\Program Files\Vision Sc	olutions\Double-Take\	
Messages & Alerts Maximum <u>s</u> ize (bytes): 5242880	Maximum <u>n</u> umber of files:	4. -
Verification File name:		
DTVerify.log		
Maximum size (bytes):		
1048576	Append	
Language:		
English (United States)	•	
Statistics File name:		
statistic.sts		
Maximum <u>s</u> ize (bytes):	Write interval (minutes):	

- Logging folder—Specify the directory where each of the log files in this section are stored. The default location is the directory where the Double-Take program files are installed.
- Messages & Alerts—These settings apply to the service log file.
  - **Maximum size**—Specify the maximum size, in bytes, of the log file. The default size is 5242880 bytes (5 MB). Once the maximum has been reached, a new log file will be created.
  - **Maximum number of files**—Specify the maximum number of log files that are maintained. The default is 5, and the maximum is 999. Once the maximum has been reached, the oldest file will be overwritten.
- Verification—The verification log is created during the verification process and details which files were verified as well as the files that are synchronized. See *Verification log* on page 79.
  - File name—This field contains the base log file name for the verification process. The job type and a unique identifier will be prefixed to the base log file name. For example, since the default is DTVerify.log, the verification log for a files and folders job will be Files and Folders\_123456abcdef DTVerify.log.
  - Maximum size—Specify the maximum size, in bytes, of the verification log file. The default is 1048576 bytes (1 MB).
  - **Append**—Enable the **Append** check box if you want to append each verification process to the same log file. If this check box is disabled, each verification process that is logged will

overwrite the previous log file. By default, this option is enabled.

- Language—At this time, English is the only language available.
- **Statistics**—The statistics log maintains connection statistics such as mirror bytes in queue or replication bytes sent. This file is a binary file that is read by the DTStat utility. See *Statistics* on page 323.
  - File name—This is the name of the statistics log file. The default file name is statistic.sts.
  - **Maximum size**—Specify the maximum size, in bytes, of the statistics log file. The default is 10485760 bytes (10 MB). Once this maximum has been reached, the oldest data will be overwritten.
  - Write interval—Specify how often, in minutes, Double-Take writes to the statistics log file. The default is every 5 minutes.

## **Verification log**

In the log file, each verification process is delineated by beginning and end markers. A list of files that are different on the source and target is provided as well cumulative totals for the verification process. The information provided for each file is the state of its synchronization between the source and the target at the time the file is verified. If the remirror option is selected so that files that are different are remirrored, the data in the verify log reflects the state of the file before it is remirrored, and does not report the state of the file after it is remirrored. If a file is reported as different, review the output for the file to determine what is different.

Sample verification log

```
--- VERIFICATION OF CONNECTION 2, CHECKSUM ENABLED (Sales data for alpha --> 206.31.65.40 : 1100) ---
Start Time: 1/24/2013 12:15:20 PM for connection 2 (Sales data for alpha -->
206.31.65.40 : 1100)
             beta\users\bob\budget.xls DIFFERENT ON TARGET
File:
     Source Attributes: Timestamp = 1/17/2013 8:21:36 PM Size = 1272 Mask = [0x20]
Target Attributes: Timestamp = 1/17/2013 8:21:36 PM Size = 1272 Mask = [0x20]
Security descriptors are different.
      0 BYTES OUT OF SYNC
File:
            beta\users\bill\timesheet.xls DIFFERENT ON TARGET
     Source Attributes: Timestamp = 1/17/2013 8:21:37 \text{ PM} Size = 1272 \text{ Mask} = [0x20]
Target Attributes: Timestamp = 1/17/2013 8:21:37 \text{ PM} Size = 1272 \text{ Mask} = [0x23]
       0 BYTES OUT OF SYNC
File:
             beta\users\vincent\training.doc DIFFERENT ON TARGET
     Source Attributes: Timestamp = 1/12/2013 3:28:20 PM Size = 17 Mask = [0x20] Target Attributes: Timestamp = 1/20/2013 5:05:26 PM Size = 2 Mask = [0x20]
       17 BYTES OUT OF SYNC
Completion Time: 1/24/2013 12:37:44 PM for connection 2 (Sales data for alpha -->
206.31.65.40 : 1100)
Elapsed Time (seconds): 1320.256470
Total Directories Compared: 657
Total Directories Missing: 0
Total Directories Remirrored: 0
Total Files Compared: 120978
Total Files Missing: 0
Total Files Different: 3
Total Files Encrypted: 0
Total Files Remirrored: 1
Total Bytes Skipped: 0
Total Bytes Compared: 18527203678
Total Bytes Missing: 0
Total Bytes Different: 17
Total Bytes Remirrored: 17
Related links and directory attributes have been adjusted.
     - END OF VERIFICATION -
```

- Timestamp—The last modified date and time of the file
- Size—The size, in bytes, of the file
- Mask—The attributes associated with the file. See further details below.
- Security descriptors—The NTFS file permissions of the file. If the file permissions are different, the message "Security descriptors are different" will be logged. If the file permissions are the same, nothing will be logged.
- Bytes out of sync—The number of bytes that are not synchronized between the file on the source and the file on the target. If the data in the file is identical, the message "0 BYTES OUT OF SYNC" will be logged. If the file is different, the message will indicate how many bytes were different. This message does not indicate that the file was remirrored during the verify.

The mask must be converted in order to determine what attributes are assigned to a file. The mask is a hexadecimal number corresponding to a binary number that indicates what the attributes are. Using the following steps, you can determine how the mask corresponds to the attributes of a file.

- 1. Each mask begins with 0x. Identify the hexadecimal number after the constant 0x. For example, if the mask is 0x23, then the hexadecimal number you are interested in is 23. The hexadecimal number may be up to four digits.
- 2. Convert the hexadecimal number to its 16-digit binary equivalent. You can use the Windows calculator for this conversion.
  - a. Select Calculator from your Accessories program or apps group.
  - b. Switch to scientific view, if it is not already in that view, by selecting View, Scientific.
  - c. Select Hex.
  - d. Enter the hexadecimal number, for example 23, as specified in your verification log.
  - e. Select **Bin** and the hexadecimal number will change to the binary equivalent.
  - f. Pad the beginning of the binary equivalent with zeroes (0) so that the number is 16 digits long. For example, hexadecimal number 23 converts to 100011, so the 16-digit binary equivalent would be 000000000100011.
- 3. Determine what number (0 or 1) appears in each position of the binary number. Because binary numbers count from right to left, start with position 1 on the right.
  - 1—Read only
  - 2—Hidden
  - 3—None
  - 4—System
  - 5—Directory
  - 6—Archive
  - 7—Encrypted
  - 8-Normal
  - 9—Temporary
  - 10—Sparse file
  - 11—Reparse point
  - 12-Compressed
  - 13—Offline
  - 14-Not content indexed
  - 15-None
  - 16—None
- 4. Using the list above, identify those attributes that are enabled by those positions equal to one (1). The positions equal to zero (0) are disabled and that attribute does not apply. So hexadecimal number 23, which converted to 000000000100011, indicates read only, hidden, and archive. Another example might be mask 0x827 which converted to binary is 000010000100111. Positions 1-3, 6, and 12 are all enabled which indicates the file is read only, hidden, archive, and compressed.

Files that were replicated with the **Replicate NTFS security attributes by name** feature enabled, will be identified as different in the log file because of the local name attribute. The files will be the same.

# **Reporting Service properties**

The Reporting Service properties identify the SQL database configuration, the data collection configuration, and the Double-Take servers you are collecting from.

Database configuration	
Database server name:	
SQL_DB	
Database name:	
DoubleTakeCollections	
Database instance name (Optional):	
• Use reporting service credentials	
C Use database credentials	
User name:	
Password:	
Test credentials and database connection:	
Test	
Collection Configuration	
Collection interval	
Collection interval:	
30     Minutes	
30 Minutes Retention interval in days:	
30 Minutes Retention interval in days:	
30 Minutes	
30     Minutes       Retention interval in days:       30	
30     Image: Minutes       Retention interval in days:       30       image: Minutes       image: Minutes	Collect data from:
30     Image: Minutes       Retention interval in days:       30       image: Minutes       image: Minutes	Server Route Port
30     Image: Minutes       Retention interval in days:       30       30       Image: Minutes       30       Image: Minutes       30       Image: Minutes       30       Image: Minutes	
30     Image: Minutes       Retention interval in days:       30       image: Minutes       image: Minutes	Server Route Port
30     Image: Minutes       Retention interval in days:       30       30       Image: Minutes       30       Image: Minutes       30       Image: Minutes       30       Image: Minutes	Add >
30     Image: Minutes       Retention interval in days:       30       30       Image: Minutes       30       Image: Minutes       30       Image: Minutes       30       Image: Minutes	Add >
30     Image: Minutes       Retention interval in days:       30       30       Image: Minutes       30       Image: Minutes       30       Image: Minutes       30       Image: Minutes	Add >> Add >> <pre></pre>
30     Image: Minutes       Retention interval in days:       30       30       Image: Minutes       30       Image: Minutes       30       Image: Minutes       30       Image: Minutes	Add > Add >
30     Image: Minutes       Retention interval in days:       30       30       Image: Minutes       30       Image: Minutes       30       Image: Minutes       30       Image: Minutes	Add >> Add >> <pre></pre>
30     Image: Minutes       Retention interval in days:       30       30       Image: Minutes       30       Image: Minutes       30       Image: Minutes       30       Image: Minutes	Add >> Add >> <pre></pre>
30     Image: Minutes       Retention interval in days:       30       30       Image: Minutes       30       Image: Minutes       30       Image: Minutes       30       Image: Minutes	Add >> Add >> Add >> < Remove

- **Database server name**—Specify the name of the SQL server that contains your SQL database that will store the collected Double-Take data.
- **Database name**—Specify the name of the SQL database that will store the collected Double-Take data.

- Database instance name—If necessary, specify the database instance name of the SQL database that you specified.
- Use reporting service credentials—Select this option if you want to use the credentials the Double-Take Reporting Service is running as.
- Use database credentials—Select this option if you want to specify SQL database credentials.
- **Test**—This button will test the specified credentials and check to see if the tables exist in the specified database. If they do not exist, they will be created. The database user role membership must be db\_owner and public to create the tables. If the tables already exist, they will be updated to the correct version, if necessary. Once the test (and therefore the table creation or verification) is complete, the database user role membership can be changed, if desired, to db\_datareader, db\_datawriter, and public.
- Collection interval—Specify the amount of time to wait between data collections.
- **Retention interval in days**—Specify how long to retain the collected data. Data older than the specified number of days will be deleted from the database.
- Identify the servers to collect data—Only the servers in your console session will be listed. Highlight the servers you want to collect data from and click Add >. If you want to add all of the servers click Add >>. If the server you want to collect data from is not listed, you need to add it from the Manage Servers page. See Adding servers on page 50.

If you need to remove a server from the **Collect data from** list, click < **Remove**. If you want to remove all of the servers, click << **Remove**.

## Server and job settings

The easiest way to view and change select server and job settings is through the Double-Take Console. However, not all of the settings are available there. To view and update the remaining settings, in addition to the settings available in the console, you will need to go to HKEY\_LOCAL\_ MACHINE\SOFTWARE\NSI Software\Double-Take\CurrentVersion in the registry. For a Linux server, you can use DTSetup to modify the configuration settings.

The following table lists all of the settings, in decimal value.



Double-Take Availability and Double-Take Move share the same set of server and job settings. Some settings apply to one product, some to the other, and some to both. For settings that apply to both, the Double-Take Availability terminology is used. For example, PreFailoverScript is used for the script to be run before failover or cutover.

## AcquireDataRetryLimit

**Description**—The length of time, in milliseconds, spent retrying a file read if there is a read error

Values—Any positive, integer value

Default—2000

Console Setting-None

Service restart required-No

## ActivationCode

Description—24-character Double-Take activation code

Values—Unique value for each customer

Default-N/A

**Console Setting**—Edit Server Properties page, Licensing section, Current activation codes

Service restart required-No

#### AdapterFlags

**Description**—Specifies the adapter to use when establishing a connection. This option should not be changed.

Values—2 Encryption, 4 Network Data Representation

Default—4

Console Setting—None

Service restart required—Yes

#### AddOnCodes

Description—This setting is no longer used.

#### Advertisement

**Description**—Indicates if the server uses Active Directory to advertise itself so that the Double-Take Console can be populated through automatic discovery

Values—0 Do not use Active Directory advertisement, 8 Use Active Directory advertisement

#### Default—8

**Console Setting**—Edit Server Properties page, Setup section, Advertise service with Active Directory

## Service restart required—Yes

**Notes**—If Active Directory advertisement is enabled, there is a 200 byte impact on the Active Directory service for each server that registers. The Double-Take service registers with Active Directory at startup and unregisters at shutdown.

## AllFailover

Description—Specifies which IP addresses to failover

Values—0 Failover only monitored IP addresses, 1 Failover all IP addresses

Default—1

Console Setting—Set Options page, Failover Options section, Failover IP addresses

Service restart required-No

## AllMustFail

**Description**—Specifies whether or not all IP addresses must fail for failover to take place

Values—0 any IP address can fail, 1 All IP addresses must fail

Default—1

Console Setting—None

Service restart required-No

#### ArchiveExclusionDirectories

Description—This setting is no longer used.

#### ArchiveExclusionFiles

**Description**—This setting is no longer used.

#### ArchiveLoopAttempts

**Description**—This setting is no longer used.

ArchiveLoopDelay

Description—This setting is no longer used.

## ArchivePreviewFileName

Description—This setting is no longer used.

## ArchivePreviewMaxFileSize

Description—This setting is no longer used.

## ArchiveRemoveBinFileOnRecall

**Description**—This setting is no longer used.

## ArchiveRequireMirrorCompleteTime

Description—This setting is no longer used.

## ArchiveUseAlternateDate

Description—This setting is no longer used.

## ArchiveUseDNSName

Description—This setting is no longer used.

## AutoCalcEulaAccepted

Description—Used internally by Double-Take. Do not modify this entry.

#### AutoReconnect

**Description**—Specifies whether to reinstate the target connection(s) when the source machine is brought online after a source machine failure

Values—0 Do not reconnect, 1 Reconnect

#### Default-1

**Console Setting**—Edit Server Properties page, Setup section, Automatically reconnect during source initialization

#### Service restart required—Yes

## AutoRemirror

**Description**—Specifies whether to remirror when a source is brought online after an auto-disconnect

**Values**—0 Do not remirror, 1 Perform a file differences checksum mirror, 2 Perform a full mirror, 3 Perform a file differences mirror, 4 Perform a date comparison mirror and send data only if the source data is newer than the target data.

#### Default—1

**Console Setting**—Edit Server Properties page, Setup section, Behavior when automatically reconnecting

#### Service restart required-No

#### AutoRemirrorRetry

**Description**—Specifies how often, in seconds, the source should check for connections that have been reconnected but still need to be remirrored

Values—any integer

Default-30

Console Setting—None

Service restart required-No

#### AutoRetransmit

**Description**—Determines whether or not a source that has lost its connection with a target will attempt to reconnect to the target

Values—0 Do not attempt to reconnect, 1 Attempt to reconnect

Default—1

Console Setting—None

Service restart required-No

#### BackupDir

**Description**—Location on the target of the backup of the protected data sets

Values—any valid path

Default—the location where the Double-Take files were installed

Console Setting-None

Service restart required-No

#### CalculateByVolume

**Description**—Calculates the approximate size of a protected data set by using the size of the volume and subtracting the free space

Values—0 Disabled, 1 Enabled

Default-0

Console Setting—None

Service restart required—No

**Notes**—If your protected data set contains a large number of files, for example, 250,000 or more, you may want to disable the calculation of the protected data set size so that data will start being mirrored sooner. If calculation is enabled, the source calculates the file size before it starts mirroring. This can take a significant amount of time depending on the number of files and system performance. Disabling calculation will result in the mirror status not showing the percentage complete or the number of

bytes remaining to be mirrored. CalculateByVolume can be enabled as a workaround. This setting will get the amount of disk space in use for the entire volume from the operating system, so the calculation occurs instantaneously. However, if the entire volume is not being replicated, the mirror percentage complete and bytes remaining will be incorrect accordingly.

Do not use enable this option if you are using a full server job because it will bypass needed hard link processing.

#### CalculateOnConnect

**Description**—Specifies whether or not the amount of data to be mirrored should be calculated on connection

Values—0 Do not calculate on connection, 1 Calculate on connection

Default—1

Console Setting-None

Service restart required-No

#### CaseSensitiveRepSetQueries

Description—This entry is no longer used.

#### ChangeJournalState

**Description**—An internal setting for change journal tracking. Do not modify this setting.

#### ChangeJournalSystemState

**Description**—An internal setting for change journal tracking. Do not modify this setting.

#### ChecksumAll

**Description**—Setting to allow for the difference checksum option on mirror, verify, or restore to ignore the date, time, and size of the file and perform a checksum calculation on all files

**Values**—0 Checksum using date, time, size comparison, 1 Checksum all files regardless of the date, time, or file size

#### Default-1

**Console Setting**—Edit Server Properties page, Source section, Use block checksum during difference mirrors

Service restart required-No

## ClusterDir

Description—Location of a Microsoft Cluster Service installation, if it exists

Values—any valid path

Default—determined by the Microsoft Cluster Service installation

Console Setting-None

Service restart required—No

## ConnectionFile

Description—Name of the database file containing connection information

Values—any valid file name

Default—connect.sts

Console Setting—None

Service restart required-No

## CreateDumpOnAckErrors

Description—Enables additional logging for out of order acknowledgement errors

Values—0 Do not create a logging file, 1 Create a logging file

Default—0

Console Setting—None

Service restart required-No

## DataPath

**Description**—The location of the Double-Take file attribute, protected data set, connection, and schedule database files

Values—any valid path

Default—the location where the Double-Take files were installed

Console Setting—None

Service restart required-No

### DefaultAddress

Description—The default primary IP address in a multi-homed server

**Values**—any valid IP address that will act as your primary IP address for connecting the source to the target

Default—<null>

Console Setting—Edit Server Properties page, General section, Default address

Service restart required—Yes

## DefaultProtocol

Description—The default protocol

**Values**—2 IPv4 protocol only, 23 IPv4 and IPv6 protocols, 3 TDU (Throughput Diagnostics Utility)

Default—2 for Windows 2003, 23 for Windows 2008 and 2012

#### Console Setting-None

Service restart required—Yes

#### DefaultReaderType

**Description**—Internal setting used by Double-Take RecoverNow for recoveries. Do not modify this setting.

#### DelayGCArbitration

**Description**—Number of seconds to delay the arbitration process. This option allows time for the network to become stable before trying to execute arbitration logic, for example, when a cluster failover has occurred, but the network has a lag before it returns to a stable state. Arbitration should not start until the network is back in that stable state.

Values—any positive number

Default—0

Console Setting-None

Service restart required-No

#### DelayGCConnection

**Description**—Delays the GeoCluster Replicated Disk resource connection to allow the cluster service enough time to reset

Values—1-15

Default—3

Console Setting—None

Service restart required-No

#### DiffMirrorHardLinkCleanup

**Description**—Specifies if files with more than one hard link are deleted on the target during a difference mirror and then relinked after the remirror is complete. This setting only applies to Windows 2008 and 2012 servers with a full server job or full server migration job. If mirror performance is negatively impacted by this setting, you may want to disable it.

**Values**—0 Hard link files are not deleted and relinked during a difference mirror, 1 Hard link files are deleted and relinked during a difference mirror

#### Default-1

Console Setting-None

## Service restart required-No

#### DirUNetPort

Description—Port used by pre-5.2 versions for directed UDP communications

Values—1025 - 65535

Default—1105

Console Setting—None

Service restart required—Yes

#### **DisableAttributeReplication**

**Description**—Specifies whether or not attributes (read-only, hidden, and so on) are replicated to the target

Values—0 Enable attribute replication, 1 Disable attribute replication

Default—0

Console Setting—None

Service restart required-No

#### DropOpOnAccessDeniedError

**Description**—Specifies whether or not operations are dropped or retried after an access denied error

Values—0 The operation will be retried, 1 The operation will be dropped

Default-1

Console Setting-None

Service restart required-No

## DropOpOnHandleError

**Description**—Determines if an additional attempt is made to access a file by a Microsoft API call if the Double-Take call fails.

**Values**—0 When opening a file using the Double-Take driver fails, attempt to open the file using the Microsoft Win32 API, 1 When opening a file using the Double-Take driver fails, skip the file and document it in the Double-Take log

#### Default—1

Console Setting-None

#### Service restart required-No

**Notes**—If the value is set to 0 and the Win32 call also fails, Double-Take will skip the file and document it in the Double-Take log

#### DTSetupType

**Description**—Used by the Double-Take installation program to maintain the installation settings for an upgrade. Do not modify this setting.

#### **DumpDiskQuotaIntervalMinutes**

**Description**—Specifies how often, in minutes, a snapshot of the disk quota is taken as a backup in case the live registry is not usable at failover or cutover

Values—any integer

Default—240

Console Setting-None

Service restart required—No

#### **DumpHiveIntervalMinutes**

**Description**—Specifies how often, in minutes, a snapshot of the registry is taken as a backup in case the live registry is not usable at failover or cutover

Values—any integer

Default—240

Console Setting—None

Service restart required—No

## EmailEnabled

Description—Specifies if e-mail notification is enabled

Values—0 E-mail notification is disabled, 1 E-mail notification is enabled

Default—0

**Console Setting**—Edit Server Properties page, E-mail Notification section, Enable email notifications

Service restart required—Yes from the registry, No from the console

**Notes**—This is a read-only setting. If you change this setting using the registry editor, e-mail notification will not automatically start. You must use the console or a PowerShell script to start e-mail notification.

#### EmailExcludelds

**Description**—Identifies the Windows Event Viewer messages that are excluded from e-mail notification.

**Values**—Comma or semicolon separated list of Event Viewer IDs. You can indicate ranges within the list.

Default—None

**Console Setting**—Edit Server Properties page, E-mail Notification section, Exclude these event IDs

Service restart required—Yes from the registry, No from the console

#### EmailFromAddress

**Description**—Specifies the e-mail address that will appear in the From field of Double-Take generated e-mail messages.

Values—Any valid e-mail address, up to 256 characters

Default—None

**Console Setting**—Edit Server Properties page, E-mail Notification section, From address

Service restart required-No

#### EmailIncludeCategories

Description—Specifies which Event Viewer messages are sent via e-mail

**Values**—1 Error messages will be sent via e-mail, 2 Warning messages will be sent via e-mail, 3 Information messages will be sent via e-mail

Default-1,2

**Console Setting**—Edit Server Properties page, E-mail Notification section, Include these events

Service restart required—Yes from the registry, No from the console

#### EmailNotificationList

**Description**—Specifies the e-mail address(es) that will receive Double-Take generated e-mail messages.

**Values**—A comma separated list of valid e-mail addresses, up to 256 addresses. Each address is limited to 256 characters.

Default-None

Console Setting—Edit Server Properties page, E-mail Notification section, Send to

Service restart required—No

## EmailPassword

Description—The password required for SMTP server authentication

Values—Any valid password text

Default—None

**Console Setting**—Edit Server Properties page, E-mail Notification section, Password

Service restart required-No

**Notes**—Since the password is encrypted for security, this entry cannot be displayed or changed through the registry.

#### EmailServer

Description—The name of the SMTP server for e-mail notification

Values—Any valid server name text

Default—None

**Console Setting**—Edit Server Properties page, E-mail Notification section, E-mail server (SMTP)

Service restart required-No

## EmailServerPort

Description—Specifies the port that the SMTP e-mail server is using

Values—any valid port number

Default—25

Console Setting-None

Service restart required-No

#### EmailSmtpLogin

**Description**—Specifies if SMTP server authentication for e-mail notification is enabled or disabled

Values—0 SMTP authentation is disabled, 1 SMTP authenticaion is enabled

Default—0

**Console Setting**—Edit Server Properties page, E-mail Notification section, Log on to e-mail server

#### Service restart required-No

**Notes**—Your SMTP server must support the LOGIN authentication method to use this feature. If your server supports a different authentication method or does not support authentication, you may need to add the Double-Take server as an authorized host for relaying e-mail messages. This option is not necessary if you are sending exclusively to e-mail addresses that the SMTP server is responsible for.

#### EmailSubjectDesc

**Description**—Specifies if the Event Viewer message will be appended to the end of the subject line for e-mail notification

**Values**—0 Event Viewer message is not included in the subject line, 1 Event Viewer message is included in the subject line

#### Default—1

**Console Setting**—Edit Server Properties page, E-mail Notification section, Add event description to subject

#### Service restart required—No

#### EmailSubjectPrefix

**Description**—Specifies unique text which will be inserted at the front of the subject line for each Double-Take generated e-mail message. This will help distinguish the Double-Take messages from other messages.

Values—Any valid text

Default—Double-Take Notification

**Console Setting**—Edit Server Properties page, E-mail Notification section, Subject prefix

Service restart required—No

#### EmailUsername

Description—The user ID required for SMTP server authentication

Values—Any valid user ID text

Default-None

**Console Setting**—Edit Server Properties page, E-mail Notification section, User name

Service restart required—No

**Notes**—Since the username is encrypted for security, this entry cannot be displayed or changed through the registry.

## EnableCRCCheck

**Description**—Indicates if Double-Take will perform a cyclic redundancy check between the source and target to identify corrupted packets

Values—0 Disabled, 1 Enabled

Default—0

Console Setting—None

#### Service restart required-No

**Notes**—This option only needs to be set on the source server. However, if you will be restoring or reversing, where the roles of the servers are reversed, then you will need to set this option on the target as well.

#### EnableDHCP

Description—Indicates if Double-Take DHCP support is enabled

Values—0 Disabled, 1 Enabled

Default-1

Console Setting—None

Service restart required—No

## EnableEFSVerify

**Description**—Indicates if Double-Take will verify Microsoft encryption on the source before transmitting the encrypted file to the target

Values—0 Disabled, 1 Enabled

**Default**—0

Console Setting—None

Service restart required-No

## EnableFileOpenTracing

**Description**—Specifies if debug-level messages are enabled to trace all mirroring and replicated files that are opened

Values—0 Do not trace files that are opened, 1 Trace files that are opened

**Default**—0

Console Setting-None

Service restart required—Yes

**Notes**—This option should only be enabled (1) for temporary, debug sessions as instructed by technical support.

## EnablePerformanceTracking

**Description**—This entry will be used in the future.

## EnableRootEncryption

**Description**—Specifies if the top-level folders of a protected data set are encrypted on the source, they will be encrypted on the target as well

Values—0 Disabled, 1 Enabled

Default-1

Console Setting—None

#### Service restart required-No

**Notes**—If the top-level folders in a protected data set are not encrypted, disabling this option may obtain a small performance improvement.

#### **EnableShortFileNameProcessing**

**Description**—Indicates if Double-Take will correct any short file names created by the operating system on the target during a mirror or for create and rename operations

during replication

Values—0 Do not correct any short file names on the target, 1 Correct short file names on the target

Default—0

Console Setting—None

Service restart required-No

#### EnableSnapshots

Description—Specifies whether Double-Take snapshot functionality is enabled

**Values**—0 Double-Take snapshot functionality is disabled, 1 Double-Take snapshot functionality is enabled

Default—1

Console Setting—None

Service restart required—Yes

**Notes**—This setting only impacts Double-Take snapshot functionality. If this setting is disabled, other snapshot software such as Microsoft Volume Shadow Copy will be not be impacted.

#### EnableTaskCmdProcessing

Description—Queues tasks inline with replication data

Values—0 Disable task command processing, 1 Enable task command processing

Default-0

**Console Setting**—Edit Server Properties page, Setup section, Enable task command processing

Service restart required-No

#### ExtensionNumber

Description—Used by the Double-Take log files.

#### FailbackHostname

**Description**—Returns the host SPN (Service Principle Name) to its original setting on failback

Values—0 Disabled, 1 Enabled

**Default**—0

Console Setting—None

Service restart required-No

**Notes**—If you are using Active Directory, this option should be enabled or you may experience problems with failback.

#### FailoverHostname

**Description**—Automatically removes the host SPN (Service Principle Name) from Active Directory on the source

Values—0 Disabled, 1 Enabled

Default—0

Console Setting—None

Service restart required-No

**Notes**—If you are using Active Directory, this option should be enabled or you may experience problems with failover.

## FailoverOnRouteFailure

**Description**—Determines if failover will occur when receiving a router message back from an IP address on the network

**Values**—0 Failover will not occur when receiving a destination host unreachable message, 1 Failover will occur when receiving a destination host unreachable message

Default—1

Console Setting—None

Service restart required-No

#### FCCHelpPath

**Description**—This entry is no longer used.

#### FileAccessRetry

Description—The number of times a failed driver call will be retried by the service.

Values—1 - 65535

Default—10

Console Setting-None

Service restart required-No

#### FileQueueSize

**Description**—When a mirror is started, one thread reads from the disk and builds the file queue. Another set of threads reads files off of the queue and sends them to the target. This setting is the maximum size of the queue in entries. If you had 100 files to be mirrored and this was set to 16 (the default value), the first thread would fill the queue to a maximum of 16 entries.

Values—1 - 65535

Default—16

Console Setting—None

Service restart required-No

**Notes**—This value must be set prior to starting the mirror process. The higher the number, the more memory that is used.

## ForceReplaceOnFailover

Description—Specifies additional failover options

**Values**—0 Use standard failover add / replace settings with no additional settings, 1 Replace the target server name with that of the source and add the source IP address, 2 Add the source server name to the target and replace the target IP address, 3 Replace the target server name with that of the source and replace the target IP address

Default-0

Console Setting-None

Service restart required-No

## ForceVerifyOnMirror

Description—Specifies if verification will be performed with every difference mirror

**Values**—0 Verification is not performed with every difference mirror, 1 Verification is performed with every difference mirror

Default-0

Console Setting-None

Service restart required-No

#### GenerateDumpOnShutdownCrashes

Description—Specifies if a log file will be created during a shutdown crash

**Values**—0 No log file is created and the default exception handler is used, 1 Log file is created

Default-0

Console Setting—None

Service restart required—Yes

## HardLinkInterval

Description—Specifies the length of time, in seconds, to generate a hard link report

Values—any valid integer

Default—3600

	Console Setting—None
	Service restart required—No
HardLinkLogF	Path
	<b>Description</b> —Specifies the location where hard links will be logged. If no path is specified, the location defined in LogDir will be used.
	Values—any valid path
	Default—None
	Console Setting—None
	Service restart required—No
HBLoopback	
	Description—This entry is no longer used.
HBTrace	
	Description—Specifies whether heartbeat debugging information is generated
	Values—0 not generated, 1 Generated
	Default—0
	Console Setting—None
	Service restart required—No
HBTTL	
	<b>Description</b> —Number of seconds without receiving a heartbeat before a remote machine is considered unavailable
	<b>Values</b> —0 - 65535
	Default—10
	Console Setting—None
	Service restart required—No
HeartbeatIgnoreIPs	
	Description—This setting is no longer used.
HPQueueRatio	
	Description—Ratio of replication packets to one mirror packet
	<b>Values</b> —1 - 65535
	Default—5

**Console Setting**—Edit Server Properties page, Source section, Number of replication packets per one mirror packet

Service restart required—No for future connections, Yes for the current connection

**Notes**—An HPQueueRatio of 5 allows Double-Take to dynamically change the ratio as needed based on the amount of replication data in queue. If you set a specific value other than the default (other than 5), the specified value will be used.

## IgnoreAlternateStreamFiles

Description—Specifies alternate streams to skip during mirroring and replication

Values—a semi-colon separate list of stream names. The stream names are not casesensitive

Default—none

Console Setting-None

Service restart required—No

#### **IgnoreArchiveBit**

Description—Specifies if the archive bit is compared during verification

**Values**—0 Archive bit is compared during a verification, 1 Archive bit is not compared during a verification

Default—1

Console Setting—None

Service restart required-No

## IgnoreDeleteOps

**Description**—Specifies if file and directory delete operations will be replicated to the target

**Values**—0 Delete operations are replicated to the target, 1 Delete operations are not replicated to the target

**Default**—0

Console Setting—None

Service restart required-No

## IgnoreOpLockErrors

**Description**—Specifies how files that are locked open on the source are handled during mirroring

**Values**—0 Fail the mirror and record OpLock errors in the log. The job state will be set to mirror required, 1 Ignore the lock errors and continue the mirror. This option does not guarantee data integrity. There may be differences in the file that was locked.

#### Default-0

Console Setting—None

## Service restart required-No

#### IgnorePPPAddresses

**Description**—Identifies if Double-Take will use PPP (Point-to-Point Protocol) or SLIP (Serial Line Internet Protocol) adapters

**Values**—0 Double-Take will send out heartbeats across the PPP/SLIP adapter, 1 Double-Take will not send out heartbeats across the PPP/SLIP adapter

Default—1

Console Setting—None

Service restart required-No

#### **IgnoreSourceErrors**

Description—Ignores source errors that will cause an update to the target data state

**Values**—0 Do not ignore source errors, 1 Ignore source errors

**Default**—0

Console Setting-None

Service restart required-No

#### IgnoreThumbnailStreams

Description—Specifies if thumbnails will be replicated to the target.

**Values**—0 Double-Take will mirror and replicate all data streams, 1 Double-Take will not mirror or replicate any data about the alternate data streams for thumbnail images. When comparing data for a verification or difference mirror, alternate data streams for thumbnails will not be reported as different.

#### Default-1

Console Setting-None

**Service restart required**—If you change this value to 0, you must restart the Double-Take service in order for the Double-Take driver to begin sending all data stream information to the service. If you change this value to 1, you do not need to restart the service.

#### IgnoreWriteFailureOnTarget

**Description**—Specifies whether failures to write a file on the target are logged

**Values**—0 Log all write failures on the target, 1 or any larger integer indicates that number of write failures which will be ignored before starting to log the write failures

#### Default-0

Console Setting-None

Service restart required-No

## IncludeSysVolInfo

**Description**—Specifies whether the system volume information folder is mirrored and replicated

**Values**—0 Do not include the system volume information folder, 1 Include the system volume information folder

Default—0

Console Setting—None

Service restart required-No

## InstallPath

**Description**—Path specified during the Double-Take installation. Do not modify this entry.

#### InstallVersionInfo

**Description**—Installation number specified during the Double-Take installation. Do not modify this entry.

## InteractWithDesktopForFOScripts

Description—Runs the failover scripts interactively on the user's local session

Values—0 Do not run the scripts interactively, 1 Run the scripts interactively.

Default—0

Console Setting-None

Service restart required—Yes

## IntermediateQueueLimit

**Description**—Amount of memory, in KB, that may be allocated to the intermediate queue by the system memory manager when MemoryAllocatorMode is set to mixed mode (2).

Values-512-4194304

Default—65536

Console Setting—None

Service restart required—Yes

#### **IPFailover**

Description—Specifies whether or not to failover the IP addresses during failover

Values—0 Do not failover IP addresses 1 Failover IP addresses

Default—1

Console Setting—Set Options page, Failover Options section, Failover IP addresses

## Service restart required-No

## **KFAIOpenRetry**

**Description**—Specifies the number of times an operation is retried if the driver return an error

Values—any valid integer

Default—10

Console Setting—None

Service restart required-No

#### LanguagesAvailable

**Description**—Specifies the Double-Take language support that has been installed. Do not modify this setting. If you need to add or remove language support, use the Double-Take installation program.

#### LanguageSelected

Description—Specifies the language of the verification log

Values—Depends on LanguagesSupported

Default—Language used during the installation

Console Setting—Edit Server Properties page, Logging section, Language

Service restart required—Yes

#### LanguagesSupported

**Description**—Specifies the available languages for the verification log. Currently English is the only language available. Do not modify this setting.

## LastModifiedReadDelay

**Description**—Specifies the length of time, in seconds, to wait before reading the last modified file time attribute

Values—any valid integer

Default—15

Console Setting—None

#### Service restart required—No

Notes—This option is only used if SendLastModifiedTimeOnClose is disabled

## LoadSourceTarget

Description—Specifies the functionality of the Double-Take service

	<b>Values</b> —0 Neither the source nor target modules are loaded, 1 Only the source module is loaded, 2 Only the target module is loaded, 3 Both the source and target modules are loaded	
	Default—3	
	Console Setting—None	
	Service restart required—Yes	
LogAllOrphans	5	
	Description—This entry is no longer used.	
LogDir		
	<b>Description</b> —The location of the Double-Take messages/alerts, verification, and statistics log files	
	Values—any valid path	
	Default—the location where the Double-Take files were installed	
	Console Setting—Edit Server Properties page, Logging section, Logging folder	
	Service restart required—Yes	
LogFile		
	Description—The name of the Double-Take messages/alerts log file	
	Values—any valid file name	
	Default—DTLog	
	Console Setting—None	
	Service restart required—No	
LogHardlinks		
	<b>Description</b> —Indicates whether hard links are logged to replication_set_name.log when the protected data set size is calculated	
	Values—0 Hard links are not logged, 1 Hard links are logged	
	Default—0	
	Console Setting—None	
	Service restart required—No	
LogMessageLevel		
	Description—Specifies the types of messages logged to the.dtl files	
	<b>Values</b> —0 No messages will be logged, 1 Only alert messages will be logged, 2 Alert and release messages will be logged, 3 Alert, release, and debug messages will be logged	

Default—2

Console Setting—None

Service restart required-No

## LoopbackID

Description—This entry is no longer used.

## MaxChecksumBlocks

Description—Specifies the number of checksum values retrieved from the target

Values—any integer

Default—32

Console Setting-None

Service restart required-No

## MaxConnections

**Description**—Number of network requests that can be processed simultaneously. Windows is limited to 5 simultaneous requests.

Values-0 - 65535

Default—5

Console Setting-None

Service restart required—Yes

Notes—Vision Solutions recommends that you not change this value.

#### MaxLogFileSize

Description—Maximum size, in bytes, of any .dtl log file

Values—limited by available disk space

Default-5242880

**Console Setting**—Edit Server Properties page, Logging section, Maximum size (under Messages & Alerts)

Service restart required-No

#### MaxLogPathname

**Description**—The maximum length of a file name (the entire volume\directory\filename including slashes, spaces, periods, extensions, and so on) that will be displayed in the Double-Take log file and the Windows Event Viewer. File names longer than the MaxDisplayablePath will be truncated and will be followed by an ellipsis (...).

Values—1-32760

Default-32760

Console Setting—None

Service restart required—No

#### MaxNumberofLogFiles

**Description**—Maximum number of .dtl log files that can exist at one time. When Double-Take creates a new .dtl file, if this number is exceeded, the oldest .dtl file is deleted.

Values—1 - 999

Default-20

**Console Setting**—Edit Server Properties page, Logging section, Maximum number of files

Service restart required-No

#### MaxOpBufferSize

**Description**—An internal setting for memory buffering. Do not modify this setting.

#### MaxRemoveOrphansOpSize

**Description**—Determines whether or not Double-Take will send over multiple orphan operations. Double-Take will send over the operations if a directory has more files than this number.

Values—0 - 131072

Default—1000

Console Setting—None

Service restart required-No

## MaxRetry

**Description**—A generic, application wide setting specifying the number of retry attempts for processes such as creating sockets, starting the service, and so on

Values—any integer

Default—5

Console Setting-None

Service restart required—Yes

#### MaxWriteChunkSize

Description—Maximum merged op size (in bytes) used during replication

Values—1 - 131072

Default—65536

## Console Setting—None

#### Service restart required-No

#### **MCHelpPath**

Description—This entry is no longer used.

## MemoryAllocatorCallbackMode

**Description**—Determines what action is taken when the MemoryQueueToDiskThreshold is met

**Values**—0 Auto-disconnect processing is initiated when theMemoryQueueToDiskThreshold has been met. Connections will be reestablished when auto-reconnect occurs, 1 The Double-Take service stops pulling operations from the driver when theMemoryQueueToDiskThreshold has been met. The target will pause the source. The service will resume pulling operations when the target tells the source to resume, 2 The source and target begin queuing operations to disk.

## Default-2

Console Setting—None

## Service restart required—Yes

## MemoryQueueToDiskThreshold

Description—A percentage of QmemoryBufferMax that will trigger queuing to disk.

Values—any valid percentage

Default-75

Console Setting-None

Service restart required—Yes

## MinCompressionFileSize

**Description**—The minimum file size, in bytes, that will be compressed. Files smaller than this size will not be compressed.

Values—any file size

Default—1024

Console Setting—None

#### Service restart required-No

#### MirrorChunkSize

Description—Block size, in bytes, used in the mirroring process

Values—1 - 1048576

**Default**—65536

**Console Setting**—Edit Server Properties page, Source section, Size of mirror packets

#### Service restart required-No

**Notes**—A higher block size value gives you better throughput, but only to a certain point, then it starts using more memory (this has to do with the way memory is allocated and deallocated). A lower block size value produces slower throughput, but uses memory efficiently.

#### **MirrorEncryptedFiles**

Description—Specifies if Windows 200x encrypted files are mirrored

Values—0 Encrypted files are not mirrored, 1 Encrypted files are mirrored

Default—1

Console Setting—None

Service restart required-No

#### MirrorOverwrite

Description—Determines if the mirror process overwrites existing files

Values—0 never overwrite, 1 always overwrite, 2 overwrite if older

Default—1

Console Setting—None

Service restart required-No

#### MirrorPrompting

**Description**—This entry is no longer used.

#### MirrorQueueLimit

**Description**—Maximum number of mirror operations that can be queued on the source machine

Values—1 - 65535

Default—1000

**Console Setting**—Edit Server Properties page, Source section, Maximum pending mirror operations

#### Service restart required—No

#### **MirrorRootAttributes**

**Description**—Specifies whether or not root permissions from the source are mirrored to the target

**Values**—0 Root permissions are not mirrored to the target, 1 Root permissions are mirrored to the target

Default-1

Console Setting-None

Service restart required—No

# MirrorZeroKFiles

**Description**—Specifies whether or not empty files, zero byte files, are included in a mirror

**Values**—0 Zero byte files are skipped and not mirrored to the target, 1 All files are mirrored to the target

Default-1

Console Setting—None

#### Service restart required-No

**Notes**—If MirrorZeroKFiles is enabled (0), zero byte files are skipped during a full mirror, file differences mirror, and a verification with synchronization. Zero byte files that contain alternate data streams that are not empty, will still be skipped if MirrorZeroKFiles is enabled.

#### **MissedHeartbeats**

**Description**—Specifies the number of heartbeats that can go unanswered by the source before failover occurs, when using Double-Take service responses to monitor for failover

Values—1 - 65535

Default-20

Console Setting—None

# Service restart required-No

**Notes**—This value is used in conjunction with the PingFrequency value to determine the value of Consider the source server failed (on the Set Options page, Failover Monitor section).

# **MissedPackets**

**Description**—Specifies the number of requests sent by the target that go unanswered by the source before failover occurs, when using network responses to monitor for failover

Values—1 - 65535

Default—5

Console Setting—None

Service restart required-No

**Notes**—This value is used in conjunction with the PingFrequency value to determine the value of Consider the source server failed (on the Set Options page, Failover Monitor section).

# **MoveOrphanedFiles**

Description—This entry is no longer used.

#### MoveOrphansDir

Description—This entry is no longer used.

#### NameFailover

**Description**—Specifies whether or not to failover machine names

Values—0 Do not failover machine names, 1 Failover machine names

Default—1

Console Setting—Set Options page, Failover Options section, Failover server name

Service restart required-No

# NetPort

Description—Port used by pre-5.2 versions for TCP communications

Values—1025 - 65535

Default—1100

Console Setting—None

Service restart required—Yes

# NetworkRetry

**Description**—Specifies the interval, in seconds, at which Double-Take will attempt to reconnect to the target

Values—any positive number

Default—10

Console Setting-None

Service restart required-No

#### **NetworkStatusInterval**

**Description**—An internal setting for network communications. Do not modify this setting.

# NetworkTimeout

**Description**—The maximum length of time, in seconds, to wait on a network connection. If data is not received over a network connection within the specified time limit, the connection is closed. During idle periods, Double-Take sends small amounts

of keep-alive data at an interval 1/6 of the NetworkTimeout value to keep the socket from being inadvertently closed.

Values—any integer

Default-120

Console Setting—None

#### Service restart required-No

**Notes**—If you are archiving files and it takes longer than the NetworkTimeout specified (for example, this may happen if the DTArchiveBin is located on an alternate volume), the archive operation will complete on the target, but the full file will not be changed to a link on the source because the source detected the network timeout.

# NodeLockedLicenseKey

Description—An internal setting for licensing. Do not modify this setting.

#### NodeLockedServerInfo

Description—An internal setting for licensing. Do not modify this setting.

# **OpBufferMax**

**Description**—Specifies the number of operations that can be stored in the memory queue prior to queuing to disk

**Values**—0 There is no limit to the number of operations that can be stored in the memory queue, 1 or any larger integer

Default-200000

Console Setting-None

Service restart required-No

# **OpBuffersCount**

Description—An internal setting for memory buffering. Do not modify this setting.

# OpLogging

Description—Specifies whether operations from the Double-Take driver are logged

Values—0 Do not log operations, 1 Log operations

Default—0

Console Setting—None

Service restart required—Yes

# OutOfOrderDiff

**Description**—The maximum number of operations that can be out of order before the connection is paused

Values—any integer

Default—10

Console Setting—None

#### Service restart required-No

**Notes**—The larger the value, the more memory the Double-Take service on the targe service will use.

# PingFrequency

**Description**—Specifies, in seconds, how often a ping is sent to the source from a monitoring target

Values—1 - 65535

Default—5

Console Setting—None

# Service restart required-No

**Notes**—This value is used in conjunction with the MissedHeartbeats or MissedPackets value to determine the value of Consider the source server failed (on the Set Options page, Failover Monitor section).

#### Port

Description—Port connection for core Double-Take communications

Values—1025 - 65535

Default-6320

Console Setting—Edit Server Properties page, General section, Port

Service restart required—Yes

# PostFailbackScript

Description—Location on the target where the target post-failback script is located

Values—Any valid path

Default—<null>

**Console Setting**—Set Options page, Failover Options section, Script file (under Postfailback script)

# Service restart required-No

#### PostFailbackScriptArgs

Description—Arguments to be used with the target post-failback script

Values—Any valid argument

Default—<null>

**Console Setting**—Set Options page, Failover Options section, Arguments (under Post-failback script)

#### Service restart required-No

#### PostFailoverScript

Description—Location on the target where the target post-failover script is located

Values—Any valid path

**Default**—<null>

**Console Setting**—Set Options page, Failover Options section, Script file (under Postfailover script)

Service restart required—No

# PostFailoverScriptArgs

Description—Arguments to be used with the target post-failover script

Values—Any valid argument

Default—<null>

**Console Setting**—Set Options page, Failover Options section, Arguments (under Post-failback script)

Service restart required—No

#### PreFailbackScript

Description—Location on the target where the target pre-failback script is located

Values—Any valid path

**Default**—<null>

**Console Setting**—Set Options page, Failover Options section, Script file (under Prefailback script)

#### Service restart required-No

#### PreFailbackScriptArgs

**Description**—Arguments to be used with the target pre-failback script

Values—Any valid argument

Default—<null>

**Console Setting**—Set Options page, Failover Options section, Arguments (under Pre-failback script)

Service restart required—No

# PreFailbackWait

**Description**—Specifies whether or not to wait for the target pre-failback script to complete before finishing a failback

Values—0 Do not wait, 1 Wait

#### Default—0

**Console Setting**—Set Options page, Failover Options section, Delay until script completes (under Pre-failback script)

Service restart required-No

# PreFailoverScript

Description—Location on the target where the target pre-failover script is located

Values—Any valid path

Default-<null>

**Console Setting**—Set Options page, Failover Options section, Script file (under Prefailover script)

Service restart required-No

# PreFailoverScriptArgs

Description—Arguments to be used with the target pre-failover script

Values—Any valid argument

Default-<null>

**Console Setting**—Set Options page, Failover Options section, Arguments (under Pre-failover script)

# Service restart required-No

#### **PreFailoverWait**

**Description**—Specifies whether or not to wait for the target pre-failover script to complete before finishing a failover

Values—0 Do not wait, 1 Wait

#### Default—0

**Console Setting**—Set Options page, Failover Options section, Delay until script completes (under Pre-failover script)

Service restart required-No

#### ProductCode

**Description**—Used by the Double-Take installation program to maintain the installation settings for an upgrade. Do not modify this entry.

#### ProductName

**Description**—Used by the Double-Take installation program to maintain the installation settings for an upgrade. Do not modify this entry.

#### QJournalDir

Description—The location where the queue is stored.

Values—any valid path

Default—the location specified during the installation

Console Setting—Edit Server Properties page, Queue section, Queue folder

Service restart required-No

**Notes**—For best results and reliability, you should select a dedicated, non-boot volume. The queue should be stored on a fixed, local NTFS volume. This location also stores the Double-Take driver pagefile.

# QJournalFileSize

Description—The size, in MB, of each queuing transaction log file.

Values—any valid file size, up to 4095 MB

Default—5

Console Setting-None

Service restart required-No

# QJournalFreeSpaceMin

**Description**—The minimum amount of disk space, in MB, in the specified QJournalDir that must be available at all times.

Values—dependent on the amount of physical disk space available

Default—250

**Console Setting**—Edit Server Properties page, Queue section, Minimum free disk space

Service restart required-No

**Notes**—The QJournalFreeSpaceMin should be less than the amount of physical disk space minus QJournalSpaceMax.

# QJournalPreload

**Description**—The number of operations being pulled from the disk queue at one time. Do not modify this setting.

# QJournalSpaceMax

**Description**—The maximum amount of disk space, in MB, in the specified QJournalDir that can be used for Double-Take queuing. When this limit is reached,

Double-Take will automatically begin the auto-disconnect process.

Values—dependent on the amount of physical disk space available

Default—Unlimited

**Console Setting**—Edit Server Properties page, Queue section, Limit disk space for queue

#### Service restart required-No

**Notes**—The unlimited setting allows the disk queue usage to automatically expand whenever the available disk space expands. Setting this option to zero (0) disables disk queuing. Even if you are using the unlimited option, Double-Take will only store 16,384 log files. If you are using the default 5MB file size, this is approximately 80GB of data. If you anticipate needing to be able to queue more data than this, you should increase the size of the log files.

# QLogWriteThrough

Description—Specifies if the disk queues are write-through mode

**Values**—0 Disk queues are not write-through mode, 1 Disk queues are write-through mode

**Default**—0

Console Setting-None

Service restart required-No

**Notes**—While write-through mode may decrease the frequency of auto-disconnects, it may also decrease the performance of the source server.

# QMemoryBufferMax

**Description**—The amount of Windows system memory, in MB, that, when exceeded, will trigger queuing to disk.

**Values**—minimum 512, maximum is dependent on the server hardware and operating system

Default—1024

**Console Setting**—Edit Server Properties page, Queue section, Amount of system memory to use

# Service restart required—Yes

# QueryOnQuorumFile

**Description**—Identifies if the Double-Take service will reopen closed files on the quorum drive

**Values**—0 The Double-Take service will not attempt to reopen a closed file on the quroum drive to get security descriptors or last modified times, 1 The Double-Take

service will attempt to reopen a closed file on the quroum drive to get security descriptors or last modified times.

# Default-1

Console Setting-None

Service restart required-No

# QueueSizeAlertThreshold

**Description**—The percentage of the queue that must be in use to trigger an alert message in the Windows Event Viewer.

Values—any valid percentage

Default—50

**Console Setting**—Edit Server Properties page, Queue section, Alert at this queue usage

Service restart required—Yes

# Registered

**Description**—This entry is no longer used.

# RemoveAllOrphans

**Description**—This entry is no longer used.

# RemoveOrphansTime

**Description**—This entry is no longer used.

# RemoveSharesOnDisconnect

**Description**—Specifies if shares are removed on the target machine when a Double-Take protected data set is disconnected from a target or a source machine is manually shutdown by the administrator. (Shares are not removed if either the source or target machines fail.)

Values—0 Remove shares from the target, 1 Do not remove shares from the target

Default-1

Console Setting-None

Service restart required-No

# ReplaceTarget

**Description**—Specifies whether or not to replace the target identity with the source identity during a failover

Values—0 Do not replace, 1 Replace

Console Setting-None

#### Service restart required-No

#### ReplicateNtSecurityByName

**Description**—Determines whether or not Double-Take replicates permissions and attributes assigned to local (non-domain) users and groups

Values—0 Do not replicate by name, 1 Replicate by name

Default-0

**Console Setting**—Edit Server Properties page, Source section, Replicate NTFS security attributes by name

Service restart required-No

#### ReplicationDiskCheckScript

Description—Specifies the script to run if validation of the replication drive fails

Values—Any valid path and script file

Default—<null>

Console Setting-None

Service restart required-No

#### ReplicationDiskCheckTimeOut

**Description**—Specifies the interval, in seconds, between validation checks when ReplicationDiskCheckSript is populated

Values—any integer

Default—300

GUI Setting—None

Service restart required—No

#### RepSetDBName

Description—Name of the database that contains protected data set information

Values—any valid file name

**Default**—DblTake.db

Console Setting—None

Service restart required—No

#### RestoreOverwrite

**Description**—Determines if the restoration process overwrites existing files

Values—0 never overwrite, 1 always overwrite, 2 overwrite if older

Default—2

Console Setting—None

Service restart required-No

# RestorePrompting

Description—This entry is no longer used.

# **RetentionFlag**

Description—This entry will be used in the future.

# RunDTInfoOnCutover

**Description**—Specifies if DTInfo is launched before a failover or cutover when protecting an entire server

Values—0 Do not launch DTInfo, 1 Launch DTInfo

Default-1

Console Setting-None

Service restart required-No

# RunScriptatSnaptime

**Description**—If a script is specified, the script is launched on the target before Double-Take executes any snapshots. The snapshot will not be executed until the script has completed. If the script returns an error, the snapshot will still execute.

Values—any valid path and script name

Default—<null>

Console Setting-None

Service restart required-No

# RunScriptInsteadofSnap

Description—Specifies if a script specified in RunScriptAtSnaptime is executed

**Values**—0 Execute script specified in RunScriptAtSnaptime, 1 Do not execute script specified in RunScriptAtSnaptime

Default-1

Console Setting—None

Service restart required-No

# SaveStatFile

**Description**—Determines if the statistic.sts (statistics logging) file is saved or ovewritten

Values—0 overwrite, 1 saved as statistic-old.sts

Default-1

Console Setting—None

Service restart required—No

# ScheduleFile

**Description**—Name of the database file that contains transmission scheduling information

Values—any valid file name

Default—Schedule.sts

Console Setting—None

Service restart required—Yes

# ScheduleInterval

**Description**—The number of seconds to wait before checking the transmission schedules to see if transmission should be started or stopped

Values—1 - 3600

Default—1

Console Setting-None

Service restart required—Yes

# SendDirLastModifiedTime

**Description**—Specifies if the last modified time for directories will be transmitted to the target during a difference mirror

**Values**—0 last modified time on directories will not be sent to the target, 1 last modified time on directories will be sent to the target

Default-1

Console Setting-None

Service restart required—No

# SendFileTimesOnCreate

**Description**—Specifies whether a file is accessed twice so that the file's creation time can be modified to match the source

**Values**—0 The Double-Take service will not access newly created files that have not been modified. These files on the target will have the date and time of when the file was created on the target, 1 The Double-Take service will access newly created files. These files on the target will have the same date and time as the source.

# Default—0

Console Setting-None

# Service restart required-No

**Notes**—New files created on the source that have not been modified will have the date and time of when the file is created on the target. The date and time will be corrected to match the source's true file attributes when a remirror or verification modifies them to match the source or the file is modified by a user or application on the source. For example, if the source machine's clock is set to 2:00 PM and the target machine is set to 4:00 PM, a newly created file that has not been modified will have a time stamp of 4:00 PM when it is applied to the target. If this option is enabled (1), Double-Take will access the file twice, to correctly set the time to 2:00 PM to reflect the file's true attributes. If this option is disabled (0), Double-Take will not access the file twice, and the file will have the target time of 4:00 PM until it is modified (remirror, verification, or user or application update).

# SendLastModifiedTimeOnClose

Description—Specifies that the last modified time attribute is sent when a file is closed

**Values**—0 Last modified time is sent when Double-Take has not received any additional operations for the file in the time period specified by LastModifiedReadDelay, 1 Last modified time is sent when a file is closed, which may not be immediately depending on system processing

# Default-1

Console Setting—None

#### Service restart required-No

**Notes**—If system processing delays (such as the system cache manager not flushing quickly enough) are causing delays in processing the last modified time, you may want to consider disabling this option (0).

# ServerUUID

**Description**—Used internally by the Double-Take service to identify Double-Take connections and IP addresses used between servers

Values—Unique identifier generated by Double-Take

Default—Generated by Double-Take

Console Setting—None

# Service restart required—Yes

**Notes**—If you are certain that the server is not being used by any jobs, you can delete the ServerUUID. For example, you may want to delete the ServerUUID so that you can create an image of a server after installing Double-Take. A deleted ServerUUID will be re-created the next time the Double-Take service is started. Keep in mind, if you delete the ServerUUID and the server is being used by any jobs, you will have problems with all aspects of Double-Take including mirroring, replication, and failover.

# **ServicePriority**

Description—The priority level at which the Double-Take service runs.

Values—2 normal priority, 3 high priority

Default—2

Console Setting—None

Service restart required—Yes

**Notes**—The Double-Take service runs at normal priority by default. This option should not be modified, however, if the priority is raised to high (3), it can be done through Windows Task Manager.

# ServicesToKeepRunning

Description—Services that will not be stopped on the target

Values—Comma separated list of service names

Default—<null>

Console Setting-None

Service restart required-No

# ServiceStopState

Description—Used internally by the Double-Take service. Do not modify this entry.

# ShareFailover

Description—Specifies whether or not to failover shares

Values—0 Do not failover shares, 1 Failover shares

Default-1

Console Setting—Set Options page, Failover Options section, Failover shares

Service restart required-No

# ShareUpdateInterval

Description—Specifies how often, in minutes, the share file will be sent to the target

Values—1 - 65535

Default—60

Console Setting—None

Service restart required-No

# **ShortFileNameScanIntervalMinutes**

**Description**—Specifies how often, in minutes, the registry is scanned for short file names

Values—any valid integer

# Console Setting-None

# Service restart required-No

#### ShutdownRebootTimeoutMinutes

**Description**—Specifies the amount of time, in minutes, to wait for the source to shutdown during failover or cutover

Values—any valid integer

Default—5

Console Setting—None

Service restart required-No

#### ShutdownTimeout

**Description**—The amount of time, in seconds, for the service to wait prior to completing the shutdown so that Double-Take can persist data on the target in an attempt to avoid a remirror when the target comes back online

**Values**—any valid number of seconds where 0 (zero) indicates waiting indefinitely and any other number indicates the number of seconds

# Default—0

**Console Setting**—Edit Server Properties page, Setup section, Time allowed to complete shutdown operations

#### Service restart required-No

**Notes**—This setting only controls the service shutdown from the Double-Take clients. It does not control the service shutdown through a reboot or from the Service Control Manager.

# SkipCompressionFileExt

**Description**—A period delimited list of file types that are not compressed, even if compression is enabled.

Values—any period delimited list of file types

Default—mp3.exe.wmv.wma.qt.mpg.mpeg.zip.jpg.jpeg.tiff.tar.rar.cab

Console Setting—None

Service restart required-No

# SnapshotType

Description—Specifies the type of snapshot that Double-Take takes

Values—0 Create a client-accessible or non-client-accessible snapshot based on the job type, 1 Always create a client-accessible snapshot, 2 Always create a non-client-accessible snapshot

# Console Setting-None

# Service restart required-No

#### SourceNewerMaxFileCount

Description—The number of files to compare during a source newer difference mirror

Values—1-1000

Default—16

Console Setting—None

Service restart required-No

# SourcePendingAcks

**Description**—The number of operations received by the target queue in which the source is waiting for a response

Values-100 - 20,000

Default—2000

Console Setting—None

Service restart required-No

#### SourcePostFailbackScript

Description—Path on the source where the source post-failback script is located

Values—Any valid path

Default—<null>

Console Setting—None

# Service restart required-No

# SourcePostFailbackScriptArgs

Description—Arguments to be used with the source post-failback script

Values—Any valid argument

Default—<null>

Console Setting-None

Service restart required-No

# SSMKeepTargetActivationCode

**Description**—Specifies if the activation code on the target is replaced or maintained after a full-serer failover or cutover. Do not modify this entry.

#### **SSMShutdownServices**

**Description**—Used by full server jobs to determine services to shutdown during failover or cutover. Do not modify this entry.

#### SSMShutdownSource

Description—Specifies if the source is shutdown when performing failover or cutover

Values—0 The source will not be shutdown, 1 The source will be shutdown

Default—1

**Console Setting**—Set Options page, Failover Options section, Shutdown the source server

Service restart required—Yes

Notes—This setting must be applied on the target server.

#### **SSMStagingBase**

**Description**—Specifies the folder to use for staging system state files for full server failover or cutover. Do not modify this entry.

#### **SSMUseDiskSignature**

**Description**—Used by full server jobs to determine how target disk signatures are used. Do not modify this entry.

# StartupScript

**Description**—Used by full server jobs to control the post-failover script after reboot after failover. Do not modify this entry.

# StatsDriverLogFlags

Description—Indicates which driver statistics are logged to the Double-Take log

Values—0 No driver statistics are logged, 1 State, 2 Operations, 4 Paging, 8 Timing

Default—0

Console Setting-None

Service restart required—Yes

**Notes**—Use the sum of various values to log multiple driver statistics. For example, a setting of 5 would log paging and state statistics. A setting of 7 would log paging, operations, and state statistics. A setting of 15 would log all driver statistics.

# **StatsFileName**

Description—Default file for logging statistics

Values—any valid file name

**Default**—statistic.sts

**Console Setting**—Edit Server Properties page, Logging section, Filename (under Statistics)

Service restart required-No

#### **StatsLoggingOn**

Description—Specifies if Double-Take logs statistics at startup

**Values**—0 Stats logging does not start when Double-Take starts, 1 Stats logging starts when Double-Take starts

#### Default-0

**Console Setting**—Edit Server Properties page, Setup section, Setup Options, Log statistics automatically

Service restart required-No

# StatsMaxFileSize

Description—Maximum size, in MB, for the statistic.sts file

Values—limited by available disk space

Default—10485760

**Console Setting**—Edit Server Properties page, Logging section, Maximum size (under Statistics)

Service restart required—No

# **StatsMaxObjects**

**Description**—This entry is no longer used.

# StatsPort

**Description**—Port used by pre-5.2 versions for DTStat to gather statistics

Values—1025 - 65535

Default—1106

Console Setting—None

Service restart required—Yes

# StatsShmSize

**Description**—This entry is no longer used.

# StatsWriteInterval

**Description**—Interval, in minutes, in which statistics are written to the statistic.sts file **Values**—0 - 65535

Console Setting—Edit Server Properties page, Logging section, Write interval

# Service restart required-No

#### SystemMemoryLimit

**Description**—Set by the Double-Take service, each time it is started, to record the amount of available memory.

#### TargetPaused

**Description**—Internal setting that indicates if the target machine is paused. Do not modify this setting.

#### **TargetPausedVirtual**

**Description**—Internal setting that indicates which target machines are paused. Do not modify this setting.

# **TCPBufferSize**

Description—Size of the TCP/IP buffer in bytes.

Values—4096-7500000

**Default**—375000

Console Setting—None

#### Service restart required—Yes

**Notes**—The default setting creates a TCP window that will accommodate most environments. In most environments, this value will not need to be adjusted. However, if your Double-Take network has a long end-to-end route and the throughput is not where you would expect it to be, then adjusting this parameter may have beneficial results. This value is the bandwidth delay product, which is calculated using the bandwidth of the network (in bits/second) times the round trip time (in seconds) between the two ends. Use the following recommended settings to improve Double-Take throughput performance.

- 100Mbit LAN—The setting should be around 37500.
- 1Gbit LAN—The setting should be around 375000.
- WAN—The setting should be around 130000.

While the calculations are fairly straight forward, the values that have been suggested are not exact because they depend on round trip time. Some improvements could be gained by adjusting these values either higher or lower. The value suited for your environment can best be determined through trial and error testing.

# TempDir

**Description**—Temporary directory used when replicating Windows 200x encrypted files.

Values—Any valid path

**Default**—\Program Files\Vision Solutions\Double-Take\Temp

# Console Setting-None

# Service restart required-No

#### **TGApplyMntPntSecurity**

**Description**—Applies security settings to the volume of a mount point instead of applying them to the directory that the mount point is mounted to.

**Values**—0 Security will be applied to the directory, 1 Security will be applied to the volume

Default—0

Console Setting—None

Service restart required—Yes

Notes—This setting needs to be applied to the target server.

#### TGBlockOnConnect

**Description**—Blocks the target path for all connections, regardless of the source, so that the data cannot be modified

Values—0 Target paths are not blocked, 1 Target paths are blocked

**Default**—0

Console Setting-None

Service restart required-No

# TGCloseDelay

Description—The length of time, in milliseconds, a file is held open on the target

Values—0 - 2000

Default—1000

Console Setting—None

Service restart required-No

**Notes**—If disk caching on the target is disabled either manually or by default (for example, by default on disks that host Active Directory database files), the target system may be slow during a mirror. If so, descreasing this setting to 100, 10, and 0 will result in incremental improvements, with 0 returning the system performance to normal.

# TGDaysToKeepMovedFiles

**Description**—Specifies the length of time, in days, to keep moved files if TGMoveFilesOnDelete is enabled

Values—any valid integer

**Console Setting**—Edit Server Properties page, Target section, Remove deleted files after this number of days

#### Service restart required-No

#### **TGDisableAttributeReplication**

**Description**—Specifies whether or not the attributes compression, ACL, and file mask are written to the target during mirroring and replication

Values—0 Enable attribute replication 1 Disable attribute replication

**Default**—0

Console Setting—None

Service restart required-No

# TGExecutionRetryLimit

**Description**—The number of times an unfinished operation will be retried on the target before it is discarded. If this value is set to zero (0), an operation will never be discarded and will be retried on the target until it is applied.

Values-0 - 65536

**Default**—0

Console Setting—None

Service restart required-No

# TGFileAlloc

**Description**—Indicates that Double-Take allocates an entire file on the first write of a mirror operation

Values—0 Disabled 1 Enabled

Default—1

Console Setting-None

Service restart required-No

**Notes**—To help eliminate file fragmentation on the target server, Double-Take should allocate the entire file first. With extremely large files, the file allocation may take a long time. Therefore, you may want to disable the file allocation. If you disable file allocation, you will have more fragmentation on the target disk.

# TGMirrorCapacityHigh

**Description**—Maximum percentage of system memory that can contain mirror data before the target signals the source to pause the sending of mirror operations.

Values-2-75

Default-20

**Console Setting**—Edit Server Properties page, Target section, Pause mirroring at this level

#### Service restart required-No

#### **TGMirrorCapacityLow**

**Description**—Minimum percentage of system memory that can contain mirror data before the target signals the source to resume the sending of mirror operations.

Values—1-75

#### Default—15

**Console Setting**—Edit Server Properties page, Target section, Resume mirroring at this level

#### Service restart required—No

**Notes**—The maximum value forTGMirrorCapacityLow is either 75 or TGMirrorCapacityHigh, which ever is lower.

# TGMoveFilesOnDelete

**Description**—Specifies whether files deleted on the source are actually moved to a different location on the target rather than being deleted on the target

**Values**—0 Files deleted on the source will be deleted on the target, 1 Files deleted on the source will be moved to a different location on the target

#### Default—0

**Console Setting**—Edit Server Properties page, Target section, Moved deleted files to this folder

#### Service restart required—No

**Notes**—If this option is enabled, the deleted files will be moved to the location specified in TGMoveFilesPath.

# **TGMoveFilesPath**

**Description**—Specifies where deleted files on the source are being moved to on the target

Values—any valid path

**Default**—<null>

**Console Setting**—Edit Server Properties page, Target section, Moved deleted files to this folder

#### Service restart required—No

#### TGMoveFilesSingleDirectory

**Description**—Specifies if deleted files that will be moved on the target (see **TGMoveFilesOnDelete**) will be moved to a single directory structure

**Values**—0 Use the same directory structure on the target as the source to store deleted files, 1 Use a single directory structure on the target to store deleted files

#### Default—0

Console Setting-None

Service restart required-No

# TGRetryLocked

**Description**—Minimum number of seconds to wait before retrying a failed operation on a target

Values-0-65536

Default—3

**Console Setting**—Edit Server Properties page, Target section, Retry delay for incomplete operations

Service restart required—No

#### TGThreadCount

**Description**—This setting is no longer used

#### TGUnfinishedOpEvent

**Description**—Specifies whether or not unfinished operations on the target are logged to the Event Viewer

**Values**—0 Unfinished operation messages are not logged, 1 Unfinished operation messages are logged

Default-1

Console Setting-None

Service restart required-No

# TGWriteCache

Description—Specifies whether or not Double-Take uses the intermediate cache

**Values**—0 Bypass the intermediate cache and write directly to disk, 1 Do not bypass the intermediate cache

Default—1

Console Setting—None

Service restart required-No

#### **TGWriteFailureBeforeNotification**

**Description**—Specifies the number of times an operation will be retried on the target before a notification is sent to update the target status

Values-0-1024

Default—10

Console Setting—None

#### Service restart required—Yes

**Notes**—If you change the setting to 0, the notification will be disabled. Changing this option will only affect how the target status is displayed. To solve the underlying issue of why the operations are failing will require investigation into the Double-Take log files.

# UpdateInterval

Description—This setting is no longer used

#### UpgradeCode

**Description**—Used by the Double-Take installation program to maintain the installation settings for an upgrade. Do not modify this entry.

#### UseChangeJournal

**Description**—Specifies if the Windows NTFS change journal is used to track file changes. If the source is rebooted, only the files identified in the change journal will be remirrored to the target. This setting helps improve mirror times.

**Values**—0 Do not track file changes, 1 Track file changes and remirror only changed files on source reboot, 2 Track file changes and remirror only changed files on source reboot and auto-reconnect

#### Default—1

**Console Setting**—Edit Server Properties page, Setup section, Mirror only changed files when source reboots

#### Service restart required—Yes

**Notes**—The corresponding Console Setting only allows off (0) and on (1) settings. Therefore, if you set UseChangeJournal to 2, the corresponding Console Setting will be disabled. The Console Setting will be reenabled when UseChangeJournal is set to 0 or 1.

# UseEventLog

**Description**—Specifies whether or not messages are logged to the Windows Event Viewer

**Values**—0 Do not log messages to the Event Viewer, 1 Log messages to the Event Viewer

Default—1

Console Setting—None

Service restart required-No

# UseLegacyDrivers

Description—This setting is no longer used

#### UserIntervention

**Description**—Specifies whether or not user intervention is required to initiate a failover or cutover

Values—0 User intervention is not required, 1 User intervention is required

#### Default-1

**Console Setting**—Set Options page, Failover Options section, Wait for user to initiate failover

Service restart required-No

# UseScheduledPause

**Description**—Used by Double-Take for internal schedule processing. Do not modify this setting.

#### UseShareFile

**Description**—Specifies whether to create and use a share file or to use the shares that are currently stored in the target memory

**Values**—0 Use the shares that are currently stored in the target memory, 1 Create and use a file containing the share information

Default—1

Console Setting—None

Service restart required-No

# VerifyLogAppend

**Description**—Specifies whether the DTVerify.log file will be appended to or overwritten

Values—0 Overwrite, 1 Append

Default-1

Console Setting—Edit Server Properties page, Logging section, Append

Service restart required-No

# VerifyLogLimit

Description—Maximum size of the DTVerify.log file in bytes

Values—limited by available hard drive space, up to 4 GB

**Console Setting**—Edit Server Properties page, Logging section, Maximum size (under Verification)

Service restart required-No

#### VerifyLogName

Description—Name of the verification log file

Values—any valid file name

Default—DTVerify.log

**Console Setting**—Edit Server Properties page, Logging section, File name (under Verification)

Service restart required-No

#### VerifyRetryInterval

**Description**—The time, in minutes, between when one verification fails and a retry is scheduled to begin.

Values—any valid number

**Default**—3

Console Setting—None

Service restart required-No

# VerifyRetryLimit

Description—The number of time a verification will be retried.

Values—any valid number

Default—5

Console Setting—None

Service restart required-No

#### VersionInfo

Description—The version of Double-Take that was installed. Do not modify this entry.

# WarningPings

Description—This entry is no longer used.

# WatchDogFailureProcessDump

**Description**—Creates a troubleshooting dump file if the Double-Take driver stops running

Values—0 Do not create a dump file, 1 Create a dump file

# Console Setting-None

# Service restart required-No

# WatchDogFailureScript

Description—Specifies the script to run if the Double-Take driver stops running

Values—Any valid path and script file

Default—<null>

Console Setting—None

Service restart required-No

# **Viewing server events**

Highlight a server on the **Manage Servers** page and click **View Server Events** from the toolbar. The **View Server Events** page displays the same messages that are logged to the Windows Event Viewer. The list of events are displayed in the top pane of the page, although the description is limited. When you highlight an event, the event details, including the full description, are displayed in the bottom pane of the page.

- Severity—An icon and/or text that classifies the event, such as Error, Warning, Information, Success Audit, or Failure Audit.
- **Time**—The date and time the event occurred.
- ID—An identification number to help identify and track event messages.
- **Source**—The component that logged the event.
- Description—The event details.

You can filter the events displayed by using the **Filter** drop-down list or the **View Warning Events** and **View Error Events** toolbar buttons. To clear a filter, select **All events** in the **Filter** drop-down list.

# **Viewing server logs**

You can view the Double-Take and Double-Take Management Service log files through the Double-Take Console using either of these two methods.

- On the **Manage Servers** page, highlight a server in the list and click **View Server Logs** from the toolbar.
- On the **Manage Jobs** page, right-click a job and select **View Logs**. Select either the source server log or the target server log.

Separate logging windows allow you to continue working in the Double-Take Console while monitoring log messages. You can open multiple logging windows for multiple servers. When the Double-Take Console is closed, all logging windows will automatically close.

II I I I I I I I I I I I I I I I I I I					
Time 🔺	Description	Service			
/23/2012 1:33:02 PM	Adding logical item: SQL (SQL:\)	Management Service	_		
/23/2012 1:33:02 PM	Adding logical item: Default Instance (SQL:\Default Instance)	Management Service			
/23/2012 1:33:02 PM	Adding logical item: SQL Server Folders (SQL:\Default Instance\SQL Server Folders)	Management Service			
23/2012 1:33:02 PM	Adding logical item: Databases (SQL:\Default Instance\Databases)	Management Service			
23/2012 1:33:02 PM	Adding logical item: Default Database Path (Data) (SQL:\Default Instance\SQL Server Fold	Management Service			
23/2012 1:33:02 PM	Adding logical item: Default Database Path (Log) (SOL:\Default Instance\SOL Server Folder	Management Service			
23/2012 1:33:02 PM	Adding logical item: Backup Directory (SOL:\Default Instance\SOL Server Folders\Backup D	Management Service			
23/2012 1:33:02 PM	Adding logical item: SQL Server Log Path (SQL:\Default Instance\SQL Server Folders\SQL	Management Service			
23/2012 1:33:02 PM	Adding logical item: Full-Text Catalog Path (SQL:\Default Instance\SQL Server Folders\Full	Management Service			
23/2012 1:33:02 PM	Adding logical item: Jobs Working Directory (SQL:\Default Instance\SQL Server Folders\Jo	Management Service			
23/2012 1:33:02 PM	Adding logical item: Replication Tasks Path (SQL:\Default Instance\SQL Server Folders\Rep	Management Service			
23/2012 1:33:02 PM	Adding logical item: System Databases (SQL:\Default Instance\Databases\System Databas	Management Service			
23/2012 1:33:02 PM	Adding logical item: User Databases (SQL:\Default Instance\Databases\User Databases)	Management Service			
23/2012 1:33:02 PM	Adding logical item: db1 (SQL:\Default Instance\Databases\User Databases\db1)	Management Service			
23/2012 1:33:02 PM	Adding logical item: master (SOL:\Default Instance\Databases\System Databases\master)	Management Service			
23/2012 1:33:02 PM	Adding logical item: model (SQL:\Default Instance\Databases\System Databases\model)	Management Service			
23/2012 1:33:02 PM	Adding logical item: msdb (SQL:\Default Instance\Databases\System Databases\msdb)	Management Service			
23/2012 1:33:02 PM	Adding logical item: ReportServer (SQL:\Default Instance\Databases\User Databases\Repo	Management Service			
23/2012 1:33:02 PM	Adding logical item: ReportServerTempDB (SOL:\Default Instance\Databases\User Databas	Management Service			
23/2012 1:33:02 PM	Adding logical item: tempdb (SOL:\Default Instance\Databases\System Databases\tempdb)	Management Service			
23/2012 1:33:02 PM	Adding logical item: C: (C:\)	Management Service			
23/2012 1:33:02 PM	Adding logical item: D: (D:\)	Management Service			
23/2012 1:33:03 PM	Adding logical item: C: (C:\)	Management Service			
23/2012 1:33:03 PM	Adding logical item: D: (D:\)	Management Service			
23/2012 1:33:03 PM	Workload Apply Defaults	Management Service			
23/2012 1:33:03 PM	Adding logical item: Hyper-V Virtual Machine (Vm:\)	Management Service			
23/2012 1:33:03 PM	System.Management.ManagementException: Invalid namespace at System.Managem	Management Service			
23/2012 1:33:12 PM	GetFilesCommand for 'C:\' returned 16 items	Management Service			
23/2012 1:33:13 PM	GetFilesCommand for 'C:\BaInfo\' returned 3 items	Management Service			
23/2012 1:34:06 PM	Connection request from IP address 192.168.1.6	Double-Take			
23/2012 1:34:06 PM	Connection from 192,168,1.6:6320 is a server to server connection.	Double-Take			
23/2012 1:34:19 PM	Adding Connection: Id = 2a96a7c2-a75c-4c47-8e49-4ebbac450f1b, ReplicationSetName =	Management Service			
23/2012 1:34:19 PM	RepSet Modified: FilesAndFolders 7d16d34a3c09467eaf42efdfb5279833	Double-Take			
23/2012 1:34:19 PM	Bandwidth limit to SQL2 (192.168.1.6:6320) has changed, and is now: Unlimited	Double-Take			
23/2012 1:34:19 PM	Originator Attempting SOL2 ip://192.168.1.6:6320	Double-Take			
23/2012 1:34:19 PM	Make CAckQueueHandlerTargetOpOrdering	Double-Take			
23/2012 1:34:19 PM	Connected to SQL2 IP address ip://192.168.1.6:6320	Double-Take			
23/2012 1:34:19 PM	StartReplicationHandler set state to RUNNING	Double-Take	1		
/23/2012 1:34:19 PM	Replication STARTED	Double-Take			

The following table identifies the controls and the table columns in the **Server logs** window.

Start 🕨	
	This button starts the addition and scrolling of new messages in the window.
Pause ║	
	This button pauses the addition and scrolling of new messages in the window. This is only for the <b>Server logs</b> window. The messages are still logged to their respective files on the server.
Сору 🗈	
	This button copies the messages selected in the <b>Server logs</b> window to the Windows clipboard.
Clear 🧟	
	This button clears the <b>Server logs</b> window. The messages are not cleared from the respective files on the server. If you want to view all of the messages again, close and reopen the <b>Server logs</b> window.
Filter	
	From the drop-down list, you can select to view all log messages or only those messages from the Double-Take log or the Double-Take Management Service log.
Time	
	This column in the table indicates the date and time when the message was logged.
Description	
<b>.</b> .	This column in the table displays the actual message that was logged.
Service	
	This column in the table indicates if the message is from the Double-Take log or the Double-Take Management Service log.

See Log files on page 312 for more information on the log files.

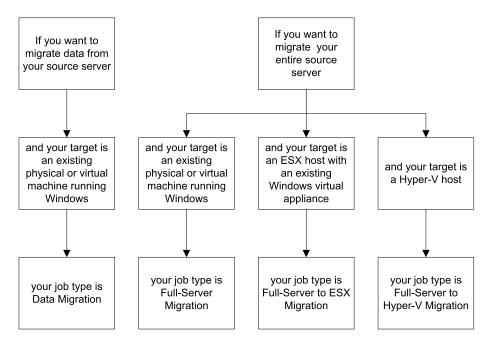
# Managing VMware servers

To manage your VMware servers, select **Go**, **Manage VMware Servers**. The **Manage VMware Server** page allows you to view, add, remove, or edit credentials for your VMware servers available in the console.

VMware Server				
	The name of the VMware server			
Full Name				
	The full name of the VMware server			
User Name				
	The user account being used to access the VMware server			
Add VMware Server 🎼				
	Add a new WMare server. When prompted, specify the VMware server and a user account.			
Remove Serve	er 🔟			
	Remove the VMware server from the console.			
Provide Crede	entials			
	Edit credentials for the selected VMware server. When prompted, specify a user account to access the VMware server.			

# **Chapter 6 Selecting a migration type**

Double-Take is an exceptionally flexible product that can be used in a wide variety of network configurations. However, this flexibility can make it difficult to determine which Double-Take job is right for your environment. Knowing what you want to migrate from your source is the key to determine which Double-Take job to use. Review the following decision trees to find which job type is best for your needs and environment.



# **Chapter 7 Data migration**

This section is specific to data migration and includes the following topics.

- See *Data migration requirements* on page 142—Data migration includes specific requirements for this type of migration.
- See *Creating a data migration job* on page 145—This section includes step-by-step instructions for creating a data migration job.
- See *Managing and controlling data migration jobs* on page 163—You can view status information about your data migration job.
- See *Cutting over data migration jobs* on page 180—Use this section when you are ready to cutover from your source to your target, which contains the data you migrated from your source.

# Data migration requirements

After you have verified your source server meets the *Requirements* on page 7, verify that your target server meets the requirements below for data migration.

- **Operating system**—Your existing physical or virtual target server can have any of the following Windows operating system editions.
  - Windows Server 2003 or 2003 R2 Datacenter, Enterprise (i386, x64), Standard (i386, x64), Web Server, Small Business Server, or Storage Server Edition. Each of the Windows 2003 operating systems require Service Pack 1 or later.
  - Windows Server 2008 or 2008 R2 Datacenter, Enterprise (i386, x64), Standard (i386, x64), Essential Business Server, Web Server, Foundation Server, Small Business Server (including SBS 2011), or Storage Server Edition
  - Windows 2012 Datacenter, Standard, Essentials, or Foundation Edition
  - Microsoft Server Core 2008 R2 and 2012 are supported for mirroring, replication, and cutover.
- **System memory**—The minimum system memory on each server should be 1 GB. The recommended amount for each server is 2 GB.
- **Disk space for program files**—This is the amount of disk space needed for the Double-Take program files. The amount depends on your operating system version and your architecture (32-bit or 64-bit) and ranges from 350-500 MB.
  - The program files can be installed to any volume while the Microsoft Windows Installer files are automatically installed to the operating system boot volume.

Make sure you have additional disk space for Double-Take queuing, logging, and so on.

- **Disk space for data files**—This is the amount of disk space needed for the source data files. This will be dependent on the applications you are running and the amount of data files you have.
- Server name—Double-Take includes Unicode file system support, but your server name must still be in ASCII format. If you have the need to use a server's fully-qualified domain name, your server cannot start with a numeric character because that will be interpreted as an IP address. Additionally, all Double-Take servers and appliances must have a unique server name.
  - If you rename a server that has already has a Double-Take license applied to it, for example if you rebuild a server, you will have to perform a host-transfer to continue using that license. This includes changing the case (capitalization) of the server name (upper or lower case or any combination of case). See *Activating a single Double-Take server* on page 35 for details on completing a host-transfer.

- **Protocols and networking**—Your servers must meet the following protocol and networking requirements.
  - Your servers must have TCP/IP with static IP addressing. (Some job types allow you to add DHCP addresses for failover monitoring, although only after a job has already been created. Keep in mind that depending on your failover configuration, a source reboot may or may not cause a failover but having a new address assigned by DHCP may also cause a failover.)
  - By default, Double-Take is configured for IPv6 and IPv4 environments, but the Double-Take service will automatically check the server at service startup and modify the appropriate setting if the server is only configured for IPv4. If you later add IPv6, you will need to manually modify the DefaultProtocol server setting. See *Server and job settings* on page 83 for details.
  - IPv4 and IPv6 are both supported.
  - IPv6 is only supported for Windows 2008 and 2012 servers.
  - If you are using IPv6 on your servers, your clients must be run from an IPv6 capable machine.
  - In order to properly resolve IPv6 addresses to a hostname, a reverse lookup entry should be made in DNS.
- **NAT support**—Data migration jobs can support NAT environments in an IP-forwarding configuration with one to one port mappings. Port-forwarding is not supported. Additionally, only IPv4 is supported for NAT environments. Make sure you have added your servers to the Double-Take Console using the correct IP address. Review the *NAT configuration* table on page 51 in the *Adding servers* section before you start the job creation process.
- **Microsoft** .**NET Framework**—Microsoft .NET Framework version 3.5 Service Pack 1 is required. This version is not included in the .NET version 4.0 release. Therefore, even if you have .NET version 4.0 installed, you will also need version 3.5.1. For Windows 2008 and earlier, you can install this version from the Double-Take DVD, via a web connection during the Double-Take installation, or from a copy you have obtained manually from the <u>Microsoft web site</u>. For Windows 2008 R2 and later, you need to enable it through Windows features.
- **Cloud**—Double-Take can be used to migrate data to an existing server in the cloud. Keep in mind that you should enable appropriate security measures, like VPN, to protect your data as it migrates to the cloud.
- **Supported configurations**—The following table identifies the supported configurations for a data migration job.

	Configuration	Supported	Not Supported
Source to target configuration	One to one, active/standby	X	
	One to one, active/active		Х
	Many to one		Х
	One to many		Х
	Chained		Х
	Single server		Х
Server configuration	Standalone to standalone	Х	
	Standalone to cluster		Х
	Cluster to standalone		Х
	Cluster to cluster		Х
	Cluster Shared Volumes (CSV) guest level	Х	
	Cluster Shared Volumes (CSV) host level		Х
Upgrade configuration	Upgrade 5.3 Double-Take Move Console data migration job to 7.0 Double-Take Console data migration job		х
	Upgrade 6.0 data migration job to 7.0 data migration job	x	

# Creating a data migration job

Use the following instructions to create a data migration job.

With a data migration job, your servers can be in a NAT environment. However, you must make sure you have added your servers to the Double-Take Console using the correct IP address. Review the *NAT configuration* table on page 51 in the *Adding servers* section before you start the job creation process.

- 1. Click Get Started from the toolbar.
- 2. Select **Double-Take Move** and click **Next**.
- 3. Choose your source server. This is the server that contains the data that you want to migrate.

Choose :	Source	Server		
	Choose the	server whose data you war	it to protect.	
	▲ Curren	t Servers		
	Servers:			
		Server 🔺	Version	
	8	alpha	7.0.0.1261.0	
	8	beta	7.0.0.1261.0	
	1			
	▼ Find a	New Server		

- **Current Servers**—This list contains the servers currently available in your console session. Servers that are not licensed for the workflow you have selected will be filtered out of the list. Select your source server from the list.
- Find a New Server—If the server you need is not in the Current Servers list, click the Find a New Server heading. From here, you can specify a server along with credentials for logging in to the server. If necessary, you can click Browse to select a server from a network drill-down list.

If you enter the source server's fully-qualified domain name, the Double-Take Console will resolve the entry to the server short name. If that short name resides in two different

domains, this could result in name resolution issues. In this case, enter the IP address of the server.

When specifying credentials for a new server, specify a user that is a member of the local Double-Take Admin and local administrator security groups.

- 4. Click **Next** to continue.
- Choose the type of workload that you want to migrate. Under Server Workloads, in the Workload types pane, select Data Migration. In the Workload items pane, if desired, you can select the entire volumes on the source that yo want to protect.
- 6. To select your files and folders in more detail, click the **Replication Rules** heading and expand the volumes under **Folders**.

Choose I	Data			
Ŷ	Choose the data on this server that	t you want to protect.		
	▼ Replication Rules			
	Folders:	Files:	Date Modified Size	Att_
	Application Data     Documents and Settings     Home	Application Data Documents and Settings	12/16/2010 10: 1 KB 12/3/2010 11:3 1 KB	
	Home     Program Files     RECYCLER	Program Files	12/16/2010 10: 1 KB 12/16/2010 10: 1 KB	R
	System Volume Informat      User Data	System Volume Information	12/16/2010 10: 1 KB 12/6/2010 5:37 1 KB	HS
	WINDOWS	WINDOWS	12/16/2010 10: 1 KB 12/6/2010 5:54. 1 KB	•
	Path: C:\			<u>•</u>
				Add Rule
	Path C:\ C:\Application Data C:\Home C:\User Data		Include Recurs Exclude Recurs Include Recurs Include Recurs Include Recurs	Remo <u>v</u> e Rule
	•		F	

Volumes and folders with a green highlight are included in their entirety in the migration. Volumes and folders highlighted in light yellow have individual files included in the migration. If there is no highlight, no part of the volume or folder is included in the migration. To modify the items selected, highlight a volume, folder, or file and click **Add Rule**. You can also enter a rule, including a wildcard specification, manually. Specify if you want to **Include** or **Exclude** the item. Also, specify if you want the rule to be recursive, which indicates the rule should automatically be applied to the subdirectories of the specified path. If you do not select **Recursive**, the rule will not be applied to subdirectories.

If you need to remove a rule, highlight it in the list at the bottom and click **Remove Rule**. Be careful when removing rules. Double-Take may create multiple rules when you are adding directories. For example, if you add E:\Data to be included in protection, then E:\ will be excluded. If you remove the E:\ exclusion rule, then the E:\Data rule will be removed also.

If you return to this page using the **Back** button in the job creation workflow, your **Workload Types** selection will be rebuilt, potentially overwriting any manual replication rules that you specified. If you do return to this page, confirm your **Workload Types** and **Replication Rules** are set to your desired settings before proceeding forward again.

- 7. Click **Next** to continue.
- 8. Choose your target server. This is the server that will receive the migrated data from the source.

0100000	he server that will store the pro		
1014-241/1	1. <u>1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1</u>		
	ent Servers		
Servers:			· · · · · ·
	Server 🔺	Version	
11.0	💡 alpha	7.0.0.1261.0	
2	beta (Diagnostics)	7.0.0.1261.0	
1			

- **Current Servers**—This list contains the servers currently available in your console session. Servers that are not licensed for the workflow you have selected and those not applicable to the workload type you have selected will be filtered out of the list. Select your target server from the list.
- Find a New Server—If the server you need is not in the Current Servers list, click the Find a New Server heading. From here, you can specify a server along with credentials for logging in to the server. If necessary, you can click Browse to select a server from a network drill-down list.
- If you enter the target server's fully-qualified domain name, the Double-Take Console will resolve the entry to the server short name. If that short name resides in two different domains, this could result in name resolution issues. In this case, enter the IP address of the server.

When specifying credentials for a new server, specify a user that is a member of the local Double-Take Admin and local administrator security groups.

9. Click **Next** to continue.

10. You have many options available for your data migration job. Configure those options that are applicable to your environment.

Go to each page identified below to see the options available for that section of the **Set Options** page. After you have configured your options, continue with the next step on page 162.

- General on page 149
- Failover Options on page 150
- *Mirror, Verify & Orphaned Files* on page 152
- Network Route on page 156
- Path Mapping on page 157
- Compression on page 158
- Bandwidth on page 159
- Scripts on page 161

### General

🔗 General	
Job name:	
alpha to beta	

For the **Job name**, specify a unique name for your job.

## Failover Options

Failover Options	
✓ Wait for user to initiate failover Shutdown source server Failover shares	
Pre-failover script	
Script file:	Arguments:
c:\scripts\prefailover.bat	arg1, arg2
Delay until script completes	
Post-failover script	
Script file:	Arguments:

- Wait for user to initiate failover—By default, the cutover process will wait for you to initiate it, allowing you to control when cutover occurs. When a cutover occurs, the job will wait in the **Protecting** state for you to manually initiate the cutover process. Disable this option only if you want cutover to occur immediately after the mirror is complete.
- Shutdown source server—Specify if you want to shut down the source server, if it is still running, before the source is cutover to the target, This option prevents identity conflicts on the network in those cases where the source and target are still both running and communicating.
- Failover shares—If desired, you can cutover shares to the target.

Automatic share cutover only occurs for standard Windows file system shares. Other shares must be configured for cutover through the failover scripts or created manually on the target. See *Macintosh shares* on page 438 or *NFS Shares* on page 439 for more information.

If you are cutting over Windows shares but your source and target do not have the same drive letters, you must use the **All to One** selection under **Path Mapping** when establishing your job. Otherwise, the shares will not be created on the target during cutover.

Windows share information is automatically updated on the target once an hour.

- Scripts—You can customize cutover by running scripts on the target. Scripts may contain any valid Windows command, executable, or batch file. The scripts are processed using the same account running the Double-Take service, unless you have identified a specific account through the server's properties. See *Script credentials* on page 76. Examples of functions specified in scripts include stopping services on the target before cutover because they may not be necessary, stopping services on the target that need to be restarted with the source's machine name and/or IP address, starting services or loading applications that are in an idle, standby mode waiting for cutover to occur, notifying the administrator before and after cutover occurs, and so on. There are two types of cutover scripts.
  - **Pre-failover script**—This script runs on the target at the beginning of the cutover process. Specify the full path and name of the script file.
  - **Post-failover script**—This script runs on the target at the end of the cutover process. Specify the full path and name of the script file.

- **Arguments**—Specify a comma-separated list of valid arguments required to execute the script.
- **Delay until script completes**—Enable this option if you want to delay the cutover process until the associated script has completed. If you select this option, make sure your script handles errors, otherwise the cutover process may never complete if the process is waiting on a script that cannot complete.

Scripts will run but will not be displayed on the screen if the Double-Take service is not set to interact with the desktop. Enable this option through the Windows Services applet.

## Mirror, Verify & Orphaned Files

🔿 Mirror, Verify & Orphaned Files	
C Mirror all files	
Mirror different files (based on modified time, size, or attributes)	
Mirror only if the file on the source is newer than the copy on the target	
This option not available for the current workload	
Use block checksum for comparisons	
Enable scheduled verification	
Verify on this interval:	
Begin immediately	
6 Begin at this time: Select a date	
Mirror files to the target server when verifying	
$\prod$ Mirror only if the file on the source is <u>n</u> ewer than the copy on the target	
This option not available for the current workload	
Use block checksum for comparisons	
Calculate size of protected data upon connection	
🔽 Delete orphaned files	

- Mirror all files—All protected files will be mirrored from the source to the target.
- **Mirror different files**—Only those protected files that are different based on date and time, size, or attributes will be mirrored from the source to the target.
  - Mirror only if the file on the source is newer than the copy on the target— This option is not available for migration jobs.
  - Use block checksum for comparisons—For those files flagged as different, the mirroring process can perform a block checksum comparison and send only those blocks that are different.

### File Differences Mirror Options Compared

The following table will help you understand how the various difference mirror options work together, including when you are using the block checksum option configured through the *Source server properties* on page 69.

An X in the table indicates that option is enabled. An X enclosed in parentheses (X) indicates that the option can be on or off without impacting the action performed during the mirror.

Not all job types have the source newer option available.

Source Server Properties	Jc	b Properties	5	Action Performed
Block Checksum Option	File Differences Option	Source Newer Option	Block Checksum Option	Action Performed
(X)	Х			Any file that is different on the source and target based on the date, time, size, and/or attribute is transmitted to the target. The mirror sends the entire file.
(X)	Х	х		Any file that is newer on the source than on the target based on date and/or time is transmitted to the target. The mirror sends the entire file.
	Х		Х	Any file that is different on the source and target based on date, time, size, and/or attributed is flagged as different. The mirror then performs a checksum comparison on the flagged files and only sends those blocks that are different.
x	х		х	The mirror performs a checksum comparison on all files and only sends those blocks that are different.
(X)	Х	Х	Х	Any file that is newer on the source than on the target based on date and/or time is flagged as different. The mirror then performs a checksum comparison on the flagged files and only sends those blocks that are different.

- Enable scheduled verification—Verification is the process of confirming that the source replica data on the target is identical to the original data on the source. Verification creates a log file detailing what was verified as well as which files are not synchronized. If the data is not the same, can automatically initiate a remirror, if configured. The remirror ensures data integrity between the source and target. When this option is enabled, Double-Take will verify the source replica data on the target and generate a verification log.
  - Because of the way the Windows Cache Manager handles memory, machines that are doing minimal or light processing may have file operations that remain in the cache until additional operations flush them out. This may make Double-Take files on the target appear as if they are not synchronized. When the Windows Cache Manager releases the operations in the cache on the source and target, the files will be updated on the target.
  - Verify on this interval—Specify the interval between verification processes.
  - **Begin immediately**—Select this option if you want to start the verification schedule immediately after the job is established.
  - **Begin at this time**—Select this option if you want to start the verification at the specified date and time.
  - Mirror files to the target server when verifying—When this option is enabled, in addition to verifying the data and generating a log, Double-Take will also mirror to the target any protected files that are different on the source.
    - Mirror only if the file on the source is newer than the copy on the target—This option is not available for migration jobs.
    - Use block checksum for comparisons—For those files flagged as different, the mirroring process can perform a block checksum comparison and send only those blocks that are different.
- Calculate size of protected data before mirroring—Specify if you want Double-Take to determine the mirroring percentage calculation based on the amount of data being protected. If the calculation is enabled, it is completed before the job starts mirroring, which can take a significant amount of time depending on the number of files and system performance. If your job contains a large number of files, for example, 250,000 or more, you may want to disable the calculation so that data will start being mirrored sooner. Disabling calculation will result in the mirror status not showing the percentage complete or the number of bytes remaining to be mirrored.

The calculated amount of protected data may be slightly off if your data set contains compressed or sparse files.

• **Delete orphaned files**—An orphaned file is a file that exists in the replica data on the target, but does not exist in the protected data on the source. This option specifies if orphaned files should be deleted on the target during a mirror, verification, or restoration.



Orphaned file configuration is a per target configuration. All jobs to the same target will have the same orphaned file configuration.

The orphaned file feature does not delete alternate data streams. To do this, use a full mirror, which will delete the additional streams when the file is re-created.

If delete orphaned files is enabled, carefully review any replication rules that use wildcard definitions. If you have specified wildcards to be excluded from protection, files matching those wildcards will also be excluded from orphaned file processing and will not be deleted from the target. However, if you have specified wildcards to be included in your protection, those files that fall outside the wildcard inclusion rule will be considered orphaned files and will be deleted from the target.

If you want to move orphaned files rather than delete them, you can configure this option along with the move deleted files feature to move your orphaned files to the specified deleted files directory. See *Target server properties* on page 72 for more information.

During a mirror, orphaned file processing success messages will be logged to a separate orphaned file log. This keeps the Double-Take log from being overrun with orphaned file success processing messages. Orphaned files processing statistics and any errors in orphaned file processing will still be logged to the Double-Take log, and during difference mirrors, verifications, and restorations, all orphaned file processing messages are logged to the Double-Take log. The orphaned file log is located in the **Logging folder** specified for the source. See *Log file properties* on page 77 for details on the location of that folder. The orphaned log file is overwritten during each orphaned file processing during a mirror, and the log file will be a maximum of 50 MB.

## Network Route

Network Route			
Send data to the target server usin	this <u>r</u> oute:		
10.10.10.30	*		
Block target paths upon connecti	n		

• Send data to the target server using this route—By default, Double-Take will select a target route for transmissions. If desired, specify an alternate route on the target that the data will be transmitted through. This allows you to select a different route for Double-Take traffic. For example, you can separate regular network traffic and Double-Take traffic on a machine with multiple IP addresses. You can also select or manually enter a public IP address (which is the public IP address of the server's NAT router) if you are using a NAT environment.

If you change the IP address on the target which is used for the target route, you will be unable to edit the job. If you need to make any modifications to the job, it will have to be deleted and re-created.

• Block target paths upon connection—You can block writing to the replica source data located on the target. This keeps the data from being changed outside of Double-Take processing. Any target paths that are blocked will be unblocked automatically during the cutover process so that users can modify data after cutover.

## Path Mapping

<u>M</u> appings:			
Source Path	Target Path		
C:\	C:\ALPHA\C\		

For the **Mappings**, specify the location on the target where the replica of the source data will be stored. By default, the replica source data will be stored in the same directory structure on the target, in a one to one configuration. Make sure you update this location if you are protecting multiple sources or jobs to the same target. Double-Take offers two pre-defined locations as well as a custom option that allows you to set your path.

- All To One—Click this button to set the mapping so that the replica source data will be stored on a single volume on the target. The pre-defined path is \source\_name\volume\_name. If you are protecting multiple volumes on the source, each volume would be stored on the same volume on the target. For example, C:\data and D:\files for the source Alpha would be stored in D:\alpha\C and D:\alpha\D, respectively.
- One To One—Click this button to set the mapping so that the replica source data will be stored in the same directory structure on the target. For example, C:\data and D:\files on the source will be stored in C:\data and D:\files, respectively, on the target.
- **Custom Location**—If the pre-defined options do not store the data in a location that is appropriate for your network operations, you can specify your own custom location where the replica source data will be stored. Click the **Target Path** and edit it, selecting the appropriate location.
- If you are protecting system state data (like your Program Files or Documents and Settings directory), you must select the **All to One** mapping or specify a customized location in order to avoid sharing violations.

If you are protecting dynamic volumes or mount points, your location on the target must be able to accommodate the amount of data that may be stored on the source.

If you are protecting multiple mount points, your directory mapping must not create a cycle or loop. For example, if you have the C: volume mounted at D:\C and the D: volume mounted at C:\D, this is a circular configuration. If you establish a job for either C:\D or D:\C, there will be a circular configuration and Double-Take mirroring will never complete.

If you are protecting sparse files and your location on the target is a non-NTFS 5 volume, the amount of disk space available must be equal to or greater than the entire size of the sparse file. If the target location is an NTFS 5 volume, the amount of disk space available must be equal to or greater than the on-disk size of the sparse file.

## Compression

O Compression			
Enable compression:			
1	τ		
- <b>-</b> -	1	3	
Minimum	Medium	Maximum	

To help reduce the amount of bandwidth needed to transmit Double-Take data, compression allows you to compress data prior to transmitting it across the network. In a WAN environment this provides optimal use of your network resources. If compression is enabled, the data is compressed before it is transmitted from the source. When the target receives the compressed data, it decompresses it and then writes it to disk. You can set the level from **Minimum** to **Maximum** to suit your needs.

Keep in mind that the process of compressing data impacts processor usage on the source. If you notice an impact on performance while compression is enabled in your environment, either adjust to a lower level of compression, or leave compression disabled. Use the following guidelines to determine whether you should enable compression.

- If data is being queued on the source at any time, consider enabling compression.
- If the server CPU utilization is averaging over 85%, be cautious about enabling compression.
- The higher the level of compression, the higher the CPU utilization will be.
- Do not enable compression if most of the data is inherently compressed. Many image (.jpg, .gif) and media (.wmv, .mp3, .mpg) files, for example, are already compressed. Some images files, such as .bmp and .tif, are decompressed, so enabling compression would be beneficial for those types.
- · Compression may improve performance even in high-bandwidth environments.
- Do not enable compression in conjunction with a WAN Accelerator. Use one or the other to compress Double-Take data.

All jobs from a single source connected to the same IP address on a target will share the same compression configuration.

## Bandwidth

o not limit bandwidth			
se a fixed limit (bytes	per second):		
Preset bandwidth:		Bandwidth (bytes per s	econd):
	*	1	*
Jse scheduled limits:	Start	End	Limit
00,0		6:00 PM	193000
Every day	6:00 AM 6:00 PM	6:00 AM	5625000
	6:00 AM 6:00 PM		5625000
Every day			5625000

Bandwidth limitations are available to restrict the amount of network bandwidth used for Double-Take data transmissions. When a bandwidth limit is specified, Double-Take never exceeds that allotted amount. The bandwidth not in use by Double-Take is available for all other network traffic.

All jobs from a single source connected to the same IP address on a target will share the same bandwidth configuration.

- **Do not limit bandwidth**—Double-Take will transmit data using 100% bandwidth availability.
- Use a fixed limit—Double-Take will transmit data using a limited, fixed bandwidth. Select a **Preset bandwidth** limit rate from the common bandwidth limit values. The **Bandwidth** field will automatically update to the bytes per second value for your selected bandwidth. This is the maximum amount of data that will be transmitted per second. If desired, modify the bandwidth using a bytes per second value. The minimum limit should be 3500 bytes per second.
- Use scheduled limits—Double-Take will transmit data using a dynamic bandwidth based on the schedule you configure. Bandwidth will not be limited during unscheduled times.
  - New—Click New to create a new scheduled bandwidth limit. Specify the following information.
    - **Daytime entry**—Select this option if the start and end times of the bandwidth window occur in the same day (between 12:01 AM and midnight). The start time must occur before the end time.
    - **Overnight entry**—Select this option if the bandwidth window begins on one day and continues past midnight into the next day. The start time must be later than the end time, for example 6 PM to 6 AM.
    - **Day**—Enter the day on which the bandwidth limiting should occur. You can pick a specific day of the week, **Weekdays** to have the limiting occur Monday through Friday, **Weekends** to have the limiting occur Saturday and Sunday, or **Every day** to have the limiting repeat on all days of the week.
    - Start time—Enter the time to begin bandwidth limiting.

- End time—Enter the time to end bandwidth limiting.
- **Preset bandwidth**—Select a bandwidth limit rate from the common bandwidth limit values. The **Bandwidth** field will automatically update to the bytes per second value for your select bandwidth.
- **Bandwidth**—If desired, modify the bandwidth using a bytes per second value. The minimum limit should be 3500 bytes per second.
- Edit—Click Edit to modify an existing scheduled bandwidth limit.
- Delete—Click Delete to remove a scheduled bandwidth limit.

If you change your job option from **Use scheduled limits** to **Do not limit bandwidth** or **Use a fixed limit**, any schedule that you created will be preserved. That schedule will be reused if you change your job option back to **Use scheduled limits**.

You can manually override a schedule after a job is established by selecting **Other Job Options**, **Set Bandwidth**. If you select **No bandwidth limit** or **Fixed bandwidth limit**, that manual override will be used until you go back to your schedule by selecting **Other Job Options**, **Set Bandwidth**, **Scheduled bandwidth limit**. For example, if your job is configured to use a daytime limit, you would be limited during the day, but not at night. But if you override that, your override setting will continue both day and night, until you go back to your schedule. See the *Managing and controlling jobs* section for your job type for more information on the **Other Job Options**.

## Scripts

cript file:	<u>A</u> rguments:	
:\scripts\mirrorstart.bat		Test
Allow script to interact with desktop 🔽 Delay until script complete	tes	
lirror Complete		
cript file:	<u>A</u> rguments:	
		Test
Allow script to interact with desktop 🔽 Delay until script complete	tes	
lirror Stop		
cript file:	<u>A</u> rguments:	
:\scripts\mirrorcomplete.bat	arg1	Test
cript file:	arg1	

You can customize mirroring by running scripts on the target at pre-defined points in the mirroring process. Scripts may contain any valid Windows command, executable, or batch file. The scripts are processed using the same account running the Double-Take service, unless you have identified a specific account through the server's properties. There are three types of mirroring scripts.

- **Mirror Start**—This script starts when the target receives the first mirror operation. In the case of a difference mirror, this may be a long time after the mirror is started because the script does not start until the first different data is received on the target. If the data is synchronized and a difference mirror finds nothing to mirror, the script will not be executed. Specify the full path and name of the **Script file**.
- **Mirror Complete**—This script starts when a mirror is completed. Because the mirror statistics may indicate a mirror is at 99-100% when it is actually still processing (for example, if files were added after the job size was calculated, if there are alternate data streams, and so on), the script will not start until all of the mirror data has been completely processed on the target. Specify the full path and name of the **Script file**.
- Mirror Stop—This script starts when a mirror is stopped, which may be caused by an auto-disconnect occurring while a mirror is running, the service is shutdown while a mirror is running, or if you stop a mirror manually. Specify the full path and name of the Script file.
- Arguments—Specify a comma-separated list of valid arguments required to execute the script.
- Allow script to interact with desktop—Enable this option if you want the script processing to be displayed on the screen. Otherwise, the script will execute silently in the background.
- **Delay until script completes**—Enable this option if you want to delay the mirroring process until the associated script has completed. If you select this option, make sure your script handles errors, otherwise the mirroring process may never complete if the process is waiting on a script that cannot complete.
- **Test**—You can test your script manually by clicking **Test**. Your script will be executed if you test it. If necessary, manually undo any changes that you do not want on your target after testing the script.



Mirror scripts are dependent on the target and the **Target Path Mappings** specified under the **Network Route & Folder Selection** section. If you establish mirroring scripts for one job and then establish additional jobs to the same target using the same target path mapping, the mirroring scripts will automatically be applied to those subsequent jobs. If you select a different target path mapping, the mirroring scripts will have to be reconfigured for the new job(s).

- 11. Click **Next** to continue.
- 12. Double-Take validates that your source and target are compatible. The **Summary** page displays your options and validation items.

Errors are designated by a white X inside a red circle. Warnings are designated by a black exclamation point (!) inside a yellow triangle. A successful validation is designated by a white checkmark inside a green circle. You can sort the list by the icon to see errors, warnings, or successful validations together. Click on any of the validation items to see details. You must correct any errors before you can enable your migration. Depending on the error, you may be able to click **Fix** or **Fix All** and let Double-Take correct the problem for you. For those errors that Double-Take cannot correct automatically, you will need to modify the source or target to correct the error, or you can select a different target. You must revalidate the selected servers, by clicking **Recheck**, until the validation check passes without errors.

Before a job is created, the results of the validation checks are logged to the Double-Take Management Service log on the target.

13. Once your servers have passed validation and you are ready to begin migration, click **Finish**, and you will automatically be taken to the **Manage Jobs** page.

Jobs in a NAT environment may take longer to start.

# Managing and controlling data migration jobs

Click **Manage Jobs** from the main Double-Take Console toolbar. The **Manage Jobs** page allows you to view status information about your jobs. You can also control your jobs from this page.

The jobs displayed in the right pane depend on the server group folder selected in the left pane. Every job for each server in your console session is displayed when the **Jobs on All Servers** group is selected. If you have created and populated server groups (see *Managing servers* on page 45), then only the jobs associated with the server or target servers in that server group will be displayed in the right pane.

- See Overview job information displayed in the top pane on page 163
- See Detailed job information displayed in the bottom pane on page 165
- See Job controls on page 167

### Overview job information displayed in the top pane

The top pane displays high-level overview information about your jobs.

#### Column 1 (Blank)

The first blank column indicates the state of the job.

The job is in a healthy state.

A The job is in a warning state. This icon is also displayed on any server groups that you have created that contain a job in a warning state.

Control The job is in an error state. This icon is also displayed on any server groups that you have created that contain a job in an error state.

🔋 The job is in an unknown state.

#### Job

The name of the job

#### **Source Server**

The name of the source. This could be the name or IP address of your source.

#### **Target Server**

The name of the target. This could be the name or IP address of your target.

#### Job Type

Each job type has a unique job type name. This job is a Data Migration job. For a complete list of all job type names, press F1 to view the Double-Take Console online help.

#### Activity

There are many different **Activity** messages that keep you informed of the job activity. Most of the activity messages are informational and do not require any administrator interaction. If you see error messages, check the job details. Keep in mind that **Idle** indicates console to server activity is idle, not that your servers are idle.

#### **Mirror Status**

- Calculating—The amount of data to be mirrored is being calculated.
- In Progress—Data is currently being mirrored.
- Waiting—Mirroring is complete, but data is still being written to the target.
- Idle—Data is not being mirrored.
- Paused—Mirroring has been paused.
- **Stopped**—Mirroring has been stopped.
- **Removing Orphans**—Orphan files on the target are being removed or deleted depending on the configuration.
- Verifying—Data is being verified between the source and target.
- Unknown—The console cannot determine the status.

#### **Replication Status**

- Replicating—Data is being replicated to the target.
- Ready—There is no data to replicate.
- Pending—Replication is pending.
- **Stopped**—Replication has been stopped.
- Out of Memory—Replication memory has been exhausted.
- Failed—The Double-Take service is not receiving replication operations from the Double-Take driver. Check the Event Viewer for driver related issues.
- **Unknown**—The console cannot determine the status.

#### Transmit Mode

- Active—Data is being transmitted to the target.
- Paused—Data transmission has been paused.
- Scheduled—Data transmission is waiting on schedule criteria.
- **Stopped**—Data is not being transmitted to the target.
- Error—There is a transmission error.
- Unknown—The console cannot determine the status.

### Detailed job information displayed in the bottom pane

The details displayed in the bottom pane of the **Manage Jobs** page provide additional information for the job highlighted in the top pane. If you select multiple jobs, the details for the first selected job will be displayed.

#### Name

The name of the job

#### Target data state

- **OK**—The data on the target is in a good state.
- **Mirroring**—The target is in the middle of a mirror process. The data will not be in a good state until the mirror is complete.
- **Mirror Required**—The data on the target is not in a good state because a remirror is required. This may be caused by an incomplete or stopped mirror or an operation may have been dropped on the target.
- **Busy**—The source is low on memory causing a delay in getting the state of the data on the target.
- **Not Loaded**—Double-Take target functionality is not loaded on the target server. This may be caused by an activation code error.
- Unknown—The console cannot determine the status.

#### Mirror remaining

The total number of mirror bytes that are remaining to be sent from the source to the target

#### Mirror skipped

The total number of bytes that have been skipped when performing a difference or checksum mirror. These bytes are skipped because the data is not different on the source and target.

#### **Replication queue**

The total number of replication bytes in the source queue

#### Disk queue

The amount of disk space being used to queue data on the source

#### Bytes sent

The total number of mirror and replication bytes that have been transmitted to the target

#### Bytes sent (compressed)

The total number of compressed mirror and replication bytes that have been transmitted to the target. If compression is disabled, this statistic will be the same as

#### Bytes sent.

#### **Connected since**

The date and time indicating when the current job was made. This field is blank, indicating that a TCP/IP socket is not present, when the job is waiting on transmit options or if the transmission has been stopped. This field will maintain the date and time, indicating that a TCP/IP socket is present, when transmission has been paused.

#### **Recent activity**

Displays the most recent activity for the selected job, along with an icon indicating the success or failure of the last initiated activity. Click the link to see a list of recent activities for the selected job. You can highlight an activity in the list to display additional details about the activity.

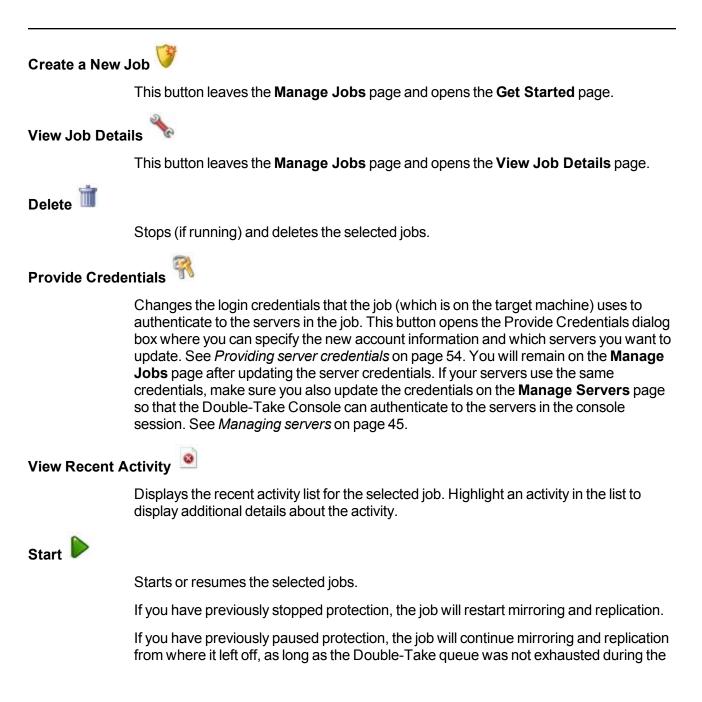
#### Additional information

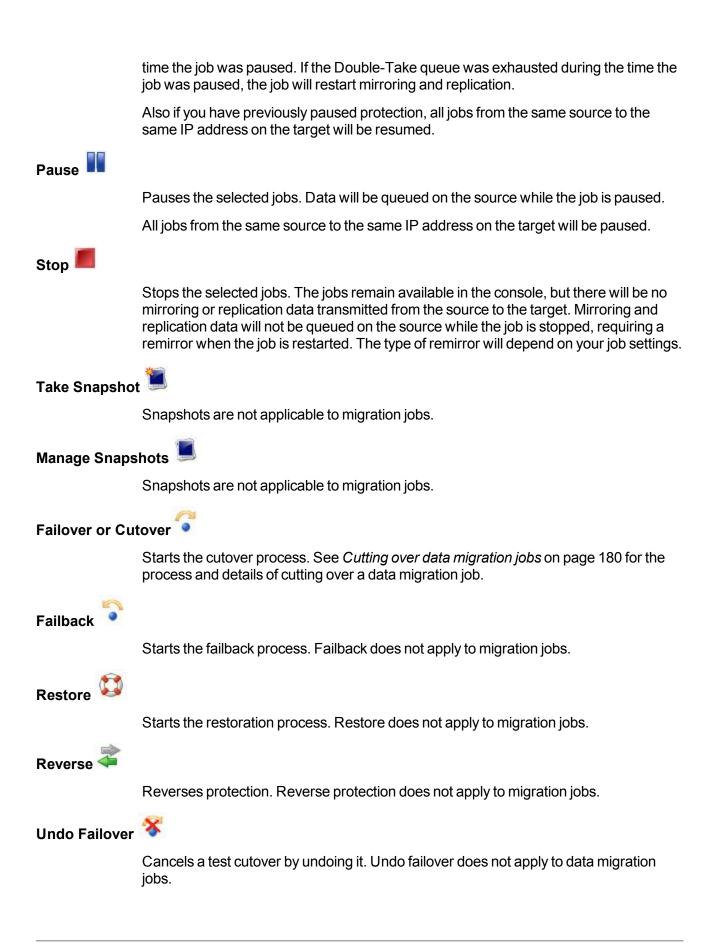
Depending on the current state of your job, you may see additional information displayed to keep you informed about the progress and status of your job. If there is no additional information, you will see (None) displayed.

### Job controls

You can control your job through the toolbar buttons available on the **Manage jobs** page. If you select multiple jobs, some of the controls will apply only to the first selected job, while others will apply to all of the selected jobs. For example, **View Job Details** will only show details for the first selected job, while **Stop** will stop protection for all of the selected jobs.

If you want to control just one job, you can also right click on that job and access the controls from the pop-up menu.





### View Job Log

Opens the job log. On the right-click menu, this option is called **View Logs**, and you have the option of opening the job log, source server log, or target server log. See *Viewing the log files through the Double-Take Console* on page 313 for details on all three of these logs.



- Other Job Actions
  - **Mirroring**—You can start, stop, pause and resume mirroring for any job that is running.

When pausing a mirror, Double-Take stops queuing mirror data on the source but maintains a pointer to determine what information still needs to be mirrored to the target. Therefore, when resuming a paused mirror, the process continues where it left off.

When stopping a mirror, Double-Take stops queuing mirror data on the source and does not maintain a pointer to determine what information still needs to be mirrored to the target. Therefore, when starting a mirror that has been stopped, you will need to decide what type of mirror to perform.

- **Mirror all files**—All protected files will be mirrored from the source to the target.
- Mirror different files—Only those protected files that are different based on date and time, size, or attributes will be mirrored from the source to the target.
  - Mirror only if the file on the source is newer than the copy on the target—Only those protected files that are newer on the source are mirrored to the target.
    - If you are using a database application or are protecting a domain controller, do not use this option unless you know for certain that you need it. With database applications and because domain controllers store their data in a database, it is critical that all files, not just some of the files that might be newer, get mirrored.
  - Use block checksum for comparisons—For those files flagged as different, the mirroring process can perform a block checksum comparison and send only those blocks that are different.
- Calculate size of protected data before mirroring—Specify if you want Double-Take to determine the mirroring percentage calculation based on the amount of data being protected. If the calculation is enabled, it is completed before the job starts mirroring, which can take a significant amount of time depending on the number of files and system performance. If your job contains a large number of files, for example, 250,000 or more, you may want to disable the calculation so that data will start being mirrored sooner.

Disabling calculation will result in the mirror status not showing the percentage complete or the number of bytes remaining to be mirrored.

The calculated amount of protected data may be slightly off if your data set contains compressed or sparse files.

- Verify—Even if you have scheduled the verification process, you can run it manually any time a mirror is not in progress.
  - Create verification report only—This option verifies the data and generates a verification log, but it does not remirror any files that are different on the source and target. See *Verification log* on page 79 for details on the log file.
  - Mirror files to the target server automatically—When this option is enabled, in addition to verifying the data and generating a log, Double-Take will also mirror to the target any protected files that are different on the source.
    - Mirror only if the file on the source is newer than the copy on the target—Only those protected files that are newer on the source are mirrored to the target.
      - If you are using a database application or are protecting a domain controller, do not use this option unless you know for certain that you need it. With database applications and because domain controllers store their data in a database, it is critical that all files, not just some of the files that might be newer, get mirrored.
    - Use block checksum for comparisons—For those files flagged as different, the mirroring process can perform a block checksum comparison and send only those blocks that are different.
- Set Bandwidth—You can manually override bandwidth limiting settings configured for your job at any time.
  - No bandwidth limit—Double-Take will transmit data using 100% bandwidth availability.
  - Fixed bandwidth limit—Double-Take will transmit data using a limited, fixed bandwidth. Select a **Preset bandwidth** limit rate from the common bandwidth limit values. The **Bandwidth** field will automatically update to the bytes per second value for your selected bandwidth. This is the maximum amount of data that will be transmitted per second. If desired, modify the bandwidth using a bytes per second value. The minimum limit should be 3500 bytes per second.
  - Scheduled bandwidth limit—If your job has a configured scheduled bandwidth limit, you can enable that schedule with this option.
- **Delete Orphans**—Even if you have enabled orphan file removal during your mirror and verification processes, you can manually remove them at any time.

• **Target**—You can pause the target, which queues any incoming Double-Take data from the source on the target. All active jobs to that target will complete the operations already in progress. Any new operations will be queued on the target until the target is resumed. The data will not be committed until the target is resumed. Pausing the target only pauses Double-Take processing, not the entire server.

While the target is paused, the Double-Take target cannot queue data indefinitely. If the target queue is filled, data will start to queue on the source. If the source queue is filled, Double-Take will automatically disconnect the connections and attempt to reconnect them.

If you have multiple jobs to the same target, all jobs from the same source will be paused and resumed.

• **Update Shares**—Windows share information is automatically updated on the target once an hour. This option allows you to manually update share information immediately when the option is selected. Shares are not applicable to environments where the target is a cluster.

#### Filter

Select a filter option from the drop-down list to only display certain jobs. You can display **Healthy jobs**, **Jobs with warnings**, or **Jobs with errors**. To clear the filter, select **All jobs**. If you have created and populated server groups, then the filter will only apply to the jobs associated with the server or target servers in that server group. See *Managing servers* on page 45.

#### Type a server name

Displays only jobs that contain the text you entered. If you have created and populated server groups, then only jobs that contain the text you entered associated with the server or target servers in that server group will be displayed. See *Managing servers* on page 45.

#### Overflow Chevron

Displays any toolbar buttons that are hidden from view when the window size is reduced.

## Viewing data migration job details

From the Manage Jobs page, highlight the job and click View Job Details in the toolbar.

Review the following table to understand the detailed information about your job displayed on the **View Job Details** page.

Job name			
	The name of the job		
Job type			
	Each job type has a unique job type name. This job is a Data Migration job. For a complete list of all job type names, press F1 to view the Double-Take Console online help.		
Health			
	The job is in a healthy state.		
	1 The job is in a warning state.		
	😢 The job is in an error state.		
	The job is in an unknown state.		
Activity			
	There are many different <b>Activity</b> messages that keep you informed of the job activity. Most of the activity messages are informational and do not require any administrator interaction. If you see error messages, check the rest of the job details.		
Connection ID			
	The incremental counter used to number connections. The number is incremented when a connection is created. It is also incremented by internal actions, such as an auto-disconnect and auto-reconnect. The lowest available number (as connections are created, stopped, deleted, and so on) will always be used. The counter is reset to one each time the Double-Take service is restarted.		
Transmit mode			
	<ul> <li>Active—Data is being transmitted to the target.</li> <li>Paused—Data transmission has been paused.</li> <li>Scheduled—Data transmission is waiting on schedule criteria.</li> <li>Stopped—Data is not being transmitted to the target.</li> <li>Error—There is a transmission error.</li> <li>Unknown—The console cannot determine the status.</li> </ul>		

#### Target data state

- **OK**—The data on the target is in a good state.
- **Mirroring**—The target is in the middle of a mirror process. The data will not be in a good state until the mirror is complete.
- **Mirror Required**—The data on the target is not in a good state because a remirror is required. This may be caused by an incomplete or stopped mirror or an operation may have been dropped on the target.
- Busy—The source is low on memory causing a delay in getting the state of the data on the target.
- Not Loaded—Double-Take target functionality is not loaded on the target server. This may be caused by an activation code error.
- **Unknown**—The console cannot determine the status.

#### **Target route**

The IP address on the target used for Double-Take transmissions.

#### Compression

- On / Level—Data is compressed at the level specified.
- Off—Data is not compressed.

#### **Bandwidth limit**

If bandwidth limiting has been set, this statistic identifies the limit. The keyword **Unlimited** means there is no bandwidth limit set for the job.

#### **Connected since**

The date and time indicating when the current job was made. This field is blank, indicating that a TCP/IP socket is not present, when the job is waiting on transmit options or if the transmission has been stopped. This field will maintain the date and time, indicating that a TCP/IP socket is present, when transmission has been paused.

#### Additional information

Depending on the current state of your job, you may see additional information displayed to keep you informed about the progress and status of your job. If there is no additional information, you will see (None) displayed.

#### **Mirror status**

- Calculating—The amount of data to be mirrored is being calculated.
- In Progress—Data is currently being mirrored.
- Waiting—Mirroring is complete, but data is still being written to the target.
- Idle—Data is not being mirrored.
- Paused—Mirroring has been paused.
- **Stopped**—Mirroring has been stopped.
- **Removing Orphans**—Orphan files on the target are being removed or deleted depending on the configuration.

- Verifying—Data is being verified between the source and target.
- **Unknown**—The console cannot determine the status.

#### **Mirror percent complete**

The percentage of the mirror that has been completed

#### **Mirror remaining**

The total number of mirror bytes that are remaining to be sent from the source to the target

#### **Mirror skipped**

The total number of bytes that have been skipped when performing a difference or checksum mirror. These bytes are skipped because the data is not different on the source and target.

#### **Replication status**

- **Replicating**—Data is being replicated to the target.
- **Ready**—There is no data to replicate.
- **Pending**—Replication is pending.
- **Stopped**—Replication has been stopped.
- Out of Memory—Replication memory has been exhausted.
- **Failed**—The Double-Take service is not receiving replication operations from the Double-Take driver. Check the Event Viewer for driver related issues.
- Unknown—The console cannot determine the status.

#### **Replication queue**

The total number of replication bytes in the source queue

#### Disk queue

The amount of disk space being used to queue data on the source

#### Bytes sent

The total number of mirror and replication bytes that have been transmitted to the target

#### Bytes sent compressed

The total number of compressed mirror and replication bytes that have been transmitted to the target. If compression is disabled, this statistic will be the same as **Bytes sent**.

# Validating a data migration job

Over time, you may want to confirm that any changes in your network or environment have not impacted your Double-Take job. Use these instructions to validate an existing job.

- 1. From the Manage Jobs page, highlight the job and click View Job Details in the toolbar.
- 2. In the Tasks area on the right on the View Job Details page, click Validate job properties.
- 3. Double-Take validates that your source and target are compatible. The **Summary** page displays your options and validation items.

Errors are designated by a white X inside a red circle. Warnings are designated by a black exclamation point (!) inside a yellow triangle. A successful validation is designated by a white checkmark inside a green circle. You can sort the list by the icon to see errors, warnings, or successful validations together. Click on any of the validation items to see details. You must correct any errors before you can enable your migration. Depending on the error, you may be able to click **Fix** or **Fix All** and let Double-Take correct the problem for you. For those errors that Double-Take cannot correct automatically, you will need to modify the source or target to correct the error, or you can select a different target. You must revalidate the selected servers, by clicking **Recheck**, until the validation check passes without errors.

Validation checks for an existing job are logged to the job log on the target server. See *Log files* on page 312 for details on the various log files.

4. Once your servers have passed validation, click Close.

## Editing a data migration job

Use these instructions to edit a data migration job.

- 1. From the Manage Jobs page, highlight the job and click View Job Details in the toolbar.
- 2. In the **Tasks** area on the right on the **View Job Details** page, click **Edit job properties**. (You will not be able to edit a job if you have removed the source of that job from your Double-Take Console session or if you only have Double-Take monitor security access.)
- 3. You have the same options available for your data migration job as when you created the job. See *Creating a data migration job* on page 145 for details on each job option.



Changing some options may require Double-Take to automatically disconnect, reconnect, and remirror the job.

 If you want to modify the workload items or replication rules for the job, click Edit workload or replication rules. Modify the Workload item you are protecting, if desired. Additionally, you can modify the specific Replication Rules for your job.

Volumes and folders with a green highlight are included in their entirety in the migration. Volumes and folders highlighted in light yellow have individual files included in the migration. If there is no highlight, no part of the volume or folder is included in the migration. To modify the items selected, highlight a volume, folder, or file and click **Add Rule**. You can also enter a rule, including a wildcard specification, manually. Specify if you want to **Include** or **Exclude** the item. Also, specify if you want the rule to be recursive, which indicates the rule should automatically be applied to the subdirectories of the specified path. If you do not select **Recursive**, the rule will not be applied to subdirectories.

If you need to remove a rule, highlight it in the list at the bottom and click **Remove Rule**. Be careful when removing rules. Double-Take may create multiple rules when you are adding directories. For example, if you add E:\Data to be included in protection, then E:\ will be excluded. If you remove the E:\ exclusion rule, then the E:\Data rule will be removed also.

Click **OK** to return to the **Edit Job Properties** page.

- 5. Click **Next** to continue.
- 6. Double-Take validates that your source and target are compatible. The **Summary** page displays your options and validation items.

Errors are designated by a white X inside a red circle. Warnings are designated by a black exclamation point (!) inside a yellow triangle. A successful validation is designated by a white checkmark inside a green circle. You can sort the list by the icon to see errors, warnings, or successful validations together. Click on any of the validation items to see details. You must correct any errors before you can enable your migration. Depending on the error, you may be able to click **Fix** or **Fix All** and let Double-Take correct the problem for you. For those errors that Double-Take cannot correct automatically, you will need to modify the source or target to correct the error, or you can select a different target. You must revalidate the selected servers, by clicking **Recheck**, until the validation check passes without errors.

Before a job is created, the results of the validation checks are logged to the Double-Take Management Service log on the target.

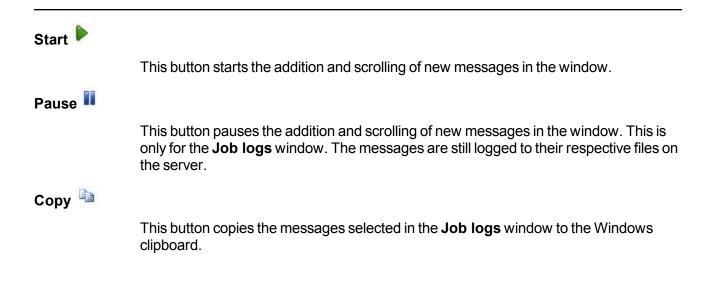
7. Once your servers have passed validation and you are ready to update your job, click **Finish**.

## Viewing a data migration job log

You can view a job log file through the Double-Take Console by selecting **View Job Log** from the toolbar on the **Manage Jobs** page. Separate logging windows allow you to continue working in the Double-Take Console while monitoring log messages. You can open multiple logging windows for multiple jobs. When the Double-Take Console is closed, all logging windows will automatically close.

) II 🖻 🖉 💡		
Time 🔺	Description	
2/14/2012 6:48:46 AM	Target beta is a NOT a cluster. Setting JobFilePath default	
2/14/2012 6:48:47 AM	Entered TopState	
2/14/2012 6:48:47 AM	Entered UninitializedState	
2/14/2012 6:48:47 AM	Attaching to engine monitor 00000000-0000-0000-0000000000000	
2/14/2012 6:48:47 AM	Changing to StoppedState from UninitializedState in response to InitializeEvent consumed	
2/14/2012 6:48:47 AM	Exited UninitializedState	
2/14/2012 6:48:47 AM	Entered InitializedState	
2/14/2012 6:48:47 AM	Entered StoppedState	
2/14/2012 6:48:47 AM	Stopping monitor ab2268f7-85c6-4b68-819c-3d2912f5380a: name = FilesAndFolders_a6cb	
2/14/2012 6:48:47 AM	Successfully created monitor 618b51de-70f0-418b-9869-169f6f7d7049	
2/14/2012 6:48:47 AM	Changing to StartingState from StoppedState in response to StartEvent consumed by Stop	
2/14/2012 6:48:47 AM	Exited StoppedState	
2/14/2012 6:48:47 AM	Entered StartingState	
2/14/2012 6:48:48 AM	Event log entry written: '6008'.	
2/14/2012 6:48:48 AM	Target beta is not clustered	
2/14/2012 5:48:48 AM	Changing to RunningState from StoppedState in response to StartEvent consumed by Stop	
2/14/2012 6:48:48 AM	Exited StoppedState	
2/14/2012 6:48:48 AM	Entered RunningState	
2/14/2012 6:48:48 AM	Starting monitor ab2268f7-85c6-4b68-819c-3d2912f5380a; name = FilesAndFolders a6cbf	
2/14/2012 6:48:48 AM	Entered SucceededState	
2/14/2012 6:48:48 AM	Successfully created connection 985ae0ce-bbba-47a2-84ec-5fa79da80174 connecting Files	
2/14/2012 5:48:48 AM	Waiting for source endpoint of " to be established (00:10:00)	
2/14/2012 6:48:50 AM	Established source endpoint of '112.42.74.29:6320' for engine connection with replication s	
2/14/2012 6:48:50 AM	Changing to ProtectingState from StartingState in response to StartSucceededEvent consu	
2/14/2012 6:48:50 AM	Exited StartingState	
2/14/2012 6:48:50 AM	Entered ProtectingState	
2/14/2012 6:48:50 AM	Event log entry written: '6004'.	
2/14/2012 6:48:52 AM	Changing to MirroringState from ProtectingState in response to MirroringEvent consumed b	
2/14/2012 6:48:52 AM	Entered MirroringState	
2/14/2012 6:48:52 AM	Changing to SynchronizedState from MirroringState in response to MirrorCompletedEvent c	
2/14/2012 6:48:52 AM	Exited MirroringState	
2/14/2012 6:48:52 AM	Entered SynchronizedState	
2/14/2012 7:05:45 AM	Event log entry written: '6008'.	
2/14/2012 7:05:48 AM	Changing to MirroringState from SynchronizedState in response to MirroringEvent consume	
2/14/2012 7:05:48 AM	Exited SynchronizedState	
2/14/2012 7:05:48 AM	Entered MirroringState	
2/14/2012 7:05:51 AM	Changing to SynchronizedState from MirroringState in response to MirrorIdleEvent consum	
2/14/2012 7:05:51 AM	Exited MirroringState	
2/14/2012 7:05:51 AM	Entered SynchronizedState	

The following table identifies the controls and the table columns in the **Job logs** window.



Clear 🥝	
	This button clears the <b>Job logs</b> window. The messages are not cleared from the respective files on the server. If you want to view all of the messages again, close and reopen the <b>Job logs</b> window.
Time	
	This column in the table indicates the date and time when the message was logged.
Description	
	This column in the table displays the actual message that was logged.

# Cutting over data migration jobs

When the migration mirror has completed, the migration job may or may not terminate automatically depending on your selection for **Wait for user intervention before cutover**. If you disabled user intervention, the migration job will automatically terminate to complete the migration process. If you enabled user intervention, when the migration mirror is complete, the status will change to **Protecting**. Use this time to complete any necessary tasks. When you are ready to complete the migration, use the following instructions to cutover.

- 1. On the **Manage Jobs** page, highlight the job that you want to cutover and click **Failover or Cutover** in the toolbar.
- 2. Select the type of cutover to perform.
  - **Cutover live data**—Select this option to initiate a full, live cutover using the current data on the target. The source is automatically shut down if it is still running.
  - **Perform test cutover**—This option is not applicable to data migration and full server migration jobs.
  - Cutover to a snapshot—This option is not available for migration jobs.
- 3. Select how you want to handle the data in the target queue. You may want to check the amount of data in queue on the target by reviewing the *Statistics* on page 323 or *Performance Monitor* on page 412.
  - Apply data in target queues before failover or cutover—All of the data in the target queue will be applied before cutover begins. The advantage to this option is that all of the data that the target has received will be applied before cutover begins. The disadvantage to this option is depending on the amount of data in queue, the amount of time to apply all of the data could be lengthy.
  - Discard data in the target queues and failover or cutover immediately—All of the data in the target queue will be discarded and cutover will begin immediately. The advantage to this option is that cutover will occur immediately. The disadvantage is that any data in the target queue will be lost.
- 4. When you are ready to begin cutover, click **Cutover**.

IPv6 addresses on the source will be set to DHCP on the target after cutover. Update them to static addresses manually, if needed.

If your NICs were configured for network load balancing (NLB), you will have to reconfigure that after cutover.

If your source was disconnected from the network during the cutover process, the original job that was mirroring the data will still be active on that machine. Do not bring that machine back on the network. If you do, the original job will attempt to begin mirroring data again which could result in data loss. While the machine is still disconnected from the network, stop the Double-Take service, delete the file connect.sts located in the Double-Take installation directory, and then restart the Double-Take service. This will delete the original job. After the original job is deleted, you can bring the machine on the network if desired.

# **Chapter 8 Full server migration**

This section is specific to full server to existing migration and includes the following topics.

- See *Full server migration requirements* on page 182—Full server migration includes specific requirements for this type of migration.
- See *Creating a full server migration job* on page 187—This section includes step-by-step instructions for creating a full server migration job.
- See *Managing and controlling full server migration jobs* on page 208—You can view status information about your full server migration job.
- See *Cutting over full server migration jobs* on page 225—Use this section when you are ready to cutover from your source to your target, which will become your new source.

# Full server migration requirements

After you have verified your source server meets the *Requirements* on page 7, verify that your target server meets the requirements below for full server migration.

Keep in mind that an existing physical or virtual target server may meet these requirements but may not be suitable to stand-in for a source in the event of a source failure. See the table *Target compatibility* on page 185 for additional information regarding an appropriate target server for your particular source.

- **Operating system**—Your existing physical or virtual target server can have any of the following Windows operating system editions.
  - Windows Server 2003 or 2003 R2 Datacenter, Enterprise (i386, x64), Standard (i386, x64), Web Server, Small Business Server, or Storage Server Edition. Each of the Windows 2003 operating systems require Service Pack 1 or later.
  - Windows Server 2008 or 2008 R2 Datacenter, Enterprise (i386, x64), Standard (i386, x64), Essential Business Server, Web Server, Foundation Server, Small Business Server (including SBS 2011), or Storage Server Edition
  - Windows 2012 Datacenter, Standard, Essentials, or Foundation Edition
  - Microsoft Server Core 2008 R2 and 2012 are supported for mirroring, replication, and cutover. However, DNS updates are not supported for Server Core servers.
- Hyper-V servers—Full server migration of a Hyper-V server is not supported.
- **System memory**—The minimum system memory on each server should be 1 GB. The recommended amount for each server is 2 GB.
- **Disk space for program files**—This is the amount of disk space needed for the Double-Take program files. The amount depends on your operating system version and your architecture (32-bit or 64-bit) and ranges from 350-500 MB.
  - The program files can be installed to any volume while the Microsoft Windows Installer files are automatically installed to the operating system boot volume.

Make sure you have additional disk space for Double-Take queuing, logging, and so on.

- **Disk space for data files**—This is the amount of disk space needed for the source data files. This will be dependent on the applications you are running and the amount of data files you have.
- Server name—Double-Take includes Unicode file system support, but your server name must still be in ASCII format. If you have the need to use a server's fully-qualified domain name, your server cannot start with a numeric character because that will be interpreted as an IP address. Additionally, all Double-Take servers and appliances must have a unique server name.

- If you rename a server that has already has a Double-Take license applied to it, for example if you rebuild a server, you will have to perform a host-transfer to continue using that license. This includes changing the case (capitalization) of the server name (upper or lower case or any combination of case). See *Activating a single Double-Take server* on page 35 for details on completing a host-transfer.
- **Protocols and networking**—Your servers must meet the following protocol and networking requirements.
  - Your servers must have TCP/IP with static IP addressing. (Some job types allow you to add DHCP addresses for failover monitoring, although only after a job has already been created. Keep in mind that depending on your failover configuration, a source reboot may or may not cause a failover but having a new address assigned by DHCP may also cause a failover.)
  - By default, Double-Take is configured for IPv6 and IPv4 environments, but the Double-Take service will automatically check the server at service startup and modify the appropriate setting if the server is only configured for IPv4. If you later add IPv6, you will need to manually modify the DefaultProtocol server setting. See *Server and job settings* on page 83 for details.
  - IPv4 and IPv6 are both supported.
  - IPv6 is only supported for Windows 2008 and 2012 servers.
  - If you are using IPv6 on your servers, your clients must be run from an IPv6 capable machine.
  - In order to properly resolve IPv6 addresses to a hostname, a reverse lookup entry should be made in DNS.
- **NAT support**—Full server migration jobs can support NAT environments in an IP-forwarding configuration with one to one port mappings. Port-forwarding is not supported. Additionally, only IPv4 is supported for NAT environments. Make sure you have added your servers to the Double-Take Console using the correct IP address. Review the *NAT configuration* table on page 51 in the *Adding servers* section before you start the job creation process.
- **Microsoft .NET Framework**—Microsoft .NET Framework version 3.5 Service Pack 1 is required. This version is not included in the .NET version 4.0 release. Therefore, even if you have .NET version 4.0 installed, you will also need version 3.5.1. For Windows 2008 and earlier, you can install this version from the Double-Take DVD, via a web connection during the Double-Take installation, or from a copy you have obtained manually from the <u>Microsoft web site</u>. For Windows 2008 R2 and later, you need to enable it through Windows features.
- **Cloud**—Double-Take can be used to migrate a server to an existing server in the cloud. Keep in mind that you should enable appropriate security measures, like VPN, to protect your data as it migrates to the cloud.
- **Supported configurations**—The following table identifies the supported configurations for a full server migration job.

	Configuration	Supported	Not Supported
	One to one, active/standby	X	
	One to one, active/active		Х
Source to	Many to one		Х
target configuration	One to many		Х
	Chained		Х
	Single server		Х
	Standalone to standalone	X	
	Standalone to cluster		Х
Server	Cluster to standalone		Х
configuration	Cluster to cluster		Х
	Cluster Shared Volumes (CSV) guest level	X	
	Cluster Shared Volumes (CSV) host level		Х
Upgrade	Upgrade 5.3 Double-Take Move Console server migration job to 7.0 Double-Take Console full server migration job		х
configuration	Upgrade 6.0 full server migration job to 7.0 full server migration job	x	

## Target compatibility

- Operating system version—The source and target must have the same operating system. For example, you cannot have Windows 2003 on the source and Windows 2008 on the target. The two servers do not have to have the same level of service pack or hotfix. Windows 2003 and 2003 R2 are considered the same operating system, however the Windows 2008 and 2008 R2 releases are considered different operating systems. Therefore, you can have Windows 2003 on the source and Windows 2003 R2 on the target, but you cannot have Windows 2008 on the source and Windows 2008 R2 on the target. The Windows edition (Standard, Enterprise, and so on) does not have to be the same.
- Server role—The target cannot be a domain controller. Ideally, the target should not host any functionality (file server, application server, and so on) because the functionality will be removed when cutover occurs.

If your source is a domain controller, it will start in a non-authoritative restore mode after cutover. This means that if the source was communicating with other domain controllers before cutover, it will require one of those domain controllers to be reachable after cutover so it can request updates. If this communication is not available, the domain controller will not function after cutover. If the source is the only domain controller, this is not an issue.

- **Architecture**—The source and the target must have the same architecture. For example, you cannot cutover a 32-bit server to a 64-bit server.
- **Processors**—There are no limits on the number or speed of the processors, but the source and the target should have at least the same number of processors. If the target has fewer processors or slower speeds than the source, there will be performance impacts for the users after cutover.
- **Memory**—The target memory should be within 25% (plus or minus) of the source. If the target has much less memory than the source, there will be performance impacts for the users after cutover.
- Network adapters—You must map at least one NIC from the source to one NIC on the target. If you have NICs on the source that are not being used, it is best to disable them. If the source has more NICs than the target, some of the source NICs will not be mapped to the target. Therefore, the IP addresses associated with those NICs will not be available after cutover. If there are more NICs on the target than the source, the additional NICs will still be available after cutover and will retain their pre-cutover network settings.
- File system format—The source and the target must have the same NTFS file system format on each server. FAT and FAT32 are no longer supported.
- Logical volumes—There are no limits to the number of logical volumes, although you are bound by operating system limits. For each volume you are protecting on the source, the target must have a matching volume. For example, if you are protecting drives C: and D: on the source, the target cannot have drives D: and E:. In this case, the target must also have drives C: and D:. Additional target volumes are preserved and available after cutover, with all data still accessible.
- **System path**—The source and the target must have the same system path. The system path includes the location of the Windows files, Program Files, and Documents and Settings.
- **Double-Take path**—Double-Take must be installed on the same path (volume and full directory path) on the source and the target.
- **Disk space**—The target must have enough space to store the data from the source. This amount of disk space will depend on the applications and data files you are protecting. The more data you are protecting, the more disk space you will need.

The target must also have enough space to store, process, and apply the source's system state data. The size of the system state will depend on the operating system and architecture. Windows 2003 operating systems need at a minimum 2-3 GB of free space for the system state. Windows 2008 operating systems need at a minimum 7-9 GB of free space for the system state. Windows 2008 R2 operating systems need at a minimum 10 GB of free space for the system state. Windows 2012 operating systems need at a minimum 14 GB of free space for the system state. These minimums are for a clean operating system installation. Operating system customizations, installed applications, and user data will increase the disk space requirement.

# Creating a full server migration job

Use the following instructions to create a full server migration job.

With a full server migration job, your servers can be in a NAT environment. However, you must make sure you have added your servers to the Double-Take Console using the correct IP address. Review the *NAT configuration* table on page 51 in the *Adding servers* section before you start the job creation process.

- 1. Click Get Started from the toolbar.
- 2. Select **Double-Take Move** and click **Next**.
- 3. Choose your source server. This is the server that you want to migrate.

ose	Source Server		
	Choose the server whose data you wan	t to protect.	
-	▲ Current Servers		
	Servers:		
	Server 🔺	Version	
	👼 🍸 alpha	7.0.0.1261.0	
	📕 💡 beta	7.0.0.1261.0	
	▼ Find a New Server		

- **Current Servers**—This list contains the servers currently available in your console session. Servers that are not licensed for the workflow you have selected will be filtered out of the list. Select your source server from the list.
- Find a New Server—If the server you need is not in the Current Servers list, click the Find a New Server heading. From here, you can specify a server along with credentials for logging in to the server. If necessary, you can click Browse to select a server from a network drill-down list.

If you enter the source server's fully-qualified domain name, the Double-Take Console will resolve the entry to the server short name. If that short name resides in two different

domains, this could result in name resolution issues. In this case, enter the IP address of the server.

When specifying credentials for a new server, specify a user that is a member of the local Double-Take Admin and local administrator security groups. If your source is the only domain controller in your network, the account must also be a local account in the local administrators group on the target. If you want Double-Take to update DNS during cutover, the account must be a member of the Domain Admins group. If your security policies do not allow use of this group, see the *Special network configurations* chapter of the Double-Take Availability *User's Guide*, in the DNS section, and use the instructions under the Double-Take DFO utility to use a non-Domain Admins account.

- 4. Click **Next** to continue.
- Choose the type of workload that you want to migrate. Under Server Workloads, in the Workload types pane, select Full Server Migration. In the Workload items pane, select the volumes on the source that you want to migrate.

-	Choose the data on this server that you want to prote	ct.	
	▲ Server Workloads		
	Workload types:	Workload items:	
	Full Server Migration     Foll Server Migration     Tota Migration     Foll Server to Hyper-V or ESX Migration		

6. By default, Double-Take selects your entire source for migration. If desired, click the **Replication Rules** heading and expand the volumes under **Folders**. You will see that Double-Take automatically excludes particular files that cannot be used during the migration. If desired, you can exclude other files that you do not want to migrate, but be careful when excluding data. Excluded volumes, folders, and/or files may compromise the integrity of your installed applications. There are some volumes, folders, and files (identified in italics text) that you will be unable to exclude, because they are required for migration. For example, the boot files cannot be excluded because that is where the system state information is stored.

Volumes and folders with a green highlight are included in their entirety in the migration. Volumes and folders highlighted in light yellow have individual files included in the migration. If there is no highlight, no part of the volume or folder is included in the migration. To modify the items selected, highlight a volume, folder, or file and click **Add Rule**. You can also enter a rule, including a wildcard specification, manually. Specify if you want to **Include** or **Exclude** the item. Also, specify if you want the rule to be recursive, which indicates the rule should automatically be applied to the subdirectories of the specified path. If you do not select **Recursive**, the rule will not be applied to subdirectories.

If you need to remove a rule, highlight it in the list at the bottom and click **Remove Rule**. Be careful when removing rules. Double-Take may create multiple rules when you are adding directories. For example, if you add E:\Data to be included in protection, then E:\ will be excluded. If you remove the E:\ exclusion rule, then the E:\Data rule will be removed also.

If you return to this page using the **Back** button in the job creation workflow, your **Workload Types** selection will be rebuilt, potentially overwriting any manual replication rules that you specified. If you do return to this page, confirm your **Workload Types** and **Replication Rules** are set to your desired settings before proceeding forward again.

If IIS is being used as a hardware platform manager by your hardware vendor on both the source and target, you need to remove the INetPub directory from replication under the **Replication Rules** heading. If IIS is being used as a software application on your source but as a hardware platform manager by your hardware vendor on your target, you need to add the INetPub directory to the **Staged Folders Options** list on the **Set Options** page later in this workflow.

- 7. Click **Next** to continue.
- 8. Choose your target server. This is the server that, after the migration, will become your new source.

Choose	the server that will store the prot	ected data.	
▲ Cu	rrent Servers		
Server	rs:		
	Server 🔺	Version	
	💡 alpha	7.0.0.1261.0	
	🍸 beta	7.0.0.1261.0	

- **Current Servers**—This list contains the servers currently available in your console session. Servers that are not licensed for the workflow you have selected and those not applicable to the workload type you have selected will be filtered out of the list. Select your target server from the list.
- Find a New Server—If the server you need is not in the Current Servers list, click the Find a New Server heading. From here, you can specify a server along with credentials for logging in to the server. If necessary, you can click Browse to select a server from a network drill-down list.
- If you enter the target server's fully-qualified domain name, the Double-Take Console will resolve the entry to the server short name. If that short name resides in two different domains, this could result in name resolution issues. In this case, enter the IP address of the server.

When specifying credentials for a new server, specify a user that is a member of the local Double-Take Admin and local administrator security groups. If your source is the only domain controller in your network, the account must also be a local account in the local administrators group on the target. If you want Double-Take to update DNS during cutover, the account must be a member of the Domain Admins group. If your security policies do not allow use of this group, see the *Special network configurations* chapter of the Double-Take Availability *User's Guide*, in the DNS section, and use the instructions under the Double-Take DFO utility to use a non-Domain Admins account.

- 9. Click **Next** to continue.
- 10. You have many options available for your server migration job. Configure those options that are applicable to your environment.

Go to each page identified below to see the options available for that section of the **Set Options** page. After you have configured your options, continue with the next step on page 207.

- General on page 191
- Failover Options on page 192
- Failover Identity on page 193
- Network Adapter Options on page 195
- Mirror, Verify & Orphaned Files on page 196
- Network Route on page 200
- Staging Folder Options on page 201
- Target Services on page 202
- Compression on page 203
- Bandwidth on page 204
- Scripts on page 206

### General

🔗 General	
Job name:	
alpha to beta	

For the **Job name**, specify a unique name for your job.

# Failover Options

Failover Options	
✓ Wait for user to initiate failover ✓ Shutdown source server	
Pre-failover script	
Script file:	Arguments:
c:\scripts\prefailover.bat	arg1, arg2
Delay until script completes	
– Post-failover script	
Script file:	Arguments:

- Wait for user to initiate failover—By default, the cutover process will wait for you to initiate it, allowing you to control when cutover occurs. When a cutover occurs, the job will wait in the **Protecting** state for you to manually initiate the cutover process. Disable this option only if you want cutover to occur immediately after the mirror is complete.
- Shutdown source server—Specify if you want to shut down the source server, if it is still running, before the source is cutover to the target, This option prevents identity conflicts on the network in those cases where the source and target are still both running and communicating.
- Scripts—You can customize cutover by running scripts on the target. Scripts may contain any valid Windows command, executable, or batch file. The scripts are processed using the same account running the Double-Take service, unless you have identified a specific account through the server's properties. See *Script credentials* on page 76. Examples of functions specified in scripts include stopping services on the target before cutover because they may not be necessary, stopping services on the target that need to be restarted with the source's machine name and/or IP address, starting services or loading applications that are in an idle, standby mode waiting for cutover to occur, notifying the administrator before and after cutover occurs, and so on. There are two types of cutover scripts.
  - **Pre-failover script**—This script runs on the target at the beginning of the cutover process. Specify the full path and name of the script file.
  - Post-failover script—This script runs on the target at the end of the cutover process. Specify the full path and name of the script file.
  - Arguments—Specify a comma-separated list of valid arguments required to execute the script.
  - **Delay until script completes**—Enable this option if you want to delay the cutover process until the associated script has completed. If you select this option, make sure your script handles errors, otherwise the cutover process may never complete if the process is waiting on a script that cannot complete.

Scripts will run but will not be displayed on the screen if the Double-Take service is not set to interact with the desktop. Enable this option through the Windows Services applet.

## Failover Identity

ilover Ide	entity		
Apply sour	rce network configuration to the target (Recon	nmended for LAN configurations)	
	get network configuration (Recommended for a DNS server	WAN configurations)	
	ONS Options		
	Credentials for domain.com User name: administrator		
	Change		
	These DNS servers will be updated during	failover:	
	112.42.48.9		Remove
		2.5	
	Update these source DNS entries with the	corresponding target IP address:	
	Update these source DNS entries with the Source Address	corresponding target IP address:	
	Source Address	T.	
		T.	

- Apply source network configuration to the target—If you select this option, you can configure the source IP addresses to cutover to the target. If your target is on the same subnet as the source (typical of a LAN environment), you should select this option. Do not select this option if you are using a NAT environment that has a different subnet on the other side of the NAT router.
  - If you are applying the source network configuration to the target in a WAN environement, do not cutover your IP addresses unless you have a VPN infrastructure so that the source and target can be on the same subnet, in which case IP address cutover will work the same as a LAN configuration. If you do not have a VPN, you can automatically reconfigure the routers via a failover script (by moving the source's subnet from the source's physical network to the target's physical network). There are a number of issues to consider when designing a solution that requires router configuration to achieve IP address cutover. Since the route to the source's subnet will be changed at cutover, the source server must be the only system on that subnet, which in turn requires all server communications to pass through a router. Additionally, it may take several minutes or even hours for routing tables on other routers throughout the network to converge.
- Retain target network configuration—If you select this option, the target will retain all of its original IP addresses. If your target is on a different subnet (typical of a WAN or NAT environment), you should select this option.

• Update DNS server—Specify if you want Double-Take to update your DNS server on cutover. If DNS updates are made, the DNS records will be locked during cutover. Be sure and review the *Requirements* on page 7 for the requirements for updating DNS.



DNS updates are not available for Server Core servers or NAT configurations.

Expand the **DNS Options** section to configure how the updates will be made. The DNS information will be discovered and displayed. If your servers are in a workgroup, you must provide the DNS credentials before the DNS information can be discovered and displayed.

- **Change**—If necessary, click this button and specify a user that has privileges to access and modify DNS records. The account must be a member of the DnsAdmins group for the domain, and must have full control permissions on the source's A (host) and PTR (reverse lookup) records. These permissions are not included by default in the DnsAdmins group.
- **Remove**—If there are any DNS servers in the list that you do not want to update, highlight them and click **Remove**.
- Update these source DNS entries with the corresponding target IP address—For each IP address on the source, specify what address you want DNS to use after failover.
- Update TTL—Specify the length of time, in seconds, for the time to live value for all modified DNS A records. Ideally, you should specify 300 seconds (5 minutes) or less.

If you select **Retain your target network configuration** but do not enable **Update DNS server**, you will need to specify failover scripts that update your DNS server during failover, or you can update the DNS server manually after failover. This would also apply to non--Microsoft Active Directory Integrated DNS servers. You will want to keep your target network configuration but do not update DNS. In this case, you will need to specify failover scripts that update your DNS server during failover, or you can update the DNS server manually after failover.

DNS updates will be disabled if the target server cannot communicate with both the source and target DNS servers

# **Network Adapter Options**

Map source network adapters to target network adapters:		
Source Network Adapter	Target Network Adapter	
Local Area Connection	Local Area Connection	•
Local Area Connection 2	Local Area Connection 2	•

For **Map source network adapters to target network adapters**, specify how you want the IP addresses associated with each NIC on the source to be mapped to a NIC on the target. Do not mix public and private networks.

### Mirror, Verify & Orphaned Files

🔿 Mirror, Verify & Orphaned Files	
C Mirror all files	
Mirror different files (based on modified time, size, or attributes)	
Mirror only if the file on the source is newer than the copy on the target	
This option not available for the current workload	
Use block checksum for comparisons	
Enable scheduled verification	
Verify on this interval:	
Begin immediately	
6 Begin at this time: Select a date	
Mirror files to the target server when verifying	
$\prod$ Mirror only if the file on the source is <u>n</u> ewer than the copy on the target	
This option not available for the current workload	
Use block checksum for comparisons	
Calculate size of protected data upon connection	
🔽 Delete orphaned files	

- Mirror all files—All protected files will be mirrored from the source to the target.
- **Mirror different files**—Only those protected files that are different based on date and time, size, or attributes will be mirrored from the source to the target.
  - Mirror only if the file on the source is newer than the copy on the target— This option is not available for migration jobs.
  - Use block checksum for comparisons—For those files flagged as different, the mirroring process can perform a block checksum comparison and send only those blocks that are different.

### File Differences Mirror Options Compared

The following table will help you understand how the various difference mirror options work together, including when you are using the block checksum option configured through the *Source server properties* on page 69.

An X in the table indicates that option is enabled. An X enclosed in parentheses (X) indicates that the option can be on or off without impacting the action performed during the mirror.

Not all job types have the source newer option available.

Source Server Properties	Job Properties		Action Performed	
Block Checksum Option	File Differences Option	Source Newer Option	Block Checksum Option	Action Performed
(X)	Х			Any file that is different on the source and target based on the date, time, size, and/or attribute is transmitted to the target. The mirror sends the entire file.
(X)	Х	х		Any file that is newer on the source than on the target based on date and/or time is transmitted to the target. The mirror sends the entire file.
	Х		Х	Any file that is different on the source and target based on date, time, size, and/or attributed is flagged as different. The mirror then performs a checksum comparison on the flagged files and only sends those blocks that are different.
x	х		х	The mirror performs a checksum comparison on all files and only sends those blocks that are different.
(X)	Х	Х	Х	Any file that is newer on the source than on the target based on date and/or time is flagged as different. The mirror then performs a checksum comparison on the flagged files and only sends those blocks that are different.

- Enable scheduled verification—Verification is the process of confirming that the source replica data on the target is identical to the original data on the source. Verification creates a log file detailing what was verified as well as which files are not synchronized. If the data is not the same, can automatically initiate a remirror, if configured. The remirror ensures data integrity between the source and target. When this option is enabled, Double-Take will verify the source replica data on the target and generate a verification log.
  - Because of the way the Windows Cache Manager handles memory, machines that are doing minimal or light processing may have file operations that remain in the cache until additional operations flush them out. This may make Double-Take files on the target appear as if they are not synchronized. When the Windows Cache Manager releases the operations in the cache on the source and target, the files will be updated on the target.
  - Verify on this interval—Specify the interval between verification processes.
  - **Begin immediately**—Select this option if you want to start the verification schedule immediately after the job is established.
  - **Begin at this time**—Select this option if you want to start the verification at the specified date and time.
  - Mirror files to the target server when verifying—When this option is enabled, in addition to verifying the data and generating a log, Double-Take will also mirror to the target any protected files that are different on the source.
    - Mirror only if the file on the source is newer than the copy on the target—This option is not available for migration jobs.
    - Use block checksum for comparisons—For those files flagged as different, the mirroring process can perform a block checksum comparison and send only those blocks that are different.
- Calculate size of protected data before mirroring—Specify if you want Double-Take to determine the mirroring percentage calculation based on the amount of data being protected. If the calculation is enabled, it is completed before the job starts mirroring, which can take a significant amount of time depending on the number of files and system performance. If your job contains a large number of files, for example, 250,000 or more, you may want to disable the calculation so that data will start being mirrored sooner. Disabling calculation will result in the mirror status not showing the percentage complete or the number of bytes remaining to be mirrored.

The calculated amount of protected data may be slightly off if your data set contains compressed or sparse files.

• **Delete orphaned files**—An orphaned file is a file that exists in the replica data on the target, but does not exist in the protected data on the source. This option specifies if orphaned files should be deleted on the target during a mirror, verification, or restoration.



Orphaned file configuration is a per target configuration. All jobs to the same target will have the same orphaned file configuration.

The orphaned file feature does not delete alternate data streams. To do this, use a full mirror, which will delete the additional streams when the file is re-created.

If delete orphaned files is enabled, carefully review any replication rules that use wildcard definitions. If you have specified wildcards to be excluded from protection, files matching those wildcards will also be excluded from orphaned file processing and will not be deleted from the target. However, if you have specified wildcards to be included in your protection, those files that fall outside the wildcard inclusion rule will be considered orphaned files and will be deleted from the target.

If you want to move orphaned files rather than delete them, you can configure this option along with the move deleted files feature to move your orphaned files to the specified deleted files directory. See *Target server properties* on page 72 for more information.

During a mirror, orphaned file processing success messages will be logged to a separate orphaned file log. This keeps the Double-Take log from being overrun with orphaned file success processing messages. Orphaned files processing statistics and any errors in orphaned file processing will still be logged to the Double-Take log, and during difference mirrors, verifications, and restorations, all orphaned file processing messages are logged to the Double-Take log. The orphaned file log is located in the **Logging folder** specified for the source. See *Log file properties* on page 77 for details on the location of that folder. The orphaned log file is overwritten during each orphaned file processing during a mirror, and the log file will be a maximum of 50 MB.

### **Network Route**

Network Route	Network Route	
Send data to the target server usin	:his <u>r</u> oute:	
10.10.10.30		

For **Send data to the target server using this route**, Double-Take will select, by default, a target route for transmissions. If desired, specify an alternate route on the target that the data will be transmitted through. This allows you to select a different route for Double-Take traffic. For example, you can separate regular network traffic and Double-Take traffic on a machine with multiple IP addresses. You can also select or manually enter a public IP address (which is the public IP address of the server's NAT router) if you are using a NAT environment.

# Staging Folder Options

The system state and profile folders are staged by default.	
Select additional folders from the source server to be staged:	
	Add.
	Remo

- Select additional folders from the source that need to be staged—Applications running on the target that cannot be stopped will cause retry operations because Double-Take will be unable to write to open application files. In this case, you will want to mirror those application files to a staging location instead of their actual location. Generally, this will only apply to applications that are not installed in the Windows Program Files directory. In this case, click Add and specify the folder that you want staged. Any staged folders will be applied to their actual installation location during cutover.
- Show system state and profile folders—This option displays the list of essential system state and profile folders that will be staged automatically. These essential items are displayed in a lighter color than folders you have manually added, and they cannot be removed from the list.
- If IIS is being used as a software application on your source but as a hardware platform manager by your hardware vendor on your target, you need to add the INetPub directory to the **Staged Folders Options** list. If IIS is being used as a hardware platform manager by your hardware vendor on both the source and target, you need to go to the **Choose Data** page and remove the INetPub directory from replication under the **Replication Rules** heading.

# **Target Services**

Services to leave running on the target server during protection:	
	Add
	Remov

• Services to leave running on the target server during protection—Double-Take controls which services are running and stopped on the target during protection. You can specify which services you want to keep running by clicking Add and selecting a service from the list. If you want to remove a service from the list, highlight it and click **Remove**.



- Services are stopped on the target to protect against retry operations. Do not leave services running unless absolutely necessary.
- Show essential services—This option displays the list of essential services that will remain running on the target. The essential services are displayed in a lighter color than services you have manually added. The essential services cannot be removed from the list.

## Compression

Compression			
Enable compression:			
·	τ		
- <del>-</del>	1	51 C	
Minimum	Medium	Maximum	

To help reduce the amount of bandwidth needed to transmit Double-Take data, compression allows you to compress data prior to transmitting it across the network. In a WAN environment this provides optimal use of your network resources. If compression is enabled, the data is compressed before it is transmitted from the source. When the target receives the compressed data, it decompresses it and then writes it to disk. You can set the level from **Minimum** to **Maximum** to suit your needs.

Keep in mind that the process of compressing data impacts processor usage on the source. If you notice an impact on performance while compression is enabled in your environment, either adjust to a lower level of compression, or leave compression disabled. Use the following guidelines to determine whether you should enable compression.

- If data is being queued on the source at any time, consider enabling compression.
- If the server CPU utilization is averaging over 85%, be cautious about enabling compression.
- The higher the level of compression, the higher the CPU utilization will be.
- Do not enable compression if most of the data is inherently compressed. Many image (.jpg, .gif) and media (.wmv, .mp3, .mpg) files, for example, are already compressed. Some images files, such as .bmp and .tif, are decompressed, so enabling compression would be beneficial for those types.
- · Compression may improve performance even in high-bandwidth environments.
- Do not enable compression in conjunction with a WAN Accelerator. Use one or the other to compress Double-Take data.

All jobs from a single source connected to the same IP address on a target will share the same compression configuration.

# Bandwidth

o not limit bandwidth				
Jse a fixed limit (bytes	per second):			
Preset bandwidth: Bandwidth (byt		Bandwidth (bytes per s	econd):	
	Ŧ	1	<u>*</u>	
Jse scheduled limits:	Start	End	Limit	1
Days Every day	6:00 AM	6:00 PM	193000	]
Days			Contraction of the second s	]
Days Every day	6:00 AM	6:00 PM	193000	]

Bandwidth limitations are available to restrict the amount of network bandwidth used for Double-Take data transmissions. When a bandwidth limit is specified, Double-Take never exceeds that allotted amount. The bandwidth not in use by Double-Take is available for all other network traffic.

All jobs from a single source connected to the same IP address on a target will share the same bandwidth configuration.

- **Do not limit bandwidth**—Double-Take will transmit data using 100% bandwidth availability.
- Use a fixed limit—Double-Take will transmit data using a limited, fixed bandwidth. Select a **Preset bandwidth** limit rate from the common bandwidth limit values. The **Bandwidth** field will automatically update to the bytes per second value for your selected bandwidth. This is the maximum amount of data that will be transmitted per second. If desired, modify the bandwidth using a bytes per second value. The minimum limit should be 3500 bytes per second.
- Use scheduled limits—Double-Take will transmit data using a dynamic bandwidth based on the schedule you configure. Bandwidth will not be limited during unscheduled times.
  - New—Click New to create a new scheduled bandwidth limit. Specify the following information.
    - **Daytime entry**—Select this option if the start and end times of the bandwidth window occur in the same day (between 12:01 AM and midnight). The start time must occur before the end time.
    - **Overnight entry**—Select this option if the bandwidth window begins on one day and continues past midnight into the next day. The start time must be later than the end time, for example 6 PM to 6 AM.
    - **Day**—Enter the day on which the bandwidth limiting should occur. You can pick a specific day of the week, **Weekdays** to have the limiting occur Monday through Friday, **Weekends** to have the limiting occur Saturday and Sunday, or **Every day** to have the limiting repeat on all days of the week.
    - Start time—Enter the time to begin bandwidth limiting.

- End time—Enter the time to end bandwidth limiting.
- **Preset bandwidth**—Select a bandwidth limit rate from the common bandwidth limit values. The **Bandwidth** field will automatically update to the bytes per second value for your select bandwidth.
- **Bandwidth**—If desired, modify the bandwidth using a bytes per second value. The minimum limit should be 3500 bytes per second.
- Edit—Click Edit to modify an existing scheduled bandwidth limit.
- Delete—Click Delete to remove a scheduled bandwidth limit.

If you change your job option from **Use scheduled limits** to **Do not limit bandwidth** or **Use a fixed limit**, any schedule that you created will be preserved. That schedule will be reused if you change your job option back to **Use scheduled limits**.

You can manually override a schedule after a job is established by selecting **Other Job Options**, **Set Bandwidth**. If you select **No bandwidth limit** or **Fixed bandwidth limit**, that manual override will be used until you go back to your schedule by selecting **Other Job Options**, **Set Bandwidth**, **Scheduled bandwidth limit**. For example, if your job is configured to use a daytime limit, you would be limited during the day, but not at night. But if you override that, your override setting will continue both day and night, until you go back to your schedule. See the *Managing and controlling jobs* section for your job type for more information on the **Other Job Options**.

# Scripts

Test
Test
Test
Test

You can customize mirroring by running scripts on the target at pre-defined points in the mirroring process. Scripts may contain any valid Windows command, executable, or batch file. The scripts are processed using the same account running the Double-Take service, unless you have identified a specific account through the server's properties. There are three types of mirroring scripts.

- **Mirror Start**—This script starts when the target receives the first mirror operation. In the case of a difference mirror, this may be a long time after the mirror is started because the script does not start until the first different data is received on the target. If the data is synchronized and a difference mirror finds nothing to mirror, the script will not be executed. Specify the full path and name of the **Script file**.
- **Mirror Complete**—This script starts when a mirror is completed. Because the mirror statistics may indicate a mirror is at 99-100% when it is actually still processing (for example, if files were added after the job size was calculated, if there are alternate data streams, and so on), the script will not start until all of the mirror data has been completely processed on the target. Specify the full path and name of the **Script file**.
- Mirror Stop—This script starts when a mirror is stopped, which may be caused by an auto-disconnect occurring while a mirror is running, the service is shutdown while a mirror is running, or if you stop a mirror manually. Specify the full path and name of the Script file.
- Arguments—Specify a comma-separated list of valid arguments required to execute the script.
- Allow script to interact with desktop—Enable this option if you want the script processing to be displayed on the screen. Otherwise, the script will execute silently in the background.
- **Delay until script completes**—Enable this option if you want to delay the mirroring process until the associated script has completed. If you select this option, make sure your script handles errors, otherwise the mirroring process may never complete if the process is waiting on a script that cannot complete.
- **Test**—You can test your script manually by clicking **Test**. Your script will be executed if you test it. If necessary, manually undo any changes that you do not want on your target after testing the script.



Mirror scripts are dependent on the target and the **Target Path Mappings** specified under the Network Route & Folder Selection section. If you establish mirroring scripts for one job and then establish additional jobs to the same target using the same target path mapping, the mirroring scripts will automatically be applied to those subsequent jobs. If you select a different target path mapping, the mirroring scripts will have to be reconfigured for the new job(s).

- 11. Click **Next** to continue.
- 12. Double-Take validates that your source and target are compatible. The **Summary** page displays your options and validation items.

Errors are designated by a white X inside a red circle. Warnings are designated by a black exclamation point (!) inside a vellow triangle. A successful validation is designated by a white checkmark inside a green circle. You can sort the list by the icon to see errors, warnings, or successful validations together. Click on any of the validation items to see details. You must correct any errors before you can enable your migration. Depending on the error, you may be able to click Fix or Fix All and let Double-Take correct the problem for you. For those errors that Double-Take cannot correct automatically, you will need to modify the source or target to correct the error, or you can select a different target. You must revalidate the selected servers, by clicking Recheck, until the validation check passes without errors.

Before a job is created, the results of the validation checks are logged to the Double-Take Management Service log on the target.

13. Once your servers have passed validation and you are ready to begin migration, click **Finish**, and you will automatically be taken to the Manage Jobs page.



Jobs in a NAT environment may take longer to start.

# Managing and controlling full server migration jobs

Click **Manage Jobs** from the main Double-Take Console toolbar. The **Manage Jobs** page allows you to view status information about your jobs. You can also control your jobs from this page.

The jobs displayed in the right pane depend on the server group folder selected in the left pane. Every job for each server in your console session is displayed when the **Jobs on All Servers** group is selected. If you have created and populated server groups (see *Managing servers* on page 45), then only the jobs associated with the server or target servers in that server group will be displayed in the right pane.

- See Overview job information displayed in the top pane on page 208
- See Detailed job information displayed in the bottom pane on page 210
- See Job controls on page 212

### Overview job information displayed in the top pane

The top pane displays high-level overview information about your jobs.

#### Column 1 (Blank)

The first blank column indicates the state of the job.

The job is in a healthy state.

A The job is in a warning state. This icon is also displayed on any server groups that you have created that contain a job in a warning state.

Control The job is in an error state. This icon is also displayed on any server groups that you have created that contain a job in an error state.

🔋 The job is in an unknown state.

#### Job

The name of the job

#### **Source Server**

The name of the source. This could be the name or IP address of your source.

#### **Target Server**

The name of the target. This could be the name or IP address of your target.

#### Job Type

Each job type has a unique job type name. This job is a Full Server Migration job. For a complete list of all job type names, press F1 to view the Double-Take Console online help.

#### Activity

There are many different **Activity** messages that keep you informed of the job activity. Most of the activity messages are informational and do not require any administrator interaction. If you see error messages, check the job details. Keep in mind that **Idle** indicates console to server activity is idle, not that your servers are idle.

#### **Mirror Status**

- Calculating—The amount of data to be mirrored is being calculated.
- In Progress—Data is currently being mirrored.
- Waiting—Mirroring is complete, but data is still being written to the target.
- Idle—Data is not being mirrored.
- Paused—Mirroring has been paused.
- **Stopped**—Mirroring has been stopped.
- **Removing Orphans**—Orphan files on the target are being removed or deleted depending on the configuration.
- Verifying—Data is being verified between the source and target.
- Unknown—The console cannot determine the status.

#### **Replication Status**

- Replicating—Data is being replicated to the target.
- Ready—There is no data to replicate.
- Pending—Replication is pending.
- Stopped—Replication has been stopped.
- Out of Memory—Replication memory has been exhausted.
- Failed—The Double-Take service is not receiving replication operations from the Double-Take driver. Check the Event Viewer for driver related issues.
- **Unknown**—The console cannot determine the status.

#### Transmit Mode

- Active—Data is being transmitted to the target.
- Paused—Data transmission has been paused.
- Scheduled—Data transmission is waiting on schedule criteria.
- **Stopped**—Data is not being transmitted to the target.
- Error—There is a transmission error.
- Unknown—The console cannot determine the status.

### Detailed job information displayed in the bottom pane

The details displayed in the bottom pane of the **Manage Jobs** page provide additional information for the job highlighted in the top pane. If you select multiple jobs, the details for the first selected job will be displayed.

#### Name

The name of the job

#### Target data state

- **OK**—The data on the target is in a good state.
- **Mirroring**—The target is in the middle of a mirror process. The data will not be in a good state until the mirror is complete.
- **Mirror Required**—The data on the target is not in a good state because a remirror is required. This may be caused by an incomplete or stopped mirror or an operation may have been dropped on the target.
- **Busy**—The source is low on memory causing a delay in getting the state of the data on the target.
- **Not Loaded**—Double-Take target functionality is not loaded on the target server. This may be caused by an activation code error.
- Unknown—The console cannot determine the status.

#### Mirror remaining

The total number of mirror bytes that are remaining to be sent from the source to the target

#### Mirror skipped

The total number of bytes that have been skipped when performing a difference or checksum mirror. These bytes are skipped because the data is not different on the source and target.

#### **Replication queue**

The total number of replication bytes in the source queue

#### Disk queue

The amount of disk space being used to queue data on the source

#### Bytes sent

The total number of mirror and replication bytes that have been transmitted to the target

#### Bytes sent (compressed)

The total number of compressed mirror and replication bytes that have been transmitted to the target. If compression is disabled, this statistic will be the same as

#### Bytes sent.

#### **Connected since**

The date and time indicating when the current job was made. This field is blank, indicating that a TCP/IP socket is not present, when the job is waiting on transmit options or if the transmission has been stopped. This field will maintain the date and time, indicating that a TCP/IP socket is present, when transmission has been paused.

#### **Recent activity**

Displays the most recent activity for the selected job, along with an icon indicating the success or failure of the last initiated activity. Click the link to see a list of recent activities for the selected job. You can highlight an activity in the list to display additional details about the activity.

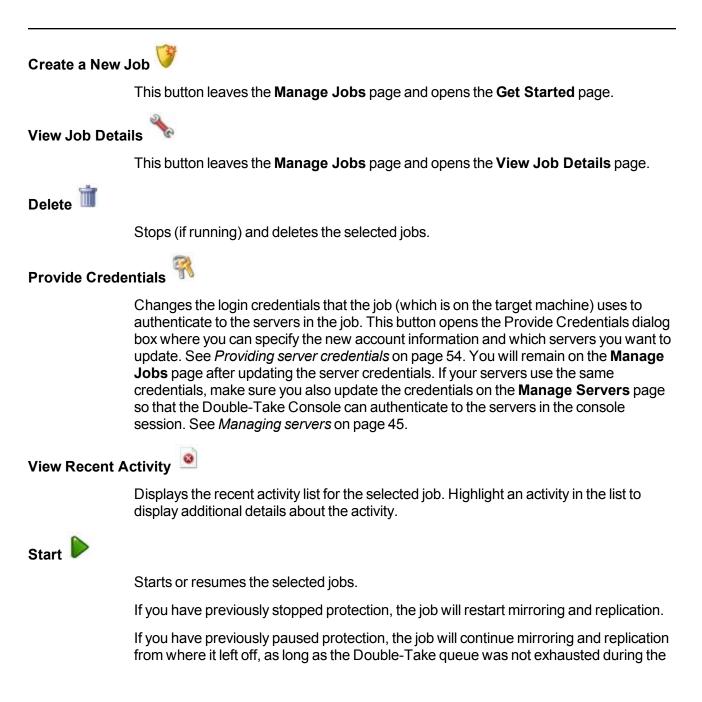
#### Additional information

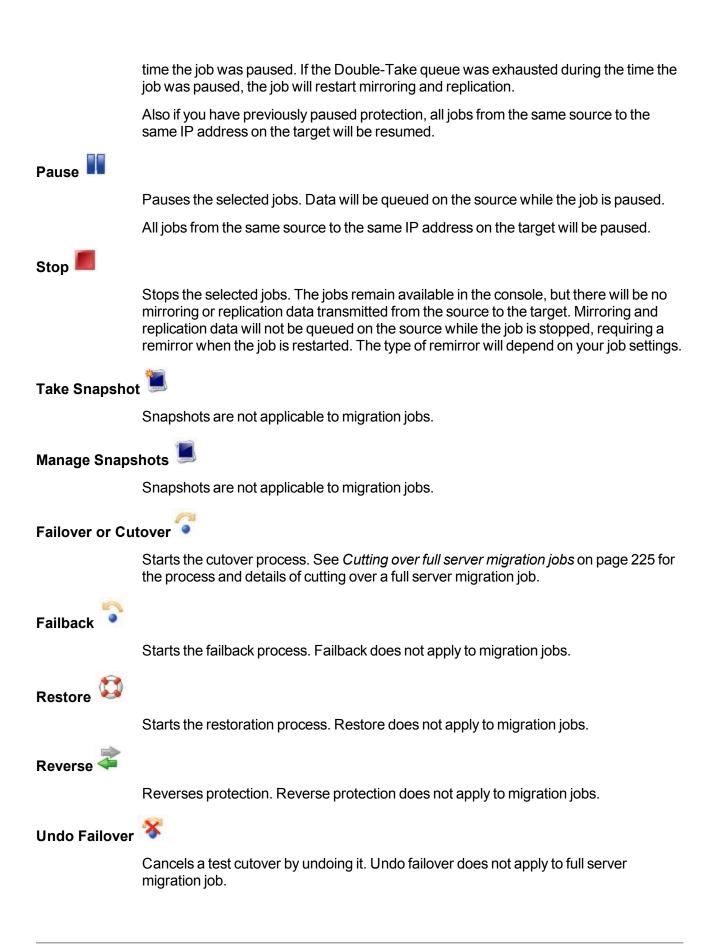
Depending on the current state of your job, you may see additional information displayed to keep you informed about the progress and status of your job. If there is no additional information, you will see (None) displayed.

### Job controls

You can control your job through the toolbar buttons available on the **Manage jobs** page. If you select multiple jobs, some of the controls will apply only to the first selected job, while others will apply to all of the selected jobs. For example, **View Job Details** will only show details for the first selected job, while **Stop** will stop protection for all of the selected jobs.

If you want to control just one job, you can also right click on that job and access the controls from the pop-up menu.





### View Job Log

Opens the job log. On the right-click menu, this option is called **View Logs**, and you have the option of opening the job log, source server log, or target server log. See *Viewing the log files through the Double-Take Console* on page 313 for details on all three of these logs.



- Other Job Actions
  - **Mirroring**—You can start, stop, pause and resume mirroring for any job that is running.

When pausing a mirror, Double-Take stops queuing mirror data on the source but maintains a pointer to determine what information still needs to be mirrored to the target. Therefore, when resuming a paused mirror, the process continues where it left off.

When stopping a mirror, Double-Take stops queuing mirror data on the source and does not maintain a pointer to determine what information still needs to be mirrored to the target. Therefore, when starting a mirror that has been stopped, you will need to decide what type of mirror to perform.

- **Mirror all files**—All protected files will be mirrored from the source to the target.
- Mirror different files—Only those protected files that are different based on date and time, size, or attributes will be mirrored from the source to the target.
  - Mirror only if the file on the source is newer than the copy on the target—Only those protected files that are newer on the source are mirrored to the target.
    - If you are using a database application or are protecting a domain controller, do not use this option unless you know for certain that you need it. With database applications and because domain controllers store their data in a database, it is critical that all files, not just some of the files that might be newer, get mirrored.
  - Use block checksum for comparisons—For those files flagged as different, the mirroring process can perform a block checksum comparison and send only those blocks that are different.
- Calculate size of protected data before mirroring—Specify if you want Double-Take to determine the mirroring percentage calculation based on the amount of data being protected. If the calculation is enabled, it is completed before the job starts mirroring, which can take a significant amount of time depending on the number of files and system performance. If your job contains a large number of files, for example, 250,000 or more, you may want to disable the calculation so that data will start being mirrored sooner.

Disabling calculation will result in the mirror status not showing the percentage complete or the number of bytes remaining to be mirrored.

The calculated amount of protected data may be slightly off if your data set contains compressed or sparse files.

- Verify—Even if you have scheduled the verification process, you can run it manually any time a mirror is not in progress.
  - Create verification report only—This option verifies the data and generates a verification log, but it does not remirror any files that are different on the source and target. See *Verification log* on page 79 for details on the log file.
  - Mirror files to the target server automatically—When this option is enabled, in addition to verifying the data and generating a log, Double-Take will also mirror to the target any protected files that are different on the source.
    - Mirror only if the file on the source is newer than the copy on the target—Only those protected files that are newer on the source are mirrored to the target.
      - If you are using a database application or are protecting a domain controller, do not use this option unless you know for certain that you need it. With database applications and because domain controllers store their data in a database, it is critical that all files, not just some of the files that might be newer, get mirrored.
    - Use block checksum for comparisons—For those files flagged as different, the mirroring process can perform a block checksum comparison and send only those blocks that are different.
- Set Bandwidth—You can manually override bandwidth limiting settings configured for your job at any time.
  - No bandwidth limit—Double-Take will transmit data using 100% bandwidth availability.
  - Fixed bandwidth limit—Double-Take will transmit data using a limited, fixed bandwidth. Select a **Preset bandwidth** limit rate from the common bandwidth limit values. The **Bandwidth** field will automatically update to the bytes per second value for your selected bandwidth. This is the maximum amount of data that will be transmitted per second. If desired, modify the bandwidth using a bytes per second value. The minimum limit should be 3500 bytes per second.
  - Scheduled bandwidth limit—If your job has a configured scheduled bandwidth limit, you can enable that schedule with this option.
- **Delete Orphans**—Even if you have enabled orphan file removal during your mirror and verification processes, you can manually remove them at any time.

• **Target**—You can pause the target, which queues any incoming Double-Take data from the source on the target. All active jobs to that target will complete the operations already in progress. Any new operations will be queued on the target until the target is resumed. The data will not be committed until the target is resumed. Pausing the target only pauses Double-Take processing, not the entire server.

While the target is paused, the Double-Take target cannot queue data indefinitely. If the target queue is filled, data will start to queue on the source. If the source queue is filled, Double-Take will automatically disconnect the connections and attempt to reconnect them.

If you have multiple jobs to the same target, all jobs from the same source will be paused and resumed.

• Update Shares—Shares are not applicable because they are automatically included with the system state that is being protected with the entire server.

#### Filter

Select a filter option from the drop-down list to only display certain jobs. You can display **Healthy jobs**, **Jobs with warnings**, or **Jobs with errors**. To clear the filter, select **All jobs**. If you have created and populated server groups, then the filter will only apply to the jobs associated with the server or target servers in that server group. See *Managing servers* on page 45.

#### Type a server name

Displays only jobs that contain the text you entered. If you have created and populated server groups, then only jobs that contain the text you entered associated with the server or target servers in that server group will be displayed. See *Managing servers* on page 45.

#### Overflow Chevron

Displays any toolbar buttons that are hidden from view when the window size is reduced.

## Viewing full server migration job details

From the Manage Jobs page, highlight the job and click View Job Details in the toolbar.

Review the following table to understand the detailed information about your job displayed on the **View Job Details** page.

Job name	
	The name of the job
Job type	
	Each job type has a unique job type name. This job is a Full Server Migration job. For a complete list of all job type names, press F1 to view the Double-Take Console online help.
Health	
	The job is in a healthy state.
	1 The job is in a warning state.
	🕴 The job is in an error state.
	? The job is in an unknown state.
Activity	
	There are many different <b>Activity</b> messages that keep you informed of the job activity. Most of the activity messages are informational and do not require any administrator interaction. If you see error messages, check the rest of the job details.
Connection ID	
	The incremental counter used to number connections. The number is incremented when a connection is created. It is also incremented by internal actions, such as an auto-disconnect and auto-reconnect. The lowest available number (as connections are created, stopped, deleted, and so on) will always be used. The counter is reset to one each time the Double-Take service is restarted.
Transmit mode	
	<ul> <li>Active—Data is being transmitted to the target.</li> <li>Paused—Data transmission has been paused.</li> <li>Scheduled—Data transmission is waiting on schedule criteria.</li> <li>Stopped—Data is not being transmitted to the target.</li> <li>Error—There is a transmission error.</li> <li>Unknown—The console cannot determine the status.</li> </ul>

### Target data state

- **OK**—The data on the target is in a good state.
- **Mirroring**—The target is in the middle of a mirror process. The data will not be in a good state until the mirror is complete.
- **Mirror Required**—The data on the target is not in a good state because a remirror is required. This may be caused by an incomplete or stopped mirror or an operation may have been dropped on the target.
- Busy—The source is low on memory causing a delay in getting the state of the data on the target.
- Not Loaded—Double-Take target functionality is not loaded on the target server. This may be caused by an activation code error.
- **Unknown**—The console cannot determine the status.

### **Target route**

The IP address on the target used for Double-Take transmissions.

### Compression

- On / Level—Data is compressed at the level specified.
- Off—Data is not compressed.

#### **Bandwidth limit**

If bandwidth limiting has been set, this statistic identifies the limit. The keyword **Unlimited** means there is no bandwidth limit set for the job.

#### **Connected since**

The date and time indicating when the current job was made. This field is blank, indicating that a TCP/IP socket is not present, when the job is waiting on transmit options or if the transmission has been stopped. This field will maintain the date and time, indicating that a TCP/IP socket is present, when transmission has been paused.

#### Additional information

Depending on the current state of your job, you may see additional information displayed to keep you informed about the progress and status of your job. If there is no additional information, you will see (None) displayed.

#### **Mirror status**

- Calculating—The amount of data to be mirrored is being calculated.
- In Progress—Data is currently being mirrored.
- Waiting—Mirroring is complete, but data is still being written to the target.
- Idle—Data is not being mirrored.
- Paused—Mirroring has been paused.
- **Stopped**—Mirroring has been stopped.
- **Removing Orphans**—Orphan files on the target are being removed or deleted depending on the configuration.

- Verifying—Data is being verified between the source and target.
- **Unknown**—The console cannot determine the status.

### **Mirror percent complete**

The percentage of the mirror that has been completed

### **Mirror remaining**

The total number of mirror bytes that are remaining to be sent from the source to the target

### **Mirror skipped**

The total number of bytes that have been skipped when performing a difference or checksum mirror. These bytes are skipped because the data is not different on the source and target.

### **Replication status**

- **Replicating**—Data is being replicated to the target.
- **Ready**—There is no data to replicate.
- **Pending**—Replication is pending.
- **Stopped**—Replication has been stopped.
- Out of Memory—Replication memory has been exhausted.
- **Failed**—The Double-Take service is not receiving replication operations from the Double-Take driver. Check the Event Viewer for driver related issues.
- Unknown—The console cannot determine the status.

### **Replication queue**

The total number of replication bytes in the source queue

### Disk queue

The amount of disk space being used to queue data on the source

### Bytes sent

The total number of mirror and replication bytes that have been transmitted to the target

### Bytes sent compressed

The total number of compressed mirror and replication bytes that have been transmitted to the target. If compression is disabled, this statistic will be the same as **Bytes sent**.

## Validating a full server migration job

Over time, you may want to confirm that any changes in your network or environment have not impacted your Double-Take job. Use these instructions to validate an existing job.

- 1. From the Manage Jobs page, highlight the job and click View Job Details in the toolbar.
- 2. In the Tasks area on the right on the View Job Details page, click Validate job properties.
- 3. Double-Take validates that your source and target are compatible. The **Summary** page displays your options and validation items.

Errors are designated by a white X inside a red circle. Warnings are designated by a black exclamation point (!) inside a yellow triangle. A successful validation is designated by a white checkmark inside a green circle. You can sort the list by the icon to see errors, warnings, or successful validations together. Click on any of the validation items to see details. You must correct any errors before you can enable your migration. Depending on the error, you may be able to click **Fix** or **Fix All** and let Double-Take correct the problem for you. For those errors that Double-Take cannot correct automatically, you will need to modify the source or target to correct the error, or you can select a different target. You must revalidate the selected servers, by clicking **Recheck**, until the validation check passes without errors.

Validation checks for an existing job are logged to the job log on the target server. See *Log files* on page 312 for details on the various log files.

4. Once your servers have passed validation, click Close.

## Editing a full server migration job

Use these instructions to edit a full server migration job.

- 1. From the Manage Jobs page, highlight the job and click View Job Details in the toolbar.
- 2. In the **Tasks** area on the right on the **View Job Details** page, click **Edit job properties**. (You will not be able to edit a job if you have removed the source of that job from your Double-Take Console session or if you only have Double-Take monitor security access.)
- 3. You will see the same options for your full server migration job as when you created the job, but you will not be able to edit all of them. If desired, edit those options that are configurable for an existing job. See *Creating a full server migration job* on page 187 for details on each job option.



Changing some options may require Double-Take to automatically disconnect, reconnect, and remirror the job.

4. If you want to modify the workload items or replication rules for the job, click **Edit workload or replication rules**. Modify the **Workload item** you are protecting, if desired. Additionally, you can modify the specific **Replication Rules** for your job.

Volumes and folders with a green highlight are included in their entirety in the migration. Volumes and folders highlighted in light yellow have individual files included in the migration. If there is no highlight, no part of the volume or folder is included in the migration. To modify the items selected, highlight a volume, folder, or file and click **Add Rule**. You can also enter a rule, including a wildcard specification, manually. Specify if you want to **Include** or **Exclude** the item. Also, specify if you want the rule to be recursive, which indicates the rule should automatically be applied to the subdirectories of the specified path. If you do not select **Recursive**, the rule will not be applied to subdirectories.

If you need to remove a rule, highlight it in the list at the bottom and click **Remove Rule**. Be careful when removing rules. Double-Take may create multiple rules when you are adding directories. For example, if you add E:\Data to be included in protection, then E:\ will be excluded. If you remove the E:\ exclusion rule, then the E:\Data rule will be removed also.

Click **OK** to return to the **Edit Job Properties** page.

- 5. Click **Next** to continue.
- 6. Double-Take validates that your source and target are compatible. The **Summary** page displays your options and validation items.

Errors are designated by a white X inside a red circle. Warnings are designated by a black exclamation point (!) inside a yellow triangle. A successful validation is designated by a white checkmark inside a green circle. You can sort the list by the icon to see errors, warnings, or successful validations together. Click on any of the validation items to see details. You must correct any errors before you can enable your migration. Depending on the error, you may be able to click **Fix** or **Fix All** and let Double-Take correct the problem for you. For those errors that Double-Take cannot correct automatically, you will need to modify the source or target to correct the error, or you can select a different target. You must revalidate the selected servers, by clicking **Recheck**, until the validation check passes without errors.

Before a job is created, the results of the validation checks are logged to the Double-Take Management Service log on the target.

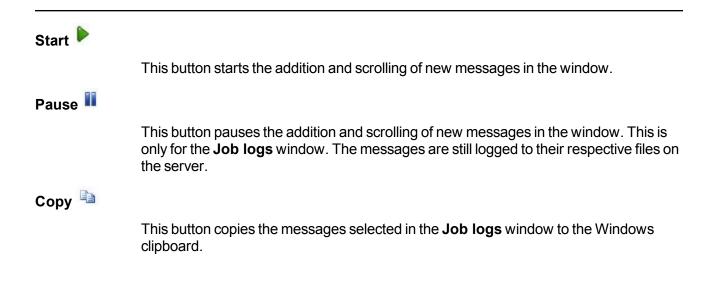
7. Once your servers have passed validation and you are ready to update your job, click **Finish**.

## Viewing a full server migration job log

You can view a job log file through the Double-Take Console by selecting **View Job Log** from the toolbar on the **Manage Jobs** page. Separate logging windows allow you to continue working in the Double-Take Console while monitoring log messages. You can open multiple logging windows for multiple jobs. When the Double-Take Console is closed, all logging windows will automatically close.

Job logs for alpha to b	eta	
Time +	Description	
2/14/2012 6:48:46 AM	Target beta is a NOT a cluster. Setting JobFilePath default	
2/14/2012 6:48:47 AM	Entered TopState	
2/14/2012 6:48:47 AM	Entered UninitializedState	
2/14/2012 6:48:47 AM	Attaching to engine monitor 00000000-0000-0000-00000000000000	
2/14/2012 6:48:47 AM	Changing to StoppedState from UninitializedState in response to InitializeEvent consumed	
2/14/2012 6:48:47 AM	Exited UninitializedState	
2/14/2012 6:48:47 AM	Entered InitializedState	
2/14/2012 6:48:47 AM	Entered StoppedState	
2/14/2012 6:48:47 AM	Stopping monitor ab2268f7-85c6-4b68-819c-3d2912f5380a: name = FilesAndFolders_a6cb	
2/14/2012 6:48:47 AM	Successfully created monitor 618b51de-70f0-418b-9869-169f6f7d7049	
2/14/2012 6:48:47 AM	Changing to StartingState from StoppedState in response to StartEvent consumed by Stop	
2/14/2012 6:48:47 AM	Exited StoppedState	
2/14/2012 6:48:47 AM	Entered StartingState	
2/14/2012 6:48:48 AM	Event log entry written: '6008',	
2/14/2012 6:48:48 AM	Target beta is not clustered	
2/14/2012 6:48:48 AM	Changing to RunningState from StoppedState in response to StartEvent consumed by Stop	
2/14/2012 6:48:48 AM	Exited StoppedState	
2/14/2012 6:48:48 AM	Entered RunningState	
2/14/2012 6:48:48 AM	Starting monitor ab2268f7-85c6-4b68-819c-3d2912f5380a: name = FilesAndFolders a6cbf	
2/14/2012 6:48:48 AM	Entered SucceededState	
2/14/2012 6:48:48 AM	Successfully created connection 985ae0ce-bbba-47a2-84ec-5fa79da80174 connecting Files	
2/14/2012 6:48:48 AM	Waiting for source endpoint of " to be established (00:10:00)	
2/14/2012 6:48:50 AM	Established source endpoint of '112,42,74,29:6320' for engine connection with replication s	
2/14/2012 6:48:50 AM	Changing to ProtectingState from StartingState in response to StartSucceededEvent consu	
2/14/2012 6:48:50 AM	Exited StartingState	
2/14/2012 6:48:50 AM	Entered ProtectingState	
2/14/2012 6:48:50 AM	Event log entry written: '6004'.	
2/14/2012 6:48:52 AM	Changing to MirroringState from ProtectingState in response to MirroringEvent consumed b	
2/14/2012 6:48:52 AM	Entered MirroringState	
2/14/2012 6:48:52 AM	Changing to SynchronizedState from MirroringState in response to MirrorCompletedEvent c	
2/14/2012 6:48:52 AM	Exited MirroringState	
2/14/2012 6:48:52 AM	Entered SynchronizedState	
2/14/2012 7:05:45 AM	Event log entry written: '6008'.	
2/14/2012 7:05:48 AM	Changing to MirroringState from SynchronizedState in response to MirroringEvent consume	
2/14/2012 7:05:48 AM	Exited SynchronizedState	
2/14/2012 7:05:48 AM	Entered MirroringState	
2/14/2012 7:05:51 AM	Changing to SynchronizedState from MirroringState in response to MirrorIdleEvent consum	
2/14/2012 7:05:51 AM	Exited MirroringState	
2/14/2012 7:05:51 AM	Entered SynchronizedState	1

The following table identifies the controls and the table columns in the **Job logs** window.



Clear 🥝	
	This button clears the <b>Job logs</b> window. The messages are not cleared from the respective files on the server. If you want to view all of the messages again, close and reopen the <b>Job logs</b> window.
Time	
	This column in the table indicates the date and time when the message was logged.
Description	
	This column in the table displays the actual message that was logged.

# Cutting over full server migration jobs

When the migration mirror has completed, the target may or may not reboot automatically depending on your selection for **Wait for user intervention before cutover**. If you disabled user intervention, the target will reboot automatically to complete the migration process. If you enabled user intervention, when the migration mirror is complete, the status will change to **Protecting**. Use this time to complete any necessary tasks. When you are ready to complete the migration, use the following instructions to cutover.

- 1. On the **Manage Jobs** page, highlight the job that you want to cutover and click **Failover or Cutover** in the toolbar.
- 2. Select the type of cutover to perform.
  - **Cutover to live data**—Select this option to initiate a full, live cutover using the current data on the target. The source is automatically shut down if it is still running. Then the target will stand in for the source by rebooting and applying the source identity, including its system state, on the target. After the reboot, the target becomes the source, and the target no longer exists.
  - **Perform test cutover**—This option is not applicable to data migration and full server migration jobs.
  - Cutover to a snapshot—This option is not available for migration jobs.
- 3. Select how you want to handle the data in the target queue. You may want to check the amount of data in queue on the target by reviewing the *Statistics* on page 323 or *Performance Monitor* on page 412.
  - Apply data in target queues before failover or cutover—All of the data in the target queue will be applied before cutover begins. The advantage to this option is that all of the data that the target has received will be applied before cutover begins. The disadvantage to this option is depending on the amount of data in queue, the amount of time to apply all of the data could be lengthy.
  - Discard data in the target queues and failover or cutover immediately—All of the data in the target queue will be discarded and cutover will begin immediately. The advantage to this option is that cutover will occur immediately. The disadvantage is that any data in the target queue will be lost.
- 4. When you are ready to begin cutover, click **Cutover**.

IPv6 addresses on the source will be set to DHCP on the target after cutover. Update them to static addresses manually, if needed.

You may experience issues following a cutover if an application or server uses hard-linked files. For example, Windows 2008 or 2012 Server Roles added after the job has been established will not function after cutover because the hard links related to the server role were not replicated. After updating server roles, a remirror should be performed.

Some applications and hardware devices create and use software devices within the operating system, but they have the characteristics of a hardware device. For example, NIC teaming solutions are typically implemented in the operating system, however they are still designed to emulate a single piece of storage hardware. In these cases, the device will not be cutover because it appears to be a hardware device.

If your NICs were configured for network load balancing (NLB), you will have to reconfigure that after cutover.

If your source was disconnected from the network during the cutover process, the original job that was mirroring the data will still be active on that machine. Do not bring that machine back on the network. If you do, the original job will attempt to begin mirroring data again which could result in data loss. While the machine is still disconnected from the network, stop the Double-Take service, delete the file connect.sts located in the Double-Take installation directory, and then restart the Double-Take service. This will delete the original job. After the original job is deleted, you can bring the machine on the network if desired.

Because the Windows product activation is dependent on hardware, you may need to reactivate your Windows registration after cutover. In most cases when you are using Windows 2003, you can follow the on-screen prompts to complete the reactivation. However, when you are using Windows 2008 or 2012, the reactivation depends on several factors including service pack level, Windows edition, and your licensing type. If a Windows 2008 or 2012 target comes online after cutover with an activation failure, use the steps below appropriate for your license type. Additionally, if you are using Windows 2012, you may only have 60 minutes to complete the reactivation process until Windows activation tampering automatically shuts down your server.

- Retail licensing—Retail licensing allows the activation of a single operating system installation.
  - 1. Open the System applet in Windows Control Panel.
  - 2. Under **Windows activation** at the bottom of the page, click **Change product key**.
  - 3. Enter your retail license key. You may need access to the Internet or to call Microsoft to complete the activation.
- MAK volume licensing—Multiple Activation Key (MAK) licensing allows the activation of multiple operating system installations using the same activation key.
  - 1. View or download the Microsoft Volume Activation Deployment Guide from the Microsoft web site.
  - 2. Using an administrative user account, open a command prompt and follow the instructions from the deployment guide to activate MAK clients. Multiple reboots may be necessary before you can access a command prompt. You may need access to the Internet or to call Microsoft to complete the activation.
- KMS volume licensing—Key Management Service (KMS) licensing allows IT professionals to complete activations on their local network without contacting Microsoft.
  - 1. View or download the Microsoft Volume Activation Deployment Guide from the Microsoft web site.
  - 2. Using an administrative user account, open a command prompt and follow the instructions from the deployment guide to convert a MAK activation client to a KMS client. Multiple reboots may be necessary before you can access a command prompt.

# **Chapter 9 Full server to ESX migration**

This section is specific to full server to ESX migration and includes the following topics.

- See *Full server to ESX migration requirements* on page 228—Full server to ESX migration includes specific requirements for this type of migration.
- See *Creating a full server to ESX migration job* on page 231—This section includes step-by-step instructions for creating a full server to ESX migration job.
- See *Managing and controlling full server to ESX migration jobs* on page 252—You can view status information about your full server to ESX migration job.
- See *Cutting over full server to ESX migration jobs* on page 268—Use this section when you are ready to cutover from your source to your target, which will become your new source.

# Full server to ESX migration requirements

After you have verified your source server meets the *Requirements* on page 7, verify that your target server meets the requirements below for full server to ESX migration.

- **Operating system**—You must have a physical ESX host machine, where Double-Take can create the new virtual server, that meets the following requirements.
  - ESX 4.0.x or 4.1 Standard, Advanced, Enterprise, or Enterprise Plus
  - ESXi 4.0.x or 4.1 Standard, Advanced, Enterprise, or Enterprise Plus
  - ESXi 5.0 Standard, Enterprise, or Enterprise Plus
  - If you are using the Standard edition of ESX 4.0 or ESXi 4.0, you must have update 1 or later.

If your source is Windows 2008 R2, your ESX host must have ESX 4.0 update 1 or later.

If your source is Windows 2012, your ESX server must have ESXi 5.0 update 1 or later.

- **vCenter**—Although vCenter is not required, if you are using it, then you must use version 4.1 or later.
- vMotion—Host vMotion is only supported if you are using vCenter. Storage vMotion is not supported.
- Virtual recovery appliance—The ESX server must have an existing virtual machine, known as a virtual recovery appliance, that meets the following requirements. (The virtual recovery appliance will create a new virtual server, mount disks, format disks, and so on. Then the new virtual machine is detached from the virtual recovery appliance and powered on. Once the new virtual machine is online, it will have the identity, data, and system state of the original source. Since the virtual recovery appliance maintains its own identity, it can be reused for additional migrations.)
  - The virtual recovery appliance must be running Windows Server 2003, 2003 R2, 2008, 2008 R2, or 2012.
  - The virtual recovery appliance must have the same or newer operating system than the source (not including service pack level).
  - The virtual recovery appliance must have Double-Take installed and licensed on it.
  - Microsoft .NET Framework version 3.5 Service Pack 1 is required on the virtual recovery appliance. This version is not included in the .NET version 4.0 release. Therefore, even if you have .NET version 4.0 installed, you will also need version 3.5.1. If you are using Windows 2008 or earlier, you can install this version from the Double-Take DVD, via a web connection during the Double-Take installation, or from a copy you have obtained manually from the Microsoft web site. If you are using Windows 2008 R2 or later, you can enable it through Windows features.
  - Do not take snapshots of the virtual recovery appliance, because they will interfere with proper cutover.
- **Disk controller**—VMware Paravirtual SCSI Controllers are not supported.

- **System memory**—The minimum system memory on each server should be 1 GB. The recommended amount for each server is 2 GB.
- **Disk space for program files**—This is the amount of disk space needed for the Double-Take program files. The amount depends on your operating system version and your architecture (32-bit or 64-bit) and ranges from 350-500 MB.

The program files can be installed to any volume while the Microsoft Windows Installer files are automatically installed to the operating system boot volume.

Make sure you have additional disk space for Double-Take queuing, logging, and so on.

- **Disk space for data files**—This is the amount of disk space needed for the source data files. This will be dependent on the applications you are running and the amount of data files you have.
- Disk space for system state image—This is the amount of disk space for the image of the source system state. The size of the system state will depend on the operating system and architecture. Windows 2003 operating systems need at a minimum 2-3 GB of free space for the system state. Windows 2008 operating systems need at a minimum 7-9 GB of free space for the system state. Windows 2008 R2 operating systems need at a minimum 10 GB of free space for the system state. These minimums are for a clean operating system installation. Operating system customizations, installed applications, and user data will increase the disk space requirement.
- Server name—Double-Take includes Unicode file system support, but your server name must still be in ASCII format. If you have the need to use a server's fully-qualified domain name, your server cannot start with a numeric character because that will be interpreted as an IP address. Additionally, all Double-Take servers and appliances must have a unique server name.
  - If you rename a server that has already has a Double-Take license applied to it, for example if you rebuild a server, you will have to perform a host-transfer to continue using that license. This includes changing the case (capitalization) of the server name (upper or lower case or any combination of case). See *Activating a single Double-Take server* on page 35 for details on completing a host-transfer.
- **Protocols and networking**—Your servers must meet the following protocol and networking requirements.
  - Your servers must have TCP/IP with static IP addressing. (Some job types allow you to add DHCP addresses for failover monitoring, although only after a job has already been created. Keep in mind that depending on your failover configuration, a source reboot may or may not cause a failover but having a new address assigned by DHCP may also cause a failover.)
  - IPv4 is the only supported version.
- Supported configurations—The following table identifies the supported configurations for a full server to ESX migration job.

	Configuration	Supported	Not Supported
	One to one, active/standby	Х	
	One to one, active/active		Х
Source to	Many to one		Х
target configuration	One to many		Х
	Chained		Х
	Single server		Х
	Standalone to standalone	Х	
Server configuration	Standalone to cluster		Х
	Cluster to standalone		Х
	Cluster to cluster		Х
	Cluster Shared Volumes (CSV) guest level	Х	
	Cluster Shared Volumes (CSV) host level		Х
Upgrade	Upgrade 5.3 Double-Take Move Console provisioned migration job to 7.0 Double-Take Console full server to ESX migration job		х
configuration	Upgrade 6.0 full server to ESX migration job to 7.0 full server to ESX migration job	x	

# Creating a full server to ESX migration job

Use the following instructions to migrate an entire server to a new virtual machine on an ESX server.

- 1. Click Get Started from the toolbar.
- 2. Select Double-Take Move and click Next.
- 3. Choose your source server. This is the server that you want to migrate.

Choose	Source	Server		
	Choose the	server whose data you war	nt to protect.	
	▲ Curren	t Servers		
	Servers:			
		Server 🔺	Version	
	<b>X Y</b>	alpha	7.0.0.1261.0	
	8	beta	7.0.0.1261.0	
	1			
	▼ Find a	New Server		

- **Current Servers**—This list contains the servers currently available in your console session. Servers that are not licensed for the workflow you have selected will be filtered out of the list. Select your source server from the list.
- Find a New Server—If the server you need is not in the Current Servers list, click the Find a New Server heading. From here, you can specify a server along with credentials for logging in to the server. If necessary, you can click Browse to select a server from a network drill-down list.

1	If you enter the source server's fully-qualified domain name, the Double-Take Console
	will resolve the entry to the server short name. If that short name resides in two different
	domains, this could result in name resolution issues. In this case, enter the IP address of
	the server.

When specifying credentials for a new server, specify a user that is a member of the local Double-Take Admin and local administrator security groups.

- 4. Click **Next** to continue.
- 5. Choose the type of workload that you want to migrate. Under Server Workloads, in the

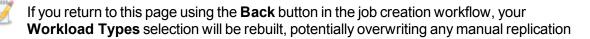
Workload types pane, select Full Server to ESX Migration. In the Workload items pane, select the volumes on the source that you want to migrate.

Choose I	Data		
<ul> <li>Image: A start of the start of</li></ul>	Choose the data on this server that you want t	o protect.	
	Workload types:	Workload items:	
	Tull Server Migration	⊠ C: IZ E:	
	Show all workload types		
	▼ Replication Rules		

6. By default, Double-Take selects your entire source for migration. If desired, click the **Replication Rules** heading and expand the volumes under **Folders**. You will see that Double-Take automatically excludes particular files that cannot be used during the migration. If desired, you can exclude other files that you do not want to migrate, but be careful when excluding data. Excluded volumes, folders, and/or files may compromise the integrity of your installed applications. There are some volumes, folders, and files (identified in italics text) that you will be unable to exclude, because they are required for migration. For example, the boot files cannot be excluded because that is where the system state information is stored.

Volumes and folders with a green highlight are included in their entirety in the migration. Volumes and folders highlighted in light yellow have individual files included in the migration. If there is no highlight, no part of the volume or folder is included in the migration. To modify the items selected, highlight a volume, folder, or file and click **Add Rule**. You can also enter a rule, including a wildcard specification, manually. Specify if you want to **Include** or **Exclude** the item. Also, specify if you want the rule to be recursive, which indicates the rule should automatically be applied to the subdirectories of the specified path. If you do not select **Recursive**, the rule will not be applied to subdirectories.

If you need to remove a rule, highlight it in the list at the bottom and click **Remove Rule**. Be careful when removing rules. Double-Take may create multiple rules when you are adding directories. For example, if you add E:\Data to be included in protection, then E:\ will be excluded. If you remove the E:\ exclusion rule, then the E:\Data rule will be removed also.



rules that you specified. If you do return to this page, confirm your **Workload Types** and **Replication Rules** are set to your desired settings before proceeding forward again.

- 7. Click **Next** to continue.
- 8. Choose your target server. This is the virtual recovery appliance on your ESX server. See *Full server to ESX migration requirements* on page 228.

hoose		t Server	erted data	
		ent Servers		
	Servers:		Contract of the Contract of th	ï
	-	Server 🔺	Version	
	0	💡 alpha 🎙 beta	7.0.0.1261.0	
		(Diagnostics)	7.0.0.1261.0	
	▼ Find	a New Server		

- **Current Servers**—This list contains the servers currently available in your console session. Servers that are not licensed for the workflow you have selected and those not applicable to the workload type you have selected will be filtered out of the list. Select your target server from the list.
- Find a New Server—If the server you need is not in the Current Servers list, click the Find a New Server heading. From here, you can specify a server along with credentials for logging in to the server. If necessary, you can click Browse to select a server from a network drill-down list.

	If you enter the target server's fully-qualified domain name, the Double-Take Console will
P	resolve the entry to the server short name. If that short name resides in two different
	domains, this could result in name resolution issues. In this case, enter the IP address of
	the server.

When specifying credentials for a new server, specify a user that is a member of the local Double-Take Admin and local administrator security groups.

- 9. Click **Next** to continue.
- 10. Choose the ESX server where your target virtual recovery appliance is located. This is also the

server where your replica virtual machine will be located.

ose	Select the VMware ESX Server where the virtual recovery appliance is hosted.
	▲ Current Servers
	Servers:
	<ul> <li>□ Use vCenter Server</li> <li>● ■ 112.42.74.50</li> <li>□ ■ □ Use ESX Server</li> <li>■ 112.42.74.60</li> </ul>
	▼ Find a New Server

- **Current Servers**—This list contains the vCenter and ESX servers currently available in your console session. Select your ESX server from the list.
- Find a New Server—If the server you need is not in the Current Servers list, click the Find a New Server heading.
  - vCenter Server—Select your vCenter server from the list. If your vCenter server is not in the list, click Add VirtualCenter Server, specify the server and valid credentials, and click Add. If you are not using vCenter, select None.
  - ESX Server—Specify the name or IP address of the ESX server.
  - User name—This field will only be available if you are not using vCenter. In this case, specify the root user or another user that has the administrator role on the specified ESX server.
  - Password—Specify the password associated with the User name you entered.
  - **Domain**—If you are working in a domain environment, specify the Domain.
- 11. Click **Next** to continue.

12. You have many options available for your server migration job. Configure those options that are applicable to your environment.

Go to each page identified below to see the options available for that section of the **Set Options** page. After you have configured your options, continue with the next step on page 251.

- General on page 236
- Replica Virtual Machine Location on page 237
- Replica Virtual Machine Configuration on page 238
- Replica Virtual Machine Volumes on page 239
- Replica Virtual Machine Network Settings on page 242
- Failover Options on page 243
- Mirror, Verify & Orphaned Files on page 244
- Network Route on page 248
- Compression on page 249
- Bandwidth on page 250

### General

🔿 General	
Job name:	
alpha to beta	

For the **Job name**, specify a unique name for your job.

## **Replica Virtual Machine Location**

select	t the datastore	on the target ESX ser	ver that will hold the repli	ca virtual machine		
-11	Volume	Total Size	Provisioned Space	Free Space	Owner	
-	SAN05	399.75 GB	285.55 GB	114.2 GB	esx40	
-	SAN06	399.75 GB	176.55 GB	304.26 GB	esx40	
-	SAN07	399.75 GB	879.93 GB	37.92 GB	esx40	
-	SAN08	399.75 GB	1230.49 GB	180.16 GB	esx40	

Select one of the volumes from the list to indicate the volume on the target where you want to store the configuration files for the new virtual server when it is created. The target volume must have enough **Free Space**. You can select the location of the .vmdk files under **Replica Virtual Machine Volumes**.

## **Replica Virtual Machine Configuration**

Repli	ica virtual machine display name:		
Alpha	a_Replica		
Number of processors: Processor		Processo	rs on the source server:
1 1		•	
Amou	unt of memory (MB):	Memory	on the source server (MB):
512		512	
Мар	source virtual switches to target vi	rtual switches:	
1	Source Network Adapter		Target Network Adapter
4	Local Area Connection		Local Area Connection - Virtual Network

- **Replica virtual machine display name**—Specify the name of the replica virtual machine. This will be the display name of the virtual machine on the host system.
- Number of processors—Specify how many processors to create on the new virtual machine. The number of processors on the source is displayed to guide you in making an appropriate selection. If you select fewer processors than the source, your clients may be impacted by slower responses.
- Amount of memory—Specify the amount of memory, in MB, to create on the new virtual machine. The memory on the source is displayed to guide you in making an appropriate selection. If you select less memory than the source, your clients may be impacted by slower responses.
- Map source virtual switches to target virtual switches—Identify how you want to handle the network mapping after cutover. The Source Network Adapter column lists the NICs from the source. Map each one to a Target Network Adapter, which is a virtual network on the target.
- **Power on replica virtual machine after failover**—By default, the replica virtual machine will automatically be powered on after the cutover process is complete. If you want the replica virtual machine to remain powered off, disable this option.

## **Replica Virtual Machine Volumes**

	Volume	Disk Size	Used Space	Replica D	isk Size	Replica Disk	Format	Target Volu	me
-	C:	54.99 GB	4.45 GB	54.99	GB 💌	Thick	•	SAN06	
Us	e pre-existing v	rtual disks							
_		n the target datasto	re which has <u>p</u> re-exi	sting virtual o	lisks:			-	150
E								LIFE	owse 150
Γ			1000	r pre-existing	disks herau	se the pre-exis	stina confi	iguration will b	be used. If
Cl ve	olumes are map	isk size and disk typ ped to different targ ast one of the follow	et datastores, the sa	me path for	pre-existing	disks will be u	sed on all	of the datatst	
C ve sł	hanges to the d plumes are map	ped to different targ	et datastores, the sa	me path for	pre-existing	disks will be u	sed on all	of the datatst	

• **Replica Disk Size**—For each volume you are protecting, specify the size of the replica disk on the target. Be sure and include the value in MB or GB for the disk. The value must be at least the size of the specified **Used Space** on that volume.

In some cases, the replica virtual machine may use more virtual disk space than the size of the source volume due to differences in how the virtual disk's block size is formatted and how hard links are handled. To avoid this issue, specify the size of your replica to be at least 5 GB larger.

- **Replica Disk Format**—For each volume you are protecting, specify the format of the disk that will be created.
  - Flat—This disk format allocates the full amount of the disk space immediately, but does not initialize the disk space to zero until it is needed. This disk format is only available on ESX 5.
  - **Thick**—This disk format allocates the full amount of the disk space immediately, initializing all of the allocated disk space to zero.
  - Thin—This disk format does not allocate the disk space until it is needed.
- **Target Volume**—For each volume you are protecting, specify the volume on the target where you want to store the .vmdk files for the new replica virtual machine. You can specify the location of the virtual machine configuration files under **Replica Virtual Machine** Location.
- Use pre-existing virtual disks—You can reuse an existing virtual disk on your target, rather than having Double-Take create a virtual disk for you. This can be useful for pre-staging data on a virtual machine over a LAN connection and then relocating it to a remote site after the initial mirror is complete. You save time by skipping the virtual disk creation steps and performing a difference mirror instead of a full mirror. In order to use a pre-existing virtual disk, it must be a valid virtual disk. It cannot be attached to any other virtual

machine, and the virtual disk size and format cannot be changed.

Each pre-existing disk must be placed in a temporary location on the appropriate datastore, and each temporary location must be the same name. For example, a valid configuration would be datastore1/prestage, datastore2/prestage, and datastore3/prestage, but an invalid configuration would be datastore1/prestage1, datastore2/prestage2, and datastore3/prestage3. Double-Take will skip the virtual disk creation steps when using a pre-existing disk, and will instead move your existing virtual disks to the appropriate VMware location on that datastore for the virtual machine. Therefore, it is important that you place your pre-existing virtual disks in the temporary locations so this move process will be handled correctly. Specify this temporary location for **Enter the path on the target datastore which has pre-existing virtual disks**.

In order for Double-Take to find the pre-existing disk, the virtual disk file names must be formatted using the convention SourceServer\_DriveLetter. For example, if your source server is Alpha and you are protecting drives C and D, Double-Take will look for the file names Alpha\_C.vmdk and Alpha\_D.vmdk. If you are using IP addresses, substitute the IP address for the server name. For example, if the IP address for server Alpha is 172.31.10.25 then Double-Take will look for the file names 172.31.10.25\_C.vmdk and 172.31.10.25\_D.vmdk.

If you originally created a virtual disk and specified the source server by its IP address, the pre-existing virtual disk file name cannot use the server name. However, you can rename that file and its associated -flat.vmdk file to use the IP address. The reverse is also true. If you originally specified the source server by its name, the pre-existing virtual disk file name cannot use the server's IP address. However, you can rename the file and its associated - flat.vmdk to use the source name. For example, if you originally created a virtual disk and specified the source by its IP address, you need to rename the file source\_name\_drive.vmdk to source\_IPaddress\_drive.vmdk. You also need to rename the file source\_name\_drive-flat.vmdk to source\_IPaddress\_drive.flat.vmdk. The reverse (change source\_IPaddress to source\_name for both files) is also true. Additionally, you will need to edit the .vmdk file manually because it contains the name of the -flat.vmdk file. Modify the reference to the -flat.vmdk file to the new name you have specified using any standard text editor.

In a WAN environment, you may want to take advantage of the **Use pre-existing virtual disks** feature by using a process similar to the following.

- a. Create a protection job in a LAN environment, letting Double-Take create the virtual disk for you.
- b. Complete the mirror process locally.
- c. Delete the protection job and when prompted, select to keep the replica.
- d. Remove the virtual machine from the ESX inventory, which will delete the virtual machine configuration but will keep the associated.vmdk files.
- e. Shut down and move the ESX target server to your remote site.
- f. After the ESX target server is back online at the remote site, move the .vmdk files to a temporary location.
- g. Create a new protection job for the same source server and select to **Use pre**existing virtual disks, specifying the temporary location of your .vmdk files. Double-Take will reuse the existing .vmdk files (automatically moving the files to the

correct location) and perform a difference mirror over the WAN to bring the virtual machine up-to-date.

## **Replica Virtual Machine Network Settings**

Jse advanced settings for re	eplica virtual machine netwo	ork configuration.		
Source network adapter:	Local Area Connection (1	12.42.74.29)		
Target IP a <u>d</u> dresses:				
IP Address	Subnet Mask			Add
112.52.74.29	255.255.0.0			Remove
Default Gate <u>w</u> ays: 112.52 .48.9			Move Up	Add
			Move Up Move Down	
112.52.48.9				Add Remove
112.52.48.9 112.52.48.10				

- Use advanced settings for replica virtual machine network configuration—This
  option allows you to configure advanced network settings, which are primarily for WAN
  support.
- Source network adapter—Select a network adapter on the source and specify the Target IP addresses, Default Gateways, and DNS Server addresses to be used after cutover. If you add multiple gateways or DNS servers, you can sort them by using the Move Up and Move Down buttons. Repeat this step for each network adapter on the source.

Updates made during cutover will be based on the network adapter name when protection is established. If you change that name, you will need to delete the job and re-create it so the new name will be used during cutover.

If you update one of the advanced settings (IP address, gateway, or DNS server), then you must update all of them. Otherwise, the remaining items will be left blank. If you do not specify any of the advanced settings, the replica virtual machine will be assigned the same network configuration as the source.

1

## Failover Options

S Failover Options	
Wait for user to initiate failover Shutdown source server	

- Wait for user to initiate failover—By default, the cutover process will wait for you to initiate it, allowing you to control when cutover occurs. When a cutover occurs, the job will wait in the **Protecting** state for you to manually initiate the cutover process. Disable this option only if you want cutover to occur immediately after the mirror is complete.
- Shutdown source server—Specify if you want to shut down the source server, if it is still running, before the source is cutover to the target, This option prevents identity conflicts on the network in those cases where the source and target are still both running and communicating.

### Mirror, Verify & Orphaned Files

Mirror, Verify & Orphaned Files	
C Mirror all files	
Mirror different files (based on modified time, size, or attributes)	
$\square$ Mirror only if the file on the source is newer than the copy on the target	
This option not available for the current workload	
Use block checksum for comparisons	
Enable scheduled verification	
Verify on this interval:	
Begin immediately	
6 Begin at this time; Select a date	
Mirror files to the target server when verifying	
Mirror only if the file on the source is newer than the copy on the target	
This option not available for the current workload	
Use block checksum for comparisons	
Calculate size of protected data upon connection	
I Delete orphaned files	

- Mirror all files—All protected files will be mirrored from the source to the target.
- **Mirror different files**—Only those protected files that are different based on date and time, size, or attributes will be mirrored from the source to the target.
  - Mirror only if the file on the source is newer than the copy on the target— This option is not available for migration jobs.
  - Use block checksum for comparisons—For those files flagged as different, the mirroring process can perform a block checksum comparison and send only those blocks that are different.

### File Differences Mirror Options Compared

The following table will help you understand how the various difference mirror options work together, including when you are using the block checksum option configured through the *Source server properties* on page 69.

An X in the table indicates that option is enabled. An X enclosed in parentheses (X) indicates that the option can be on or off without impacting the action performed during the mirror.

Not all job types have the source newer option available.

Source Server Properties	Jo	b Properties	Action Performed	
Block Checksum Option	File Differences Option	Source Newer Option	Block Checksum Option	Action Performed
(X)	Х			Any file that is different on the source and target based on the date, time, size, and/or attribute is transmitted to the target. The mirror sends the entire file.
(X)	Х	х		Any file that is newer on the source than on the target based on date and/or time is transmitted to the target. The mirror sends the entire file.
	Х		Х	Any file that is different on the source and target based on date, time, size, and/or attributed is flagged as different. The mirror then performs a checksum comparison on the flagged files and only sends those blocks that are different.
x	х		х	The mirror performs a checksum comparison on all files and only sends those blocks that are different.
(X)	Х	Х	Х	Any file that is newer on the source than on the target based on date and/or time is flagged as different. The mirror then performs a checksum comparison on the flagged files and only sends those blocks that are different.

- Enable scheduled verification—Verification is the process of confirming that the source replica data on the target is identical to the original data on the source. Verification creates a log file detailing what was verified as well as which files are not synchronized. If the data is not the same, can automatically initiate a remirror, if configured. The remirror ensures data integrity between the source and target. When this option is enabled, Double-Take will verify the source replica data on the target and generate a verification log.
  - Because of the way the Windows Cache Manager handles memory, machines that are doing minimal or light processing may have file operations that remain in the cache until additional operations flush them out. This may make Double-Take files on the target appear as if they are not synchronized. When the Windows Cache Manager releases the operations in the cache on the source and target, the files will be updated on the target.
  - Verify on this interval—Specify the interval between verification processes.
  - **Begin immediately**—Select this option if you want to start the verification schedule immediately after the job is established.
  - **Begin at this time**—Select this option if you want to start the verification at the specified date and time.
  - Mirror files to the target server when verifying—When this option is enabled, in addition to verifying the data and generating a log, Double-Take will also mirror to the target any protected files that are different on the source.
    - Mirror only if the file on the source is newer than the copy on the target—This option is not available for migration jobs.
    - Use block checksum for comparisons—For those files flagged as different, the mirroring process can perform a block checksum comparison and send only those blocks that are different.
- Calculate size of protected data before mirroring—Specify if you want Double-Take to determine the mirroring percentage calculation based on the amount of data being protected. If the calculation is enabled, it is completed before the job starts mirroring, which can take a significant amount of time depending on the number of files and system performance. If your job contains a large number of files, for example, 250,000 or more, you may want to disable the calculation so that data will start being mirrored sooner. Disabling calculation will result in the mirror status not showing the percentage complete or the number of bytes remaining to be mirrored.

The calculated amount of protected data may be slightly off if your data set contains compressed or sparse files.

• **Delete orphaned files**—An orphaned file is a file that exists in the replica data on the target, but does not exist in the protected data on the source. This option specifies if orphaned files should be deleted on the target during a mirror, verification, or restoration.



Orphaned file configuration is a per target configuration. All jobs to the same target will have the same orphaned file configuration.

The orphaned file feature does not delete alternate data streams. To do this, use a full mirror, which will delete the additional streams when the file is re-created.

If delete orphaned files is enabled, carefully review any replication rules that use wildcard definitions. If you have specified wildcards to be excluded from protection, files matching those wildcards will also be excluded from orphaned file processing and will not be deleted from the target. However, if you have specified wildcards to be included in your protection, those files that fall outside the wildcard inclusion rule will be considered orphaned files and will be deleted from the target.

If you want to move orphaned files rather than delete them, you can configure this option along with the move deleted files feature to move your orphaned files to the specified deleted files directory. See *Target server properties* on page 72 for more information.

During a mirror, orphaned file processing success messages will be logged to a separate orphaned file log. This keeps the Double-Take log from being overrun with orphaned file success processing messages. Orphaned files processing statistics and any errors in orphaned file processing will still be logged to the Double-Take log, and during difference mirrors, verifications, and restorations, all orphaned file processing messages are logged to the Double-Take log. The orphaned file log is located in the **Logging folder** specified for the source. See *Log file properties* on page 77 for details on the location of that folder. The orphaned log file is overwritten during each orphaned file processing during a mirror, and the log file will be a maximum of 50 MB.

### **Network Route**

Network Route		
Send data to the target server usin	g this <u>r</u> oute:	
10.10.10.30		

For **Send data to the target server using this route**, Double-Take will select, by default, a target route for transmissions. If desired, specify an alternate route on the target that the data will be transmitted through. This allows you to select a different route for Double-Take traffic. For example, you can separate regular network traffic and Double-Take traffic on a machine with multiple IP addresses.

The IP address used on the source will be determined through the Windows route table.

## Compression

O Compression			
Enable compression:			
1	τ		
- <b>-</b> -	1		
Minimum	Medium	Maximum	

To help reduce the amount of bandwidth needed to transmit Double-Take data, compression allows you to compress data prior to transmitting it across the network. In a WAN environment this provides optimal use of your network resources. If compression is enabled, the data is compressed before it is transmitted from the source. When the target receives the compressed data, it decompresses it and then writes it to disk. You can set the level from **Minimum** to **Maximum** to suit your needs.

Keep in mind that the process of compressing data impacts processor usage on the source. If you notice an impact on performance while compression is enabled in your environment, either adjust to a lower level of compression, or leave compression disabled. Use the following guidelines to determine whether you should enable compression.

- If data is being queued on the source at any time, consider enabling compression.
- If the server CPU utilization is averaging over 85%, be cautious about enabling compression.
- The higher the level of compression, the higher the CPU utilization will be.
- Do not enable compression if most of the data is inherently compressed. Many image (.jpg, .gif) and media (.wmv, .mp3, .mpg) files, for example, are already compressed. Some images files, such as .bmp and .tif, are decompressed, so enabling compression would be beneficial for those types.
- · Compression may improve performance even in high-bandwidth environments.
- Do not enable compression in conjunction with a WAN Accelerator. Use one or the other to compress Double-Take data.

All jobs from a single source connected to the same IP address on a target will share the same compression configuration.

## Bandwidth

o not limit bandwidth				
Jse a fixed limit (bytes	per second):			
Preset bandwidth:		Bandwidth (bytes per s	econd):	
	*	1	<u> </u>	
Use scheduled limits: Days	Start	End	Limit	1
Days Every day	6:00 AM	6:00 PM	193000	1
Days				]
Days Every day	6:00 AM	6:00 PM	193000	]

Bandwidth limitations are available to restrict the amount of network bandwidth used for Double-Take data transmissions. When a bandwidth limit is specified, Double-Take never exceeds that allotted amount. The bandwidth not in use by Double-Take is available for all other network traffic.

All jobs from a single source connected to the same IP address on a target will share the same bandwidth configuration.

- **Do not limit bandwidth**—Double-Take will transmit data using 100% bandwidth availability.
- Use a fixed limit—Double-Take will transmit data using a limited, fixed bandwidth. Select a **Preset bandwidth** limit rate from the common bandwidth limit values. The **Bandwidth** field will automatically update to the bytes per second value for your selected bandwidth. This is the maximum amount of data that will be transmitted per second. If desired, modify the bandwidth using a bytes per second value. The minimum limit should be 3500 bytes per second.
- Use scheduled limits—Double-Take will transmit data using a dynamic bandwidth based on the schedule you configure. Bandwidth will not be limited during unscheduled times.
  - New—Click New to create a new scheduled bandwidth limit. Specify the following information.
    - **Daytime entry**—Select this option if the start and end times of the bandwidth window occur in the same day (between 12:01 AM and midnight). The start time must occur before the end time.
    - **Overnight entry**—Select this option if the bandwidth window begins on one day and continues past midnight into the next day. The start time must be later than the end time, for example 6 PM to 6 AM.
    - **Day**—Enter the day on which the bandwidth limiting should occur. You can pick a specific day of the week, **Weekdays** to have the limiting occur Monday through Friday, **Weekends** to have the limiting occur Saturday and Sunday, or **Every day** to have the limiting repeat on all days of the week.
    - Start time—Enter the time to begin bandwidth limiting.

- End time—Enter the time to end bandwidth limiting.
- **Preset bandwidth**—Select a bandwidth limit rate from the common bandwidth limit values. The **Bandwidth** field will automatically update to the bytes per second value for your select bandwidth.
- **Bandwidth**—If desired, modify the bandwidth using a bytes per second value. The minimum limit should be 3500 bytes per second.
- Edit—Click Edit to modify an existing scheduled bandwidth limit.
- Delete—Click Delete to remove a scheduled bandwidth limit.

If you change your job option from **Use scheduled limits** to **Do not limit bandwidth** or **Use a fixed limit**, any schedule that you created will be preserved. That schedule will be reused if you change your job option back to **Use scheduled limits**.

You can manually override a schedule after a job is established by selecting **Other Job Options**, **Set Bandwidth**. If you select **No bandwidth limit** or **Fixed bandwidth limit**, that manual override will be used until you go back to your schedule by selecting **Other Job Options**, **Set Bandwidth**, **Scheduled bandwidth limit**. For example, if your job is configured to use a daytime limit, you would be limited during the day, but not at night. But if you override that, your override setting will continue both day and night, until you go back to your schedule. See the *Managing and controlling jobs* section for your job type for more information on the **Other Job Options**.

- 13. Click **Next** to continue.
- 14. Double-Take validates that your source and target are compatible. The **Summary** page displays your options and validation items.

Errors are designated by a white X inside a red circle. Warnings are designated by a black exclamation point (!) inside a yellow triangle. A successful validation is designated by a white checkmark inside a green circle. You can sort the list by the icon to see errors, warnings, or successful validations together. Click on any of the validation items to see details. You must correct any errors before you can enable your migration. Depending on the error, you may be able to click **Fix** or **Fix All** and let Double-Take correct the problem for you. For those errors that Double-Take cannot correct automatically, you will need to modify the source or target to correct the error, or you can select a different target. You must revalidate the selected servers, by clicking **Recheck**, until the validation check passes without errors.

Before a job is created, the results of the validation checks are logged to the Double-Take Management Service log on the target.

15. Once your servers have passed validation and you are ready to begin migration, click **Finish**, and you will automatically be taken to the **Manage Jobs** page.

## Managing and controlling full server to ESX migration jobs

Click Manage Jobs from the main Double-Take Console toolbar. The Manage Jobs page allows you to view status information about your jobs. You can also control your jobs from this page.

The jobs displayed in the right pane depend on the server group folder selected in the left pane. Every job for each server in your console session is displayed when the Jobs on All Servers group is selected. If you have created and populated server groups (see Managing servers on page 45), then only the jobs associated with the server or target servers in that server group will be displayed in the right pane.

- See Overview job information displayed in the top pane on page 252
- See Detailed job information displayed in the bottom pane on page 254
- See Job controls on page 256

### Overview job information displayed in the top pane

The top pane displays high-level overview information about your jobs.

Column 1 (Blai	nk)
	The first blank column indicates the state of the job.
	The job is in a healthy state.
	1 The job is in a warning state. This icon is also displayed on any server groups that you have created that contain a job in a warning state.
	Solution The job is in an error state. This icon is also displayed on any server groups that you have created that contain a job in an error state.
	The job is in an unknown state.
Job	
	The name of the job
Source Server	
	The name of the source. This could be the name or IP address of your source.
Target Server	
	The name of the target. This could be the name or IP address of your target.
Job Type	
	Each job type has a unique job type name. This job is a Full Server to ESX Migration job. For a complete list of all job type names, press F1 to view the Double-Take

Console online help.

#### Activity

There are many different **Activity** messages that keep you informed of the job activity. Most of the activity messages are informational and do not require any administrator interaction. If you see error messages, check the job details. Keep in mind that **Idle** indicates console to server activity is idle, not that your servers are idle.

#### **Mirror Status**

- Calculating—The amount of data to be mirrored is being calculated.
- In Progress—Data is currently being mirrored.
- Waiting—Mirroring is complete, but data is still being written to the target.
- Idle—Data is not being mirrored.
- Paused—Mirroring has been paused.
- Stopped—Mirroring has been stopped.
- **Removing Orphans**—Orphan files on the target are being removed or deleted depending on the configuration.
- Verifying—Data is being verified between the source and target.
- Unknown—The console cannot determine the status.

#### **Replication Status**

- Replicating—Data is being replicated to the target.
- Ready—There is no data to replicate.
- Pending—Replication is pending.
- Stopped—Replication has been stopped.
- Out of Memory—Replication memory has been exhausted.
- **Failed**—The Double-Take service is not receiving replication operations from the Double-Take driver. Check the Event Viewer for driver related issues.
- Unknown—The console cannot determine the status.

#### Transmit Mode

- Active—Data is being transmitted to the target.
- **Paused**—Data transmission has been paused.
- Scheduled—Data transmission is waiting on schedule criteria.
- **Stopped**—Data is not being transmitted to the target.
- Error—There is a transmission error.
- Unknown—The console cannot determine the status.

### Detailed job information displayed in the bottom pane

The details displayed in the bottom pane of the **Manage Jobs** page provide additional information for the job highlighted in the top pane. If you select multiple jobs, the details for the first selected job will be displayed.

#### Name

The name of the job

#### Target data state

- **OK**—The data on the target is in a good state.
- **Mirroring**—The target is in the middle of a mirror process. The data will not be in a good state until the mirror is complete.
- **Mirror Required**—The data on the target is not in a good state because a remirror is required. This may be caused by an incomplete or stopped mirror or an operation may have been dropped on the target.
- **Busy**—The source is low on memory causing a delay in getting the state of the data on the target.
- **Not Loaded**—Double-Take target functionality is not loaded on the target server. This may be caused by an activation code error.
- Unknown—The console cannot determine the status.

#### Mirror remaining

The total number of mirror bytes that are remaining to be sent from the source to the target

#### Mirror skipped

The total number of bytes that have been skipped when performing a difference or checksum mirror. These bytes are skipped because the data is not different on the source and target.

#### **Replication queue**

The total number of replication bytes in the source queue

#### Disk queue

The amount of disk space being used to queue data on the source

#### Bytes sent

The total number of mirror and replication bytes that have been transmitted to the target

#### Bytes sent (compressed)

The total number of compressed mirror and replication bytes that have been transmitted to the target. If compression is disabled, this statistic will be the same as

#### Bytes sent.

#### **Connected since**

The date and time indicating when the current job was made. This field is blank, indicating that a TCP/IP socket is not present, when the job is waiting on transmit options or if the transmission has been stopped. This field will maintain the date and time, indicating that a TCP/IP socket is present, when transmission has been paused.

#### **Recent activity**

Displays the most recent activity for the selected job, along with an icon indicating the success or failure of the last initiated activity. Click the link to see a list of recent activities for the selected job. You can highlight an activity in the list to display additional details about the activity.

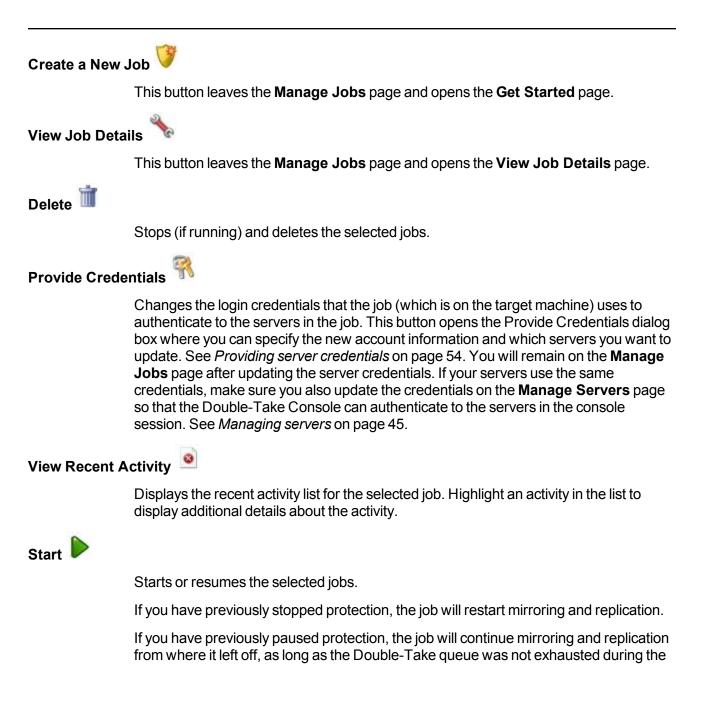
#### Additional information

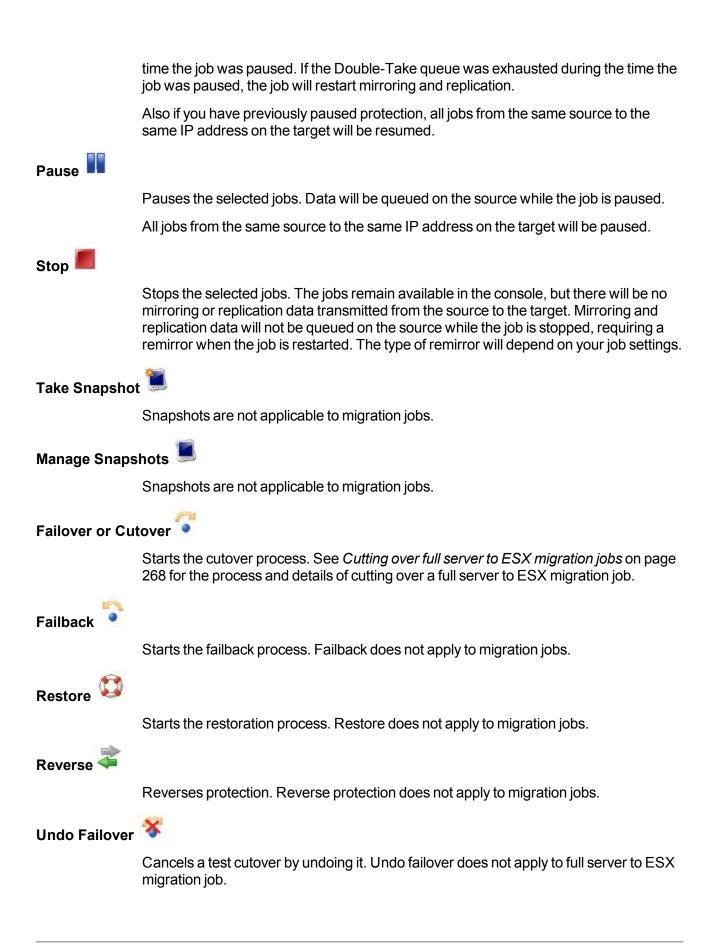
Depending on the current state of your job, you may see additional information displayed to keep you informed about the progress and status of your job. If there is no additional information, you will see (None) displayed.

### Job controls

You can control your job through the toolbar buttons available on the **Manage jobs** page. If you select multiple jobs, some of the controls will apply only to the first selected job, while others will apply to all of the selected jobs. For example, **View Job Details** will only show details for the first selected job, while **Stop** will stop protection for all of the selected jobs.

If you want to control just one job, you can also right click on that job and access the controls from the pop-up menu.





### View Job Log

Opens the job log. On the right-click menu, this option is called **View Logs**, and you have the option of opening the job log, source server log, or target server log. See *Viewing the log files through the Double-Take Console* on page 313 for details on all three of these logs.



- Other Job Actions
  - **Mirroring**—You can start, stop, pause and resume mirroring for any job that is running.

When pausing a mirror, Double-Take stops queuing mirror data on the source but maintains a pointer to determine what information still needs to be mirrored to the target. Therefore, when resuming a paused mirror, the process continues where it left off.

When stopping a mirror, Double-Take stops queuing mirror data on the source and does not maintain a pointer to determine what information still needs to be mirrored to the target. Therefore, when starting a mirror that has been stopped, you will need to decide what type of mirror to perform.

- **Mirror all files**—All protected files will be mirrored from the source to the target.
- Mirror different files—Only those protected files that are different based on date and time, size, or attributes will be mirrored from the source to the target.
  - Mirror only if the file on the source is newer than the copy on the target—This option is available for full server to ESX migration jobs, but ideally it should not be used.
  - Use block checksum for comparisons—For those files flagged as different, the mirroring process can perform a block checksum comparison and send only those blocks that are different.
- Calculate size of protected data before mirroring—Specify if you want Double-Take to determine the mirroring percentage calculation based on the amount of data being protected. If the calculation is enabled, it is completed before the job starts mirroring, which can take a significant amount of time depending on the number of files and system performance. If your job contains a large number of files, for example, 250,000 or more, you may want to disable the calculation so that data will start being mirrored sooner. Disabling calculation will result in the mirror status not showing the percentage complete or the number of bytes remaining to be mirrored.

The calculated amount of protected data may be slightly off if your data set contains compressed or sparse files.

• Verify—Even if you have scheduled the verification process, you can run it manually any time a mirror is not in progress.

- Create verification report only—This option verifies the data and generates a verification log, but it does not remirror any files that are different on the source and target. See *Verification log* on page 79 for details on the log file.
- Mirror files to the target server automatically—When this option is enabled, in addition to verifying the data and generating a log, Double-Take will also mirror to the target any protected files that are different on the source.
  - Mirror only if the file on the source is newer than the copy on the target—This option is available for full server to ESX migration jobs, but ideally it should not be used.
  - Use block checksum for comparisons—For those files flagged as different, the mirroring process can perform a block checksum comparison and send only those blocks that are different.
- Set Bandwidth—You can manually override bandwidth limiting settings configured for your job at any time.
  - No bandwidth limit—Double-Take will transmit data using 100% bandwidth availability.
  - Fixed bandwidth limit—Double-Take will transmit data using a limited, fixed bandwidth. Select a **Preset bandwidth** limit rate from the common bandwidth limit values. The **Bandwidth** field will automatically update to the bytes per second value for your selected bandwidth. This is the maximum amount of data that will be transmitted per second. If desired, modify the bandwidth using a bytes per second value. The minimum limit should be 3500 bytes per second.
  - Scheduled bandwidth limit—If your job has a configured scheduled bandwidth limit, you can enable that schedule with this option.
- **Delete Orphans**—Even if you have enabled orphan file removal during your mirror and verification processes, you can manually remove them at any time.
- **Target**—You can pause the target, which queues any incoming Double-Take data from the source on the target. All active jobs to that target will complete the operations already in progress. Any new operations will be queued on the target until the target is resumed. The data will not be committed until the target is resumed. Pausing the target only pauses Double-Take processing, not the entire server.

While the target is paused, the Double-Take target cannot queue data indefinitely. If the target queue is filled, data will start to queue on the source. If the source queue is filled, Double-Take will automatically disconnect the connections and attempt to reconnect them.

If you have multiple jobs to the same target, all jobs from the same source will be paused and resumed.

 Update Shares—Shares are not applicable because they are automatically included with the system state that is being protected with the entire server.

Filter

Select a filter option from the drop-down list to only display certain jobs. You can display **Healthy jobs**, **Jobs with warnings**, or **Jobs with errors**. To clear the filter, select

**All jobs**. If you have created and populated server groups, then the filter will only apply to the jobs associated with the server or target servers in that server group. See *Managing servers* on page 45.

#### Type a server name

Displays only jobs that contain the text you entered. If you have created and populated server groups, then only jobs that contain the text you entered associated with the server or target servers in that server group will be displayed. See *Managing servers* on page 45.

#### Overflow Chevron

Displays any toolbar buttons that are hidden from view when the window size is reduced.

## Viewing full server to ESX migration job details

From the Manage Jobs page, highlight the job and click View Job Details in the toolbar.

Review the following table to understand the detailed information about your job displayed on the **View Job Details** page.

Job name	
	The name of the job
Job type	
	Each job type has a unique job type name. This job is a Full Server to ESX Migration job. For a complete list of all job type names, press F1 to view the Double-Take Console online help.
Health	
	The job is in a healthy state.
	1 The job is in a warning state.
	🕴 The job is in an error state.
	The job is in an unknown state.
Activity	
	There are many different <b>Activity</b> messages that keep you informed of the job activity. Most of the activity messages are informational and do not require any administrator interaction. If you see error messages, check the rest of the job details.
Connection ID	
	The incremental counter used to number connections. The number is incremented when a connection is created. It is also incremented by internal actions, such as an auto-disconnect and auto-reconnect. The lowest available number (as connections are created, stopped, deleted, and so on) will always be used. The counter is reset to one each time the Double-Take service is restarted.
Transmit mode	)
	<ul> <li>Active—Data is being transmitted to the target.</li> <li>Paused—Data transmission has been paused.</li> <li>Scheduled—Data transmission is waiting on schedule criteria.</li> <li>Stopped—Data is not being transmitted to the target.</li> <li>Error—There is a transmission error.</li> <li>Unknown—The console cannot determine the status.</li> </ul>

#### Target data state

- **OK**—The data on the target is in a good state.
- **Mirroring**—The target is in the middle of a mirror process. The data will not be in a good state until the mirror is complete.
- **Mirror Required**—The data on the target is not in a good state because a remirror is required. This may be caused by an incomplete or stopped mirror or an operation may have been dropped on the target.
- Busy—The source is low on memory causing a delay in getting the state of the data on the target.
- Not Loaded—Double-Take target functionality is not loaded on the target server. This may be caused by an activation code error.
- **Unknown**—The console cannot determine the status.

#### **Target route**

The IP address on the target used for Double-Take transmissions.

#### Compression

- **On / Level**—Data is compressed at the level specified.
- Off—Data is not compressed.

#### **Bandwidth limit**

If bandwidth limiting has been set, this statistic identifies the limit. The keyword **Unlimited** means there is no bandwidth limit set for the job.

#### **Connected since**

The date and time indicating when the current job was made. This field is blank, indicating that a TCP/IP socket is not present, when the job is waiting on transmit options or if the transmission has been stopped. This field will maintain the date and time, indicating that a TCP/IP socket is present, when transmission has been paused.

#### Additional information

Depending on the current state of your job, you may see additional information displayed to keep you informed about the progress and status of your job. If there is no additional information, you will see (None) displayed.

#### **Mirror status**

- Calculating—The amount of data to be mirrored is being calculated.
- In Progress—Data is currently being mirrored.
- Waiting—Mirroring is complete, but data is still being written to the target.
- Idle—Data is not being mirrored.
- Paused—Mirroring has been paused.
- **Stopped**—Mirroring has been stopped.
- **Removing Orphans**—Orphan files on the target are being removed or deleted depending on the configuration.

- Verifying—Data is being verified between the source and target.
- **Unknown**—The console cannot determine the status.

#### **Mirror percent complete**

The percentage of the mirror that has been completed

#### **Mirror remaining**

The total number of mirror bytes that are remaining to be sent from the source to the target

#### **Mirror skipped**

The total number of bytes that have been skipped when performing a difference or checksum mirror. These bytes are skipped because the data is not different on the source and target.

#### **Replication status**

- **Replicating**—Data is being replicated to the target.
- Ready—There is no data to replicate.
- **Pending**—Replication is pending.
- **Stopped**—Replication has been stopped.
- Out of Memory—Replication memory has been exhausted.
- **Failed**—The Double-Take service is not receiving replication operations from the Double-Take driver. Check the Event Viewer for driver related issues.
- Unknown—The console cannot determine the status.

#### **Replication queue**

The total number of replication bytes in the source queue

#### Disk queue

The amount of disk space being used to queue data on the source

#### Bytes sent

The total number of mirror and replication bytes that have been transmitted to the target

#### Bytes sent compressed

The total number of compressed mirror and replication bytes that have been transmitted to the target. If compression is disabled, this statistic will be the same as **Bytes sent**.

## Validating a full server to ESX migration job

Over time, you may want to confirm that any changes in your network or environment have not impacted your Double-Take job. Use these instructions to validate an existing job.

- 1. From the Manage Jobs page, highlight the job and click View Job Details in the toolbar.
- 2. In the Tasks area on the right on the View Job Details page, click Validate job properties.
- 3. Double-Take validates that your source and target are compatible. The **Summary** page displays your options and validation items.

Errors are designated by a white X inside a red circle. Warnings are designated by a black exclamation point (!) inside a yellow triangle. A successful validation is designated by a white checkmark inside a green circle. You can sort the list by the icon to see errors, warnings, or successful validations together. Click on any of the validation items to see details. You must correct any errors before you can enable your migration. Depending on the error, you may be able to click **Fix** or **Fix All** and let Double-Take correct the problem for you. For those errors that Double-Take cannot correct automatically, you will need to modify the source or target to correct the error, or you can select a different target. You must revalidate the selected servers, by clicking **Recheck**, until the validation check passes without errors.

Validation checks for an existing job are logged to the job log on the target server. See *Log files* on page 312 for details on the various log files.

4. Once your servers have passed validation, click **Close**.

## Editing a full server to ESX migration job

Use these instructions to edit a full server to ESX migration job.

- 1. From the Manage Jobs page, highlight the job and click View Job Details in the toolbar.
- 2. In the **Tasks** area on the right on the **View Job Details** page, click **Edit job properties**. (You will not be able to edit a job if you have removed the source of that job from your Double-Take Console session or if you only have Double-Take monitor security access.)
- 3. You will see the same options available for your full server to ESX migration job as when you created the job, but you will not be able to edit all of them. If desired, edit those options that are configurable for an existing job. See *Creating a full server to ESX migration job* on page 231 for details on each job option.



Changing some options may require Double-Take to automatically disconnect, reconnect, and remirror the job.

- 4. Click **Next** to continue.
- 5. Double-Take validates that your source and target are compatible. The **Summary** page displays your options and validation items.

Errors are designated by a white X inside a red circle. Warnings are designated by a black exclamation point (!) inside a yellow triangle. A successful validation is designated by a white checkmark inside a green circle. You can sort the list by the icon to see errors, warnings, or successful validations together. Click on any of the validation items to see details. You must correct any errors before you can enable your migration. Depending on the error, you may be able to click **Fix** or **Fix All** and let Double-Take correct the problem for you. For those errors that Double-Take cannot correct automatically, you will need to modify the source or target to correct the error, or you can select a different target. You must revalidate the selected servers, by clicking **Recheck**, until the validation check passes without errors.

Before a job is created, the results of the validation checks are logged to the Double-Take Management Service log on the target.

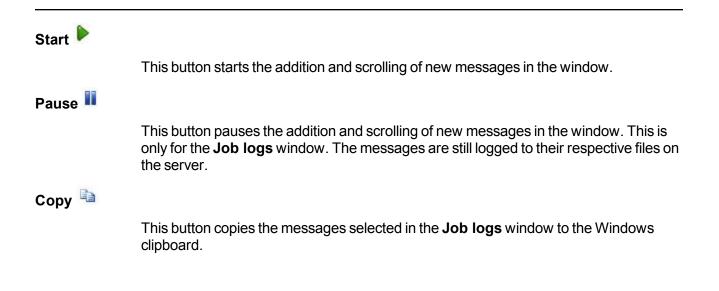
6. Once your servers have passed validation and you are ready to update your job, click Finish.

## Viewing a full server to ESX migration job log

You can view a job log file through the Double-Take Console by selecting **View Job Log** from the toolbar on the **Manage Jobs** page. Separate logging windows allow you to continue working in the Double-Take Console while monitoring log messages. You can open multiple logging windows for multiple jobs. When the Double-Take Console is closed, all logging windows will automatically close.

Job logs for alpha to b		
Time 🔺	Description	11
2/14/2012 6:48:46 AM	Target beta is a NOT a cluster. Setting JobFilePath default	
2/14/2012 6:48:47 AM	Entered TopState	
2/14/2012 6:48:47 AM	Entered UninitializedState	
2/14/2012 6:48:47 AM	Attaching to engine monitor 00000000-0000-0000-00000000000000	
2/14/2012 6:48:47 AM	Changing to StoppedState from UninitializedState in response to InitializeEvent consumed	
2/14/2012 6:48:47 AM	Exited UninitializedState	
2/14/2012 6:48:47 AM	Entered InitializedState	
2/14/2012 6:48:47 AM	Entered StoppedState	
2/14/2012 6:48:47 AM	Stopping monitor ab2268f7-85c6-4b68-819c-3d2912f5380a: name = FilesAndFolders_a6cb	
2/14/2012 6:48:47 AM	Successfully created monitor 618b51de-70f0-418b-9869-169f6f7d7049	
2/14/2012 6:48:47 AM	Changing to StartingState from StoppedState in response to StartEvent consumed by Stop	
2/14/2012 6:48:47 AM	Exited StoppedState	
2/14/2012 6:48:47 AM	Entered StartingState	
2/14/2012 6:48:48 AM	Event log entry written: '6008',	
2/14/2012 6:48:48 AM	Target beta is not clustered	
2/14/2012 6:48:48 AM	Changing to RunningState from StoppedState in response to StartEvent consumed by Stop	
2/14/2012 6:48:48 AM	Exited StoppedState	
2/14/2012 6:48:48 AM	Entered RunningState	
2/14/2012 6:48:48 AM	Starting monitor ab2268f7-85c6-4b68-819c-3d2912f5380a: name = FilesAndFolders a6cbf	
2/14/2012 6:48:48 AM	Entered SucceededState	
2/14/2012 6:48:48 AM	Successfully created connection 985ae0ce-bbba-47a2-84ec-5fa79da80174 connecting Files	
2/14/2012 5:48:48 AM	Waiting for source endpoint of " to be established (00:10:00)	
2/14/2012 6:48:50 AM	Established source endpoint of '112.42.74.29:6320' for engine connection with replication s	
2/14/2012 6:48:50 AM	Changing to ProtectingState from StartingState in response to StartSucceededEvent consu	
2/14/2012 6:48:50 AM	Exited StartingState	
2/14/2012 6:48:50 AM	Entered ProtectingState	
2/14/2012 6:48:50 AM	Event log entry written: '6004'.	
2/14/2012 6:48:52 AM	Changing to MirroringState from ProtectingState in response to MirroringEvent consumed b	
2/14/2012 6:48:52 AM	Entered MirroringState	
2/14/2012 6:48:52 AM	Changing to SynchronizedState from MirroringState in response to MirrorCompletedEvent c	
2/14/2012 6:48:52 AM	Exited MirroringState	
2/14/2012 6:48:52 AM	Entered SynchronizedState	
2/14/2012 7:05:45 AM	Event log entry written: '6008'.	
2/14/2012 7:05:48 AM	Changing to MirroringState from SynchronizedState in response to MirroringEvent consume	
2/14/2012 7:05:48 AM	Exited SynchronizedState	
2/14/2012 7:05:48 AM	Entered MirroringState	
2/14/2012 7:05:51 AM	Changing to SynchronizedState from MirroringState in response to MirrorIdleEvent consum	
2/14/2012 7:05:51 AM	Exited MirroringState	
2/14/2012 7:05:51 AM	Entered SynchronizedState	

The following table identifies the controls and the table columns in the **Job logs** window.



Clear 🥝	
	This button clears the <b>Job logs</b> window. The messages are not cleared from the respective files on the server. If you want to view all of the messages again, close and reopen the <b>Job logs</b> window.
Time	
	This column in the table indicates the date and time when the message was logged.
Description	
	This column in the table displays the actual message that was logged.

## Cutting over full server to ESX migration jobs

When the migration mirror has completed, the target may or may not reboot automatically depending on your selection for **Wait for user intervention before cutover**. If you disabled user intervention, the target will reboot automatically to complete the migration process. If you enabled user intervention, when the migration mirror is complete, the status will change to **Protecting**. Use this time to complete any necessary tasks. When you are ready to complete the migration, use the following instructions to cutover.

- 1. On the **Manage Jobs** page, highlight the job that you want to cutover and click **Failover or Cutover** in the toolbar.
- 2. Select the type of cutover to perform.
  - **Cutover to live data**—Select this option to initiate a full, live cutover using the current data on the target. The source is automatically shut down if it is still running. Then the target will stand in for the source by rebooting and applying the source identity, including its system state, on the target. After the reboot, the target becomes the source, and the target no longer exists.
  - **Perform test cutover**—Select this option to perform a test cutover using the current date on the target. This option will leave the source machine online, suspend the migration job, and start the replica virtual machine on the target without network connectivity.
  - Cutover to a snapshot—This option is not available for migration jobs.
- 3. Select how you want to handle the data in the target queue. You may want to check the amount of data in queue on the target by reviewing the *Statistics* on page 323 or *Performance Monitor* on page 412.
  - Apply data in target queues before failover or cutover—All of the data in the target queue will be applied before cutover begins. The advantage to this option is that all of the data that the target has received will be applied before cutover begins. The disadvantage to this option is depending on the amount of data in queue, the amount of time to apply all of the data could be lengthy.
  - Discard data in the target queues and failover or cutover immediately—All of the data in the target queue will be discarded and cutover will begin immediately. The advantage to this option is that cutover will occur immediately. The disadvantage is that any data in the target queue will be lost.
- 4. When you are ready to begin cutover, click Cutover.
  - If your source was disconnected from the network during the cutover process, the original job that was mirroring the data will still be active on that machine. Do not bring that machine back on the network. If you do, the original job will attempt to begin mirroring data again which could result in data loss. While the machine is still disconnected from the network, stop the Double-Take service, delete the file connect.sts located in the Double-Take installation directory, and then restart the Double-Take service. This will delete the original job. After the original job is deleted, you can bring the machine on the network if desired.

Because the Windows product activation is dependent on hardware, you may need to reactivate your Windows registration after cutover. In most cases when you are using Windows 2003, you can follow the on-screen prompts to complete the reactivation.

However, when you are using Windows 2008, the reactivation depends on several factors including service pack level, Windows edition, and your licensing type. If a Windows 2008 target comes online after cutover with an activation failure, use the steps below appropriate for your license type. Additionally, if you are using Windows 2012, you may only have 60 minutes to complete the reactivation process until Windows activation tampering automatically shuts down your server.

- **Retail licensing**—Retail licensing allows the activation of a single operating system installation.
  - 1. Open the System applet in Windows Control Panel.
  - 2. Under **Windows activation** at the bottom of the page, click **Change product key**.
  - 3. Enter your retail license key. You may need access to the Internet or to call Microsoft to complete the activation.
- **MAK volume licensing**—Multiple Activation Key (MAK) licensing allows the activation of multiple operating system installations using the same activation key.
  - 1. View or download the Microsoft Volume Activation Deployment Guide from the Microsoft web site.
  - 2. Using an administrative user account, open a command prompt and follow the instructions from the deployment guide to activate MAK clients. Multiple reboots may be necessary before you can access a command prompt. You may need access to the Internet or to call Microsoft to complete the activation.
- KMS volume licensing—Key Management Service (KMS) licensing allows IT professionals to complete activations on their local network without contacting Microsoft.
  - 1. View or download the Microsoft Volume Activation Deployment Guide from the Microsoft web site.
  - 2. Using an administrative user account, open a command prompt and follow the instructions from the deployment guide to convert a MAK activation client to a KMS client. Multiple reboots may be necessary before you can access a command prompt.

If your source was using vCenter, you may have problems with cutover if vCenter is down or if it is unreachable. See the <u>technical support</u> article 34768 for details on how to complete cutover in this situation.

5. If you performed a test cutover, you can undo it by selecting **Undo Failover or Cutover** in the toolbar. The replica virtual machine on the target will be shut down and the migration job will be restarted performing a file differences mirror.

# Chapter 10 Full server to Hyper-V migration

This section is specific to full server to Hyper-V migration and includes the following topics.

- See *Full server to Hyper-V migration requirements* on page 271—Full server to Hyper-V migration includes specific requirements for this type of migration.
- See *Creating a full server to Hyper-V migration job* on page 274—This section includes step-bystep instructions for creating a full server to Hyper-V migration job.
- See *Managing and controlling full server to Hyper-V migration jobs* on page 292—You can view status information about your full server to Hyper-V migration job.
- See *Cutting over full server to Hyper-V migration jobs* on page 308—Use this section when you are ready to cutover from your source to your target, which will become your new source.

## Full server to Hyper-V migration requirements

After you have verified your source server meets the *Requirements* on page 7, verify that your target server meets the requirements below for full server to Hyper-V migration.

- **Operating system**—You must have a physical Hyper-V host machine, where Double-Take can create the new virtual server, that meets the following requirements.
  - Your physical Hyper-V host machine can be any Windows 2008, 2008 R2, or 2012 operating system from the *Requirements* on page 7 that has the Hyper-V role enabled. In addition, you can use Hyper-V Server 2008 R2, Server Core 2008 R2, or Server Core 2012 with the Hyper-V role enabled. (Hyper-V Server 2008 and Server Core 2008 are not supported.)
  - If you are using Hyper-V Integration Services and your source is running Windows 2003, the source must have Service Pack 2 or later.
  - The virtual machines can use raw, pass-through, or differencing disks, however, they will be virtual hard disks on the replica on the target.
- **System memory**—The minimum system memory on each server should be 1 GB. The recommended amount for each server is 2 GB.
- Disk space for program files—This is the amount of disk space needed for the Double-Take program files. The amount depends on your operating system version and your architecture (32bit or 64-bit) and ranges from 350-500 MB.
  - The program files can be installed to any volume while the Microsoft Windows Installer files are automatically installed to the operating system boot volume.

Make sure you have additional disk space for Double-Take queuing, logging, and so on.

- **Disk space for data files**—This is the amount of disk space needed for the source data files. This will be dependent on the applications you are running and the amount of data files you have.
- Disk space for system state image—This is the amount of disk space for the image of the source system state. The size of the system state will depend on the operating system and architecture. Windows 2003 operating systems need at a minimum 2-3 GB of free space for the system state. Windows 2008 operating systems need at a minimum 7-9 GB of free space for the system state. Windows 2008 R2 operating systems need at a minimum 10 GB of free space for the system state. These minimums are for a clean operating system installation. Operating system customizations, installed applications, and user data will increase the disk space requirement.
- Server name—Double-Take includes Unicode file system support, but your server name must still be in ASCII format. If you have the need to use a server's fully-qualified domain name, your server cannot start with a numeric character because that will be interpreted as an IP address. Additionally, all Double-Take servers and appliances must have a unique server name.

If you rename a server that has already has a Double-Take license applied to it, for example if you rebuild a server, you will have to perform a host-transfer to continue using that license. This includes changing the case (capitalization) of the server name (upper or



lower case or any combination of case). See *Activating a single Double-Take server* on page 35 for details on completing a host-transfer.

- **Protocols and networking**—Your servers must meet the following protocol and networking requirements.
  - Your servers must have TCP/IP with static IP addressing. (Some job types allow you to add DHCP addresses for failover monitoring, although only after a job has already been created. Keep in mind that depending on your failover configuration, a source reboot may or may not cause a failover but having a new address assigned by DHCP may also cause a failover.)
  - IPv4 is the only supported version.
- **Microsoft** .**NET Framework**—Microsoft .NET Framework version 3.5 Service Pack 1 is required. This version is not included in the .NET version 4.0 release. Therefore, even if you have .NET version 4.0 installed, you will also need version 3.5.1. For Windows 2008 and earlier, you can install this version from the Double-Take DVD, via a web connection during the Double-Take installation, or from a copy you have obtained manually from the <u>Microsoft web site</u>. For Windows 2008 R2 and later, you need to enable it through Windows features.

Configuration Support			Not Supported
	One to one, active/standby	Х	
	One to one, active/active		Х
Source to	Many to one		Х
target configuration	One to many		Х
	Chained		Х
	Single server		Х
	Standalone to standalone	Х	
	Standalone to cluster		Х
Server	Cluster to standalone		Х
configuration	Cluster to cluster		Х
	Cluster Shared Volumes (CSV) guest level	Х	
	Cluster Shared Volumes (CSV) host level		Х

 Supported configurations—The following table identifies the supported configurations for a full server to Hyper-V migration job.

Configuration		Supported	Not Supported
Upgrade	Upgrade 5.3 Double-Take Move Console provisioned migration job to 7.0 Double-Take Console full server to Hyper-V migration job		х
configuration	Upgrade 6.0 full server to Hyper-V migration job to 7.0 full server to Hyper-V migration job	х	

## Creating a full server to Hyper-V migration job

Use the following instructions to create a full server to Hyper-V migration job.

- 1. Click Get Started from the toolbar.
- 2. Select Double-Take Move and click Next.
- 3. Choose your source server. This is the server that you want to migrate.

Choose	Choose Source Server			
The second second	Choose the	server whose data you w	ant to protect.	
	▲ Curren	nt Servers		
	Servers:			
		Server 🔺	Version	1
		alpha	7.0.0.1261.0	
	8	beta	7.0.0.1261.0	
	1			
	▼ Find a	New Server		

- **Current Servers**—This list contains the servers currently available in your console session. Servers that are not licensed for the workflow you have selected will be filtered out of the list. Select your source server from the list.
- Find a New Server—If the server you need is not in the Current Servers list, click the Find a New Server heading. From here, you can specify a server along with credentials for logging in to the server. If necessary, you can click Browse to select a server from a network drill-down list.

1	If you enter the source server's fully-qualified domain name, the Double-Take Console
_	will resolve the entry to the server short name. If that short name resides in two different
	domains, this could result in name resolution issues. In this case, enter the IP address of
	the server.

When specifying credentials for a new server, specify a user that is a member of the local Double-Take Admin and local administrator security groups. The user must also have administrative rights for Microsoft Hyper-V.

4. Click **Next** to continue.

 Choose the type of workload that you want to migrate. Under Server Workloads, in the Workload types pane, select Full Server to Hyper-V Migration. In the Workload items pane, select the volumes on the source that you want to migrate.

Choose	Data		
	Choose the data on this server that you want to p	rotect.	_
	▲ Server Workloads		
	Workload types:	Workload items:	
	Tull Server Migration	C: () = E:	
	Data Migration Full Server to Hyper-V or ESX Migration		
		_	
	Show all workload types		
	▼ Replication Rules		

6. By default, Double-Take selects your entire source for migration. If desired, click the **Replication Rules** heading and expand the volumes under **Folders**. You will see that Double-Take automatically excludes particular files that cannot be used during the migration. If desired, you can exclude other files that you do not want to migrate, but be careful when excluding data. Excluded volumes, folders, and/or files may compromise the integrity of your installed applications. There are some volumes, folders, and files (identified in italics text) that you will be unable to exclude, because they are required for migration. For example, the boot files cannot be excluded because that is where the system state information is stored.

Volumes and folders with a green highlight are included in their entirety in the migration. Volumes and folders highlighted in light yellow have individual files included in the migration. If there is no highlight, no part of the volume or folder is included in the migration. To modify the items selected, highlight a volume, folder, or file and click **Add Rule**. You can also enter a rule, including a wildcard specification, manually. Specify if you want to **Include** or **Exclude** the item. Also, specify if you want the rule to be recursive, which indicates the rule should automatically be applied to the subdirectories of the specified path. If you do not select **Recursive**, the rule will not be applied to subdirectories.

If you need to remove a rule, highlight it in the list at the bottom and click **Remove Rule**. Be careful when removing rules. Double-Take may create multiple rules when you are adding directories. For example, if you add E:\Data to be included in protection, then E:\ will be excluded. If you remove the E:\ exclusion rule, then the E:\Data rule will be removed also.



If you return to this page using the **Back** button in the job creation workflow, your **Workload Types** selection will be rebuilt, potentially overwriting any manual replication



rules that you specified. If you do return to this page, confirm your **Workload Types** and **Replication Rules** are set to your desired settings before proceeding forward again.

- 7. Click **Next** to continue.
- 8. Choose your target server. This is the Hyper-V server that will host the virtual machine that, after the migration, will become your new source.

oose	larget	Server		
	Choose th	e server that will store the prot	ected data.	
	+ Curre	ent Servers		
	Servers:			
		Server 🔺	Version	
	1		7.0.0.1261.0	
		👔 beta	7.0.0.1261.0	
	▼ Find a	a New Server		

- **Current Servers**—This list contains the servers currently available in your console session. Servers that are not licensed for the workflow you have selected and those not applicable to the workload type you have selected will be filtered out of the list. Select your target server from the list.
- Find a New Server—If the server you need is not in the Current Servers list, click the Find a New Server heading. From here, you can specify a server along with credentials for logging in to the server. If necessary, you can click Browse to select a server from a network drill-down list.
- If you enter the target server's fully-qualified domain name, the Double-Take Console will resolve the entry to the server short name. If that short name resides in two different domains, this could result in name resolution issues. In this case, enter the IP address of the server.

When specifying credentials for a new server, specify a user that is a member of the local Double-Take Admin and local administrator security groups. The user must also have administrative rights for Microsoft Hyper-V.

9. Click **Next** to continue.

10. You have many options available for your server migration job. Configure those options that are applicable to your environment.

Go to each page identified below to see the options available for that section of the **Set Options** page. After you have configured your options, continue with the next step on page 291.

- General on page 278
- Replica Virtual Machine Location on page 279
- Replica Virtual Machine Configuration on page 280
- Replica Virtual Machine Volumes on page 281
- Replica Virtual Machine Network Settings on page 282
- Failover Options on page 283
- Mirror, Verify & Orphaned Files on page 284
- Network Route on page 288
- Compression on page 289
- Bandwidth on page 290

### General

🔿 General	
Job name:	
alpha to beta	

For the **Job name**, specify a unique name for your job.

## Replica Virtual Machine Location

Select the volume and folder on the target server that will hold the replica virtual machine:						
	Volume	Total Size	Free Space	Owner		
-	C:	19.43 GB	2.8 GB			
in.	E:	213.29 GB	176.53 GB			
	A 12 A 1	replica virtual machine will				

- Select the volume and folder on the target server that will hold the replica virtual machine—Select one of the volumes from the list to indicate the volume on the target where you want to store the new virtual server when it is created. The target volume must have enough **Free Space** to store the source data.
- Full path where the replica virtual machine will be stored—Specify a location on the selected Volume to store the replica of the source. By specifying an existing folder, you can reuse an existing virtual machine on your Hyper-V target created by a previous protection job. This can be useful for pre-staging data on a virtual machine over a LAN connection and then relocating it to a remote site after the initial mirror is complete. You save time by skipping the virtual disk creation steps and performing a difference mirror instead of a full mirror. In order to use a pre-existing virtual disk, it must be a valid virtual disk and it cannot be attached to any registered virtual machine. In a WAN environment, you may want to take advantage of re-using an existing virtual disk by using a process similar to the following.
  - a. Create a protection job in a LAN environment, letting Double-Take create the virtual disk for you.
  - b. Complete the mirror process locally.
  - c. Delete the protection job and when prompted, select to keep the replica.
  - d. From the Hyper-V Manager, delete the replica virtual machine, which will delete the virtual machine configuration but will keep the associated hard disk files.
  - e. Shut down and move the Hyper-V target server to your remote site.
  - f. After the Hyper-V target server is back online at the remote site, create a new protection job for the same source server. Double-Take will reuse the existing hard disk files and perform a difference mirror over the WAN to bring the virtual machine up-to-date.

## **Replica Virtual Machine Configuration**

Repli	ica virtual machine display name:			
Alpha	a_Replica			
Number of processors: Proces		Processo	ors on the source server:	
1		▼ 1		
Amo	unt of memory (MB):	Memory	ory on the source server (MB):	
512 51		512		
Мар	source virtual switches to target	virtual switches:		
	Source Network Adapter		Target Network Adapter	
4	Local Area Connection		Local Area Connection - Virtual Network	

- **Replica virtual machine display name**—Specify the name of the replica virtual machine. This will be the display name of the virtual machine on the host system.
- Number of processors—Specify how many processors to create on the new virtual machine. The number of processors on the source is displayed to guide you in making an appropriate selection. If you select fewer processors than the source, your clients may be impacted by slower responses.
- Amount of memory—Specify the amount of memory, in MB, to create on the new virtual machine. The memory on the source is displayed to guide you in making an appropriate selection. If you select less memory than the source, your clients may be impacted by slower responses.
- Map source virtual switches to target virtual switches—Identify how you want to handle the network mapping after cutover. The Source Network Adapter column lists the NICs from the source. Map each one to a Target Network Adapter, which is a virtual network on the target.
- **Power on replica virtual machine after failover**—By default, the replica virtual machine will automatically be powered on after the cutover process is complete. If you want the replica virtual machine to remain powered off, disable this option.

## Replica Virtual Machine Volumes

onfi	gure the volum	es for replica virtual	machine.					
	Volume	Disk Size	Used Space	Replica D	isk Size	Replica Disk Format	Storage Controller	
Q.	C:	89.9 GB	9.04 GB	89.9	GB 💌	Dynamic 💌	IDE 💌	

• **Replica Disk Size**—For each volume you are protecting, specify the size of the replica disk on the target. Be sure and include the value in MB or GB for the disk. The value must be at least the size of the specified **Used Space** on that volume.

In some cases, the replica virtual machine may use more virtual disk space than the size of the source volume due to differences in how the virtual disk's block size is formatted and how hard links are handled. To avoid this issue, specify the size of your replica to be at least 5 GB larger.

- **Replica Disk Format**—For each volume you are protecting, specify the format of the disk, **Dynamic** or **Fixed**, that will be created on the replica virtual machine. Any disk format specification will be discarded if you are reusing a disk from the **Full path where the replica virtual machine will be stored** from the **Replica Virtual Machine Location** section.
- Storage Controller—For each volume you are protecting, specify the type of Storage Controller that you want to use for each volume on the target.

The system volume must be an IDE controller. In addition, up to two more volumes can be attached to an IDE controller. If you are protecting more than three volumes on the source, you will need to install the Hyper-V Integration Components to acquire a SCSI device after failover to attach these volumes to the replica virtual machine. You must be using Windows 2003 Service Pack 2 or later to use Hyper-V Integration Components.See your Microsoft documentation for more information.

## **Replica Virtual Machine Network Settings**

lse advanced settings for re	eplica virtual machine netwo	ork configuration.		
Source network adapter:	Local Area Connection (1	12.42.74.29)		
Target IP a <u>d</u> dresses:				
IP Address	Subnet Mask			Add
112.52.74.29	255.255.0.0			Remove
Default Gate <u>w</u> ays: 112.52.48.9			Move Up	Add
			Move Up Move Down	
112.52.48.9			1	Add Remove
112.52.48.9 112.52.48.10			1	

- Use advanced settings for replica virtual machine network configuration—This
  option allows you to configure advanced network settings, which are primarily for WAN
  support.
- Source network adapter—Select a network adapter on the source and specify the Target IP addresses, Default Gateways, and DNS Server addresses to be used after cutover. If you add multiple gateways or DNS servers, you can sort them by using the Move Up and Move Down buttons. Repeat this step for each network adapter on the source.

Updates made during cutover will be based on the network adapter name when protection is established. If you change that name, you will need to delete the job and re-create it so the new name will be used during cutover.

If you update one of the advanced settings (IP address, gateway, or DNS server), then you must update all of them. Otherwise, the remaining items will be left blank. If you do not specify any of the advanced settings, the replica virtual machine will be assigned the same network configuration as the source.

1

## Failover Options

S Failover Options	
Wait for user to initiate failover Shutdown source server	

- Wait for user to initiate failover—By default, the cutover process will wait for you to initiate it, allowing you to control when cutover occurs. When a cutover occurs, the job will wait in the **Protecting** state for you to manually initiate the cutover process. Disable this option only if you want cutover to occur immediately after the mirror is complete.
- Shutdown source server—Specify if you want to shut down the source server, if it is still running, before the source is cutover to the target, This option prevents identity conflicts on the network in those cases where the source and target are still both running and communicating.

### Mirror, Verify & Orphaned Files

Mirror, Verify & Orphaned Files	
C Mirror all files	
<ul> <li>Mirror different files (based on modified time, size, or attributes)</li> </ul>	
$\square$ Mirror only if the file on the source is newer than the copy on the target	
<ul> <li>This option not available for the current workload</li> </ul>	
Use block checksum for comparisons	
Enable scheduled verification	
Verify on this interval:	
Begin immediately	
Begin at this time: Select a date	
Mirror files to the target server when verifying	
Mirror only if the file on the source is newer than the copy on the target	
This option not available for the current workload	
Use block checksum for comparisons	
Calculate size of protected data upon connection	
Delete orphaned files	

- Mirror all files—All protected files will be mirrored from the source to the target.
- **Mirror different files**—Only those protected files that are different based on date and time, size, or attributes will be mirrored from the source to the target.
  - Mirror only if the file on the source is newer than the copy on the target— This option is not available for migration jobs.
  - Use block checksum for comparisons—For those files flagged as different, the mirroring process can perform a block checksum comparison and send only those blocks that are different.

### File Differences Mirror Options Compared

The following table will help you understand how the various difference mirror options work together, including when you are using the block checksum option configured through the *Source server properties* on page 69.

An X in the table indicates that option is enabled. An X enclosed in parentheses (X) indicates that the option can be on or off without impacting the action performed during the mirror.

Not all job types have the source newer option available.

Source Server Properties	Jo	b Properties	Action Performed	
Block Checksum Option	File Differences Option	Source Newer Option	Block Checksum Option	Action Performed
(X)	Х			Any file that is different on the source and target based on the date, time, size, and/or attribute is transmitted to the target. The mirror sends the entire file.
(X)	Х	х		Any file that is newer on the source than on the target based on date and/or time is transmitted to the target. The mirror sends the entire file.
	Х		Х	Any file that is different on the source and target based on date, time, size, and/or attributed is flagged as different. The mirror then performs a checksum comparison on the flagged files and only sends those blocks that are different.
x	х		х	The mirror performs a checksum comparison on all files and only sends those blocks that are different.
(X)	Х	Х	Х	Any file that is newer on the source than on the target based on date and/or time is flagged as different. The mirror then performs a checksum comparison on the flagged files and only sends those blocks that are different.

- Enable scheduled verification—Verification is the process of confirming that the source replica data on the target is identical to the original data on the source. Verification creates a log file detailing what was verified as well as which files are not synchronized. If the data is not the same, can automatically initiate a remirror, if configured. The remirror ensures data integrity between the source and target. When this option is enabled, Double-Take will verify the source replica data on the target and generate a verification log.
  - Because of the way the Windows Cache Manager handles memory, machines that are doing minimal or light processing may have file operations that remain in the cache until additional operations flush them out. This may make Double-Take files on the target appear as if they are not synchronized. When the Windows Cache Manager releases the operations in the cache on the source and target, the files will be updated on the target.
  - Verify on this interval—Specify the interval between verification processes.
  - **Begin immediately**—Select this option if you want to start the verification schedule immediately after the job is established.
  - **Begin at this time**—Select this option if you want to start the verification at the specified date and time.
  - Mirror files to the target server when verifying—When this option is enabled, in addition to verifying the data and generating a log, Double-Take will also mirror to the target any protected files that are different on the source.
    - Mirror only if the file on the source is newer than the copy on the target—This option is not available for migration jobs.
    - Use block checksum for comparisons—For those files flagged as different, the mirroring process can perform a block checksum comparison and send only those blocks that are different.
- Calculate size of protected data before mirroring—Specify if you want Double-Take to determine the mirroring percentage calculation based on the amount of data being protected. If the calculation is enabled, it is completed before the job starts mirroring, which can take a significant amount of time depending on the number of files and system performance. If your job contains a large number of files, for example, 250,000 or more, you may want to disable the calculation so that data will start being mirrored sooner. Disabling calculation will result in the mirror status not showing the percentage complete or the number of bytes remaining to be mirrored.

The calculated amount of protected data may be slightly off if your data set contains compressed or sparse files.

• **Delete orphaned files**—An orphaned file is a file that exists in the replica data on the target, but does not exist in the protected data on the source. This option specifies if orphaned files should be deleted on the target during a mirror, verification, or restoration.



Orphaned file configuration is a per target configuration. All jobs to the same target will have the same orphaned file configuration.

The orphaned file feature does not delete alternate data streams. To do this, use a full mirror, which will delete the additional streams when the file is re-created.

If delete orphaned files is enabled, carefully review any replication rules that use wildcard definitions. If you have specified wildcards to be excluded from protection, files matching those wildcards will also be excluded from orphaned file processing and will not be deleted from the target. However, if you have specified wildcards to be included in your protection, those files that fall outside the wildcard inclusion rule will be considered orphaned files and will be deleted from the target.

If you want to move orphaned files rather than delete them, you can configure this option along with the move deleted files feature to move your orphaned files to the specified deleted files directory. See *Target server properties* on page 72 for more information.

During a mirror, orphaned file processing success messages will be logged to a separate orphaned file log. This keeps the Double-Take log from being overrun with orphaned file success processing messages. Orphaned files processing statistics and any errors in orphaned file processing will still be logged to the Double-Take log, and during difference mirrors, verifications, and restorations, all orphaned file processing messages are logged to the Double-Take log. The orphaned file log is located in the **Logging folder** specified for the source. See *Log file properties* on page 77 for details on the location of that folder. The orphaned log file is overwritten during each orphaned file processing during a mirror, and the log file will be a maximum of 50 MB.

### **Network Route**

Network Route		
Send data to the target server usin	g this <u>r</u> oute:	
10.10.10.30		

For **Send data to the target server using this route**, Double-Take will select, by default, a target route for transmissions. If desired, specify an alternate route on the target that the data will be transmitted through. This allows you to select a different route for Double-Take traffic. For example, you can separate regular network traffic and Double-Take traffic on a machine with multiple IP addresses.

The IP address used on the source will be determined through the Windows route table.

### Compression

•) Compression			
Enable compression:			
	ч		
-	1	1	
Minimum	Medium	Maximum	

To help reduce the amount of bandwidth needed to transmit Double-Take data, compression allows you to compress data prior to transmitting it across the network. In a WAN environment this provides optimal use of your network resources. If compression is enabled, the data is compressed before it is transmitted from the source. When the target receives the compressed data, it decompresses it and then writes it to disk. You can set the level from **Minimum** to **Maximum** to suit your needs.

Keep in mind that the process of compressing data impacts processor usage on the source. If you notice an impact on performance while compression is enabled in your environment, either adjust to a lower level of compression, or leave compression disabled. Use the following guidelines to determine whether you should enable compression.

- If data is being queued on the source at any time, consider enabling compression.
- If the server CPU utilization is averaging over 85%, be cautious about enabling compression.
- The higher the level of compression, the higher the CPU utilization will be.
- Do not enable compression if most of the data is inherently compressed. Many image (.jpg, .gif) and media (.wmv, .mp3, .mpg) files, for example, are already compressed. Some images files, such as .bmp and .tif, are decompressed, so enabling compression would be beneficial for those types.
- · Compression may improve performance even in high-bandwidth environments.
- Do not enable compression in conjunction with a WAN Accelerator. Use one or the other to compress Double-Take data.

All jobs from a single source connected to the same IP address on a target will share the same compression configuration.

### Bandwidth

o not limit bandwidth				
lse a fixed limit (bytes	per second):			
Preset bandwidth:		Bandwidth (bytes per s	econd):	
	*	1	*	
Use scheduled limits: Days	Start	End	Limit	1
Days Every day	6:00 AM	6:00 PM	193000	I
Days				Ĩ
Days Every day	6:00 AM	6:00 PM	193000	Ĩ

Bandwidth limitations are available to restrict the amount of network bandwidth used for Double-Take data transmissions. When a bandwidth limit is specified, Double-Take never exceeds that allotted amount. The bandwidth not in use by Double-Take is available for all other network traffic.

All jobs from a single source connected to the same IP address on a target will share the same bandwidth configuration.

- **Do not limit bandwidth**—Double-Take will transmit data using 100% bandwidth availability.
- Use a fixed limit—Double-Take will transmit data using a limited, fixed bandwidth. Select a **Preset bandwidth** limit rate from the common bandwidth limit values. The **Bandwidth** field will automatically update to the bytes per second value for your selected bandwidth. This is the maximum amount of data that will be transmitted per second. If desired, modify the bandwidth using a bytes per second value. The minimum limit should be 3500 bytes per second.
- Use scheduled limits—Double-Take will transmit data using a dynamic bandwidth based on the schedule you configure. Bandwidth will not be limited during unscheduled times.
  - New—Click New to create a new scheduled bandwidth limit. Specify the following information.
    - **Daytime entry**—Select this option if the start and end times of the bandwidth window occur in the same day (between 12:01 AM and midnight). The start time must occur before the end time.
    - **Overnight entry**—Select this option if the bandwidth window begins on one day and continues past midnight into the next day. The start time must be later than the end time, for example 6 PM to 6 AM.
    - **Day**—Enter the day on which the bandwidth limiting should occur. You can pick a specific day of the week, **Weekdays** to have the limiting occur Monday through Friday, **Weekends** to have the limiting occur Saturday and Sunday, or **Every day** to have the limiting repeat on all days of the week.
    - Start time—Enter the time to begin bandwidth limiting.

- End time—Enter the time to end bandwidth limiting.
- **Preset bandwidth**—Select a bandwidth limit rate from the common bandwidth limit values. The **Bandwidth** field will automatically update to the bytes per second value for your select bandwidth.
- **Bandwidth**—If desired, modify the bandwidth using a bytes per second value. The minimum limit should be 3500 bytes per second.
- Edit—Click Edit to modify an existing scheduled bandwidth limit.
- Delete—Click Delete to remove a scheduled bandwidth limit.

If you change your job option from **Use scheduled limits** to **Do not limit bandwidth** or **Use a fixed limit**, any schedule that you created will be preserved. That schedule will be reused if you change your job option back to **Use scheduled limits**.

You can manually override a schedule after a job is established by selecting **Other Job Options**, **Set Bandwidth**. If you select **No bandwidth limit** or **Fixed bandwidth limit**, that manual override will be used until you go back to your schedule by selecting **Other Job Options**, **Set Bandwidth**, **Scheduled bandwidth limit**. For example, if your job is configured to use a daytime limit, you would be limited during the day, but not at night. But if you override that, your override setting will continue both day and night, until you go back to your schedule. See the *Managing and controlling jobs* section for your job type for more information on the **Other Job Options**.

- 11. Click **Next** to continue.
- 12. Double-Take validates that your source and target are compatible. The **Summary** page displays your options and validation items.

Errors are designated by a white X inside a red circle. Warnings are designated by a black exclamation point (!) inside a yellow triangle. A successful validation is designated by a white checkmark inside a green circle. You can sort the list by the icon to see errors, warnings, or successful validations together. Click on any of the validation items to see details. You must correct any errors before you can enable your migration. Depending on the error, you may be able to click **Fix** or **Fix All** and let Double-Take correct the problem for you. For those errors that Double-Take cannot correct automatically, you will need to modify the source or target to correct the error, or you can select a different target. You must revalidate the selected servers, by clicking **Recheck**, until the validation check passes without errors.

Before a job is created, the results of the validation checks are logged to the Double-Take Management Service log on the target.

13. Once your servers have passed validation and you are ready to begin migration, click **Finish**, and you will automatically be taken to the **Manage Jobs** page.

# Managing and controlling full server to Hyper-V migration jobs

Click Manage Jobs from the main Double-Take Console toolbar. The Manage Jobs page allows you to view status information about your jobs. You can also control your jobs from this page.

The jobs displayed in the right pane depend on the server group folder selected in the left pane. Every job for each server in your console session is displayed when the Jobs on All Servers group is selected. If you have created and populated server groups (see Managing servers on page 45), then only the jobs associated with the server or target servers in that server group will be displayed in the right pane.

- See Overview job information displayed in the top pane on page 292
- See Detailed job information displayed in the bottom pane on page 294
- See Job controls on page 296

### Overview job information displayed in the top pane

The top pane displays high-level overview information about your jobs.

Column 1 (Blank)				
	The first blank column indicates the state of the job.			
	The job is in a healthy state.			
	1 The job is in a warning state. This icon is also displayed on any server groups that you have created that contain a job in a warning state.			
	Solution The job is in an error state. This icon is also displayed on any server groups that you have created that contain a job in an error state.			
	The job is in an unknown state.			
Job				
	The name of the job			
Source Server				
	The name of the source. This could be the name or IP address of your source.			
Target Server				
	The name of the target. This could be the name or IP address of your target.			
Job Type				
	Each job type has a unique job type name. This job is a Full Server to Hyper-V Migration job. For a complete list of all job type names, press F1 to view the Double-			

Take Console online help.

#### Activity

There are many different **Activity** messages that keep you informed of the job activity. Most of the activity messages are informational and do not require any administrator interaction. If you see error messages, check the job details. Keep in mind that **Idle** indicates console to server activity is idle, not that your servers are idle.

#### **Mirror Status**

- Calculating—The amount of data to be mirrored is being calculated.
- In Progress—Data is currently being mirrored.
- Waiting—Mirroring is complete, but data is still being written to the target.
- Idle—Data is not being mirrored.
- Paused—Mirroring has been paused.
- Stopped—Mirroring has been stopped.
- **Removing Orphans**—Orphan files on the target are being removed or deleted depending on the configuration.
- Verifying—Data is being verified between the source and target.
- Unknown—The console cannot determine the status.

#### **Replication Status**

- Replicating—Data is being replicated to the target.
- Ready—There is no data to replicate.
- Pending—Replication is pending.
- Stopped—Replication has been stopped.
- Out of Memory—Replication memory has been exhausted.
- **Failed**—The Double-Take service is not receiving replication operations from the Double-Take driver. Check the Event Viewer for driver related issues.
- Unknown—The console cannot determine the status.

#### Transmit Mode

- Active—Data is being transmitted to the target.
- **Paused**—Data transmission has been paused.
- Scheduled—Data transmission is waiting on schedule criteria.
- **Stopped**—Data is not being transmitted to the target.
- Error—There is a transmission error.
- Unknown—The console cannot determine the status.

### Detailed job information displayed in the bottom pane

The details displayed in the bottom pane of the **Manage Jobs** page provide additional information for the job highlighted in the top pane. If you select multiple jobs, the details for the first selected job will be displayed.

#### Name

The name of the job

#### Target data state

- **OK**—The data on the target is in a good state.
- **Mirroring**—The target is in the middle of a mirror process. The data will not be in a good state until the mirror is complete.
- **Mirror Required**—The data on the target is not in a good state because a remirror is required. This may be caused by an incomplete or stopped mirror or an operation may have been dropped on the target.
- **Busy**—The source is low on memory causing a delay in getting the state of the data on the target.
- **Not Loaded**—Double-Take target functionality is not loaded on the target server. This may be caused by an activation code error.
- Unknown—The console cannot determine the status.

#### Mirror remaining

The total number of mirror bytes that are remaining to be sent from the source to the target

#### Mirror skipped

The total number of bytes that have been skipped when performing a difference or checksum mirror. These bytes are skipped because the data is not different on the source and target.

#### **Replication queue**

The total number of replication bytes in the source queue

#### Disk queue

The amount of disk space being used to queue data on the source

#### Bytes sent

The total number of mirror and replication bytes that have been transmitted to the target

#### Bytes sent (compressed)

The total number of compressed mirror and replication bytes that have been transmitted to the target. If compression is disabled, this statistic will be the same as

#### Bytes sent.

#### **Connected since**

The date and time indicating when the current job was made. This field is blank, indicating that a TCP/IP socket is not present, when the job is waiting on transmit options or if the transmission has been stopped. This field will maintain the date and time, indicating that a TCP/IP socket is present, when transmission has been paused.

#### **Recent activity**

Displays the most recent activity for the selected job, along with an icon indicating the success or failure of the last initiated activity. Click the link to see a list of recent activities for the selected job. You can highlight an activity in the list to display additional details about the activity.

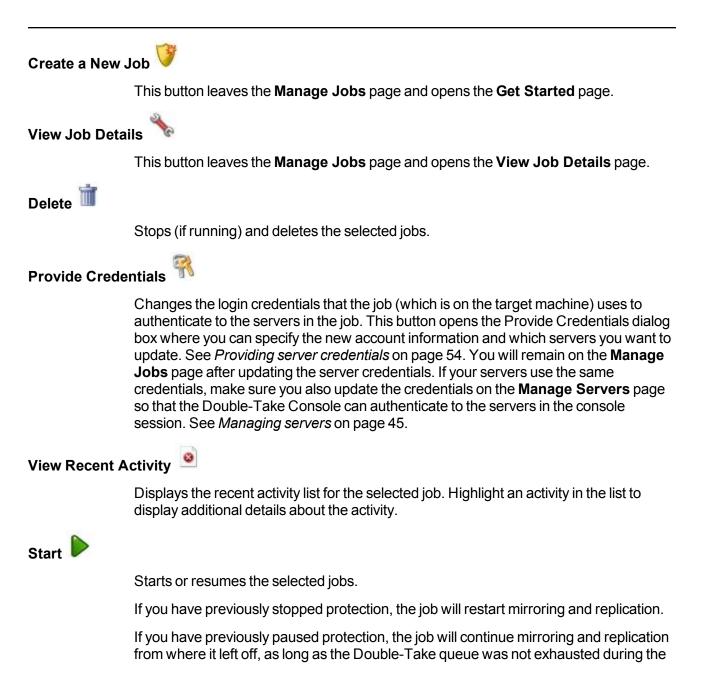
#### Additional information

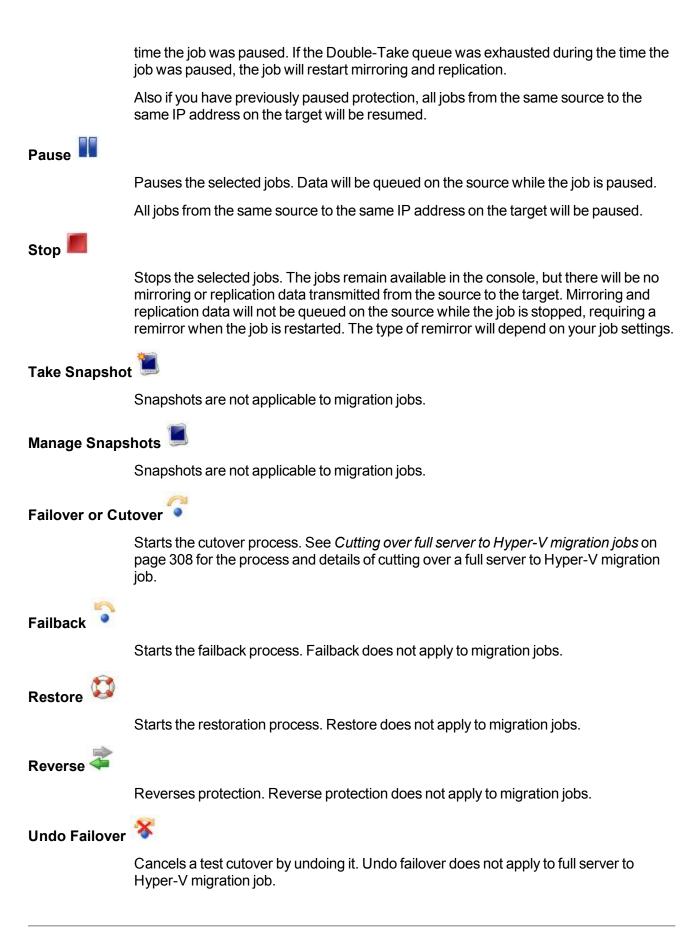
Depending on the current state of your job, you may see additional information displayed to keep you informed about the progress and status of your job. If there is no additional information, you will see (None) displayed.

### Job controls

You can control your job through the toolbar buttons available on the **Manage jobs** page. If you select multiple jobs, some of the controls will apply only to the first selected job, while others will apply to all of the selected jobs. For example, **View Job Details** will only show details for the first selected job, while **Stop** will stop protection for all of the selected jobs.

If you want to control just one job, you can also right click on that job and access the controls from the pop-up menu.





### View Job Loa

Opens the job log. On the right-click menu, this option is called **View Logs**, and you have the option of opening the job log, source server log, or target server log. See Viewing the log files through the Double-Take Console on page 313 for details on all three of these logs.



- Other Job Actions
  - Mirroring—You can start, stop, pause and resume mirroring for any job that is running.

When pausing a mirror, Double-Take stops queuing mirror data on the source but maintains a pointer to determine what information still needs to be mirrored to the target. Therefore, when resuming a paused mirror, the process continues where it left off.

When stopping a mirror, Double-Take stops queuing mirror data on the source and does not maintain a pointer to determine what information still needs to be mirrored to the target. Therefore, when starting a mirror that has been stopped, you will need to decide what type of mirror to perform.

- Mirror all files—All protected files will be mirrored from the source to the target.
- Mirror different files—Only those protected files that are different based on date and time, size, or attributes will be mirrored from the source to the target.
  - Mirror only if the file on the source is newer than the copy on the target—This option is available for full server to Hyper-V migration jobs, but ideally it should not be used.
  - Use block checksum for comparisons—For those files flagged as different, the mirroring process can perform a block checksum comparison and send only those blocks that are different.
- Calculate size of protected data before mirroring—Specify if you want Double-Take to determine the mirroring percentage calculation based on the amount of data being protected. If the calculation is enabled, it is completed before the job starts mirroring, which can take a significant amount of time depending on the number of files and system performance. If your job contains a large number of files, for example, 250,000 or more, you may want to disable the calculation so that data will start being mirrored sooner. Disabling calculation will result in the mirror status not showing the percentage complete or the number of bytes remaining to be mirrored.

The calculated amount of protected data may be slightly off if your data set contains compressed or sparse files.

 Verify—Even if you have scheduled the verification process, you can run it manually any time a mirror is not in progress.

- Create verification report only—This option verifies the data and generates a verification log, but it does not remirror any files that are different on the source and target. See *Verification log* on page 79 for details on the log file.
- Mirror files to the target server automatically—When this option is enabled, in addition to verifying the data and generating a log, Double-Take will also mirror to the target any protected files that are different on the source.
  - Mirror only if the file on the source is newer than the copy on the target—This option is available for full server to Hyper-V migration jobs, but ideally it should not be used.
  - Use block checksum for comparisons—For those files flagged as different, the mirroring process can perform a block checksum comparison and send only those blocks that are different.
- Set Bandwidth—You can manually override bandwidth limiting settings configured for your job at any time.
  - No bandwidth limit—Double-Take will transmit data using 100% bandwidth availability.
  - Fixed bandwidth limit—Double-Take will transmit data using a limited, fixed bandwidth. Select a **Preset bandwidth** limit rate from the common bandwidth limit values. The **Bandwidth** field will automatically update to the bytes per second value for your selected bandwidth. This is the maximum amount of data that will be transmitted per second. If desired, modify the bandwidth using a bytes per second value. The minimum limit should be 3500 bytes per second.
  - Scheduled bandwidth limit—If your job has a configured scheduled bandwidth limit, you can enable that schedule with this option.
- **Delete Orphans**—Even if you have enabled orphan file removal during your mirror and verification processes, you can manually remove them at any time.
- **Target**—You can pause the target, which queues any incoming Double-Take data from the source on the target. All active jobs to that target will complete the operations already in progress. Any new operations will be queued on the target until the target is resumed. The data will not be committed until the target is resumed. Pausing the target only pauses Double-Take processing, not the entire server.

While the target is paused, the Double-Take target cannot queue data indefinitely. If the target queue is filled, data will start to queue on the source. If the source queue is filled, Double-Take will automatically disconnect the connections and attempt to reconnect them.

If you have multiple jobs to the same target, all jobs from the same source will be paused and resumed.

 Update Shares—Shares are not applicable because they are automatically included with the system state that is being protected with the entire server.

Filter

Select a filter option from the drop-down list to only display certain jobs. You can display **Healthy jobs**, **Jobs with warnings**, or **Jobs with errors**. To clear the filter, select

**All jobs**. If you have created and populated server groups, then the filter will only apply to the jobs associated with the server or target servers in that server group. See *Managing servers* on page 45.

#### Type a server name

Displays only jobs that contain the text you entered. If you have created and populated server groups, then only jobs that contain the text you entered associated with the server or target servers in that server group will be displayed. See *Managing servers* on page 45.

#### Overflow Chevron

Displays any toolbar buttons that are hidden from view when the window size is reduced.

## Viewing full server to Hyper-V migration job details

From the Manage Jobs page, highlight the job and click View Job Details in the toolbar.

Review the following table to understand the detailed information about your job displayed on the **View Job Details** page.

The name of the job
Each job type has a unique job type name. This job is a Full Server to Hyper-V Migration job. For a complete list of all job type names, press F1 to view the Double- Take Console online help.
The job is in a healthy state.
1 The job is in a warning state.
🕴 The job is in an error state.
The job is in an unknown state.
There are many different <b>Activity</b> messages that keep you informed of the job activity. Most of the activity messages are informational and do not require any administrator interaction. If you see error messages, check the rest of the job details.
The incremental counter used to number connections. The number is incremented when a connection is created. It is also incremented by internal actions, such as an auto-disconnect and auto-reconnect. The lowest available number (as connections are created, stopped, deleted, and so on) will always be used. The counter is reset to one each time the Double-Take service is restarted.
<ul> <li>Active—Data is being transmitted to the target.</li> <li>Paused—Data transmission has been paused.</li> <li>Scheduled—Data transmission is waiting on schedule criteria.</li> <li>Stopped—Data is not being transmitted to the target.</li> <li>Error—There is a transmission error.</li> <li>Unknown—The console cannot determine the status.</li> </ul>

#### Target data state

- **OK**—The data on the target is in a good state.
- **Mirroring**—The target is in the middle of a mirror process. The data will not be in a good state until the mirror is complete.
- **Mirror Required**—The data on the target is not in a good state because a remirror is required. This may be caused by an incomplete or stopped mirror or an operation may have been dropped on the target.
- Busy—The source is low on memory causing a delay in getting the state of the data on the target.
- Not Loaded—Double-Take target functionality is not loaded on the target server. This may be caused by an activation code error.
- **Unknown**—The console cannot determine the status.

#### **Target route**

The IP address on the target used for Double-Take transmissions.

#### Compression

- On / Level—Data is compressed at the level specified.
- Off—Data is not compressed.

#### **Bandwidth limit**

If bandwidth limiting has been set, this statistic identifies the limit. The keyword **Unlimited** means there is no bandwidth limit set for the job.

#### **Connected since**

The date and time indicating when the current job was made. This field is blank, indicating that a TCP/IP socket is not present, when the job is waiting on transmit options or if the transmission has been stopped. This field will maintain the date and time, indicating that a TCP/IP socket is present, when transmission has been paused.

#### Additional information

Depending on the current state of your job, you may see additional information displayed to keep you informed about the progress and status of your job. If there is no additional information, you will see (None) displayed.

#### **Mirror status**

- Calculating—The amount of data to be mirrored is being calculated.
- In Progress—Data is currently being mirrored.
- Waiting—Mirroring is complete, but data is still being written to the target.
- Idle—Data is not being mirrored.
- Paused—Mirroring has been paused.
- **Stopped**—Mirroring has been stopped.
- **Removing Orphans**—Orphan files on the target are being removed or deleted depending on the configuration.

- Verifying—Data is being verified between the source and target.
- **Unknown**—The console cannot determine the status.

#### **Mirror percent complete**

The percentage of the mirror that has been completed

#### **Mirror remaining**

The total number of mirror bytes that are remaining to be sent from the source to the target

#### **Mirror skipped**

The total number of bytes that have been skipped when performing a difference or checksum mirror. These bytes are skipped because the data is not different on the source and target.

#### **Replication status**

- **Replicating**—Data is being replicated to the target.
- Ready—There is no data to replicate.
- **Pending**—Replication is pending.
- **Stopped**—Replication has been stopped.
- Out of Memory—Replication memory has been exhausted.
- **Failed**—The Double-Take service is not receiving replication operations from the Double-Take driver. Check the Event Viewer for driver related issues.
- Unknown—The console cannot determine the status.

#### **Replication queue**

The total number of replication bytes in the source queue

#### Disk queue

The amount of disk space being used to queue data on the source

#### Bytes sent

The total number of mirror and replication bytes that have been transmitted to the target

#### Bytes sent compressed

The total number of compressed mirror and replication bytes that have been transmitted to the target. If compression is disabled, this statistic will be the same as **Bytes sent**.

# Validating a full server to Hyper-V migration job

Over time, you may want to confirm that any changes in your network or environment have not impacted your Double-Take job. Use these instructions to validate an existing job.

- 1. From the Manage Jobs page, highlight the job and click View Job Details in the toolbar.
- 2. In the Tasks area on the right on the View Job Details page, click Validate job properties.
- 3. Double-Take validates that your source and target are compatible. The **Summary** page displays your options and validation items.

Errors are designated by a white X inside a red circle. Warnings are designated by a black exclamation point (!) inside a yellow triangle. A successful validation is designated by a white checkmark inside a green circle. You can sort the list by the icon to see errors, warnings, or successful validations together. Click on any of the validation items to see details. You must correct any errors before you can enable your migration. Depending on the error, you may be able to click **Fix** or **Fix All** and let Double-Take correct the problem for you. For those errors that Double-Take cannot correct automatically, you will need to modify the source or target to correct the error, or you can select a different target. You must revalidate the selected servers, by clicking **Recheck**, until the validation check passes without errors.

Validation checks for an existing job are logged to the job log on the target server. See *Log files* on page 312 for details on the various log files.

4. Once your servers have passed validation, click Close.

# Editing a full server to Hyper-V migration job

Use these instructions to edit a full server to Hyper-V migration job.

- 1. From the Manage Jobs page, highlight the job and click View Job Details in the toolbar.
- 2. In the **Tasks** area on the right on the **View Job Details** page, click **Edit job properties**. (You will not be able to edit a job if you have removed the source of that job from your Double-Take Console session or if you only have Double-Take monitor security access.)
- 3. You will see the same options available for your full server to Hyper-V migration job as when you created the job, but you will not be able to edit all of them. If desired, edit those options that are configurable for an existing job. See *Creating a full server to Hyper-V migration job* on page 274 for details on each job option.



Changing some options may require Double-Take to automatically disconnect, reconnect, and remirror the job.

- 4. Click **Next** to continue.
- 5. Double-Take validates that your source and target are compatible. The **Summary** page displays your options and validation items.

Errors are designated by a white X inside a red circle. Warnings are designated by a black exclamation point (!) inside a yellow triangle. A successful validation is designated by a white checkmark inside a green circle. You can sort the list by the icon to see errors, warnings, or successful validations together. Click on any of the validation items to see details. You must correct any errors before you can enable your migration. Depending on the error, you may be able to click **Fix** or **Fix All** and let Double-Take correct the problem for you. For those errors that Double-Take cannot correct automatically, you will need to modify the source or target to correct the error, or you can select a different target. You must revalidate the selected servers, by clicking **Recheck**, until the validation check passes without errors.

Before a job is created, the results of the validation checks are logged to the Double-Take Management Service log on the target.

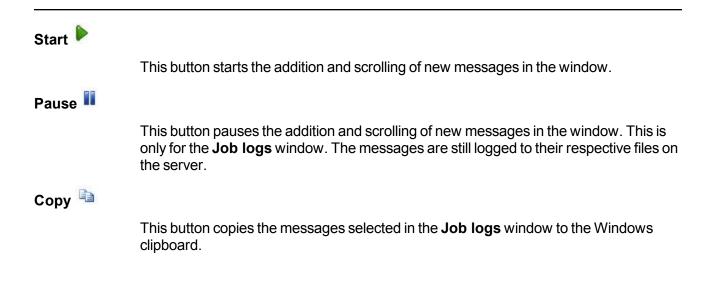
6. Once your servers have passed validation and you are ready to update your job, click Finish.

# Viewing a full server to Hyper-V migration job log

You can view a job log file through the Double-Take Console by selecting **View Job Log** from the toolbar on the **Manage Jobs** page. Separate logging windows allow you to continue working in the Double-Take Console while monitoring log messages. You can open multiple logging windows for multiple jobs. When the Double-Take Console is closed, all logging windows will automatically close.

Time 🔺	Description	
2/14/2012 6:48:46 AM	Target beta is a NOT a cluster. Setting JobFilePath default	
2/14/2012 6:48:47 AM	Entered TopState	
2/14/2012 6:48:47 AM	Entered UninitializedState	
2/14/2012 6:48:47 AM	Attaching to engine monitor 00000000-0000-0000-0000-00000000000	
2/14/2012 6:48:47 AM	Changing to StoppedState from UninitializedState in response to InitializeEvent consumed	
2/14/2012 6:48:47 AM	Exited UninitializedState	
2/14/2012 6:48:47 AM	Entered InitializedState	
2/14/2012 6:48:47 AM	Entered StoppedState	
2/14/2012 6:48:47 AM	Stopping monitor ab2268f7-85c6-4b68-819c-3d2912f5380a: name = FilesAndFolders_a6cb	
2/14/2012 6:48:47 AM	Successfully created monitor 618b51de-70f0-418b-9869-169f6f7d7049	
2/14/2012 6:48:47 AM	Changing to StartingState from StoppedState in response to StartEvent consumed by Stop	
2/14/2012 6:48:47 AM	Exited StoppedState	
2/14/2012 6:48:47 AM	Entered StartingState	
2/14/2012 6:48:48 AM	Event log entry written: '6008'.	
2/14/2012 6:48:48 AM	Target beta is not clustered	
2/14/2012 6:48:48 AM	Changing to RunningState from StoppedState in response to StartEvent consumed by Stop	
2/14/2012 6:48:48 AM	Exited StoppedState	
2/14/2012 6:48:48 AM	Entered RunningState	
2/14/2012 6:48:48 AM	Starting monitor ab2268f7-85c6-4b68-819c-3d2912f5380a; name = FilesAndFolders a6cbf	
2/14/2012 6:48:48 AM	Entered SucceededState	
2/14/2012 6:48:48 AM	Successfully created connection 985ae0ce-bbba-47a2-84ec-5fa79da80174 connecting Files	
2/14/2012 6:48:48 AM	Waiting for source endpoint of " to be established (00:10:00)	
2/14/2012 6:48:50 AM	Established source endpoint of '112.42,74.29:6320' for engine connection with replication s	
2/14/2012 6:48:50 AM	Changing to ProtectingState from StartingState in response to StartSucceededEvent consu	
2/14/2012 6:48:50 AM	Exited StartingState	
2/14/2012 6:48:50 AM	Entered ProtectingState	
2/14/2012 6:48:50 AM	Event log entry written: '6004'.	
2/14/2012 6:48:52 AM	Changing to MirroringState from ProtectingState in response to MirroringEvent consumed b	
2/14/2012 6:48:52 AM	Entered MirroringState	
2/14/2012 6:48:52 AM	Changing to SynchronizedState from MirroringState in response to MirrorCompletedEvent c	
2/14/2012 6:48:52 AM	Exited MirroringState	
2/14/2012 6:48:52 AM	Entered SynchronizedState	
2/14/2012 7:05:45 AM	Event log entry written: '6008'.	
2/14/2012 7:05:48 AM	Changing to MirroringState from SynchronizedState in response to MirroringEvent consume	
2/14/2012 7:05:48 AM	Exited SynchronizedState	
2/14/2012 7:05:48 AM	Entered MirroringState	
2/14/2012 7:05:51 AM	Changing to SynchronizedState from MirroringState in response to MirrorIdleEvent consum	
2/14/2012 7:05:51 AM	Exited MirroringState	
2/14/2012 7:05:51 AM	Entered SynchronizedState	i.

The following table identifies the controls and the table columns in the **Job logs** window.



Clear 🥝	
	This button clears the <b>Job logs</b> window. The messages are not cleared from the respective files on the server. If you want to view all of the messages again, close and reopen the <b>Job logs</b> window.
Time	
	This column in the table indicates the date and time when the message was logged.
Description	
	This column in the table displays the actual message that was logged.

# Cutting over full server to Hyper-V migration jobs

When the migration mirror has completed, the target may or may not reboot automatically depending on your selection for **Wait for user intervention before cutover**. If you disabled user intervention, the target will reboot automatically to complete the migration process. If you enabled user intervention, when the migration mirror is complete, the status will change to **Protecting**. Use this time to complete any necessary tasks. When you are ready to complete the migration, use the following instructions to cutover.

- 1. On the **Manage Jobs** page, highlight the job that you want to cutover and click **Failover or Cutover** in the toolbar.
- 2. Select the type of cutover to perform.
  - **Cutover to live data**—Select this option to initiate a full, live cutover using the current data on the target. The source is automatically shut down if it is still running. Then the target will stand in for the source by rebooting and applying the source identity, including its system state, on the target. After the reboot, the target becomes the source, and the target no longer exists.
  - **Perform test cutover**—Select this option to perform a test cutover using the current date on the target. This option will leave the source machine online, suspend the migration job, and start the replica virtual machine on the target without network connectivity.
  - Cutover to a snapshot—This option is not available for migration jobs.
- 3. Select how you want to handle the data in the target queue. You may want to check the amount of data in queue on the target by reviewing the *Statistics* on page 323 or *Performance Monitor* on page 412.
  - Apply data in target queues before failover or cutover—All of the data in the target queue will be applied before cutover begins. The advantage to this option is that all of the data that the target has received will be applied before cutover begins. The disadvantage to this option is depending on the amount of data in queue, the amount of time to apply all of the data could be lengthy.
  - Discard data in the target queues and failover or cutover immediately—All of the data in the target queue will be discarded and cutover will begin immediately. The advantage to this option is that cutover will occur immediately. The disadvantage is that any data in the target queue will be lost.
- 4. When you are ready to begin cutover, click Cutover.
  - If your source was disconnected from the network during the cutover process, the original job that was mirroring the data will still be active on that machine. Do not bring that machine back on the network. If you do, the original job will attempt to begin mirroring data again which could result in data loss. While the machine is still disconnected from the network, stop the Double-Take service, delete the file connect.sts located in the Double-Take installation directory, and then restart the Double-Take service. This will delete the original job. After the original job is deleted, you can bring the machine on the network if desired.

Because the Windows product activation is dependent on hardware, you may need to reactivate your Windows registration after cutover. In most cases when you are using Windows 2003, you can follow the on-screen prompts to complete the reactivation.

However, when you are using Windows 2008, the reactivation depends on several factors including service pack level, Windows edition, and your licensing type. If a Windows 2008 target comes online after cutover with an activation failure, use the steps below appropriate for your license type. Additionally, if you are using Windows 2012, you may only have 60 minutes to complete the reactivation process until Windows activation tampering automatically shuts down your server.

- **Retail licensing**—Retail licensing allows the activation of a single operating system installation.
  - 1. Open the System applet in Windows Control Panel.
  - 2. Under **Windows activation** at the bottom of the page, click **Change product key**.
  - 3. Enter your retail license key. You may need access to the Internet or to call Microsoft to complete the activation.
- **MAK volume licensing**—Multiple Activation Key (MAK) licensing allows the activation of multiple operating system installations using the same activation key.
  - 1. View or download the Microsoft Volume Activation Deployment Guide from the Microsoft web site.
  - 2. Using an administrative user account, open a command prompt and follow the instructions from the deployment guide to activate MAK clients. Multiple reboots may be necessary before you can access a command prompt. You may need access to the Internet or to call Microsoft to complete the activation.
- KMS volume licensing—Key Management Service (KMS) licensing allows IT professionals to complete activations on their local network without contacting Microsoft.
  - 1. View or download the Microsoft Volume Activation Deployment Guide from the Microsoft web site.
  - 2. Using an administrative user account, open a command prompt and follow the instructions from the deployment guide to convert a MAK activation client to a KMS client. Multiple reboots may be necessary before you can access a command prompt.
- 5. If you performed a test cutover, you can undo it by selecting **Undo Failover or Cutover** in the toolbar. The replica virtual machine on the target will be shut down and the migration job will be restarted performing a file differences mirror.

# Chapter 11 Simulating migration

Double-Take offers a simple way for you to simulate migration in order to generate statistics that can be used to approximate the time and amount of bandwidth that a particular source and job type will use when actively established. This simulation uses the TDU (Throughput Diagnostics Utility), which is a built-in null (non-existent) target that simulates a real job. No data is actually transmitted across the network. Since there is no true job, this diagnostics utility helps you plan your implementation strategy.

Before and after simulating a job, you should gather network and system information specific to Double-Take operations. Use the DTInfo utility to automatically collect this data. It gathers Double-Take log files; Double-Take and system settings; network configuration information such as IP, WINS and DNS addresses; and other data which may be necessary in evaluating Double-Take performance. The DTInfo utility can be found on the product DVD, in the Double-Take installation directory, or on the Vision Solutions support web site.

- From the source where you will be running the TDU, run DTInfo.exe. It may take several minutes for DTInfo to finish processing. After DTInfo processing is complete, a \support subdirectory will automatically be created in the Double-Take installation directory. (The default installation directory is \Program Files\Vision Solutions\Double-Take.) A .zip file will contain the information gathered from DTInfo. The file name is based on the machine name. To distinguish this file from the next time you run DTInfo, append a unique identifier, perhaps the date and time, to the end of the file name.
- 2. Establish any migration job, noting the following caveats.
  - When you get to the **Choose Target Server** page in the workflow, select the **Diagnostics** target.
  - When you get to the **Set Options** page in the workflow, some options for your selected job type will not be displayed because they are not applicable. For example, if you have selected a job type for an ESX server, you will not need to specify options for the target replica virtual machine because there is no actual target with the TDU.
- 3. Once you have established your job, you should ideally let it run for several days to gather accurate data for your network and source server usage. The simulation data will be logged to the Double-Take statistics file. See *Statistics* on page 323.
- 4. After your simulation is complete, repeat step 1 to run DTInfo again, appending the new unique identifier to the end of the new .zip file.

# Chapter 12 Monitoring tools

Outside of the Double-Take consoles, you have other general monitoring tools available for all job types.

- Log files on page 312
- Statistics on page 323
- Replication service view on page 332
- Error codes on page 344
- Windows Event messages on page 350
- Performance Monitor on page 412
- SNMP on page 419
- Double-Take Reporting Service on page 427

# Log files

Double-Take generates log files to gather alerts, which are notification, warning, and error messages.

- **Double-Take log**—This log records data from the Double-Take service, also referred to as the Double-Take engine. The Double-Take service controls the data movement functions like Double-Take mirroring and replication. This log file can be viewed from within the Double-Take Console (see *Viewing the log files through the Double-Take Console* on page 313) or through any standard text editor (see *Viewing the log files through a text editor* on page 317). You can also filter the data in the log file using the Double-Take LogViewer utility. (see *Filtering the log file with LogViewer* on page 321).
- **Double-Take Management Service log**—This log records data from the Double-Take Management Service. It controls all non-data movement aspects of each job. This log file can be viewed from within the Double-Take Console (see *Viewing the log files through the Double-Take Console* on page 313) or through any standard text editor (see *Viewing the log files through a text editor* on page 317).
- **Double-Take job log**—This log records job specific message. There is a unique job log for each job you create. This log file can be viewed from within the Double-Take Console (see *Viewing the log files through the Double-Take Console* on page 313) or through any standard text editor (see *Viewing the log files through a text editor* on page 317).
- **Double-Take Console log**—This log records data and user interaction from the Double-Take Console. This log file can be viewed through any standard text editor (see *Viewing the log files through a text editor* on page 317).

## Viewing the log files through the Double-Take Console

You can view the Double-Take, Double-Take Management Service, job, and Double-Take Console log files through the Double-Take Console.

### Viewing the Double-Take and Double-Take Management Service logs

You can view the Double-Take and Double-Take Management Service log files through the Double-Take Console using either of these two methods.

- On the Manage Servers page, highlight a server in the list and click View Server Logs from the toolbar.
- On the **Manage Jobs** page, right-click a job and select **View Logs**. Select either the source server log or the target server log.

Separate logging windows allow you to continue working in the Double-Take Console while monitoring log messages. You can open multiple logging windows for multiple servers. When the Double-Take Console is closed, all logging windows will automatically close.

Time 🔺	Description	Service	
3/23/2012 1:33:02 PM	Adding logical item: SQL (SQL:\)	Management Service	
/23/2012 1:33:02 PM	Adding logical item: Default Instance (SOL:\Default Instance)	Management Service	
/23/2012 1:33:02 PM	Adding logical item: SOL Server Folders (SOL:\Default Instance\SOL Server Folders)	Management Service	
23/2012 1:33:02 PM	Adding logical item: Databases (SQL:\Default Instance\Databases)	Management Service	
23/2012 1:33:02 PM	Adding logical item: Default Database Path (Data) (SOL:\Default Instance\SOL Server Fold	Management Service	
23/2012 1:33:02 PM	Adding logical item: Default Database Path (Log) (SQL;\Default Instance\SQL Server Folder	Management Service	
23/2012 1:33:02 PM	Adding logical item: Backup Directory (SQL: Default Instance SQL Server Folders/Backup D	Management Service	
23/2012 1:33:02 PM	Adding logical item: SQL Server Log Path (SQL:\Default Instance\SQL Server Folders\SQL	Management Service	
23/2012 1:33:02 PM	Adding logical item: SQL Server Log Path (SQL:\Default Instance\SQL Server Folders\SQL Adding logical item: Full-Text Catalog Path (SQL:\Default Instance\SQL Server Folders\SQL	Management Service	
	Adding logical item: Jobs Working Directory (SQL:\Default Instance\SQL Server Folders\Jo		
23/2012 1:33:02 PM 23/2012 1:33:02 PM	Adding logical item: Replication Tasks Path (SOL:\Default Instance\SQL Server Folders\Jo Adding logical item: Replication Tasks Path (SOL:\Default Instance\SQL Server Folders\Rep	Management Service Management Service	
23/2012 1:33:02 PM	Adding logical item: System Databases (SQL:\Default Instance\Databases\System Databas	Management Service	
23/2012 1:33:02 PM	Adding logical item: User Databases (SQL:\Default Instance\Databases\User Databases)	Management Service	
23/2012 1:33:02 PM	Adding logical item: db1 (SQL:\Default Instance\Databases\User Databases\db1)	Management Service	
23/2012 1:33:02 PM	Adding logical item: master (SQL:\Default Instance\Databases\System Databases\master)	Management Service	
23/2012 1:33:02 PM	Adding logical item: model (SQL:\Default Instance\Databases\System Databases\model)	Management Service	
23/2012 1:33:02 PM	Adding logical item: msdb (SQL:\Default Instance\Databases\System Databases\msdb)	Management Service	
23/2012 1:33:02 PM	Adding logical item: ReportServer (SQL:\Default Instance\Databases\User Databases\Repo	Management Service	
23/2012 1:33:02 PM	Adding logical item: ReportServerTempDB (SQL:\Default Instance\Databases\User Databas	Management Service	
23/2012 1:33:02 PM	Adding logical item: tempdb (SQL:\Default Instance\Databases\System Databases\tempdb)	Management Service	
23/2012 1:33:02 PM	Adding logical item: C: (C:\)	Management Service	
23/2012 1:33:02 PM	Adding logical item: D: (D:\)	Management Service	
23/2012 1:33:03 PM	Adding logical item: C: (C:\)	Management Service	
23/2012 1:33:03 PM	Adding logical item: D: (D:\)	Management Service	
23/2012 1:33:03 PM	Workload Apply Defaults	Management Service	
23/2012 1:33:03 PM	Adding logical item: Hyper-V Virtual Machine (Vm:\)	Management Service	
23/2012 1:33:03 PM	System.Management.ManagementException: Invalid namespace at System.Managem	Management Service	
23/2012 1:33:12 PM	GetFilesCommand for 'C:\' returned 16 items	Management Service	
23/2012 1:33:13 PM	GetFilesCommand for 'C:\BgInfo\' returned 3 items	Management Service	
23/2012 1:34:06 PM	Connection request from IP address 192.168.1.6	Double-Take	
23/2012 1:34:06 PM	Connection from 192.168.1.6:6320 is a server to server connection.	Double-Take	
23/2012 1:34:19 PM	Adding Connection: Id = 2a96a7c2-a75c-4c47-8e49-4ebbac450f1b, ReplicationSetName =	Management Service	
23/2012 1:34:19 PM	RepSet Modified: FilesAndFolders_7d16d34a3c09467eaf42efdfb5279833	Double-Take	
23/2012 1:34:19 PM	Bandwidth limit to SQL2 (192.168.1.6:6320) has changed, and is now: Unlimited	Double-Take	
23/2012 1:34:19 PM	Originator Attempting SQL2 ip://192.168.1.6:6320	Double-Take	
23/2012 1:34:19 PM	Make CAckQueueHandlerTargetOpOrdering	Double-Take	
23/2012 1:34:19 PM	Connected to SQL2 IP address ip://192.168.1.6:6320	Double-Take	
/23/2012 1:34:19 PM	StartReplicationHandler set state to RUNNING	Double-Take	- 1
/23/2012 1:34:19 PM	Replication STARTED	Double-Take	12

The following table identifies the controls and the table columns in the **Server logs** window.

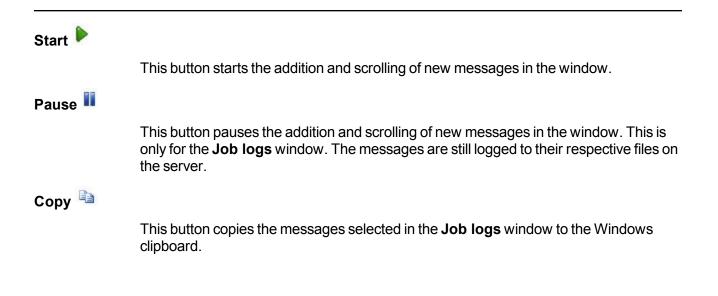
Start 🕨	
	This button starts the addition and scrolling of new messages in the window.
Pause 睸	
	This button pauses the addition and scrolling of new messages in the window. This is only for the <b>Server logs</b> window. The messages are still logged to their respective files on the server.
Сору 🛅	
	This button copies the messages selected in the <b>Server logs</b> window to the Windows clipboard.
Clear 🥝	
	This button clears the <b>Server logs</b> window. The messages are not cleared from the respective files on the server. If you want to view all of the messages again, close and reopen the <b>Server logs</b> window.
Filter	
	From the drop-down list, you can select to view all log messages or only those messages from the Double-Take log or the Double-Take Management Service log.
Time	
	This column in the table indicates the date and time when the message was logged.
Description	
<b>.</b> .	This column in the table displays the actual message that was logged.
Service	
	This column in the table indicates if the message is from the Double-Take log or the Double-Take Management Service log.

### Viewing the job log file

You can view a job log file through the Double-Take Console by selecting **View Job Log** from the toolbar on the **Manage Jobs** page. Separate logging windows allow you to continue working in the Double-Take Console while monitoring log messages. You can open multiple logging windows for multiple jobs. When the Double-Take Console is closed, all logging windows will automatically close.

🖥 Job logs for alpha to beta 📃 🛄 🗶		
Time +	Description	
2/14/2012 6:48:46 AM	Target beta is a NOT a cluster. Setting JobFilePath default	
2/14/2012 6:48:47 AM	Entered TopState	
2/14/2012 6:48:47 AM	Entered UninitializedState	
2/14/2012 6:48:47 AM	Attaching to engine monitor 00000000-0000-0000-00000000000000	
2/14/2012 6:48:47 AM	Changing to StoppedState from UninitializedState in response to InitializeEvent consumed	
2/14/2012 6:48:47 AM	Exited UninitializedState	
2/14/2012 6:48:47 AM	Entered InitializedState	
2/14/2012 6:48:47 AM	Entered StoppedState	
2/14/2012 6:48:47 AM	Stopping monitor ab2268f7-85c6-4b68-819c-3d2912f5380a: name = FilesAndFolders_a6cb	
2/14/2012 6:48:47 AM	Successfully created monitor 618b51de-70f0-418b-9869-169f6f7d7049	
2/14/2012 6:48:47 AM	Changing to StartingState from StoppedState in response to StartEvent consumed by Stop	
2/14/2012 6:48:47 AM	Exited StoppedState	
2/14/2012 6:48:47 AM	Entered StartingState	
2/14/2012 6:48:48 AM	Event log entry written: '6008'.	
2/14/2012 6:48:48 AM	Target beta is not clustered	
2/14/2012 6:48:48 AM	Changing to RunningState from StoppedState in response to StartEvent consumed by Stop	
2/14/2012 6:48:48 AM	Exited StoppedState	
2/14/2012 6:48:48 AM	Entered RunningState	
2/14/2012 6:48:48 AM	Starting monitor ab2268f7-85c6-4b68-819c-3d2912f5380a; name = FilesAndFolders a6cbf	
2/14/2012 6:48:48 AM	Entered SucceededState	
2/14/2012 6:48:48 AM	Successfully created connection 985ae0ce-bbba-47a2-84ec-5fa79da80174 connecting Files	
2/14/2012 5:48:48 AM	Waiting for source endpoint of " to be established (00:10:00)	
2/14/2012 6:48:50 AM	Established source endpoint of '112,42,74,29:6320' for engine connection with replication s	
2/14/2012 6:48:50 AM	Changing to ProtectingState from StartingState in response to StartSucceededEvent consu	
2/14/2012 6:48:50 AM	Exited StartingState	
2/14/2012 6:48:50 AM	Entered ProtectingState	
2/14/2012 6:48:50 AM	Event log entry written: '6004'.	
2/14/2012 6:48:52 AM	Changing to MirroringState from ProtectingState in response to MirroringEvent consumed b	
2/14/2012 6:48:52 AM	Entered MirroringState	
2/14/2012 6:48:52 AM	Changing to SynchronizedState from MirroringState in response to MirrorCompletedEvent c	
2/14/2012 6:48:52 AM	Exited MirroringState	
2/14/2012 6:48:52 AM	Entered SynchronizedState	
2/14/2012 7:05:45 AM	Event log entry written: '6008'.	
2/14/2012 7:05:48 AM	Changing to MirroringState from SynchronizedState in response to MirroringEvent consume	
2/14/2012 7:05:48 AM	Exited SynchronizedState	
2/14/2012 7:05:48 AM	Entered MirroringState	
2/14/2012 7:05:51 AM	Changing to SynchronizedState from MirroringState in response to MirrorIdleEvent consum	
2/14/2012 7:05:51 AM	Exited MirroringState	
2/14/2012 7:05:51 AM	Entered SynchronizedState	1

The following table identifies the controls and the table columns in the **Job logs** window.



Clear 🥝	
	This button clears the <b>Job logs</b> window. The messages are not cleared from the respective files on the server. If you want to view all of the messages again, close and reopen the <b>Job logs</b> window.
Time	
	This column in the table indicates the date and time when the message was logged.
Description	
	This column in the table displays the actual message that was logged.

### Viewing the Double-Take Console log file

You can view the Double-Take Console log file by using the following instructions.

- 1. Select Tools, Options.
- 2. Expand the **Diagnostics** section, if necessary.
- 3. Click View Log File.
- 4. Click **Cancel** to return back to the console page you were on previously. (Unless you were in the middle of a job creation workflow, in which case you will be returned to the beginning of the workflow.)

The log file is opened in the default text editor. The file will remain open until you close.

## Viewing the log files through a text editor

You can view the Double-Take, Double-Take Management Service, job, and Double-Take Console log files through any text editor.

### Viewing the Double-Take log

This log file is located in the same directory where you installed Double-Take. By default, this is \Program Files\Vision Solutions\Double-Take.

The Double-Take log file consists of a base name, a series number, and an extension. The base name is dtlog and the extension is .dtl. The series number ranges from 1 to 999. For example, Double-Take begins logging messages to dtlog1.dtl. When this file reaches its maximum size, which by default is 5 MB, the next log file will be written to dtlog2.dtl. As long as log messages continue to be written, files dtlog3.dtl, dtlog4.dtl, and dtlog5.dtl will be opened and filled. When the maximum number of files is reached, which by default is 5, the oldest file is deleted. For example, when dtlog6.dtl is created, dtlog1.dtl is deleted, and when dtlog7.dtl is created, dtlog2.dtl is deleted. When file dtlog999.dtl is created and filled, dtlog1.dtl will be re-created and Double-Take will continue writing log messages to that file. The Double-Take log file settings can be modified for each server. See *Log file properties* on page 77 for details.

The following list describes the information found in each column of the log file.

- 1. Date the message was generated
- 2. Time the message was generated
- Process ID
- 4. Thread ID
- 5. Sequence number is an incremental counter that assigns a unique number to each message
- 6. The type or level of message displayed 1 for warning or error message and 2 for informational message
- 7. Message ID, if any
- 8. Message text

02/07/2013 05:26:32.954 1360 3668 1 2 0 Using default heap
02/07/2013 05:26:33.048 1360 3668 3 2 0 Winsock v2.2Enabled
02/07/2013 05:26:35.689 1360 3668 5 2 0 Virtual operating system detected.
02/07/2013 05:26:35.689 1360 3668 6 2 69 Kernel Starting on BETA ip://112.42.74.30:6320 V
02/07/2013 05:26:35.689 1360 3668 7 2 0 WARNING: Unable to determine Firewall status, ass
02/07/2013 05:26:35.751 1360 3668 8 2 69 Kernel Started on BETA ip://112.42.74.30:6320 Ve
02/07/2013 05:26:35.954 1360 3668 9 2 503008 LoadNL set state to IDLE
02/07/2013 05:26:35.954 1360 3944 10 2 503008 Op Retrieval: entering standard retrieval m
02/07/2013 05:26:35.954 1360 3020 11 2 503008 Op Parsing: entering standard parsing mode
02/07/2013 05:26:36.017 1360 3668 12 2 0 The local security process has been added to the
02/07/2013 05:26:38.751 1360 3668 14 2 0 SourceRelationships::UpdateSourceMap:GUID(A0779C
02/07/2013 05:26:38.751 1360 3668 15 2 0 Source IP '10.10.10.29:6320' for ServerID 'GUID(
02/07/2013 05:26:38.814 1360 3668 16 2 52000 New Target Internals created for 10.10.10.29
02/07/2013 05:26:38.876 1360 3668 17 2 302004 Queuing to disk has started
02/07/2013 05:26:38.876 1360 3668 18 2 302005 Disk Queue is empty - Queuing to disk has s
02/07/2013 05:26:38.939 1360 3668 19 2 52501 Target module loaded successfully
02/07/2013 05:26:39.064 1360 3816 20 2 71 Originator Attempting ip://10.10.10.29:6320
02/07/2013 05:26:39.157 1360 2260 21 2 72 Connection request from IP address 112.42.74.30

### Viewing the Double-Take Management Service log

This file is located in the \Service\Logs subdirectory where you installed Double-Take.

The Double-Take Management Service log file consists of a base name, an optional date, an optional series number, and an extension. The base name is ManagementService and the extension is .log. When this file reaches its maximum size, 10 MB, the file will be renamed with the current date in year, month, day format. For example, it might be ManagementService.20130207.log. The latest log messages are then stored in ManagementService.log. If the main file fills again on the same day, then a series number will be used. In this case, the ManagementService.log file will be renamed to ManagementService.20130207.1.log. If the main file is filled on a different day, that date will be specified. In each case, the latest log messages will be stored in ManagementService.log. When the maximum number of files is reached, which is 5, the oldest file is deleted. The Management Service log file settings cannot be modified.

[2013-02-07 05:27:19] Verbose: Successfully opened service host JobManager (PID:2512, TID
[2013-02-07 05:27:19] Verbose: Successfully opened service host WorkloadManager (PID:2512
[2013-02-07 05:27:19] Verbose: Successfully opened service host ManagementService (PID:25
[2013-02-07 05:27:19] Verbose: Successfully opened service host CoreEngine (PID:2512, TID
[2013-02-07 05:27:19] Verbose: Successfully opened service host CoreSystemState (PID:2512
[2013-02-07 05:27:19] Verbose: Successfully opened service host DiskManager (PID:2512, TI
[2013-02-07 05:27:20] Verbose: Completed: 10.10.10.30 (PID:2512, TID:9, AID:fce50580-0307
[2013-02-07 05:27:20] Information: The Double-Take engine is initialized. (PID:2512, TID:
[2013-02-07 05:27:20] Verbose: The Double-Take engine source module is initialized. (PID:
[2013-02-07 05:27:20] Verbose: The Double-Take engine target module is initialized. (PID:
[2013-02-07 05:27:20] Verbose: Removing Connection: Id = f34dcble-ac6b-4267-a891-5e45629b
[2013-02-07 05:27:20] Verbose: The Double-Take engine failover module is initialized. (PI
[2013-02-07 05:27:21] Verbose: Removing Monitor: Id = 5fa3b4eb-ea21-4e47-976e-25fd62c10c5
[2013-02-07 06:48:44] Verbose: Entered TopState (PID:2512, TID:13, AID:7c5f8158-16f0-4330
[2013-02-07 06:48:44] Verbose: Entered UninitializedState (PID:2512, TID:13, AID:7c5f8158
[2013-02-07 06:48:44] Verbose: Changing to StoppedState from UninitializedState in respon
[2013-02-07 06:48:44] Verbose: Exited UninitializedState (PID:2512, TID:13, AID:7c5f8158-
[2013-02-07 06:48:44] Verbose: Entered InitializedState (PID:2512, TID:13, AID:7c5f8158-1

### Viewing the job log

This file is located on the target server in the \Service\Logs subdirectory where you installed Double-Take.

The job log file consists of a global unique identifier (GUID) for the job and the job name. When this file reaches its maximum size, 10 MB, the file will be renamed with the current date in year, month, day format. For example, it might be a6cbf990-ba67-403d-855f-5bb44c18e1d6 (alpha to beta).20130207.log. The latest log messages are then stored in the base GUID\_name.log file. If the main file fills again on the same day, then a series number will be used. In this case, the example file would be renamed to a6cbf990-ba67-403d-855f-5bb44c18e1d6 (alpha to beta).20130207.1.log. If the main file is filled on a different day, that date will be specified. In each case, the latest log messages will be stored in the main GUID\_name.log file. When the maximum number of files is reached, which is 5, the oldest file is deleted. The job log file settings cannot be modified.

[2013-02-07 06:48:46] [2013-02-07 06:48:47] [2013-02-07 06:48:47]	Verbose: Entered TopState (PID:2512, TID:13, AID:e6246673-57a9-4a25 Verbose: Entered UninitializedState (PID:2512, TID:13, AID:e6246673 Information: Target beta is a NOT a cluster. Setting JobFilePath de Verbose: Entered TopState (PID:2512, TID:13, AID:e6246673-57a9-4a25 Verbose: Entered UninitializedState (PID:2512, TID:13, AID:e6246673 Verbose: Attaching to engine monitor 0000000-0000-0000-0000-00000 Verbose: Changing to StoppedState from UninitializedState in respon Verbose: Exited UninitializedState (PID:2512, TID:5, AID:e6246673-57 Verbose: Entered InitializedState (PID:2512, TID:5, AID:e6246673-57 Verbose: Entered StoppedState (PID:2512, TID:5, AID:e6246673-57 Verbose: Stopping monitor ab2268f7-85c6-4b68-819c-3d2912f5380a: nam Information: Successfully created monitor 618b51de-70f0-418b-9869-1 Verbose: Exited UninitializedState (PID:2512, TID:5, AID:e6246673-57 Verbose: Changing to StoppedState from UninitializedState in respon
[2013-02-07 06:48:47] [2013-02-07 06:48:47] [2013-02-07 06:48:47] [2013-02-07 06:48:47] [2013-02-07 06:48:47] [2013-02-07 06:48:47] [2013-02-07 06:48:48] [2013-02-07 06:48:48]	Verbose: Exited UninitializedState (PID:2512, TID:13, AID:e6246673- Verbose: Entered InitializedState (PID:2512, TID:13, AID:e6246673-5 Verbose: Entered StoppedState (PID:2512, TID:13, AID:e6246673-57a9- Verbose: Changing to StartingState from StoppedState in response to Verbose: Exited StoppedState (PID:2512, TID:13, AID:5decb7a7-ff7a-4 Verbose: Entered StartingState (PID:2512, TID:13, AID:5decb7a7-ff7a Information: Event log entry written: '6008'. (PID:2512, TID:13, AI Verbose: Target beta is not clustered (PID:2512, TID:13, AID:5decb7
[2013-02-07 06:48:48] [2013-02-07 06:48:48]	Verbose: Changing to RunningState from StoppedState in response to Verbose: Exited StoppedState (PID:2512, TID:14, AID:e6246673-57a9-4 Verbose: Entered RunningState (PID:2512, TID:14, AID:e6246673-57a9- Verbose: Starting monitor ab2268f7-85c6-4b68-819c-3d2912f5380a: nam

### Viewing the Double-Take Console log

This file is called Double-Take Console.log and its location depends on your operating system. If you are using Windows 2008 or 2012, the file will be located in \Users\<your user name>\AppData\Local\Vision Solutions\Double-Take Console\Logs. If you are using Windows 2003, the log file will be located in \Documents and Settings\<your user name>\Local Settings\Application Data\Vision Solutions\Double-Take Console\Logs. Note that these are hidden locations, so you will have to search directly for the file name or display hidden files to browse for it. Also note that the log file is dependent on the user who is logged in, so there will be multiple Double-Take Console log files if you have multiple Double-Take users.

```
[2013-02-07 05:28:01] Verbose: Activating DoubleTake.Virtualization.VRA.Console.VRAConsol
[2013-02-07 05:28:01] Verbose: Activating DoubleTake.Virtualization.VRA.Console.VRABindin
[2013-02-07 05:28:01] Verbose: Activating DoubleTake.Virtualization.VRA.Console.Model.VRA
[2013-02-07 05:28:02] Verbose: Rendering Tier = 0 (PID:620, TID:1, AID:00000000-0000-0000
[2013-02-07 05:28:02] Verbose: Component Versions:
         Microsoft .NET Framework: 2.0.50727.3053
         Double-Take Console Framework: 7.0.0.1124
         Double-Take Applications Console Library: 7.0.0.1124
         Double-Take Dashboard Console Library: 7.0.0.1124
         Double-Take Diagnostics Console Library: 7.0.0.1124
         Double-Take Full Server Console Library: 7.0.0.1124
         Double-Take Move Console Library: 7.0.0.1124
         Double-Take for Hyper-V Console Library: 7.0.0.1124
         Double-Take Virtualization UVRA Console Library: 7.0.0.1124
Double-Take Virtualization VRA Console Library: 7.0.0.1124
(PID:620, TID:1, AID:2e1d2989-7b38-4c9a-93b9-063a3c12b6f3 - Extensibility)
[2013-02-07 05:29:33] Information: Qualify truealpha (PID:620, TID:1, AID:00000000-0000-0
[2013-02-07 05:40:52] Information: Qualify truealpha (PID:620, TID:1, AID:00000000-0000-0
[2013-02-07 06:06:38] Information: Qualify truealpha (PID:620, TID:1, AID:00000000-0000-0
[2013-02-07 06:25:02] Information: Qualify truealpha (PID:620, TID:1, AID:00000000-0000-0
[2013-02-07 06:47:48] Information: Qualify truealpha (PID:620, TID:1, AID:00000000-0000-0
[2013-02-07 06:48:46] Verbose: Creating job with options:
    <JobOptions xmlns:i="http://www.w3.org/2001/XMLSchema-instance" xmlns="http://schemas
<ApplicationOptions i:nil="true" />
       <BandwidthOptions xmlns:d2p1="http://schemas.datacontract.org/2004/07/DoubleTake.Jo
         <d2p1:Entries i:nil="true" />
         <d2p1:Limit>0</d2p1:Limit>
         <d2p1:Mode>NotLimited</d2p1:Mode>
         <d2p1:Specifications xmlns:d3p1="http://schemas.datacontract.org/2004/07/DoubleTa
       </BandwidthOptions>
       <ClusterOptions>
```

# Filtering the log file with LogViewer

You can filter the Double-Take log file through the Double-Take LogViewer utility. From a command prompt, use the LogViewer command from the directory where Double-Take is installed. Press Ctrl-C to exit back to the command prompt.

Command	
	LOGVIEWER
Description	
	The Double-Take logging utility that filtersDouble-Take log files
Syntax	
	LOGVIEWER [-PATH < <i>path</i> >] [-TYPE < <i>number</i> >] [-INCLUDE < <i>list</i> >] [-EXCLUDE < <i>list</i> >] [-NODATE] [-NOTIME] [-NOPID] [-NOTID] [-NOSEQ] [-NOTYPE] [-NOID] [- HELP]
Options	
	<ul> <li>PATH path—Specify the full path to the log file</li> </ul>
	<ul> <li>TYPE <i>number</i>—Allows you to filter the messages that are displayed. Specify 1 to display warning and error messages or specify 2 to display warnings, errors, and information messages.</li> </ul>
	<ul> <li>INCLUDE—Only includes specified IDs. All other IDs will not be displayed in the output</li> </ul>
	EXCLUDE—Excludes specified IDs. Ignore the specified IDs and display all others
	• <i>list</i> —A comma-separated list of IDs or ID ranges that follows the INCLUDE and EXCLUDE switches. A space should separate the switch from the list but within the list, there should be no spaces. Ranges are specified with a begin and end number and separated with a dash (-).
	<ul> <li>NODATE—Does not display the date in the output</li> </ul>
	<ul> <li>NOTIME—Does not display the time in the output</li> </ul>
	<ul> <li>NOPID—Does not display the process ID in the output</li> </ul>
	NOTID—Does not display the thread ID in the output
	NOSEQ—Does not display the sequence number in the output
	NOTYPE—Does not display the message type number in the output
	<ul> <li>NOID—Does not display the LogViewer ID in the output</li> <li>HELP—Displays the command options</li> </ul>
Examples	
	<ul> <li>LogViewer -type 2</li> <li>LogViewer -include 200,400-500,10000-15000</li> </ul>

Notes

The default setting is -type 2 which displays both type 1 and 2 messages.

# **Statistics**

Statistics logging is the process of taking snapshots of Double-Take statistical data. The data can be written to a file for future use. Changes to the statistics file configuration are detected and applied immediately without restarting the Double-Take service.

The statistics log file created is a binary file. To view the log file, you must run the DTStat utility from the command prompt.

#### Sample DTStat output

```
0/11/10 12:48:05:2040
SYSTEMALLOCATOR::Total Bytes: 0
IQALLOCATOR::Total Bytes: 0
SECURITY::Logins : 1 FailedLogins : 0
KERNEL::SourceState: 2 TargetState: 1 Start Time: Tue Sep 11 12:45:26 2007
RepOpsGenerated: 436845 RepBytesGenerated: 0
MirOpsGenerated: 3316423 MirBytesGenerated: 108352749214952
   FailedMirrorCount: 0 FailedRepCount: 0
   ActFailCount: 0 TargetOpenHandles: 0 DriverQueuePercent: 0
TARGET:: PeerAddress: 10.10.1.104 LocalAddress: 10.10.1.104
   Ops Received: 25 Mirror Ops Received: 23
   Retries: 0 OpsDropped: 0 Ops Remaining: 0
Orphan Files Removed: 0 Orphan Directories Removed: 0 Orphan Bytes Removed: 0
   Bytes In Target Queue: 0 Bytes In Target Disk Queue: 0 TasksSucceeded: 0 TasksFailed: 0 TasksIgnored: 0
SOURCE::autoDisConnects : 0 autoReConnects : 1
   lastFileTouched : /log/data file
CONNECTION:: conPeerAddress: 10.10.1.104
   connectTime: Tue Sep 11 12:45:34 2007
   conState: 1 conOpsInCmdQueue: 0 conOpsInAckQueue: 0
   conOpsInRepQueue: 0 conOpsInMirQueue: 0 conBytesInRepQueue: 0
   conOpsTx: 27 conBytesInMirQueue: 0 conBytesTx: 14952687269
   conBytesCompressedTx: 14952
   conOpsRx: 201127 conBytesRx: 647062280 conResentOpCount: 0 conBytesInDiskQueue: 0
   conBandwidthLimit: 429496295 conBytesSkipped: 22867624 conMirrorBytesRemain: 0
   conMirrorPercent: 100.0%
   conTaskCmdsSubmitted: 0 conTaskCmdsQueued: 0
   conTasksSucceeded: 0 conTasksFailed: 0 conTasksIgnored: 0
```

# Viewing the statistics file

The statistics log file created is a binary file. To view the log file, you must run the DTStat utility from a command prompt. From the directory where Double-Take is installed, run the DTStat command.

Command	
	DTSTAT
Description	
	Starts the DTStats statistics logging utility from a command prompt
Syntax	
	DTSTAT [-p][-i <i><interval></interval></i> ][-t <i><filename></filename></i> ] [-f <i><filename></filename></i> ] [-s <i><filename></filename></i> ] [-st <i><filename></filename></i> ][-IP <i><address></address></i> ] [-START <i><mm dd="" yyyyhh:mm=""></mm></i> ][-STOP <i><mm dd="" yyyyhh:mm=""></mm></i> ] [-SERVER <i><ip_address> <port_number></port_number></ip_address></i> ]
Options	
	<ul> <li>-p—Do not print the output to the screen. This option will increase the speed of the output to files.</li> </ul>
	<ul> <li>-i interval—Refresh from shared memory every interval seconds</li> </ul>
	<ul> <li>-t <i>filename</i>—Save the data from memory to the specified binary file filename</li> </ul>
	<ul> <li>-f <i>filename</i>—Reads from a previously saved binary file, filename, that was generated using the -t option instead of reading from memory</li> </ul>
	<ul> <li>-s <i>filename</i>—Saves only the connection data from the data in memory to an ASCII, comma-delimited file, filename</li> </ul>
	<ul> <li>-st <i>filename</i>—Saves only the target data from the data in memory to an ASCII, comma-delimited file, filename</li> </ul>
	<ul> <li>-f <i>filename1</i> -s <i>filename2</i>—Saves only the connection data from a previously saved binary file, filename1, to an ASCII, comma-delimited file, filename2</li> </ul>
	<ul> <li>-f <i>filename1</i> -st <i>filename2</i>—Saves only the target data from a previously saved binary file, filename1, to an ASCII, comma-delimited file, filename2</li> </ul>
	• - <i>IP address</i> —Filters out the specified address in the IP address field and prints only those entries. Specify more than one IP address by separating them by a comma.
	<ul> <li>-START <i>mm/dd/yyyyhh:mm</i>—Filters out any data prior to the specified date and time</li> </ul>
	-STOP <i>mm/dd/yyyyhh:mm</i> —Filters out any data after the specified date and time
	<ul> <li>-SERVER <i>ip_address port_number</i>—Connects DTStat to the specified IP address using the specified port number instead of to the local machine</li> </ul>
Examples	
	DTStat -p -f statistic.sts -s statistic.csv
	DTStat -p -f statistic.sts -st statistic.csv

#### Notes

- This command is not case-sensitive.
- If no options are specified, DTStat will print the output to the screen at an interval of every one second.
- If the statistics are not changing, DTStat will discontinue writing until statistics begin updating again.

## **Statistics**

The following table identifies the Double-Take statistics.

#### The categories you see will depend on the function of your server (source, target, or both).

If you have multiple IP addresses connected to one target server, you will see multiple Target sections for each IP address.

Statistic values are cumulative. For example if Kernel, RepBytesGenerated is 10000 at 1:00pm and 25000 at 2:00pm, the difference is 15000 and that is the amount of change that occurred within that one hour.

If you convert your statistics output to an ASCII, comma-delimited file using the dtstat -s option, keep in mind the following differences.

- The statistic labels will be slightly different in the ASCII file than in the following table.
- The statistics will appear in a different order in the ASCII file than in the following table.
- The statistics in the Target Category in the following table are not included in the ASCII file.
- The Kernel statistic Target Open Handles is not included in the ASCII file.
- The ASCII file contains a Managed Pagefile Alloc statistic which is no longer used.

#### **Date/Time Stamp**

The date and time that the snapshot was taken. This is the date and time that each statistic was logged. By default, these are generated once a second, as long as there are statistics being generated. If mirroring/replication is idle, then DTStat will be idle as well.

#### System Allocator, Total Bytes

The number of bytes currently allocated to the system pagefile

#### **IQAllocator, Total Bytes**

The number of bytes currently allocated to the intermediate queue

#### Security, Logins

The number of successful login attempts

#### Security, Failed Logins

The number of failed login attempts

#### Kernel, SourceState

- 0—Source is not running
- 1—Source is running without the replication driver

• 2—Source is running with the replication driver

#### Kernel, TargetState

- 0—Target is not running
- 1—Target is running

#### Kernel, Start Time

Date and time stamp indicating when the Double-Take service was loaded

#### Kernel, RepOpsGenerated

The number of replication operations generated by the file system driver. An op is a file system operation. Double-Take replicates data by sending the file system operations across the network to the target. RepOpsGenerated indicates the number of file system operations that have been generated by replication.

#### Kernel, RepBytesGenerated

The number of replication bytes generated by the file system driver. This is the number of bytes generated during replication. In other words, this is roughly the amount of traffic being sent across the network that is generated by replication. It does not take into account TCP/IP overhead (headers and such).

#### Kernel, MirOpsGenerated

The number of mirror operations transmitted to the target. Mirroring is completed by transmitting the file system operations necessary to generate the files on the target. This statistic indicates the number of file system operations that were transmitted during the initial mirror. It will continue to increase until the mirror is complete. Any subsequent remirrors will reset this field to zero and increment from there.

#### Kernel, MirBytesGenerated

The number of mirror bytes transmitted to the target. This is the number of bytes generated during mirroring. In other words, this is roughly the amount of traffic being sent across the network that is generated by the mirror. It does not take into account TCP/IP overhead (headers and such), however it does account for attributes and other overhead associated with creating a file. With many small files in a directory, you will see larger statistics than expected because of the file creation overhead. Any subsequent remirror will reset this field to zero and increment from there.

#### Kernel, FailedMirrorCount

The number of mirror operations that failed due to an error reading the file from the disk

#### Kernel, FailedRepCount

The number of replication operations that failed due to an error reading the file from the disk

#### Kernel, ActFailCount

The number of activation code failures when loading the source or target. Activation codes can be bad for reasons such as: expiration of evaluation codes, duplicate codes,

incorrect codes, etc.

#### Kernel, TargetOpenHandles

The number of handles currently open on the target

#### Kernel, DriverQueuePercent

The amount of throttling calculated as a percentage of the stop replicating limit

#### Target, PeerAddress

The IP address of the source machine

#### Target, LocalAddress

The IP address of the target machine.

#### Target, Ops Received

The total number of operations received by this machine as a target since the Double-Take service was loaded

#### Target, Mirror Ops Received

The total number of mirror operations received by this machine as a target since the Double-Take service was loaded. This number does not reset to zero for remirrors.

#### Target, Retries

The number of retries performed before all operations were completed

#### Target, OpsDropped

The number of operations skipped during a difference mirror. During a difference mirror, if Double-Take detects that there have been no changes to a file, then it will indicate the number of operations it did not send for this file in this field.

#### Target, Ops Remaining

The total number of operations that are left in the target queue

#### Target, Orphan Files Removed

The number of orphan files removed from the target machine

#### Target, Orphan Directories Removed

The number of orphan directories removed from the target machine

#### Target, Orphan Bytes Removed

The number of orphan bytes removed from the target machine

#### Target, Bytes In Target Queue

The number of bytes currently in the system memory queue on the target

#### Target. Bytes In Target Disk Queue

The number of bytes currently in the disk queue on the target

#### Target, TasksSucceeded

The number of task commands that have succeeded on the target

#### Target, TasksFailed

The number of task commands that have failed on the target

#### Target, TasksIgnored

The number of task commands that have been ignored on the target

#### Source, autoDisConnects

The number of automatic disconnects since starting Double-Take. Auto-disconnects occur because the source no longer sees the target This could be because the connection between the two has failed at some point or because the target machine data is changing on the source faster than the source can get the data to the target. This field tracks the number of times an auto-disconnect has occurred since the Double-Take service was started.

#### Source, autoReConnects

The number of automatic reconnects since starting Double-Take. Auto-reconnect occurs after a target machine is back online. This field tracks the number of times an auto-reconnect has happened since the Double-Take service was started.

#### Source, lastFileTouched

The last filename that had a replication operation executed

#### Connection, conPeerAddress

The IP address of the target machine

#### Connection, connectTime

The time that this connection was established

#### Connection, conState

The state of the active connection

- 0—None. This indicates there is no active connection. This may be because the connection has not been established or the underlying connection is unavailable. Statistics are still available for the source and target machines.
- 1—Active. This indicates that the connection is functioning normally and has no scheduling restrictions imposed on it at this time. (There may be restrictions, but it is currently in a state that allows it to transmit.)
- 2—Paused. This indicates a connection that has been paused.
- 4—Scheduled. This indicates a connection that is not currently transmitting due to scheduling restrictions (bandwidth limitations, time frame limitations, and so on).

• 8—Error. This indicates a connection that is not transmitting because something has gone wrong (for example, lost connection).

Only the Scheduled and Error states can coexist. All other states are mutually exclusive. Statistics will display a conState of 12 when the connection is in both a scheduled and an error state because this is the sum of the two values (4 + 8).

#### Connection, conOpsInCmdQueue

The number of operations waiting to be executed on the target

#### Connection, conOpsInAckQueue

The number of operations waiting in the acknowledgement queue. Each operation that is generated receives an acknowledgement from the target after that operation has been received by the target. This statistic indicates the number of operations that have yet to receive acknowledgement of receipt.

#### Connection, conOpsInRepQueue

The number of replication operations currently waiting to be executed on the target

#### Connection, conOpsInMirQueue

The number of mirror operations currently waiting to be executed on the target

#### Connection, conBytesInRepQueue

The number of replication bytes remaining to be transmitted to the target

#### Connection, conOpsTx

The number of operations transmitted to the target. This is the total number of operations that Double-Take has transmitted as a source. In other words, the cumulative number of operations transmitted by this source to all connected targets.

#### Connection, conBytesInMirQueue

The number of mirror bytes remaining to be transmitted to the target

#### Connection, conBytesTx

The number of bytes transmitted to the target. This is the total number of bytes that Double-Take has transmitted as a source. In other words, the cumulative number of bytes transmitted by this source to all connected targets.

#### Connection, conBytesCompressedTx

The number of compressed bytes transmitted to the target.

#### Connection, conOpsRx

The number of operations received by the target. The number of operations that the target for this connection (as indicated by the IP address field) has received from this source.

#### Connection, conBytesRx

The number of bytes received by the target. The number of bytes that the target for this connection (as indicated by the IP address field) has received from this source.

#### Connection, conResentOpCount

The number of operations resent because they were not acknowledged

#### Connection, conBytesInDiskQueue

The number of bytes in the source disk queue

#### Connection, conBandwidthLimit

The amount of bandwidth that may be used to transfer data

#### Connection, conBytesSkipped

The number of bytes skipped during a difference mirror. During a difference mirror, if Double-Take detects that there have been no changes to a file, then it will indicate the number of bytes it did not send for this file in this field.

#### Connection, conMirrorBytesRemaining

The number of mirror bytes remaining to be transmitted

#### Connection, conMirrorPercent

The percentage of the mirror that has been completed. This field is determined if the Job size was calculated.

#### Connection, conTaskCmdsSubmitted

The number of task commands that have been submitted on the source

#### Connection, conTaskCmdsQueued

The number of task commands that have been queued on the source

#### Connection, conTasksSucceeded

The number of task commands that have succeeded on the source

#### Connection, conTasksFailed

The number of task commands that have failed on the source

#### Connection, conTasksIgnored

The number of task commands that have been ignored on the source

## **Replication service view**

You can view the replication service details for a server by right-clicking on a server on the **Manage Servers** page and selecting **View Replication Service Details**. A separate window will open allowing you to continue working in the Double-Take Console while monitoring the replication service details. You can open multiple **Replication service view** windows for multiple servers. When the Double-Take Console is closed, all **Replication service view** windows will automatically close. If you do not want to open separate windows, you can switch between servers that are in your Double-Take Console from within the **Replication service view** window by using the drop-down list of servers in the toolbar.

The left pane of the Replication service view window is divided into the root and three folders.

- **Root**—This section shows high-level overview information for the server. See *Root items* on page 333 for the items in this **Server Properties** section.
- **Connections**—This section shows any active connections from this server. A connection is the underlying component of a job that controls data movement, like mirroring and replication. The Double-Take engine controls the connection.

A connection may or may not be associated with a job. If it is not associated with a job, it can be deleted. However, you should be certain it is not associated with a job because deleting a connection that is being used can corrupt its parent job. Use the **Delete** button in the toolbar to delete a connection. (You cannot delete a GeoCluster connection.)

When you highlight the **Connections** folder in the left pane, all active connections from this server will be displayed in the right pane. See *Connections folder items* on page 333 for details on the data displayed in this view. If you highlight a specific connection under the **Connections** folder, only the information for that connection will be displayed in the right pane. The connections are identified by the type of job and the connection ID. See *Specific connection items* on page 336 for details on the data displayed in this view.

• **Replication sets**—This section shows any replication sets on this server. The replication set is the data that your job is protecting.

A replication set may or may not be associated with a connection. If it is not associated with a connection, it can be deleted. Use the **Delete** button in the toolbar to delete a replication set.

When you highlight the **Replication sets** folder in the left pane, all replication sets on this server will be displayed in the right pane. See *Replication sets folder items* on page 339 for details on the data displayed in this view. If you highlight a specific replication set under the **Replication sets** folder, only the information for that replication set will be displayed in the right pane. See *Specific replication set items* on page 340 for details on the data displayed in this view.

 Target connection entries—This section is like the Connections section, however it shows any active connections to this server.

You may see target connections that are not associated with a job. These connections will have a **Target Data State** of **Disconnected**. For example, this may happen if you delete a stopped job. These disconnected target connections cannot be deleted. They will be reused when a new connection (same job type, same servers) is created.

When you highlight the **Target connection entries** folder in the left pane, all active connection to this server will be displayed in the right pane. See *Target connection entries folder items* on page 340 for details on the data displayed in this view. If you highlight a specific connection under the **Target connection entries** folder, only the information for that connection will be displayed in

the right pane. See *Specific target connection items* on page 342 for details on the data displayed in this view.

### Root items

Server name		
	The name of the server	
Product version		
	The Double-Take version	
Operating system		
	The operating system version and edition	
Source module		
	Indicates if the source module is running on the server	
Target module		
	Indicates if the target module is running on the server	
Failover module		
	Indicates if the failover module is running on the server	

### **Connections folder items**

#### **Replication Set**

The name of the replication set the connection is using

#### **Connection ID**

The incremental counter used to number connections. The number is incremented when a connection is created. It is also incremented by internal actions, such as an auto-disconnect and auto-reconnect. The lowest available number (as connections are created, stopped, deleted, and so on) will always be used. The counter is reset to one each time the Double-Take service is restarted.

#### **Target Name**

The name of the target the connection is using, including the port number

#### Target IP

The target IP address and port, as well as the location on the target where the replication set data is being stored. This is sometimes called the transform path.

#### **Target Data State**

- **OK**—The data on the target is in a good state.
- **Mirroring**—The target is in the middle of a mirror process. The data will not be in a good state until the mirror is complete.
- **Mirror Required**—The data on the target is not in a good state because a remirror is required. This may be caused by an incomplete or stopped mirror or an operation may have been dropped on the target.
- **Restore Required**—The data on the source and target do not match because of a failover condition. Restore the data from the target back to the source. If you want to discard the changes on the target, you can remirror to resynchronize the source and target.
- **Snapshot Reverted**—The data on the source and target do not match because a snapshot has been applied on the target. Restore the data from the target back to the source. If you want to discard the changes on the target, you can remirror to resynchronize the source and target.
- **Busy**—The source is low on memory causing a delay in getting the state of the data on the target.
- **Not Loaded**—Double-Take target functionality is not loaded on the target server. This may be caused by an activation code error.
- Unknown—The console cannot determine the status.

#### **Target Status**

- **OK**—The target machine is active and online.
- Not Loaded—The target module is not loaded on the target. (For example, the activation code is invalid.)
- Paused—The target machine is paused by user intervention.
- **Retrying**—The target machine is retrying operations for the connection.

#### Transmit Mode

**Mirror Status** 

#### **Replication Status**

Queued (ops)

The total number of mirror and replication operations that are in the source queue

Sent (bytes)

The total number of mirror and replication bytes that have been transmitted to the target

#### Sent Compressed (bytes)

The total number of compressed mirror and replication bytes that have been transmitted to the target. If compression is disabled, this statistic will be the same as **Bytes sent**.

#### Intermediate Queue (bytes)

The total amount of memory being used by the operations buffer queue

#### Disk Queue (bytes)

The amount of disk space being used to queue data on the source

#### **Queued Replication (bytes)**

The total number of replication bytes in the source queue

#### Sent Replication (bytes)

The total number of replication bytes that have been transmitted to the target

#### Sent Compressed Replication (bytes)

The total number of compressed replication bytes that have been transmitted to the target. If compression is disabled, this statistic will be the same as sent replication (bytes).

#### Sent Mirror (bytes)

The total number of mirror bytes that have been transmitted to the target

#### Sent Compressed Mirror (bytes)

The sent compressed mirror (bytes) statistic is the total number of compressed mirror bytes that have been transmitted to the target. If compression is disabled, this statistic will be the same as sent mirror (bytes).

#### **Skipped Mirror (bytes)**

The total number of bytes that have been skipped when performing a difference or checksum mirror. These bytes are skipped because the data is not different on the source and target.

#### **Remaining Mirror (bytes)**

The total number of mirror bytes that are remaining to be sent from the source to the target

#### **Queued Replication (ops)**

The total number of replication operations in the queue

#### **Connected Since**

The date and time indicating when the current job was made. This field is blank, indicating that a TCP/IP socket is not present, when the job is waiting on transmit options or if the transmission has been stopped. This field will maintain the date and time, indicating that a TCP/IP socket is present, when transmission has been paused.

#### **Bandwidth Limit (Kbps)**

If bandwidth limiting has been set, this statistic identifies the limit. The keyword **Unlimited** means there is no bandwidth limit set for the job.

### Specific connection items

#### **Replication set**

The name of the replication set the connection is using

#### **Connection ID**

The incremental counter used to number connections. The number is incremented when a connection is created. It is also incremented by internal actions, such as an auto-disconnect and auto-reconnect. The lowest available number (as connections are created, stopped, deleted, and so on) will always be used. The counter is reset to one each time the Double-Take service is restarted.

#### Transmit mode

#### Target data state

- **OK**—The data on the target is in a good state.
- **Mirroring**—The target is in the middle of a mirror process. The data will not be in a good state until the mirror is complete.
- **Mirror Required**—The data on the target is not in a good state because a remirror is required. This may be caused by an incomplete or stopped mirror or an operation may have been dropped on the target.
- **Restore Required**—The data on the source and target do not match because of a failover condition. Restore the data from the target back to the source. If you want to discard the changes on the target, you can remirror to resynchronize the source and target.
- **Snapshot Reverted**—The data on the source and target do not match because a snapshot has been applied on the target. Restore the data from the target back to the source. If you want to discard the changes on the target, you can remirror to resynchronize the source and target.
- **Busy**—The source is low on memory causing a delay in getting the state of the data on the target.
- **Not Loaded**—Double-Take target functionality is not loaded on the target server. This may be caused by an activation code error.
- **Unknown**—The console cannot determine the status.

#### **Target route**

The target IP address and port

#### Compression

- On / Level—Data is compressed at the level specified.
- Off—Data is not compressed.

#### Bandwidth limit (Kbps)

If bandwidth limiting has been set, this statistic identifies the limit. The keyword **Unlimited** means there is no bandwidth limit set for the job.

#### **Connected since**

The date and time indicating when the current job was made. This field is blank, indicating that a TCP/IP socket is not present, when the job is waiting on transmit options or if the transmission has been stopped. This field will maintain the date and time, indicating that a TCP/IP socket is present, when transmission has been paused.

#### **Mirror status**

#### **Mirror percent complete**

The percentage of the mirror that has been completed

#### Mirror remaining (bytes)

The total number of mirror bytes that are remaining to be sent from the source to the target

#### Mirror skipped (bytes)

The total number of bytes that have been skipped when performing a difference or checksum mirror. These bytes are skipped because the data is not different on the source and target.

#### Queue mirror (ops)

The total number of mirror operations in the queue

#### Sent mirror (bytes)

The total number of mirror bytes that have been transmitted to the target

#### Sent compressed mirror (bytes)

The sent compressed mirror (bytes) statistic is the total number of compressed mirror bytes that have been transmitted to the target. If compression is disabled, this statistic will be the same as sent mirror (bytes).

#### **Replication status**

#### **Replication queue (bytes)**

The total number of replication bytes in the source queue

#### Sent replication (bytes)

The total number of replication bytes that have been transmitted to the target

#### Sent compressed replication (bytes)

The total number of compressed replication bytes that have been transmitted to the target. If compression is disabled, this statistic will be the same as sent replication (bytes).

#### Sent (bytes)

The total number of mirror and replication bytes that have been transmitted to the target

#### Sent compressed (bytes)

The total number of compressed mirror and replication bytes that have been transmitted to the target. If compression is disabled, this statistic will be the same as **Bytes sent**.

#### Intermediate queue (bytes)

The total amount of memory being used by the operations buffer queue

#### **Disk queue (bytes)**

The amount of disk space being used to queue data on the source

#### Queued (ops)

The total number of mirror and replication operations that are in the source queue

#### Source Path

The location of the data on the source that is being protected

#### **Target Path**

The location on the target where the source replica data is located

#### Usage type

- Normal—The replication set type used for all job types except GeoCluster
- GeoCluster Replicated Disk—The replication set type for a GeoCluster job
- Not Determined—The replication set type could not be determined

#### Contains

The number of files and directories contained in the replication set

#### **Total size**

The amount of data contained in the replication set

#### Last calculated

The date and time the size of the replication set was last calculated

Path	
	The path including volume, drive, directory, file, and/or wild card
Attributes	
	The attributes that define the path.
	<ul> <li>Inc—The specified path is included in the replication set</li> </ul>
	<ul> <li>Exc—The specified path is not included in the replication set</li> </ul>
	Rec—The rule is automatically applied to the subdirectories of the specified path

## Replication sets folder items

Name			
	The name of the replication set		
In Use			
	Specifies if the replication set is being used by a connection		
Last Calculated			
	The date and time the size of the replication set was last calculated		
Size (bytes)			
	The amount of data contained in the replication set		
Files			
	The number of files contained in the replication set		
Directories			
	The number of directories contained in the replication set		

### Specific replication set items

Name	
	The name of the replication set
Usage type	
	<ul> <li>Normal—The replication set type used for all job types except GeoCluster</li> <li>GeoCluster Replicated Disk—The replication set type for a GeoCluster job</li> <li>Not Determined—The replication set type could not be determined</li> </ul>
In Use	
	Specifies if the replication set is being used by a connection
Contains	
	The number of files and directories contained in the replication set
Total size	
	The amount of data contained in the replication set
Last calculate	d
	The date and time the size of the replication set was last calculated
Path	
	The path including volume, drive, directory, file, and/or wild card
Attributes	
	The attributes that define the path.
	<ul> <li>Inc—The specified path is included in the replication set</li> <li>Exc—The specified path is not included in the replication set</li> <li>Rec—The rule is automatically applied to the subdirectories of the specified path</li> </ul>

### Target connection entries folder items

### Source Name

The name of the source the connection is using

#### Source Address

The source IP address and port the connection is using

#### **Replication Set**

The name of the replication set

#### **Connection ID**

The incremental counter used to number connections. The number is incremented when a connection is created. It is also incremented by internal actions, such as an auto-disconnect and auto-reconnect. The lowest available number (as connections are created, stopped, deleted, and so on) will always be used. The counter is reset to one each time the Double-Take service is restarted.

#### Target Data State

- **Disconnected**—The target connection entry is not associated with a connection. This may happen if you delete a stopped job. These disconnected target connections cannot be deleted. They will be reused when a new connection (same job type, same servers) is created.
- **OK**—The data on the target is in a good state.
- **Mirroring**—The target is in the middle of a mirror process. The data will not be in a good state until the mirror is complete.
- Mirror Required—The data on the target is not in a good state because a remirror is required. This may be caused by an incomplete or stopped mirror or an operation may have been dropped on the target.
- **Restore Required**—The data on the source and target do not match because of a failover condition. Restore the data from the target back to the source. If you want to discard the changes on the target, you can remirror to resynchronize the source and target.
- **Snapshot Reverted**—The data on the source and target do not match because a snapshot has been applied on the target. Restore the data from the target back to the source. If you want to discard the changes on the target, you can remirror to resynchronize the source and target.
- **Busy**—The source is low on memory causing a delay in getting the state of the data on the target.
- **Not Loaded**—Double-Take target functionality is not loaded on the target server. This may be caused by an activation code error.
- Unknown—The console cannot determine the status.

#### **Target Status**

- **OK**—The target machine is active and online.
- Not Loaded—The target module is not loaded on the target. (For example, the activation code is invalid.)
- Paused—The target machine is paused by user intervention.
- Retrying—The target machine is retrying operations for the connection.

#### Source name

The name of the source the connection is using

#### Source address

The source IP address and port the connection is using

#### **Replication set**

The name of the replication set

#### **Connection ID**

The incremental counter used to number connections. The number is incremented when a connection is created. It is also incremented by internal actions, such as an auto-disconnect and auto-reconnect. The lowest available number (as connections are created, stopped, deleted, and so on) will always be used. The counter is reset to one each time the Double-Take service is restarted.

#### Target data state

- **Disconnected**—The target connection entry is not associated with a connection. This may happen if you delete a stopped job. These disconnected target connections cannot be deleted. They will be reused when a new connection (same job type, same servers) is created.
- **OK**—The data on the target is in a good state.
- **Mirroring**—The target is in the middle of a mirror process. The data will not be in a good state until the mirror is complete.
- **Mirror Required**—The data on the target is not in a good state because a remirror is required. This may be caused by an incomplete or stopped mirror or an operation may have been dropped on the target.
- **Restore Required**—The data on the source and target do not match because of a failover condition. Restore the data from the target back to the source. If you want to discard the changes on the target, you can remirror to resynchronize the source and target.
- **Snapshot Reverted**—The data on the source and target do not match because a snapshot has been applied on the target. Restore the data from the target back to the source. If you want to discard the changes on the target, you can remirror to resynchronize the source and target.
- **Busy**—The source is low on memory causing a delay in getting the state of the data on the target.
- **Not Loaded**—Double-Take target functionality is not loaded on the target server. This may be caused by an activation code error.
- Unknown—The console cannot determine the status.

Target status	
	OK—The target machine is active and online.
	• Not Loaded—The target module is not loaded on the target. (For example, the activation code is invalid.)
	Paused—The target machine is paused by user intervention.
	Retrying—The target machine is retrying operations for the connection.
Schedule	
	Any configured snapshot schedule
Next scheduled	d snapshot
	The date and time of the next scheduled snapshot, if any
Time Taken	
	The date and time of the listed snapshot
Туре	
	Automatic—This snapshot was taken automatically by Double-Take.
	Manual—This snapshot was taken manually by a user.
	Scheduled—This snapshot was taken as part of a periodic snapshot.
	• <b>Deferred</b> —This snapshot was taken as part of a periodic snapshot, although it did not occur at the specified interval because the job between the source and target was not in a good state.
ID	
	The snapshot ID
Target States	
	The state of the target at the time of the snapshot

## **Error codes**

The following table contains error codes that you may see in the various user interfaces or in log files.

-1 Unknown error code (generated when a command failed but the failure is not linked to a pre-defined error code)

- -101 Invalid parameter was supplied
- -102 Command is not a valid or the syntax is incorrect
- -103 Double-Take source module is not loaded
- -104 No Double-Take source identified
- -105 Double-Take target module is not loaded
- -106 Connection already established
- -107 Connection does not exist
- -108 Mirror currently active
- -109 Server does not exist or could not be located
- -110 Server is not responding
- -111 Double-Take is running
- -112 Unknown connection error
- -113 Mirror already active
- -114 Date is invalid valid format is mm/dd/yy
- -115 Time is invalid valid format is hh:mm
- -116 Invalid option supplied
- -117 Mirror is not paused
- -118 Connection is not paused
- -119 Connection does not exist
- -120 Connection already connected
- -121 Mirror is not running
- -122 Job exists
- -123 Job does not exist
- -124 No job has been selected
- -125 Connection is replicating
- -126 Connection is not replicating

- -127 Job is enabled
- -128 Schedule is not defined
- -129 Job is changed
- -130 Job is in use
- -131 No Double-Take target identified
- -132 Memory is low
- -133 Memory is sufficient
- -134 Replication is pending
- -135 Invalid option supplied
- -136 Job replication rule does not exist
- -137 Mirror queue is full
- -138 Insufficient security access
- -139 Schedule command is invalid
- -140 Source path is invalid
- -141 Job is not changed
- -142 Insufficient source security access
- -143 Invalid statistics file
- -144 Job not saved
- -145 Connection failed
- -146 Cleaner option is not enabled
- -147 Target mirror capacity high threshold is met
- -148 Target mirror capacity low threshold is met
- -149 New option applied
- -150 Target is restarted
- -151 Replication is out of memory
- -152 Write access is blocked on the volume
- -153 Transmission is paused
- -154 Transmission is active
- -155 Target does not support the command
- -156 Command conversion to accommodate a different Double-Take version has failed
- -157 Incompatible source and target Double-Take versions

- -158 Incompatible source and target operating system versions
- -159 NAS server to non-NAS server is not a supported configuration
- -160 Target module is not loaded
- -161 Operation or command is not supported
- -162 Target is paused
- -163 Target is pending
- -164 Target is active
- -165 Target is retrying operations
- -166 Target is no longer retrying operations
- -167 Restore required state is unknown
- -168 Not a valid failover or cutover source
- -169 Failover or cutover login failed
- -170 Feature is not supported
- -171 Command is not supported
- -172 Target queue log file error
- -173 Target disk is full
- -174 Target disk has sufficient disk space
- -175 Error reading from or writing to the queue log file
- -176 Memory-based queue is in use
- -177 Disk-based queue is in use
- -178 Restore is required
- -179 ID the driver supplied to the service is invalid
- -180 Child path is blocked
- -181 Parent path is blocked
- -182 Target path blocking is disabled
- -183 Connection ID specified is invalid
- -184 No command objects are in the queue
- -185 Target is discarding operations from the target queue
- -186 Target is not discarding operations from the target queue
- -187 Schedule is paused
- -188 Schedule is resumed

- -189 Target state has changed
- -190 Target name has changed
- -191 Acknowledgement queue has been updated
- -201 Monitor name exists
- -202 Monitor name does not exist
- -203 Monitor configuration exists
- -204 Monitor configuration does not exist
- -205 Monitor configuration is in use
- -206 Monitor configuration is not in use
- -207 Source is online
- -208 Source is offline
- -209 Server is not failed over
- -210 Server is failed over
- -211 Server is not being monitored
- -212 Failback is in progress
- -213 IP address placeholders on the target are unavailable
- -214 Target NIC was not found
- -215 Source module is not loaded
- -216 Failed to set the source state
- -217 Unable to ping source
- -218 Invalid argument
- -219 Recovery is busy
- -220 Invalid command
- -221 Recovery is started
- -222 Script failed to start
- -223 Script timeout met
- -224 No replication timeout met connection is bad
- -225 Invalid path
- -226 Kernel module is not loaded
- -227 System dump has failed
- -228 Response is null

-229 Object stream is not OK

-230 Transactional NTFS (TxF) SavePoints (intermediate rollback points) are not supported

-231 Data overload

-2001 Transform initialization failed

-2002 General transform failure

-2003 Transform volume count

-2004 Transform missing source

-2005 Transform missing target

-2101 Network controller initialization failed

-2102 General network controller failure

-2103 Network controller already started

-2104 No socket on the network controller

-2105 Listen failure on the network controller

-2201 Error communicating with e-mail server

-2202 Error connecting to e-mail server

-2203 E-mail notification is disabled

-2204 E-mail notification is enabled

-2205 E-mail notification requires Internet Explorer version 5.0 and WMI (E-mail notification no longer requires Internet 5.0 or later.)

-2206 E-mail notification requires Internet Explorer version 5.0 (E-mail notification no longer requires Internet Explorer 5.0 or later.)

-2207 Error sending e-mail

-2208 Error sending test e-mail

- -2209 WMI error connecting to e-mail server
- -2210 E-mail notification requires WMI
- -2211 Event Viewer settings for e-mail notification are invalid
- -2212 E-mail notification setting is invalid
- -2213 E-mail notification address exists
- -2214 E-mail notification alert ID is invalid
- -2215 E-mail notification format is invalid
- -2216 E-mail notification address does not exist

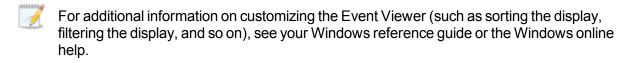
-2217 E-mail notification address notification list is empty

- -2218 E-mail warning is not set
- -2219 E-mail test warning is not set
- -2200 E-mail notification is functioning properly
- -2301 Bandwidth limiting time exists
- -2302 Bandwidth limiting name exists
- -2303 Bandwidth limit not found
- -2304 Bandwidth limit day is invalid
- -2305 Bandwidth limit label is invalid
- -2401 Snapshot module is not loaded
- -2402 Error reading the snapshot .dll
- -2403 Snapshot not found
- -2404 No snapshot connections found
- -2405 Snapshot revert completed
- -2406 Snapshot revert is in progress
- -2501 Full server functionality is disabled
- -2502 No full server interface available
- -3001 Refused target mode Small Business Server
- -3002 Refused target mode Double-Take Move
- -3003 Refused target mode Duplicate code
- -3004 Refused target mode Double-Take Cloud

## Windows Event messages

An event is a significant occurrence in the system or in an application that requires administrators to be notified. The operating system writes notifications for these events to a log that can be displayed using the Windows Event Viewer. Three different log files are generated: application, security, and system.

- 1. To access the Event Viewer, select Administrative Tools, Event Viewer.
- 2. Select the **Application** or **System** log. See your Windows reference guide or online help for details on the information provided for each event.
- 3. To view a detailed description, double-click an event.



For a complete list of Double-Take events, see Event messages on page 351.

### **Event messages**

The following table identifies the Double-Take events. The event ID is followed by the event message. Below the ID and message you will find the following information.

- Event log—This identifies if the message will be found in the Application or System event log.
- **Source**—This identifies the Source in the event log.
- **Type or Level**—This identifies the Type (Windows 2003) or Level (Windows 2008 and 2012) in the event log.
- **Required response**—This identifies the required action, if any, you should take if you get this message.

Double-Take Availability and Double-Take Move share the same set of event messages. Some messages apply to one product, some to the other, and some to both. For messages that apply to both, the Double-Take Availability terminology is used. For example, message 5100 indicates failover completed. This same message will also be seen when cutover is completed.

Variables that are dynamically updated in a generated message are designated by a percent symbol followed by a number. For example, the message "The evaluation period expires in %1 day(s)" will have a number automatically inserted for %1, so the message you see might be "The evaluation period expires in 12 day(s)." Variables are used for things like server names, error codes, numbers, and so on.

1: This evaluation period has expired. Mirroring and replication have been stopped. To obtain a license, please contact your vendor.

Event log—Application

Source—Double-Take

Type or Level—Error

Required response—Contact your vendor to purchase either a single or site license.

#### 2: The evaluation period expires in %1 day(s).

Event log—Application

Source—Double-Take

Type or Level—Information

**User action required**—Contact your vendor before the evaluation period expires to purchase either a single or site license.

#### 3: The evaluation period has been activated and expires in %1 day(s).

Event log—Application

Source—Double-Take

Type or Level—Information

**User action required**—Contact your vendor before the evaluation period expires to purchase either a single or site license.

#### 4: Duplicate activation codes detected on machine %1 from machine %2.

Event log—Application

Source—Double-Take

Type or Level—Warning

**User action required**—If you have an evaluation license or a site license, no action is necessary. If you have a single license, you must purchase either another single license or a site license.

# 5: This product edition can only be run on Windows Server or Advanced Server running the Server Appliance Kit.

Event log—Application

Source—Double-Take

Type or Level—Error

User action required—Verify your activation code has been entered correctly.

#### 6: Evaluation period ends today at %1.

Event log—Application

Source—Double-Take

Type or Level—Warning

**User action required**—Contact your vendor to purchase either a single or site license.

# 7: Product activation code is invalid. Please check that it is typed correctly and is valid for the version of the operating system in use.

Event log—Application

Source—Double-Take

Type or Level—Error

**User action required**—If you are in the process of installing Double-Take, verify that you are using a 24 character alpha-numeric code. If Double-Take is already installed, confirm that the code entered is correct. If the code appears to be correct, contact technical support.

#### 100: Critical Error: %1 line %2, %3.

Event log—Application

Source—Double-Take

Type or Level—Error

User action required—Contact technical support with the details from this message.

#### 101: Service has aborted due to the following unrecoverable error: %1.

Event log—Application

Source—Double-Take

Type or Level—Error

**User action required**—Restart the Double-Take service. Contact technical support if this event occurs repeatedly.

200: ExchFailover failover from %1 to %2 was started in commit mode. See log file %3 for details.

Event log—Application

Source—ExchFailover

Type or Level—Information

User action required—See the specific log message for additional details.

201: ExchFailover failover from %1 to %2 was started in test mode. See log file %3 for details.

Event log—Application

Source—ExchFailover

Type or Level—Information

User action required—See the specific log message for additional details.

202: ExchFailover failback to %1 from %2 was started in commit mode. See log file %3 for details.

Event log—Application

Source—ExchFailover

Type or Level—Information

User action required—See the specific log message for additional details.

203: ExchFailover failback to %1 from %2 was started in test mode. See log file %3 for details.

Event log—Application

Source—ExchFailover

Type or Level—Information

User action required—See the specific log message for additional details.

#### 204: ExchFailover setup started for server %1. See log file %2 for details.

Event log—Application

Source—ExchFailover

Type or Level—Information

**User action required**—See the specific log message for additional details.

205: ExchFailover was unable to open the default log file. A new log file has been created. All messages will be log in %1.

Event log—Application

Source—ExchFailover

Type or Level—Error

User action required—See the specific log message for additional details.

210: ExchFailover completed. Moved %1 users in %2 mail stores in %3 seconds. Check log file %4 for details.

Event log—Application

Source—ExchFailover

Type or Level—Success

User action required—See the specific log message for additional details.

# 211: ExchFailover completed with warnings. Moved %1 users in %2 mail stores in %3 seconds. Check log file %4 for details.

Event log—Application

Source—ExchFailover

Type or Level—Warning

User action required—See the specific log message for additional details.

# 212: ExchFailover completed. Tested %1 users in %2 mail stores in %3 seconds. Check log file %4 for details.

Event log—Application

Source—ExchFailover

Type or Level—Success

User action required—See the specific log message for additional details.

# 213: ExchFailover completed with warnings. Moved %1 users in %2 mail stores in %3 seconds. Check log file %4 for details.

Event log—Application

Source—ExchFailover

Type or Level—Warning

User action required—See the specific log message for additional details.

# 214: ExchFailover setup completed. Updated %1 mail stores in %2 seconds. Check log file %3 for details.

Event log—Application

Source—ExchFailover

Type or Level—Success

User action required—See the specific log message for additional details.

#### 220: ExchFailover start failed. Could not open log file: %1.

Event log—Application

Source—ExchFailover

Type or Level—Error

**User action required**—Restart failover. Contact technical support if this event occurs again.

#### 221: ExchFailover start failed. Invalid command line arguments. See log file %1 for details.

Event log—Application

Source—ExchFailover

Type or Level—Error

**User action required**—See the specific log message for additional details.

#### 222: ExchFailover start failed. Double-Take is not licensed on this machine.

Event log—Application

Source—ExchFailover

Type or Level—Error

**User action required**—Verify your activation code has been entered correctly and contact technical support.

#### 223: ExchFailover start failed due to an Active Directory error.

Event log—Application

Source—ExchFailover

Type or Level—Error

**User action required**—Restart failover. Contact technical support if this event occurs again.

224: ExchFailover failed to find one (or both) of the Exchange servers. Check the server names. This can also occur if the process does not have sufficient privileges to access Active Directory.

Event log—Application

Source—ExchFailover

Type or Level—Error

**User action required**—Verify the Exchange server names and the account has sufficient privileges to update Active Directory.

1000: An exception occurred: %1

Event log—Application

Source—DTCounters

Type or Level—Error

**User action required**—Run the installation and select Repair. Contact technical support if this event occurs again.

# 1001: The Double-Take counter DLL could not initialize the statistics handler object to gather performance data.

Event log—Application

**Source**—DTCounters

Type or Level—Error

**User action required**—Run the installation and select Repair. Contact technical support if this event occurs again.

1002: The Double-Take counter DLL could not map shared memory file containing the performance data.

Event log—Application

Source—DTCounters

Type or Level—Error

**User action required**—Run the installation and select Repair. Contact technical support if this event occurs again.

# 1003: The Double-Take counter DLL could not open the "Performance" key in the Double-Take section of the registry.

Event log—Application

Source—DTCounters

Type or Level—Error

**User action required**—Run the installation and select Repair. Contact technical support if this event occurs again.

1004: The Double-Take counter DLL could not read the "First Counter" value under the Double-Take\Performance Key.

Event log—Application

Source—DTCounters

Type or Level—Error

**User action required**—Run the installation and select Repair. Contact technical support if this event occurs again.

## 1005: The Double-Take counter DLL read the "First Help" value under the Double-Take\Performance Key.

Event log—Application

Source—DTCounters

Type or Level—Error

**User action required**—Run the installation and select Repair. Contact technical support if this event occurs again.

#### 1006: The Double-Take counter DLL could not create event handler for the worker thread.

Event log—Application

Source—DTCounters

Type or Level—Error

**User action required**—Run the installation and select Repair. Contact technical support if this event occurs again.

#### 4000: Kernel was successfully started.

Event log—Application

Source—Double-Take

Type or Level—Information

User action required—No action required.

#### 4001: Target service was successfully started.

Event log—Application

Source—Double-Take

Type or Level—Information

User action required—No action required.

#### 4002: Source service was successfully started.

Event log—Application

Source—Double-Take

Type or Level—Information

User action required—No action required.

#### 4003: Source service was successfully stopped.

Event log—Application

Source—Double-Take

Type or Level—Information

User action required—No action required.

#### 4004: Target service was successfully stopped.

Event log—Application

Source—Double-Take

Type or Level—Information

User action required—No action required.

#### 4005: Kernel was successfully stopped.

Event log—Application

Source—Double-Take

Type or Level—Information

User action required—No action required.

#### 4007: Auto-disconnecting from %1 (%2) for Replication Set %3, ID: %4 due to %5

Event log—Application

Source—Double-Take

Type or Level—Warning

**User action required**—The connection is auto-disconnecting because the diskbased queue on the source has been filled, the service has encountered an unknown file ID, the target server has restarted, or an error has occurred during disk queuing on the source or target (for example, Double-Take cannot read from or write to the transaction log file).

#### 4008: Auto-disconnect has succeeded for %1 (%2) for Replication Set %3, ID: %4

Event log—Application

Source—Double-Take

Type or Level—Information

User action required—No action required.

#### 4009: Auto-reconnecting Replication Set %1 to %2 (%3)

Event log—Application

Source—Double-Take

Type or Level—Information

User action required—No action required.

#### 4010: Auto-reconnect has succeeded connecting Replication Set %1 to %2 (%3)

Event log—Application

Source—Double-Take

Type or Level—Information

User action required—No action required.

### 4011: Auto-reconnect has failed connecting Replication Set %1 to %2 (%3)

Event log—Application

Source—Double-Take

Type or Level—Error

User action required—Manually reestablish the job to target connection.

#### 4014: Service has started network transmission.

Event log—Application

Source—Double-Take

Type or Level—Information

**User action required**—No action required.

#### 4015: Service has stopped network transmission.

Event log—Application

Source—Double-Take

Type or Level—Information

User action required—No action required.

### 4016: Service has established a connection to %1 (%2) for Replication Set %3, ID: %4

Event log—Application

Source—Double-Take

Type or Level—Information

User action required—No action required.

#### 4017: Service has disconnected from %1 (%2) for Replication Set %3, ID: %4

Event log—Application

Source—Double-Take

Type or Level—Information

**User action required**—No action required.

4018: %1, however, mirroring and replication have been disabled as a restore is required due to a previous failover.

Event log—Application

**Source**—Double-Take

Type or Level—Warning

**User action required**—Perform a restoration.

#### 4019: Service has started a mirror to %1 (%2) for Replication Set %3, ID: %4

Event log—Application

Source—Double-Take

Type or Level—Information

User action required—No action required.

#### 4020: Service has paused a mirror to %1 (%2) for Replication Set %3, ID: %4

Event log—Application

Source—Double-Take

Type or Level—Information

**User action required**—No action required.

#### 4021: Service has resumed a mirror to %1 (%2) for Replication Set %3, ID: %4

Event log—Application

Source—Double-Take

Type or Level—Information

User action required—No action required.

#### 4022: Service has stopped a mirror to %1 for Replication Set %2, ID: %3, %4

Event log—Application

Source—Double-Take

Type or Level—Information

User action required—No action required.

4023: Service has completed a mirror to %1 %2 for Replication Set %3, ID: %4, %5

Event log—Application

Source—Double-Take

Type or Level—Information

**User action required**—No action required.

4024: Service has started Replication to %1 (%2) for Replication Set %3, ID: %4

Event log—Application

Source—Double-Take

Type or Level—Information

User action required—No action required.

4025: Service has stopped Replication to %1 (%2) for Replication Set %3, ID: %4

Event log—Application

Source—Double-Take

Type or Level—Information

User action required—No action required.

# 4026: The target has been paused due to user intervention.

Event log—Application

Source—Double-Take

Type or Level—Information

User action required—No action required.

# 4027: The target has been resumed due to user intervention.

Event log—Application

Source—Double-Take

Type or Level—Information

User action required—No action required.

# 4028: Registration of service class with Active Directory failed. Verify that the Active Directory server is up and the service has the proper permissions to update its entries.

Event log—Application

Source—Double-Take

Type or Level—Warning

**User action required**—Verify that the Active Directory server is running and that the Double-Take service has permission to update Active Directory.

4029: Registration of service instance with Active Directory failed. Verify that the Active Directory server is up and the service has the proper permissions to update its entries.

Event log—Application

Type or Level—Warning

**User action required**—Verify that the Active Directory server is running and that the Double-Take service has permission to update Active Directory.

#### 4030: RSResource.dll has an unknown error. The product functionality has been disabled.

Event log—Application

Source—Double-Take

Type or Level—Error

**User action required**—Reinstall the software, using the installation Repair option, to install a new copy of the RSResource.dll. Contact technical support if this error persists.

#### 4031: RSResource.dll could not be opened. The product functionality has been disabled.

Event log—Application

Source—Double-Take

Type or Level—Error

**User action required**—Reinstall the software, using the installation Repair option, to install a new copy of the RSResource.dll. Contact technical support if this error persists.

# 4032: The RSResource.dll component version does not match the component version expected by the product. The product functionality has been disabled.

Event log—Application

Source—Double-Take

Type or Level—Error

**User action required**—Reinstall the software, using the installation Repair option, to install a new copy of the RSResource.dll. Contact technical support if this error persists.

# 4033: RSResource.dll build version is invalid. The product functionality has been disabled.

Event log—Application

Source—Double-Take

Type or Level—Error

**User action required**—Reinstall the software, using the installation Repair option, to install a new copy of the RSResource.dll. Contact technical support if this error persists.

#### 4034: Error verifying the service name. The product functionality has been disabled.

Event log—Application

Type or Level—Error

**User action required**—Reinstall the software, using the installation Repair option, to install a new copy of the RSResource.dll. Contact technical support if this error persists.

#### 4035: Error verifying the product name. The product functionality has been disabled.

Event log—Application

Source—Double-Take

Type or Level—Error

**User action required**—Reinstall the software, using the installation Repair option, to install a new copy of the RSResource.dll. Contact technical support if this error persists.

#### 4036: Error verifying the vendor name. The product functionality has been disabled.

Event log—Application

Source—Double-Take

Type or Level—Error

**User action required**—Reinstall the software, using the installation Repair option, to install a new copy of the RSResource.dll. Contact technical support if this error persists.

# 4037: Error verifying the vendor URL name. The product functionality has been disabled.

Event log—Application

Source—Double-Take

Type or Level—Error

**User action required**—Reinstall the software, using the installation Repair option, to install a new copy of the RSResource.dll. Contact technical support if this error persists.

# 4038: Error verifying the product code. The product functionality has been disabled.

Event log—Application

Source—Double-Take

Type or Level—Error

**User action required**—Reinstall the software, using the installation Repair option, to install a new copy of the RSResource.dll. Contact technical support if this error persists.

#### 4039: Error while reading RSResource.dll. The product functionality has been disabled.

Event log—Application

Type or Level—Error

**User action required**—Reinstall the software, using the installation Repair option, to install a new copy of the RSResource.dll. Contact technical support if this error persists.

# 4040: The product code is illegal for this computer hardware. The product functionality has been disabled.

Event log—Application

Source—Double-Take

Type or Level—Error

**User action required**—Reinstall the software, using the installation Repair option, to install a new copy of the RSResource.dll. Contact technical support if this error persists.

# 4041: The product code is illegal for this operating system version. The product functionality has been disabled.

Event log—Application

Source—Double-Take

Type or Level—Error

**User action required**—Reinstall the software, using the installation Repair option, to install a new copy of the RSResource.dll. Contact technical support if this error persists.

# 4042: The product code requires installing the Windows Server Appliance Kit. The product functionality has been disabled.

Event log—Application

Source—Double-Take

Type or Level—Error

**User action required**—Reinstall the software, using the installation Repair option, to install a new copy of the RSResource.dll. Contact technical support if this error persists.

# 4043: This product can only be run on a limited number of processors and this server exceeds the limit. The product functionality has been disabled.

Event log—Application

Source—Double-Take

Type or Level—Error

**User action required**—Reinstall the software, using the installation Repair option, to install a new copy of the RSResource.dll. Contact technical support if this error persists.

# 4044: An error was encountered and replication has been stopped. It is necessary to stop and restart the service to correct this error.

Event log—Application

Source—Double-Take

Type or Level—Error

User action required—Contact technical support if this error persists.

# 4045: %1 value must be between 1025 and 65535. Using default of %2.

Event log—Application

Source—Double-Take

Type or Level—Warning

**User action required**—Verify that the Double-Take port value you are trying to use is within the valid range. If it is not, it will automatically be reset to the default value.

#### 4046: This service failed to start because of a possible port conflict. Win32 error: %1

Event log—Application

Source—Double-Take

Type or Level—Error

**User action required**—Verify that the Double-Take ports are not conflicting with ports used by other applications.

# 4047: Could not load ZLIB DLL %1. Some levels of compression will not be available.

Event log—Application

Source—Double-Take

Type or Level—Information

**User action required**—The compression levels available depend on your operating system. You can reinstall the software, using the installation Repair option, to install a new copy of the DynaZip.dll, or contact technical support if this error persists.

# 4048: Service has started a delete orphans task to %1 (%2) for Replication Set %3, ID: %4

Event log—Application

Source—Double-Take

Type or Level—Information

User action required—No action required.

#### 4049: Service has paused a delete orphans task to %1 (%2) for Replication Set %3, ID: %4

Event log—Application

Type or Level—Information

User action required—No action required.

# 4050: Service has resumed a delete orphans task to %1 (%2) for Replication Set %3, ID: %4

Event log—Application

Source—Double-Take

Type or Level—Information

User action required—No action required.

# 4051: Service has stopped a delete orphans task to %1 (%2) for Replication Set %3, ID: %4

Event log—Application

Source—Double-Take

Type or Level—Information

User action required—No action required.

# 4052: Service has completed a delete orphans task to %1 (%2) for Replication Set %3, ID: %4

Event log—Application

Source—Double-Take

Type or Level—Information

User action required—No action required.

# 4053: Service has started a restore task to %1 (%2) for Replication Set %3, ID: %4

Event log—Application

Source—Double-Take

Type or Level—Information

User action required—No action required.

# 4054: Service has paused a restore task to %1 (%2) for Replication Set %3, ID: %4

Event log—Application

Source—Double-Take

Type or Level—Information

User action required—No action required.

# 4055: Service has resumed a restore task to %1 (%2) for Replication Set %3, ID: %4

Event log—Application

Type or Level—Information

User action required—No action required.

# 4056: Service has stopped a restore task to %1 (%2) for Replication Set %3, ID: %4

Event log—Application

Source—Double-Take

Type or Level—Information

User action required—No action required.

# 4057: Service has completed a restore task to %1 (%2) for Replication Set %3, ID: %4

Event log—Application

Source—Double-Take

Type or Level—Information

User action required—No action required.

# 4058: Service has started a verification task to %1 (%2) for Replication Set %3, ID: %4

Event log—Application

Source—Double-Take

Type or Level—Information

User action required—No action required.

# 4059: Service has paused a verification task to %1 (%2) for Replication Set %3, ID: %4

Event log—Application

Source—Double-Take

Type or Level—Information

**User action required**—No action required.

# 4060: Service has resumed a verification task to %1 (%2) for Replication Set %3, ID: %4

Event log—Application

Source—Double-Take

Type or Level—Information

User action required—No action required.

# 4061: Service has stopped a verification task to %1 (%2) for Replication Set %3, ID: %4

Event log—Application

Source—Double-Take

Type or Level—Information

User action required—No action required.

4062: Service has completed a verification task to %1 (%2) for Replication Set %3, ID: %4

Event log—Application

Source—Double-Take

Type or Level—Information

User action required—No action required.

# 4063: Bandwidth limit to %1 (%2) has changed to %3.

Event log—Application

Source—Double-Take

Type or Level—Information

User action required—No action required.

# 4064: Bandwidth limit to %1 (%2) is now in the "%3" period at %4.

Event log—Application

Source—Double-Take

Type or Level—Information

User action required—No action required.

4065: Target data state for connection %1 from %2 (%3) has changed because %4.

Event log—Application

Source—Double-Take

Type or Level—Warning

User action required—No action required.

# 4066: The product code requires a virtual server environment. The product functionality has been disabled.

Event log—Application

Source—Double-Take

Type or Level—Error

**User action required**—The activation code you are using is for the Virtual SystemsTM edition. This code will not work on non-virtual server environments.

#### 4067: No replication ops have been received from the driver for an extended period of time.

Event log—Application

Source—Double-Take

Type or Level—Error

**User action required**—Check other messages for errors with the Double-Take drivers, and correct as required. If there are no driver messages, verify that your drives are connected to the source. If this error persists, contact technical support.

#### 4068: Failed to write to a replicating volume.

Event log—Application

Source—Double-Take

Type or Level—Error

**User action required**—Reboot the source server. Contact technical support if this event occurs again.

#### 4069: The option MoveOrphansDir has been updated because it was missing or empty.

Event log—Application

Source—Double-Take

Type or Level—Warning

User action required—No action required.

# 4070: An error occurred while reading data for connection %1. All data needs to be remirrored. See the log for details.

#### Event log—Application

Source—Double-Take

Type or Level—Error

**User action required**—Initiate a remirror to guarantee data integrity. Contact technical support if this event occurs repeatedly.

#### 4071: Received network message with invalid checksum.

Event log—Application

Source—Double-Take

Type or Level—Warning

**User action required**—Initiate a remirror to guarantee data integrity. Contact technical support if this event occurs repeatedly.

#### 4072: QueueSizeAlertThreshold of %1% has been exceeded.

Event log—Application

Source—Double-Take

Type or Level—Warning

**User action required**—If the queue reaches capacity, Double-Take will automatically begin the auto-disconnect process. If you see this message repeatedly, you may want

to consider a larger queue or upgrading your server hardware to keep up with the amount of data changes in your environment.

# 4096: The registry parameter %2 is unknown.

Event log—System

Source—RepDrv

Type or Level—Warning

**User action required**—Delete the parameter and report this issue to technical support.

4097: Failed to initialize WMI support. The last Word in the Data Window is the NT status code.

Event log—System

Source—RepDrv, RepKap, RepHsm, or RepSis

Type or Level—Warning

User action required—No action required.

4097: The file system filter failed to load. Replication will not occur. Reboot your server and contact technical support if this error occurs again. The last Word in the Data window is the NT status code.

Event log—System

Source—RepDrv

Type or Level—Error

**User action required**—Reboot your server and contact technical support if this event occurs again.

4098: The registry parameters failed to load, so the default configuration values will be used. The last Word in the Data window is the NT status code.

Event log-System

Source—RepKap

Type or Level—Warning

User action required—No action required.

4098: The control device %2 was not created. Communication with the service will be disabled. Reboot the server and contact technical support if this error occurs again. The last Word in the Data window is the NT status code.

Event log—System

Source—RepDrv, RepDac, RepKap, or RepHsm

Type or Level—Error

**User action required**—Reboot your server and contact technical support if this event occurs again.

4099: The driver detected a hard link for a file on drive %2. Hard links are not supported. Changes to this file will not be replicated.

Event log—System
Source—RepDrv
Type or Level—Warning

**User action required**—Hard links are not supported.

4099: The driver failed to register with filter manager. Reboot the server and contact technical support if this error occurs again. The last Word in the Data window is the NT status code.

Event log—System

Source—RepKap

Type or Level—Error

**User action required**—Reboot your server and contact technical support if this event occurs again.

4100: The versions of the driver and the filter driver do not match. Replication will not occur. Reboot your server. If this error occurs again, reinstall the software. Contact technical support if this error occurs after the software has been reinstalled. The last three Words in the Data window are the NT status code and the driver version numbers.

Event log—System

Source—RepDrv

Type or Level—Error

**User action required**—Reboot your server. Reinstall the software if this event occurs again. Contact technical support if this event occurs after reinstalling the software.

# 4110: Target cannot write %1 due to target disk being full. Operation will be retried (%2 times or forever)

Event log—Application

Source—Double-Take

Type or Level—Warning

**User action required**—The disk on the target is full. The operation will be retried according to the TGExecutionRetryLimit setting.

4111: Target can not write %1 due to a sharing violation. Operation will be retried (%2 times or forever)

Event log—Application

Source—Double-Take

Type or Level—Warning

**User action required**—A sharing violation error is prohibiting Double-Take from writing on the target. The operation will be retried according to the TGExecutionRetryLimit setting.

# 4112: Target can not write %1 due to access denied. Operation will be retried (%2 times or forever)

Event log—Application

Source—Double-Take

Type or Level—Warning

**User action required**—An access denied error is prohibiting Double-Take from writing on the target. The operation will be retried according to the TGExecutionRetryLimit setting..

# 4113: Target can not write %1 due to an unknown reason. Operation will be retried (%2 times or forever). Please check the log files for further information on the error.

Event log—Application

Source—Double-Take

Type or Level—Warning

**User action required**—An unknown error is prohibiting Double-Take from writing on the target. The operation will be retried according to the TGExecutionRetryLimit setting.

# 4120: Target write to %1 was completed successfully after %2 retries.

Event log—Application

Source—Double-Take

Type or Level—Information

**User action required**—No action required.

4150: Target write %1 failed after %2 retries and will be discarded. See the event log or log files for error conditions. After correcting the problem, you should re-mirror or run a verify to resynchronize the changes.

Event log—Application

Source—Double-Take

Type or Level—Error

**User action required**—The operation has been retried according to the TGExecutionRetryLimit setting but was not able to be written to the target and the operation was discarded. Correct the problem and remirror the files.

4155: The service was unable to complete a file system operation in the allotted time. See the log files for error conditions. After correcting the problem, remirror or perform a verification with remirror to synchronize the changes.

Event log—Application

Source—Double-Take

Type or Level—Warning

**User action required**—Correct the file system error and then remirror or perform a verification with remirror to synchronize the changes.

#### 4200: In band task %1 submitted from %2 by %3 at %4

Event log—Application

Source—Double-Take

Type or Level—Information

User action required—No action required.

#### 4201: In band task %1 discarded (submitted from %2 by %3 at %4)

Event log—Application

Source-Double-Take

Type or Level—Warning

**User action required**—A task may be discarded in the following scenarios: all connections to a target are manually disconnected, replication is stopped for all connections to a target, or an auto-disconnect occurs. If one of these scenarios did not cause the task to be discarded, contact technical support.

# 4202: Running %1 in band script: %2 (task %3 submitted from %4 by %5 at %6)

Event log—Application

Source—Double-Take

Type or Level—Information

User action required—No action required.

# 4203: Completed run of in band script: %1 (exit code %2)

Event log—Application

Source—Double-Take

Type or Level—Information

User action required—No action required.

# 4204: Error running in band script: %1

# Event log—Application

Source—Double-Take

Type or Level—Error

User action required—Review the task and its associated script(s) for syntax errors.

#### 4205: Timeout (%1 seconds) running in band script: %2

Event log—Application

Source—Double-Take

Type or Level—Warning

**User action required**—The timeout specified for the script to complete has expired. Normal processing will continue. You may need to manually terminate the script if it will never complete

#### 4206: Run timeout disabled for in band script: %1

Event log—Application

Source—Double-Take

Type or Level—Warning

**User action required**—The timeout period was set to zero (0). Double-Take will not wait for the script to complete before continuing. No action is required.

#### 4207: In band scripts disabled by server - no attempt will be made to run %1

Event log—Application

Source—Double-Take

Type or Level—Warning

User action required—Enable task command processing.

# 4300: A connection request was received on the target before the persistent target paths could be loaded.

Event log—Application

Source—Double-Take

Type or Level—Error

User action required—You may need to stop and restart your job.

#### 4301: Unable to block target paths, the driver is unavailable.

Event log—Application

Source—Double-Take

Type or Level—Error

**User action required**—If you need to block your target paths, contact technical support.

### 4302: Target Path %1 has been successfully blocked

Event log—Application

Source—Double-Take

Type or Level—Information

User action required—No action required.

# 4303: Blocking of target path: %1 failed. Error Code: %2

Event log—Application

Source—Double-Take

Type or Level—Warning

**User action required**—If you need to block your target paths, contact technical support.

#### 4304: Target Path %1 has been successfully unblocked

Event log—Application

Source—Double-Take

Type or Level—Information

User action required—No action required.

# 4305: Unblocking of target path: %1 failed. Error Code: %2

Event log—Application

Source—Double-Take

Type or Level—Warning

**User action required**—If you need to unblock your target paths, contact technical support.

# 4306: Target paths for source %1 (%2) Connection id: %3 are already blocked

Event log—Application

Source—Double-Take

Type or Level—Warning

User action required—No action required.

# 4307: Target paths for source %1 (%2) Connection id: %3 are already unblocked

Event log—Application

Type or Level—Warning

User action required—No action required.

### 4308: Error loading target paths for blocking, registry key %1 has been corrupted.

Event log—Application

Source—Double-Take

Type or Level—Error

**User action required**—If you need to block your target paths, contact technical support.

#### 4400: Failed to create snapshot set for source %1 (%2) Connection ID: %3. Error: %4

Event log—Application

Source—Double-Take

Type or Level—Error

**User action required**—The snapshot could not be created. This may be due to a lack of disk space or memory or another reason. The error code is the Microsoft VSS error. Check your VSS documentation or contact technical support.

# 4401: Failed to delete automatic snapshot set for source %1 (%2) Connection ID: %3. Error: %4

Event log—Application

Source—Double-Take

Type or Level—Error

**User action required**—The automatic snapshot could not be deleted. This may be due to a lack of memory, the file does not exist, or another reason. The error code is the Microsoft Volume Shadow Copy error. Check your Volume Shadow Copy documentation or contact technical support.

#### 4402: Failed to delete snapshot set for source %1 (%2) Connection ID: %3. Error: %4

Event log—Application

**Source**—Double-Take

#### Type or Level—Error

**User action required**—The snapshot could not be deleted. This may be due to a lack of memory, the file does not exist, or another reason. The error code is the Microsoft Volume Shadow Copy error. Check your Volume Shadow Copy documentation or contact technical support.

4403: A scheduled snapshot could not be created for source %1 (%2) Connection ID: %3. because the target data was in a bad state. A snapshot will automatically be created when the target data reaches a good state.

Event log—Application

Source—Double-Take

Type or Level—Error

**User action required**—No action required. A snapshot will automatically be created when the target data reaches a good state.

4404: Set snapshot schedule for source %1 (%2) connection %3 to every %4 minutes. Next snapshot: %5.

Event log—Application

Source—Double-Take

Type or Level—Information

User action required—No action required.

#### 4405: Removed snapshot schedule for source %1 (%2) connection %3.

Event log—Application

Source—Double-Take

Type or Level—Information

User action required—No action required.

#### 4406: Enabled snapshot schedule for source %1 (%2) connection %3.

Event log—Application

Source—Double-Take

Type or Level—Information

User action required—No action required.

#### 4407: Disabled snapshot schedule for source %1 (%2) connection %3.

Event log—Application

Source—Double-Take

Type or Level—Information

User action required—No action required.

4408: %1 was unable to move some orphans for source %2 on connection ID %3. Check the %1 logs for further details.

Event log—Application

Type or Level—Warning

**User action required**—Orphan files could not be moved. For example, the location could be out of disk space. Check the Double-Take log for more information.

# 4409: %3 was unable to delete some orphans for source %1 on connection ID %2. Check the %3 logs for further details.

Event log—Application

Source—Double-Take

Type or Level—Warning

**User action required**—Orphan files could not be deleted. Check the Double-Take log for more information.

#### 4410: The registry hive dump failed with an of error: %1.

Event log—Application

Source—Double-Take

Type or Level—Error

User action required—Contact technical support.

#### 4411: The Service has detected that port %1 is being %2 by the Windows Firewall.

Event log—Application

Source—Double-Take

Type or Level—Warning

**User action required**—The firewall port needs to be unblocked or restrictions against Double-Take removed so that Double-Take data can be transmitted.

#### 5100: Failover completed for %1.

Event log—Application

Source—Double-Take

Type or Level—Information

User action required—No action required.

#### 5101: IP address %1 with subnet mask %2 was added to target machine's %3 adapter.

Event log—Application

Source—Double-Take

Type or Level—Information

User action required—No action required.

# 5102: %1 has reached a failover condition. A response from the user is required before failover can take place.

Event log—Application

Source—Double-Take

Type or Level—Warning

**User action required**—Check your source machine and initiate failover, if user intervention for failover is configured. If you bring your source machine back online without initiating failover, the failover condition met state will be canceled.

#### 5103: Started adding drive shares from %1 to %2.

Event log—Application

Source—Double-Take

Type or Level—Information

User action required—No action required.

#### 5104: %1 drive shares were taken over by %2.

Event log—Application

Source—Double-Take

Type or Level—Information

User action required—No action required.

# 5105: Attempting to run the %1 script.

Event log—Application

Source—Double-Take

Type or Level—Information

**User action required**—No action required.

# 5106: The %1 script ran successfully.

Event log—Application

Source—Double-Take

Type or Level—Information

User action required—No action required.

# 5107: Error occurred in running %1 script.

Event log—Application

Source—Double-Take

# Type or Level—Error

**User action required**—Verify that the script identified exists with the proper permissions.

#### 5108: The source machine %1 is not responding to a ping.

Event log—Application

**Source**—Double-Take

Type or Level—Error

**User action required**—This occurs when all monitored IP addresses on the source machine stop responding to pings. Countdown to failover will begin at the first occurrence and will continue until the source machine responds or until failover occurs.

#### 5109: The public NIC on source machine %1 is not responding to a ping.

Event log—Application

Source—Double-Take

Type or Level—Error

**User action required**—The failover target did not receive an answer to its ping of the source machine. Eventually, a failover will result. Investigate possible errors (down server, network error, and so on).

### 5110: The %1 script "%2" is still running.

Event log—Application

Source—Double-Take

Type or Level—Information

User action required—No action required.

#### 5200: Failback completed for %1.

Event log—Application

Source—Double-Take

Type or Level—Information

User action required—No action required.

#### 5201: IP address %1 was removed from target machine's %2 adapter.

Event log—Application

Source—Double-Take

Type or Level—Information

User action required—No action required.

# 5202: Unable to Failback properly because IP address %1 was missing a corresponding SubNet Mask.

Event log—Application

Source—Double-Take

Type or Level—Error

User action required—Contact technical support.

# 5300: The following IP address was added to target's monitoring list: %1

Event log—Application

Source—Double-Take

Type or Level—Information

**User action required**—No action required.

# 5301: The following IP address was removed from target's monitoring list: %1

Event log—Application

Source—Double-Take

Type or Level—Information

User action required—No action required.

# 5302: Drive share information for %1 has been updated on the target machine.

Event log—Application

Source—Double-Take

Type or Level—Information

**User action required**—No action required.

# 5303: The application monitor script has started successfully.

Event log—Application

Source—Double-Take

Type or Level—Information

User action required—No action required.

# 5304: The application monitor script has finished successfully.

Event log—Application

Source—Double-Take

Type or Level—Information

User action required—No action required.

# 5305: The application monitor has found the %1 service stopped.

Event log—Application

Source—Double-Take

Type or Level—Warning

User action required—Application Manager will attempt to restart the service.

### 5306: The application monitor has restarted the %1 service.

Event log—Application

Source—Double-Take

Type or Level—Warning

User action required—No action required.

#### 5307: The application monitor cannot contact the server %1.

Event log—Application

Source—Double-Take

Type or Level—Error

**User action required**—Verify the server is running. Verify available network communications with the server.

# 5400: Broadcasted new MAC address %1 for IP address %2.

Event log—Application

Source—Double-Take

Type or Level—Information

User action required—No action required.

# 5500: Could not connect to e-mail server. Check to make sure the SMTP server %1 is available (error code: %2).

Event log—Application

**Source**—Double-Take

Type or Level—Warning

**User action required**—Double-Take could not connect to your SMTP server or the username and/or password supplied is incorrect. Verify that SMTP server is available and that you have identified it correctly in your e-mail notification configuration. Also verify that your username and password have been entered correctly.

#### 5501: E-mail notification could not be enabled (error code: %1).

Event log—Application

### Type or Level—Warning

**User action required**—This alert occurs if there is an unexpected error enabling email notification during service startup. Check to see if any other errors related to e-mail notification have been logged. Also, check to make sure the Windows Management Instrumentation (WMI) service is enabled. If neither of these apply, contact technical support.

# 5502: E-mail notification could not be initialized. Check to make sure Internet Explorer 5.0 or later is installed.

Event log—Application

Source—Double-Take

Type or Level—Warning

**User action required**—E-mail notification no longer requires Internet Explorer 5.0 or later. If you receive this error, contact technical support.

# 5503: E-mail notification could not be processed. Check to make sure the correct version of SMTPMail.DLL is registered on the system (error code: %1).

Event log—Application

Source—Double-Take

Type or Level—Warning

**User action required**—If you are using Double-Take 4.4.2.1 or earlier and Windows NT 4.0, e-mail notification requires Windows Management Instrumentation (WMI) to be installed. Verify that you have it installed on the Double-Take server.

# 5504: Could not load LocalRS.dll (for e-mail notification).

Event log—Application

Source—Double-Take

Type or Level—Warning

**User action required**—This alert occurs if there is an error loading the resource DLL for the service. Typically, this is caused by a missing LocalRS.dll file. Reinstall the software, using the installation Repair option, to install a new copy of the LocalRS.dll. Contact technical support if this error persists.

#### 5505: E-mail could not be sent. Check e-mail settings (error code: %1).

Event log—Application

Source—Double-Take

#### Type or Level—Warning

**User action required**—Verify that the e-mail server that you have identified in your e-mail notification configuration is correct.

### 5506: One or more required e-mail settings have not been specified (error code: %1).

Event log—Application

Source—Double-Take

Type or Level—Warning

**User action required**—At a minimum, you must specify the e-mail server, the From and To addresses, and at least one type of event to include.

# 5507: E-mail notification could not be initialized. Check to make sure WMI is installed and available (error code: %1).

Event log—Application

Source—Double-Take

Type or Level—Warning

**User action required**—If you are using Double-Take 4.4.2.1 or earlier and Windows NT 4.0, e-mail notification requires Windows Management Instrumentation (WMI) to be installed. Verify that you have it installed on the Double-Take server.

# 5508: An error occurred connecting to the WMI namespace. Check to make sure the Windows Management Instrumentation service is not disabled (error code %1).

Event log—Application

Source—Double-Take

Type or Level—Warning

**User action required**—This alert occurs if there is an error with the Windows Management Instrumentation (WMI) service. Verify that you have it installed on the Double-Take server and that it is enabled.

#### 5600: Part or all of the e-mail setting %1 is not in a valid format.

Event log—Application

Source—Double-Take

Type or Level—Warning

**User action required**—Verify that the include categories and exclude ID list are identified and formatted correctly.

#### 6000: %1

Event log—Application

Source—Double-Take Management Service

Type or Level—Information

**User action required**—This is a placeholder message for many other messages. See the specific log message for additional details.

6001: %1

Event log—Application

Source—Double-Take Management Service

Type or Level—Warning

**User action required**—This is a placeholder message for many other messages. See the specific log message for additional details.

6002: %1

Event log—Application

Source—Double-Take Management Service

Type or Level—Error

**User action required**—This is a placeholder message for many other messages. See the specific log message for additional details.

#### 6003: A %1 job has been created. The name is "%2" and the ID is %3.

Event log—Application

Source—Double-Take Management Service

Type or Level—Information

User action required—No action required.

#### 6004: The %1 job "%2" (ID %3) has been started.

Event log—Application

**Source**—Double-Take Management Service

Type or Level—Information

**User action required**—No action required.

#### 6005: The %1 job "%2" (ID %3) has been stopped.

Event log—Application

Source—Double-Take Management Service

Type or Level—Information

User action required—No action required. If desired, you can restart your job.

#### 6006: The %1 job "%2" (ID %3) has been deleted.

Event log—Application

Source—Double-Take Management Service

Type or Level—Information

User action required—No action required. If desired, you can re-create your job.

6007: The %1 operation has failed for the %2 job "%3" (ID %4).

Event log—Application

Source—Double-Take Management Service

Type or Level—Error

User action required—No action required. If desired, you can re-create your job.

# 6008: The %1 operation has completed successfully for the %2 job "%3" (ID %4).

Event log—Application

Source—Double-Take Management Service

Type or Level—Information

User action required—No action required.

# 6009: Could not log the following message:%n%1%n---%nError:%n%2.

Event log—Application

Source—Double-Take Management Service

Type or Level—Error

**User action required**—There is a problem with logging. Contact technical support if this event occurs again.

# 6010: A failover condition has been met for the %1 job "%2" (ID %3).

Event log—Application

Source—Double-Take Management Service

Type or Level—Warning

**User action required**—Check your source machine and initiate failover, if user intervention for failover is configured. If you bring your source machine back online without initiating failover, the failover condition met state will be canceled.

# 6011: The source machine (IP %1) is not responding to a ping from monitor %2 (ID %3).

Event log—Application

**Source**—Double-Take Management Service

Type or Level—Error

**User action required**—Check your source machine and initiate failover, if user intervention for failover is configured. If you bring your source machine back online without initiating failover, the source machine should start responding to the ping.

# 6050: The service has detected that port %1 is RESTRICTED in the Windows Firewall. This port is critical to the operation of the Double-Take Management Service.

Event log—Application

Source—Double-Take Management Service

Type or Level—Error

**User action required**—Verify the specified firewall port is open for Double-Take traffic.

# 6051: The service has detected that port %1 is BLOCKED in the Windows Firewall. This port is critical to the operation of the Double-Take Management Service.

Event log—Application

Source—Double-Take Management Service

Type or Level—Error

**User action required**—Verify the specified firewall port is open for Double-Take traffic.

# 6100: The job "%1" (ID %2) has started provisioning a replica for %3.

Event log—Application

Source—Double-Take Management Service

Type or Level—Information

User action required—No action required.

# 6101: The job "%1" (ID %2) has successfully completed provisioning a replica for %3.

Event log—Application

Source—Double-Take Management Service

Type or Level—Information

**User action required**—No action required.

# 6102: The job "%1" (ID %2) has failed to provision a replica for %3.%n%n

Event log—Application

Source—Double-Take Management Service

Type or Level—Error

**User action required**—Review the additional error information to identify the problem. Correct the problem and retry the operation. Contact technical support if this event occurs again.

6110: The job "%1" (ID %2) has started a %3 failover of the replica of %4.

Event log—Application

Source—Double-Take Management Service

Type or Level—Information

**User action required**—No action required.

6111: The job "%1" (ID %2) has successfully completed a %3 failover of the replica of %4.

Event log—Application

Source—Double-Take Management Service

Type or Level—Information

User action required—No action required.

6112: The job "%1" (ID %2) has encountered an error while performing a %3 failover of the replica of %4.%n%n

Event log—Application

Source—Double-Take Management Service

Type or Level—Error

**User action required**—Review the additional error information to identify the problem. Correct the problem and retry the operation. Contact technical support if this event occurs again.

# 6120: The job "%1" (ID %2) has started undoing the failover for the replica of %3.

Event log—Application

Source—Double-Take Management Service

Type or Level—Information

**User action required**—No action required.

6121: The job "%1" (ID %2) has successfully reattached the replica and resumed protecting %3.

Event log—Application

**Source**—Double-Take Management Service

Type or Level—Information

**User action required**—No action required.

6122: The job "%1" (ID %2) has encountered an error undoing the failing over for the replica of %3.%n%n

Event log—Application

Source—Double-Take Management Service

Type or Level—Error

**User action required**—Review the additional error information to identify the problem. Correct the problem and retry the operation. Contact technical support if this event occurs again.

6130: The job "%1" (ID %2) has started reversing the direction of the protection of %3.

Event log—Application

Source—Double-Take Management Service

Type or Level—Information

User action required—No action required.

# 6131: The job "%1" (ID %2) has successfully reversed the direction of the protection of %3.

Event log—Application

Source—Double-Take Management Service

Type or Level—Information

User action required—No action required.

6132: The job "%1" (ID %2) has encountered an error reversing the direction of the protection of %3.%n%n

Event log—Application

Source—Double-Take Management Service

Type or Level—Error

**User action required**—Review the additional error information to identify the problem. Correct the problem and retry the operation. Contact technical support if this event occurs again.

# 6140: The job "%1" (ID %2) is being deleted.

Event log—Application

Source—Double-Take Management Service

Type or Level—Information

User action required—No action required.

# 6141: The job "%1" (ID %2) has successfully been deleted.

Event log—Application

**Source**—Double-Take Management Service

Type or Level—Information

User action required—No action required.

# 6142: The job "%1" (ID %2) has encountered an error while being deleted.%n%n

Event log—Application

Source—Double-Take Management Service

Type or Level—Error

**User action required**—Review the additional error information to identify the problem. Correct the problem and retry the operation. Contact technical support if this event occurs again.

#### 6150: The job "%1" (ID %2) protecting %3 has completed its mirror.

Event log—Application

**Source**—Double-Take Management Service

Type or Level—Information

User action required—No action required.

#### 6210: The job "%1" (ID %2) has started a %3 failover of the replica of %4.

Event log—Application

Source—Double-Take Management Service

Type or Level—Information

**User action required**—No action required.

6211: The job "%1" (ID %2) has successfully completed a %3 failover of the replica of %4.

Event log—Application

Source—Double-Take Management Service

Type or Level—Information

User action required—No action required.

6212: The job "%1" (ID %2) has encountered an error while performing a %3 failover of the replica of %4.%n%n

Event log—Application

Source—Double-Take Management Service

Type or Level—Error

**User action required**—Review the additional error information to identify the problem. Correct the problem and retry the operation. Contact technical support if this event occurs again.

#### 6213: A failover condition has been met for the host level job "%1" (ID %2).

Event log—Application

Source—Double-Take Management Service

Type or Level—Warning

**User action required**—Check your source machine and initiate failover, if user intervention for failover is configured. If you bring your source machine back online without initiating failover, the failover condition met state will be canceled.

# 6214: Failover monitors removed for the host level job "%1" (ID %2).

Event log—Application

Source—Double-Take Management Service

Type or Level—Information

**User action required**—No action required. The failover pending state has been canceled because the job has been stopped, deleted, or failed over.

# 6215: The job "%1" (ID %2) is protecting.

Event log—Application

Source—Double-Take Management Service

Type or Level—Information

**User action required**—No action required.

# 6220: The job "%1" (ID %2) has started undoing the failover for the replica of %3.

Event log—Application

Source—Double-Take Management Service

Type or Level—Information

User action required—No action required.

6221: The job "%1" (ID %2) has successfully reattached the replica and resumed protecting %3.

Event log—Application

Source—Double-Take Management Service

Type or Level—Information

**User action required**—No action required.

6222: The job "%1" (ID %2) has encountered an error undoing the failing over for the replica of %3.%n%n

Event log—Application

**Source**—Double-Take Management Service

Type or Level—Error

**User action required**—Review the additional error information to identify the problem. Correct the problem and retry the operation. Contact technical support if this event occurs again.

6230: The job "%1" (ID %2) has started reversing the direction of the protection of %3.

Event log—Application

Source—Double-Take Management Service

Type or Level—Information

User action required—No action required.

6231: The job "%1" (ID %2) has successfully reversed the direction of the protection of %3.

Event log—Application

Source—Double-Take Management Service

Type or Level—Information

User action required—No action required.

6232: The job "%1" (ID %2) has encountered an error reversing the direction of the protection of %3.%n%n

Event log—Application

Source—Double-Take Management Service

Type or Level—Error

**User action required**—Review the additional error information to identify the problem. Correct the problem and retry the operation. Contact technical support if this event occurs again.

#### 6240: The job "%1" (ID %2) is being deleted.

Event log—Application

Source—Double-Take Management Service

Type or Level—Information

User action required—No action required.

# 6241: The job "%1" (ID %2) has successfully been deleted.

Event log—Application

Source—Double-Take Management Service

Type or Level—Information

User action required—No action required.

# 6242: The job "%1" (ID %2) has encountered an error while being deleted.%n%n

Event log—Application

Source—Double-Take Management Service

Type or Level—Error

**User action required**—Review the additional error information to identify the problem. Correct the problem and retry the operation. Contact technical support if this event occurs again.

6250: The job "%1" (ID %2) protecting %3 has completed its mirror.

Event log—Application

Source—Double-Take Management Service

Type or Level—Information

User action required—No action required.

# 6300: A failover condition has been met for the full server job "%1" (ID %2).

Event log—Application

Source—Double-Take Management Service

Type or Level—Warning

**User action required**—Check your source machine and initiate failover, if user intervention for failover is configured. If you bring your source machine back online without initiating failover, the failover condition met state will be canceled.

# 6500: A cutover condition has been met for the full server migration job "%1" (ID %2).

Event log—Application

Source—Double-Take Management Service

Type or Level—Information

User action required—Initiate cutover.

# 6700: A cutover condition has been met for the data migration job "%1" (ID %2).

Event log—Application

**Source**—Double-Take Management Service

Type or Level—Information

User action required—Initiate cutover.

# 7000: Usage reporting enabled.

Event log—Application

Source—Double-Take Management Service

Type or Level—Information

User action required—No action required.

# 7001: Usage reporting disabled.

Event log—Application

Source—Double-Take Management Service

Type or Level—Information

**User action required**—No action required.

7002: Usage reporter could not be initialized due to an error. Fix the configuration file and reload the usage reporter.

Event log—Application

Source—Double-Take Management Service

Type or Level—Error

User action required—Contact your Double-Take service provider.

7003: User ID "%1" rejected by licensing service. Verify that the user ID is correct in the configuration file and reload the usage reporter.

Event log—Application Source—Double-Take Management Service Type or Level—Warning

User action required—Contact your Double-Take service provider.

7106: The driver was unable to get valid name information from the Filter Manager for the file %2. (Filename may be truncated.) It cannot be replicated. Please contact technical support.

Event log—System Source—RepDrv Type or Level—Error User action required—Contact technical support.

7107: The driver was unable to get valid name information from the Filter Manager for a file. It cannot be replicated. Please contact technical support.

Event log—System Source—RepDrv Type or Level—Error User action required—Contact technical support.

8100: The driver encountered an unrecoverable internal error. Contact technical support. The last Word in the Data window is the internal error code.

Event log—System

Source—RepDac

Type or Level—Error

User action required—Contact technical support.

8192: Driver failed to allocate Kernel memory. Replication is stopped and server must be rebooted for replication to continue. The last word in the data window is the tag of the allocation that failed.

Event log—System

**Source**—RepDrv, RepKap, or RepHsm

Type or Level—Error

**User action required**—Reboot the server and contact technical support if this event occurs again.

8192: Kernel memory is exhausted. Replication is stopped. This may have been caused by low system resources.

Event log—System

**Source**—RepDrv or RepHsm

Type or Level—Error

**User action required**—Reboot the server and contact technical support if this event occurs again.

8193: The driver failed to create a thread required for normal operation. This may have been caused by low system resources. Reboot your server and contact technical support if this error occurs again. The last Word in the Data window is the NT status code.

Event log—System

Source—RepDrv

Type or Level—Error

**User action required**—Reboot the server and contact technical support if this event occurs again.

# 8196: The maximum amount of memory for replication queuing has been reached. Replication is stopped and memory is being freed.

Event log—System

Source—RepDrv

Type or Level—Warning

**User action required**—This error is expected when the amount of replication exceeds what can be queued and transmitted on the source server. You do not have to take any action because Double-Take will automatically disconnect, reconnect and remirror (by default) when memory resources are available. However, you may want to consider changes to the source that will reduce the load on the server. See Knowledge Base Article 32410 on the support site for details on the 8196 event and possible steps you can take on your server to help alleviate this condition.

# 8198: The driver registry path could not be saved. The default registry path will be used.

Event log—System

**Source**—RepDrv, RepKap, or RepHsm

Type or Level—Warning

User action required—No action required.

8200: The driver failed to allocate a buffer for a file name longer than 260 characters. The file will be skipped. The last Word in the Data window is the NT status code.

Event log—System

Source—RepDrv

Type or Level—Warning

**User action required**—Reboot the server and contact technical support if this event occurs again.

9000: The driver has failed to process a rename operation. The driver will resend the rename operation. This message is only a warning. If you receive this message repeatedly, contact technical support. The last Word in the Data window is the NT status code.

Event log—System

Source—RepKap

Type or Level—Warning

User action required—Contact technical support if this event occurs again.

9100: The driver encountered an error opening a file from the service. Check the Event Viewer Application log for additional service information or contact technical support. The last Word in the Data window is the exception code.

Event log—System

Source—RepKap

Type or Level—Error

**User action required**—Check for related service messages. Contact technical support if this event occurs again.

9101: The driver encountered an error reading from the service input buffer. Check the Event Viewer Application log for additional service information or contact technical support. The last Word in the Data window is the exception code.

Event log—System

Source—RepKap

Type or Level—Error

**User action required**—Check for related service messages. Contact technical support if this event occurs again.

9102: The driver encountered an error writing to the service output buffer. Check the Event Viewer Application log for additional service information or contact technical support. The last Word in the Data window is the exception code.

Event log—System

Source—RepKap

Type or Level—Error

**User action required**—Check for related service messages. Contact technical support if this event occurs again.

9103: The driver encountered an error writing to the service input buffer. Check the Event Viewer Application log for additional service information or contact technical support. The last Word in the Data window is the exception code.

Event log—System

Source—RepKap

Type or Level—Error

**User action required**—Check for related service messages. Contact technical support if this event occurs again.

9104: The driver encountered an error querying for file security from the service input buffer. Check the Event Viewer Application log for additional service information or contact technical support. The last Word in the Data window is the exception code.

Event log—System

Source—RepKap

Type or Level—Error

**User action required**—Check for related service messages. Contact technical support if this event occurs again.

9105: The driver encountered an error querying for file security from the service input buffer. Check the Event Viewer Application log for additional service information or contact technical support. The last Word in the Data window is the exception code.

Event log—System

Source—RepKap

Type or Level—Error

**User action required**—Check for related service messages. Contact technical support if this event occurs again.

9106: The driver encountered an error writing file security data to the service input buffer. Check the Event Viewer Application log for additional service information or contact technical support. The last Word in the Data window is the exception code.

Event log—System

**Source**—RepKap

Type or Level—Error

**User action required**—Check for related service messages. Contact technical support if this event occurs again.

9107: The driver encountered an error querying for an allocated range from the service input buffer. Check the Event Viewer Application log for additional service information or contact technical support. The last Word in the Data window is the exception code.

Event log—System

Source—RepKap

Type or Level—Error

**User action required**—Check for related service messages. Contact technical support if this event occurs again.

9108: The driver encountered an error querying for an allocated range from the service output buffer. Check the Event Viewer Application log for additional service information or contact technical support. The last Word in the Data window is the exception code.

Event log—System

Source—RepKap

Type or Level—Error

**User action required**—Check for related service messages. Contact technical support if this event occurs again.

9109: The driver encountered an error writing an allocated range to the service input buffer. Check the Event Viewer Application log for additional service information or contact technical support. The last Word in the Data window is the exception code.

Event log—System

Source—RepKap

Type or Level—Error

**User action required**—Check for related service messages. Contact technical support if this event occurs again.

9110: The driver encountered an error querying for a directory from the service input buffer. Check the Event Viewer Application log for additional service information or contact technical support. The last Word in the Data window is the exception code.

Event log—System

Source—RepKap

Type or Level—Error

**User action required**—Check for related service messages. Contact technical support if this event occurs again.

9111: The driver encountered an error querying for a directory from the service output buffer. Check the Event Viewer Application log for additional service information or contact technical support. The last Word in the Data window is the exception code.

Event log—System

Source—RepKap

Type or Level—Error

**User action required**—Check for related service messages. Contact technical support if this event occurs again.

9112: The driver encountered an error writing a directory query to the service input buffer. Check the Event Viewer Application log for additional service information or contact technical support. The last Word in the Data window is the exception code.

Event log—System

Source—RepKap

Type or Level—Error

**User action required**—Check for related service messages. Contact technical support if this event occurs again.

9113: The driver encountered an error querying a stream from the service input buffer. Check the Event Viewer Application log for additional service information or contact technical support. The last Word in the Data window is the exception code.

Event log—System

Source—RepKap

Type or Level—Error

**User action required**—Check for related service messages. Contact technical support if this event occurs again.

9114: The driver encountered an error writing a stream query to the service output buffer. Check the Event Viewer Application log for additional service information or contact technical support. The last Word in the Data window is the exception code.

Event log—System

Source—RepKap

Type or Level—Error

**User action required**—Check for related service messages. Contact technical support if this event occurs again.

9115: The driver encountered an error writing a stream query to the service output buffer. Check the Event Viewer Application log for additional service information or contact technical support. The last Word in the Data window is the exception code.

Event log—System

Source—RepKap

Type or Level—Error

**User action required**—Check for related service messages. Contact technical support if this event occurs again.

9116: The driver has failed to close a file handle. If you receive this message repeatedly, contact technical support. The last Word in the Data window is the NT status code.

Event log—System Source—RepKap Type or Level—Error User action required—Contact technical support.

9117: The driver encountered an error querying for extended attributes from the service input buffer. Check the Event Viewer Application log for additional service information or contact technical support. The last Word in the Data window is the exception code.

Event log—System Source—RepKap Type or Level—Error

**User action required**—Check for related service messages. Contact technical support if this event occurs again.

9118: The driver encountered an error writing extended attributes to the service output buffer. Check the Event Viewer Application log for additional service information or contact technical support. The last Word in the Data window is the exception code.

Event log—System

Source—RepKap

Type or Level—Error

**User action required**—Check for related service messages. Contact technical support if this event occurs again.

9119: The driver encountered an error writing extended attributes status to the service input buffer. Check the Event Viewer Application log for additional service information or contact technical support. The last Word in the Data window is the exception code.

Event log—System

Source—RepKap

Type or Level—Error

**User action required**—Check for related service messages. Contact technical support if this event occurs again.

9120: The driver encountered an error querying for file information from the service input buffer. Check the Event Viewer Application log for additional service information or contact technical support. The last Word in the Data window is the exception code.

Event log—System

Source—RepKap

Type or Level—Error

**User action required**—Check for related service messages. Contact technical support if this event occurs again.

9121: The driver encountered an error writing file information to the service output buffer. Check the Event Viewer Application log for additional service information or contact technical support. The last Word in the Data window is the exception code.

Event log—System

Source—RepKap

Type or Level—Error

**User action required**—Check for related service messages. Contact technical support if this event occurs again.

9122: The driver encountered an error writing file information status to the service input buffer. Check the Event Viewer Application log for additional service information or contact technical support. The last Word in the Data window is the exception code.

Event log—System

Source—RepKap

Type or Level—Error

**User action required**—Check for related service messages. Contact technical support if this event occurs again.

9123: The driver encountered an error querying for fsctl information from the service input buffer. Check the Event Viewer Application log for additional service information or contact technical support. The last Word in the Data window is the exception code.

Event log—System

Source—RepKap

Type or Level—Error

**User action required**—Check for related service messages. Contact technical support if this event occurs again.

9124: The driver encountered an error writing fsctl information to the service output buffer. Check the Event Viewer Application log for additional service information or contact technical support. The last Word in the Data window is the exception code.

Event log—System

Source—RepKap

Type or Level—Error

**User action required**—Check for related service messages. Contact technical support if this event occurs again.

9125: The driver encountered an error writing fsctl status to the service input buffer. Check the Event Viewer Application log for additional service information or contact technical support. The last Word in the Data window is the exception code.

Event log—System

Source—RepKap

Type or Level—Error

**User action required**—Check for related service messages. Contact technical support if this event occurs again.

9126: The driver encountered an error reading from the service input buffer, KFAI\_OPEN\_ BY\_FILE\_ID. Check the Event Viewer Application log for additional service information or contact technical support. The last Word in the Data window is the exception code

Event log—System

Source—RepKap

Type or Level—Error

**User action required**—Check for related service messages. Contact technical support if this event occurs again.

9127: The driver encountered an error writing to the service output buffer, KFAI\_OPEN\_BY\_ FILE\_ID. Check the Event Viewer Application log for additional service information or contact technical support. The last Word in the Data window is the exception code.

Event log—System

Source—RepKap

Type or Level—Error

**User action required**—Check for related service messages. Contact technical support if this event occurs again.

9128: The driver encountered an error reading from the service input buffer, KFAI\_QUERY\_ INFO. Check the Event Viewer Application log for additional service information or contact technical support. The last Word in the Data window is the exception code.

Event log—System

Source—RepKap

Type or Level—Error

**User action required**—Check for related service messages. Contact technical support if this event occurs again.

9129: The driver encountered an error writing to the service output buffer, KFAI\_QUERY\_ INFO. Check the Event Viewer Application log for additional service information or contact technical support. The last Word in the Data window is the exception code.

Event log—System

Source—RepKap

Type or Level—Error

**User action required**—Check for related service messages. Contact technical support if this event occurs again.

# 10000: This message is only a placeholder warning. The last Word in the Data window is the NT status code.

Event log—System

Source—Double-Take

Type or Level—Warning

**User action required**—No action required.

#### 10000: Connect failed to node %1 for resource %2. Adding node to reconnect list.

Event log—Application

Source—Double-Take

Type or Level—Error

**User action required**—Ensure that GeoCluster is running on all possible owners and that it can communicate on the network selected for mirroring and replication traffic. GeoCluster will try to reestablish a connection using the check unresponsive node interval specified for the resource.

# 10001: Reconnect succeeded to node %1 for resource %2. Will be added as a possible owner when mirror is complete.

Event log—Application

Source—Double-Take

Type or Level—Information

User action required—No action required.

#### 10002: Disk check failed on node %1 for resource %2. Removing as a possible owner.

Event log—Application

Source—Double-Take

Type or Level—Error

**User action required**—Ensure that GeoCluster is running on all possible owners and that it can communicate on the public network. Also ensure that the disk specified for the resource is functioning correctly on all possible owners.

# 10003: Owner %1 of the quorum resource %2 couldn't access the arbitration path %3. Network may be down.

Event log—Application

Source—Double-Take

Type or Level—Error

**User action required**—Ensure that the network used to access the arbitration path is up and that the server is operational. Also ensure that the arbitration share path does exist and that the account running the cluster service has write privileges to the share path.

# 10004: Failover of the group %1 is being delayed. Group will be brought online when the target queue is below the limit or the timeout has expired.

Event log—Application

Source—Double-Take

Type or Level—Warning

User action required—No action required.

10005: Node %1 is taking ownership of the group %2. The group will be brought online on this node.

Event log—Application

Source—Double-Take

Type or Level—Information

**User action required**—No action required.

# 10006: The cluster notification thread failed to start on node %1 for resource %2. The resource should be taken offline and brought back online.

Event log—Application

Source—Double-Take

Type or Level—Warning

User action required—Take the resource offline and bring it back online.

#### 10007: The user %1 has reverted a snapshot for the %2 resource on node %3.

Event log—Application

Source—Double-Take

Type or Level—Warning

**User action required**—No action required. The snapshot you selected will be reverted.

#### 10008: The user %1 has discarded queued data for the %2 resource on node %3.

Event log—Application

Source—Double-Take

Type or Level—Warning

User action required—No action required. The queue you selected will be discarded.

#### 10009: The user %1 is verifying data for the %2 resource on node %3.

Event log—Application

Source—Double-Take

Type or Level—Warning

**User action required**—A snapshot of the current data has been taken. After you have verified the data, accept or reject the data.

#### 10010: The user %1 has rejected the data for the %2 resource on node %3.

Event log—Application

Source—Double-Take

Type or Level—Warning

**User action required**—No action required. Since the data was rejected, the data has been reverted to the snapshot taken when the data was selected for verification.

#### 10011: The user %1 has accepted the data for the %2 resource on node %3.

Event log—Application

Source—Double-Take

Type or Level—Warning

User action required—No action required. The current data will be used.

10012: The GeoCluster Replicated Disk resource %1 has been set to validate its data. No data replication is occurring to the remaining nodes in the cluster. Please Accept or Reject the data by right-clicking on the resource and selecting the appropriate option.

Event log—Application

Source—Double-Take

Type or Level—Warning

**User action required**—Replication has been stopped because of the validation request. Accept or reject the data on the node by right-clicking on the resource and selecting the appropriate option.

10100: The driver could not recall a file because it did not have a token for impersonation. The security provider service should set this token. The last Word in the Data window is the exception code.

Event log—System

Source—RepKap

Type or Level—Error

User action required—Contact technical support if this event occurs again.

10101: The driver could not access the file in the archive bin, due to a failed impersonation attempt. The last Word in the Data window is the exception code.

Event log-System

Source—RepKap

Type or Level—Error

User action required—Contact technical support if this event occurs again.

10102: The driver could not recall the file. The last Word in the Data window is the exception code.

Event log—System

Source—RepKap

Type or Level—Error

User action required—Contact technical support if this event occurs again.

11000: Service has started an archive to %1 (%2) for Replication Set %3, ID: %4

Event log—Application

Source—Double-Take

Type or Level—Information

User action required—No action required.

#### 11001: Service has completed an archive to %1 (%2) for Replication Set %3, ID: %4, %5

Event log—Application

Source—Double-Take

Type or Level—Information

User action required—No action required.

11002: Service has started a recall from %1 (%2) for Replication Set %3, ID: %4

Event log—Application

Source—Double-Take

Type or Level—Information

User action required—No action required.

#### 11003: Service has completed a recall from %1 (%2) for Replication Set %3, ID: %4, %5

Event log—Application

Source—Double-Take

Type or Level—Information

User action required—No action required.

#### 11004: Service has failed connection to the RepHSM driver. %1

Event log—Application

Source—Double-Take

Type or Level—Warning

**User action required**—Reboot the server or manually restart the RepHSM.sys driver.

#### **11005:** Service has aborted the archive operation.

Event log—Application

Source—Double-Take

Type or Level—Warning

**User action required**—Verify the activation code on the source and target is valid for archiving. Reboot an unlicensed server.

#### **11006:** Service has aborted the archive recall operation.

Event log—Application

Source—Double-Take

Type or Level—Warning

**User action required**—Verify the activation code on the source and target is valid for archiving. Reboot an unlicensed server.

#### 11007: Verification has finished with errors. %1

Event log—Application

Source—Double-Take

Type or Level—Warning

User action required—Review the verification log to correct or accept the errors.

#### 11008: Archive feature is not supported on volume %1

Event log—Application

Source—Double-Take

Type or Level—Warning

**User action required**—The source and target must be NTFS for archiving functionality.

#### 11009: Service has started an archive preview to %1 (%2) for Replication Set %3, ID: %4

Event log—Application

Source—Double-Take

Type or Level—Information

User action required—No action required.

#### 11010: Service has completed an archive preview to %1 (%2) for Replication Set %3, ID: %4

Event log—Application

Source—Double-Take

Type or Level—Information

User action required—No action required.

#### 11011: Service has aborted the archive preview operation.

Event log—Application

Source—Double-Take

Type or Level—Warning

**User action required**—Verify the activation code on the source and target is valid for archiving. Reboot an unlicensed server.

#### 12000: The service has started.

Event log—Application

Source—Double-Take

Type or Level—Information

**User action required**—This message refers to the Double-Take Recall service. No action required.

#### 12001: The service failed to start.

Event log—Application

Source—Double-Take

Type or Level—Error

**User action required**—Check the user name and password for the Double-Take Recall service to ensure validity. Reinstall the software if this event occurs again.

#### 12002: The service has stopped.

Event log—Application

Source—Double-Take

Type or Level—Information

**User action required**—This message indicates a system shutdown or the user stopped the Double-Take Recall service. No action is required.

#### 12003: The service failed to create a stop control event. (Error %1)

Event log—Application

Source—Double-Take

Type or Level—Error

**User action required**—Restart the Double-Take Recall service. Reinstall the software if this event occurs again.

#### 12004: RegisterServiceCtrlHandler failed. (Error %1)

Event log—Application

Source—Double-Take

Type or Level—Error

**User action required**—Restart the Double-Take Recall service. Reinstall the software if this event occurs again.

#### 12005: Service encountered SetServiceStatus error (Error %1)

Event log—Application

Source—Double-Take

Type or Level—Error

**User action required**—Restart the Double-Take Recall service. Reinstall the software if this event occurs again.

#### 12006: Service could not get handle to driver for security update. (Error %1)

Event log—Application

Source—Double-Take

Type or Level—Error

**User action required**—The Double-Take Recall service could not connect to the Double-Take Recall archiving driver. Reboot the server and reinstall the software if this event occurs again.

#### 12007: Service failed a periodic security update. (Error %1)

Event log—Application

Source—Double-Take

Type or Level—Warning

**User action required**—This message refers to the Double-Take Recall service. The operation will be performed every five minutes. Reinstall the software if this event occurs after five minutes.

12288: The driver encountered an error accessing a buffer from the service. Contact technical support. The last Word in the Data window is the exception code.

Event log—System

Source—RepDrv

Type or Level—Error

User action required—Contact technical support.

16384: The driver encountered an unrecoverable error. Contact technical support.

Event log—System

Source—RepDrv

Type or Level—Error

User action required—Contact technical support.

16385: The driver encountered an unexpected internal result. Contact technical support. The last Word in the Data window is the NT status code.

Event log—System

Source—RepDrv

Type or Level—Error

User action required—Contact technical support.

16393: The driver encountered an internal error. Contact technical support. The last Word in the Data window is the internal error code.

Event log—System

Source—RepDrv

Type or Level—Error

User action required—Contact technical support.

16395: The driver detected a memory error which may have been caused by a bad driver or faulty hardware. Contact technical support. The last Word in the Data window is the internal error code.

Event log—System Source—RepDrv or RepHsm Type or Level—Error User action required—Contact technical support.

16396: The driver failed to create work queues for normal operation. This may have been caused by low system resources. Reboot the server and contact technical support if this error occurs again. The last Word in the Data window is the NT status code.

Event log—System

Source—RepDrv

Type or Level—Error

**User action required**—Reboot the server and contact technical support if this event occurs again.

16400: RepDrv has encountered an unexpected condition, usually caused by low kernel memory. Unless otherwise mentioned, this event has already been handled and your data remains protected. If you continue to receive these events or have further questions please contact tech support.

Event log—System Source—RepDrv Type or Level—Information User action required—No action required.

# **Performance Monitor**

Performance Monitor is the Windows graphical tool for measuring performance. It provides charting, alerting, and reporting capabilities that reflect both current activity and ongoing logging. Double-Takestatistics are available through the Performance Monitor.

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- Performance Monitor statistics on page 413

## **Monitoring Performance Monitor statistics**

- 1. From the Performance Monitor, specify the data to monitor by right-clicking and selecting **Add** or using the **Add** button on the toolbar.
- 2. Choose one of the following Double-Take Performance Objects.
  - Double-Take Connection
  - Double-Take Kernel
  - Double-Take Security
  - Double-Take Source
  - Double-Take Target
- 3. Select the statistics you want to monitor, and click Add.

For additional information and details on the Performance Monitor, see your Windows reference guide.

Performance Monitor should not be used remotely on systems running different operating systems (Windows 2003 to Windows 2008 or vice versa). Performance Monitor can be used remotely when using like systems (Windows 2003 to Windows 2003 or Windows 2008 to Windows 2008).

## **Performance Monitor statistics**

The following tables identify the Double-Take Performance Monitor statistics and what they are measuring for each Double-Take counter.

If you have multiple IP addresses connected to one target server, you will see multiple *Double-Take Target* statistic sections for each IP address.

## Double-Take Connection

#### **Bandwidth Limit**

Description—The amount of bandwidth that may be used to transfer data

Bytes in disk queue

**Description**—The number of bytes in the source disk queue

Bytes in replication queue

Description—The number of replication bytes in the source queue

Bytes in the mirror queue

**Description**—The number of mirror bytes in the source queue

#### **Bytes received**

**Description**—The number of bytes received by the target since the last Performance Monitor refresh

#### Bytes transferred

Description—The number of bytes transmitted from the source

#### **Compressed bytes transferred**

Description—The number of compressed bytes transmitted from the source

#### **Operations in acknowledgement queue**

**Description**—The number of operations waiting in the source acknowledgement queue

#### **Operations in command queue**

Description—The number of operations waiting in the source command queue

#### **Operations in mirror queue**

Description—The number of mirror operations in the source queue

#### **Operations in replication queue**

Description—The number of replication operations in the source queue

#### **Operations received**

**Description**—The number of operations received by the target since the last Performance Monitor refresh

#### **Operations resent**

**Description**—The number of operations re-sent since the last time the Double-Take service was restarted on the source

#### **Operations transmitted**

Description—The number of operations transmitted from the source

#### Task commands queued

Counter—Double-Take Connection

Description—The number of task commands queued on the source

#### Task commands submitted

Description—The number of task commands submitted on the source

#### **Tasks failed**

**Description**—The number of task commands that have failed to execute on the source

#### **Tasks ignored**

Description—The number of task commands that have been ignored on the source

#### **Tasks succeeded**

Description—The number of task commands that have succeeded on the source

#### Activation code failures

**Description**—The number of activation code failures when loading the source or target, since the last time the Double-Take service was restarted on the source

#### **CRC Read Time**

**Description**—The length of time, in microseconds, spent reading CRC (cyclic redundancy check) data on the target. If this value is longer than the standard access time of the target's storage device, it indicates there is possibly an issue reading the data on the target. For example, if the target storage is a SAN, there may be an issue with the way the SAN is configured.

#### **CRC Thread Count**

**Description**—The number of commands being executed simultaneously on the target. In a properly functioning environment, this number should never be greater than the number of difference mirrors currently being executed on the sources connected to this target. If the value grows larger than the number of currently executing difference mirrors, that indicates there is an error condition.

#### Double-Take queue memory usage

Description—The amount of system memory in use by the Double-Take queue

#### **Driver Queue Percent**

**Description**—The amount of throttling calculated as a percentage of the stop replicating limit

#### **Failed mirror operations**

**Description**—The number of mirror operations on the source that failed due to an error reading the file from the disk

#### Failed replication operations

**Description**—The number of replication operations on the source that failed due to an error reading the file from the disk

#### **Memory Pool Bytes Available**

**Description**—The amount of memory, in bytes, in the Double-Take memory pool that can be used for Double-Take operations. When Double-Take is at or near idle, the pool bytes available and pool total bytes will at or near equal. If Double-Take is queuing, the pool bytes available will be at or near zero and the pool total bytes will be larger (near 256 MB based on default settings).

#### **Memory Pool Total Bytes**

**Description**—The amount of memory, in bytes, that Double-Take has allocated for memory pooling. When Double-Take is at or near idle, the pool bytes available and pool total bytes will at or near equal. If Double-Take is queuing, the pool bytes available will be at or near zero and the pool total bytes will be larger (near 256 MB based on default settings).

#### **Mirror Kbytes generated**

**Description**—The number of mirror kilobytes transmitted to the target. This is the number of bytes generated during mirroring. In other words, this is roughly the amount of traffic being sent across the network that is generated by the mirror. It does not take into account TCP/IP overhead (headers and such), however it does account for attributes and other overhead associated with creating a file. With many small files in a directory, you will see larger statistics than expected because of the file creation overhead. Any subsequent remirror will reset this field to zero and increment from there.

#### Mirror operations generated

Description—The number of mirror operations transmitted from the source

#### **Open Target Handles**

**Description**—The number of handles currently open on the target.

#### **Replication Kbytes generated**

**Description**—The number of replication kilobytes generated on the source by the file system driver

#### **Replication operations generated**

**Description**—The number of replication operations generated on the source by the file system driver

## **Double-Take Security**

#### **Failed logins**

**Description**—Number of failed login attempts since the last time the Double-Take service was restarted

#### **Successful logins**

**Description**—Number of successful login attempts since the last time the Double-Take service was restarted

### **Double-Take Source**

#### Auto disconnects

**Description**—The number of automatic disconnects since the last time the Double-Take service was restarted on the source

#### Auto reconnects

**Description**—The number of automatic reconnects since the last time the Double-Take service was restarted on the source

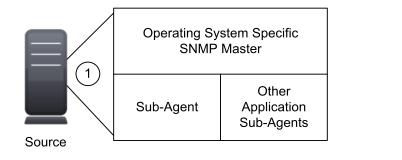
Bytes in Disk 0	Queue
	Description—The number of bytes in the target disk queue
Bytes in Queue	
	Description—The number of bytes in the system memory and disk queues
Mirror operatio	ons received
	Description—The number of mirror operations received on the target
Operations rec	eived
	Description—The number of operations received on the target
Ops Dropped	
	<b>Description</b> —The number of operations dropped on the target since the last time the Double-Take service was restarted on the target
Ops Remaining	9
	<b>Description</b> —The number of operations on the target remaining to be applied
Orphan Bytes	
	Description—The number of orphan bytes removed from the target
Orphan Directo	bries
	Description—The number of orphan directories removed from the target
Orphan Files	
	Description—The number of orphan files removed from the target
Retries	
	<b>Description</b> —The number of retries performed on the target since the last time the Double-Take service was restarted on the target
Tasks failed	
	<b>Description</b> —The number of task commands that have failed on the target.
Tasks ignored	
	Description—The number of task commands that have been ignored on the target
Tasks succeed	led
	Description—The number of task commands that have succeeded on the target

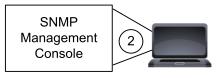
# SNMP

SNMP, Simple Network Management Protocol, is the Internet's standard for remote monitoring and management of hosts, routers and other nodes and devices on a network. Double-Take provides an SNMP sub-agent that can be managed from an SNMP Management Console.

Double-Take installs two components to work with SNMP.

- 1. The sub-agent is a program that installs and runs on the same machine as Double-Take and gathers statistics, data, and traps. The sub-agent forwards the information to the SNMP agent, which relays the information to the manager. The Double-Take SNMP sub-agent is included in the Double-Take installation program.
- 2. A Double-Take MIB file is placed on the administrator's machine so that the Management Console can interpret the data sent from the sub-agent. The Double-Take .mib file is dt.mib and meets SNMP standards.





- Configuring SNMP on your server on page 419
- SNMP traps on page 420
- SNMP statistics on page 423

## **Configuring SNMP on your server**

The Double-Take SNMP components are automatically included with the Double-Take installation. However, the Double-Take .mib file will need to be loaded into your SNMP Management Console. Depending on the type of console you are using, this process might include compiling the .mib file. Reference your SNMP Management Console documentation for additional information.

## **SNMP** traps

The following table lists the Double-Take SNMP traps.

#### dttrapAutoDisconnectEndConnection

Auto-disconnect has intentionally dropped the connection

#### dttrapAutoDisconnectPauseTransmission

Auto-disconnect requested that the source pause sending any operations (create, modify, or delete)

#### dttrapAutoDisconnectShutdown

Auto-disconnect forced Double-Take to shut down

#### dttrapAutoDisconnectWriteQueue

Auto-disconnect has forced the queue to be written to disk

#### dttrapAutoReconnect

Auto-reconnect needs to make a new connection

#### dttrapConnectionFailed

The source to target connection was not successful

#### dttrapConnectionLost

The source to target connection has been disconnected

#### dttrapConnectionPause

The source to target transmission has paused

#### dttrapConnectionRequested

The source has requested a connection to the target

#### dttrapConnectionRequestReceived

The target has received a connection request from the source

#### dttrapConnectionResume

The source to target transmission has resumed

#### dttrapConnectionSucceeded

The source to target connection has been established

#### dttrapFailoverConditionMet

Manual intervention is required because failover has detected a failed source machine

#### dttrapFailoverInProgress

Failover or cutover is occurring

#### dttrapKernelStarted

Double-Take has started

#### dttrapKernelStopped

Double-Take has stopped

#### dttrapLicenseViolationOnNetwork

A Double-Take serial number conflict was identified on the network

#### dttrapLicenseViolationStartingSource

The source or target cannot be started due to a license violation

#### dttrapMemoryLimitReached

The Double-Take memory pool limit has been reached

#### dttrapMemoryLimitRemedied

The memory pool usage is below the maximum limit specified

#### dttrapMirrorEnd

Mirroring has ended

#### dttrapMirrorPause

Mirroring has paused

#### dttrapMirrorResume

Mirroring has resumed

#### dttrapMirrorStart

Mirroring has started

#### dttrapMirrorStop

Mirroring has stopped

#### dttrapReplicationStart

Replication has started

#### dttrapReplicationStop

Replication has stopped

#### dttrapRepSetModified

The replication set has been modified

#### dttrapRestoreComplete

Restoration has ended

#### dttrapRestoreStarted

Restoration has started

#### dttrapScheduledConnectEnd

A scheduled end connection has been reached and the connection has been disconnected

#### dttrapScheduledConnectStart

A scheduled connection has been started

#### dttrapSourceStarted

The Double-Take source component has started

#### dttrapSourceStopped

The Double-Take source component has stopped

#### dttrapTargetFull

The target is full

#### dttrapTargetStarted

The Double-Take target component has started

#### dttrapTargetStopped

The Double-Take target component has stopped

#### dttrapVerificationEnd

Verification has ended

#### dttrapVerificationFailure

Verification has the source and target are not synchronized

#### dttrapVerificationStart

Verification has started

## **SNMP** statistics

The following table lists the Double-Take SNMP statistics.

#### dtActFailCount

The number of activation code errors

#### dtAutoDisCount

The number of auto-disconnects

#### dtAutoReCount

The number of auto-reconnects

#### dtconBytesCompressedTx

The total number of compressed bytes transmitted to the target

#### dtconBytesInMirQueue

The number of mirror bytes in the queue

#### dtconBytesInRepQueue

The number of replication bytes in the queue

#### dtconBytesRx

The total number of bytes received by the target

#### dtconBytesTx

The total number of bytes transmitted to the target

#### dtconConnectTime

The length of time, in seconds, that the connection has been active

#### dtconlpAddress

The IP address of the connected machine. If you are on the source, then this will be the IP address of the target. If you are on the target, then this will be the IP address of the source.

#### dtConnectionCount

The number of active connections between servers

#### dtconOpsInAckQueue

The number of operations (create, modify, or delete) waiting for verification acknowledgements from the target

#### dtconOpsInCmdQueue

The number of operations (create, modify, or delete) in the queue on the source

#### dtconOpsInMirQueue

The number of mirror operations (create, modify, or delete) in the queue on the source

#### dtconOpsInRepQueue

The number of replication operations (create, modify, or delete) in the queue on the source

#### dtconOpsRx

The total number of operations (create, modify, or delete) received by the target

#### dtconOpsTx

The total number of operations (create, modify, or delete) transmitted to the target

#### dtconResentOpCount

The number of operations that were resent because of acknowledgement errors

#### dtconState

The state of the active connection

0—None. This indicates there is no active connection. This may be because the connection has not been established or the underlying connection is unavailable. Statistics are still available for the source and target machines.

1—Active. This indicates that the connection is functioning normally and has no scheduling restrictions imposed on it at this time. (There may be restrictions, but it is currently in a state that allows it to transmit.)

2-Paused. This indicates a connection that has been paused.

4—Scheduled. This indicates a connection that is not currently transmitting due to scheduling restrictions (bandwidth limitations, time frame limitations, and so on).

8—Error. This indicates a connection that is not transmitting because something has gone wrong (for example, lost connection).

Only the Scheduled and Error states can coexist. All other states are mutually exclusive. SNMP will display a dtconState of 12 when the connection is in both a scheduled and an error state because this is the sum of the two values (4 + 8).

#### dtCurrentMemoryUsage

The amount of memory, in bytes, allocated from the Double-Take memory pool

#### dtCurrentMemoryUsageMB

The amount of memory, in MB, allocated from the Double-Take memory pool

#### dtDriverQueuePercent

The percentage of the driver queue that is currently in use. (This is the amount of throttling calculated as a percentage of the stop replicating limit.)

#### dtFailedLoginCount

The number of unsuccessful logins

#### dtFailedMirrorCount

The number of operations that failed to mirror because they could not be read on the source

#### dtFailedRepCount

The number of operations that failed to be replicated because they could not be read on the source

#### dtLoginCount

The number of successful logins and logouts

#### dtMirBytesGenerated

The number of mirror bytes transmitted to the target. This is the number of bytes generated during mirroring. In other words, this is roughly the amount of traffic being sent across the network that is generated by the mirror. It does not take into account TCP/IP overhead (headers and such), however it does account for attributes and other overhead associated with creating a file. With many small files in a directory, you will see larger statistics than expected because of the file creation overhead. Any subsequent remirror will reset this field to zero and increment from there.

#### dtMirOpsGenerated

The number of mirror operations (create, modify, or delete) that have been generated by the mirroring driver

#### dtOpsDroppedCount

The number of file operations that have failed and will not be retried

#### dtRepBytesGenerated

The number of bytes generated by the replication driver

#### dtRepOpsGenerated

The number of operations (create, modify, or delete) that have been generated by the replication driver

#### dtRetryCount

The number of file operations that have been retried

#### dtSourceState

0—Source is not running

1—Source is running without the replication driver

2—Source is running with the replication driver

### dtTargetState

0—Target is not running

1—Target is running

## dtUpTime

The time in seconds since Double-Take was last started

## **Double-Take Reporting Service**

The Double-Take Reporting Service is a centralized reporting and analysis tool that allows you to create detailed, custom reports of all Double-Take servers in your environment. It can be used to show the overall effectiveness of Double-Take protection over time and to analyze trends in a data protection scheme. After you install and configure Double-Take Reporting Service, it monitors and collects data from the Double-Take servers you specify. It sends the collected data to a SQL database that you create and maintain.

To use Double-Take Reporting Service, your environment must meet the following requirements.

- The reporting service must be installed on a Windows operating system.
- The reporting service cannot be installed on a Double-Take source or target server. The reporting service can be run with a Double-Take client only installation.
- You must have an existing server running SQL Server 2005 or later.
- The reporting service can be run on the SQL server or a different server.
- A new SQL database needs to be created, however no tables should be created because Double-Take Reporting Service will automatically create the tables it needs.
- The newly created SQL database needs established security credentials. The database user role membership must initially include db\_owner and public to allow Double-Take Reporting Service to create the tables it needs. Once the tables have been created (during the database configuration in step 4 below), the database user role membership can be changed, if desired, to db\_datareader, db\_datawriter, and public.
- Your SQL server authentication must be set to SQL Server and Windows Authentication mode.
- Your SQL server must have TCP/IP enabled and all IP addresses on the SQL server must be using the same port. Additionally, the SQL server must be set to listen on all IP addresses. See your SQL documentation for details on these settings.
- If you are using a firewall on your SQL server, make sure it does not block SQL or Double-Take Reporting Service traffic.

If you want to use Double-Take Reporting Service, you will need to complete the following steps, in order.

- 1. Create your SQL database according to the requirements above. See your SQL documentation for detailed instructions on configuring SQL server and databases.
- 2. Install Double-Take Reporting Service. See *Installing Double-Take Reporting Service* on page 28.
- 3. Add the server where you installed Double-Take Reporting Service to your console. See *Adding servers* on page 50.
- 4. Configure the Double-Take Reporting Service server. See *Configuring the Double-Take Reporting Service server* on page 428. This is the step where your database user role membership must initially include db\_owner and public.

Once your configuration is complete, Double-Take data will be collected and you can use standard SQL queries and tools to create your own customized reports. See your SQL documentation for detailed instructions on creating queries and reports. For a complete list of the data stored in the Double-Take Reporting Service tables, see *Double-Take Reporting Service tables* on page 430.

## Configuring the Double-Take Reporting Service server

- 1. Make sure you have inserted your Reporting Service server into your console. See Adding servers on page 50.
- 2. From the **Manage Servers** page, double-click your Reporting Service server to open the server's details.
- 3. From the View Server Details page, click the Edit server properties link.
- 4. The Reporting Service properties identify the SQL database configuration, the data collection configuration, and the Double-Take servers you are collecting from.

	uration			
Database serv				
SQL_DB				
Database nam	1e:			
DoubleTakeCo	lections	1		
Database insta	ance name (Optional):			
Use reportin	ng service credentials			
Use databas				
User nam	-			
Password	-			
Fest credential	s and database connec	ction:		
Test	1			
Retention inte	erval in days:			
	rs to collect data:			
ailable servers	:		-	Collect data from:
ailable servers	er 🔺		]	Collect data from:
ailable servers Servers alpha	: er▲		Add >	
ailable servers	: er▲		Add > Add >>	
ailable servers Servers alpha	: er▲			
ailable servers Servers alpha	: er▲			
ailable servers Servers	: er▲		Add >>	
ailable servers Servers	: er▲		Add >> < Remove	
ailable servers Servers alpha	: er▲		Add >> < Remove	
ailable servers Servers alpha	: er▲		Add >> < Remove	
ailable servers Servers	: er▲		Add >> < Remove	

- **Database server name**—Specify the name of the SQL server that contains your SQL database that will store the collected Double-Take data.
- **Database name**—Specify the name of the SQL database that will store the collected Double-Take data.
- Database instance name—If necessary, specify the database instance name of the SQL database that you specified.
- Use reporting service credentials—Select this option if you want to use the credentials the Double-Take Reporting Service is running as.
- Use database credentials—Select this option if you want to specify SQL database credentials.
- **Test**—This button will test the specified credentials and check to see if the tables exist in the specified database. If they do not exist, they will be created. The database user role membership must be db\_owner and public to create the tables. If the tables already exist, they will be updated to the correct version, if necessary. Once the test (and therefore the table creation or verification) is complete, the database user role membership can be changed, if desired, to db\_datareader, db\_datawriter, and public.
- Collection interval—Specify the amount of time to wait between data collections.
- **Retention interval in days**—Specify how long to retain the collected data. Data older than the specified number of days will be deleted from the database.
- Identify the servers to collect data—Only the servers in your console session will be listed. Highlight the servers you want to collect data from and click Add >. If you want to add all of the servers click Add >>. If the server you want to collect data from is not listed, you need to add it from the Manage Servers page. See Adding servers on page 50.

If you need to remove a server from the **Collect data from** list, click **< Remove**. If you want to remove all of the servers, click **<< Remove**.

5. When you have finished your Reporting Service server configuration, click **OK** to return to the Manage Servers page.

## **Double-Take Reporting Service tables**

The following data is available in the Double-Take Reporting Service tables. Each time data is collected, it is written to a new row in the table. You can link data together using time stamps and unique IDs to see how data and states change over time.

## Server table

The following data is available in the Server table.

ServerGUID	
	The unique ID Double-Take assigns to the server
Timestamp	
	The date and time the server data was collected
Name	
Status	The name of the server
Status	The status of the server

## Job table

The following data is available in the Job table.

Jobid	
	The unique ID that Double-Take assigns to the job
Timestamp	
	The date and time the job data was collected
SourceUniqueID	
	The unique ID Double-Take assigns to the job's source server
TargetUniqueID	
	The unique ID Double-Take assigns to the job's target server
SourceHostUri	
	The source's URI (uniform resource identifier)

TargetHostUri	
	The target's URI (uniform resource identifier)
Name	
	The name that Double-Take assigned to the job. You may have modified the job name.
Workload	
	The type of workload the job is using
Туре	
	The job type. This value equates to the <b>Job Type</b> column in the top right pane on the <b>Manage Jobs</b> page. See the managing and controlling jobs topic for any job type for additional details.
CreatorUserNa	ime
	The name of the user that created the job
Health	
	The high level health, or state, of the job. This value equates to the colored icons seen in the first column in the top right pane on the <b>Manage Jobs</b> page. See the managing and controlling jobs topic for any job type for additional details.
HighLevelState	
	The overall state of the job. This value equates to the <b>Activity</b> column in the top right pane on the <b>Manage Jobs</b> page. See the managing and controlling jobs topic for any job type for additional details.
LowLevelState	
	The low level state of the job. This value equates to the <b>Additional Information</b> field in the bottom right pane on the <b>Manage Jobs</b> page. See the managing and controlling jobs topic for any job type for additional details.
TargetState	
	The state of the data on the target. This value equates to the <b>Target data state</b> field in the bottom right pane on the <b>Manage Jobs</b> page. See the managing and controlling jobs topic for any job type for additional details.
CanEdit	
	Indicates if the job can currently be edited
CanDelete	
	Indicates if the job can currently be deleted
CanStart	
	Indicates if the job can currently be started

CanStop		
	Indicates if the job can currently be stopped	
CanPause		
	Indicates if the job can currently be paused	
CanFailover		
	Indicates if the job can currently be failed over	
CanFailback		
	Indicates if the job can currently be failed back	
CanRestore		
	Indicates if the job can currently be restored	
CanReverse		
	Indicates if the job can currently be reversed	
CanUndoFailover		
	Indicates if a failed over job can currently be undone	

## **Connection table**

The following data is available in the Connection table.

#### ManagedConnectionId

The incremental counter used to number connections. The number is incremented when a connection is created. It is also incremented by internal actions, such as an auto-disconnect and auto-reconnect. The lowest available number (as connections are created, stopped, deleted, and so on) will always be used. The counter is reset to one each time the Double-Take service is restarted.

#### Jobld

The unique job ID associated with this connection

#### Timestamp

The date and time the connection data was collected

#### SourceUniqueID

The unique ID Double-Take assigns to the job's source server

#### TargetUniqueID

The unique ID Double-Take assigns to the job's target server

#### BandwidthCollar

The bandwidth limiting that has been set or the keyword **Unlimited** if no bandwidth limit has been set

#### CompressionEnabled

Indicates if data is being compressed before it is sent to the target

#### CompressionLevel

The level of compression

#### **DiskQueueBytes**

The amount of disk space being used to queue data on the source

#### **InitialMirrorComplete**

Indicates if the initial mirror has been completed

#### **MirrorBytesRemaining**

The total number of mirror bytes that are remaining to be sent from the source to the target

#### **MirrorBytesSent**

The total number of mirror bytes that have been transmitted to the target

#### MirrorBytesSkipped

The total number of bytes that have been skipped when performing a difference or checksum mirror. These bytes are skipped because the data is not different on the source and target.

#### MirrorBytesTransmitted

The total number of compressed mirror bytes that have been transmitted to the target. If compression is disabled, this will be the same as MirorBytesSent.

#### **MirrorOpsQueued**

The total number of mirror operations in the queue

#### MirrorPermillage

The percentage of the mirror that has been completed

#### **MirrorState**

The state of mirroring. This value equates to the **Mirror Status** column in the top right pane on the **Manage Jobs** page. See the managing and controlling jobs topic for any job type for additional details.

#### PeerMemoryLow

Indicates if the target is running low on memory based on the **Amount of system memory to use** setting on the target server's queue properties. See *Double-Take queue* on page 65 for details.

#### ReplicationBytesQueued

The total number of replication bytes in the source queue

#### **ReplicationBytesSent**

The total number of replication bytes that have been transmitted to the target

#### ReplicationBytesTransmitted

The total number of compressed replication bytes that have been transmitted to the target. If compression is disabled, this will be the same as ReplicationBytesSent.

#### ReplicationOpsQueued

The total number of replication operations in the queue

#### ReplicationState

The state of mirroring. This value equates to the **Replication Status** column in the top right pane on the **Manage Jobs** page. See the managing and controlling jobs topic for any job type for additional details.

#### Restoring

Identifies if the connection is actively restoring

#### SourceAvailable

Identifies if the target was able to communicate with the source server

#### SourceEngineAvailable

Identifies if the target was able to communicate with Double-Take on the source

#### SourceMachineName

The name of the server associated with this connection

#### StartTime

The date and time the connection was initiated

#### TargetAvailable

Identifies if the source was able to communicate with the target server

#### TargetEngineAvailable

Identifies if the source was able to communicate with Double-Take on the target

#### TargetRoute

The IP address identifying the route to the target

#### TargetMachineName

The name of the target server associated with this connection

#### TargetQueueBytes

The number of bytes queued on the target

#### TargetState

The state of the target

#### **TotalBytesSent**

The total number of mirror and replication bytes that have been transmitted to the target

#### TotalBytesTransmitted

The total number of compressed mirror and replication bytes that have been transmitted to the target. If compression is disabled, this will be the same as TotalBytesSent. .

#### TotalOpsQueued

The total number of mirror and replication operations that are in the source queue

#### **TransmissionMode**

Indicates if data is actively being transmitted to the target

#### SourceClusterResourceState

The state of the Double-Take Source Connection resource, if it is being used by a cluster-aware job on a Double-Take source cluster

# Chapter 13 Special network configurations

Double-Take can be implemented with very little configuration necessary in small or simple networks, but additional configuration may be required in large or complex environments. Because an infinite number of network configurations and environments exist, it is difficult to identify all of the possible configurations. Review the following sections for configuration information for that particular type of network environment.

- See Firewalls on page 437
- See Macintosh shares on page 438
- See NFS Shares on page 439

# Firewalls

If your source and target are on opposite sides of a firewall, you will need to configure your hardware to accommodate communications. You must have the hardware already in place and know how to configure the hardware ports. If you do not, see the reference manual for your hardware.

- **Double-Take ports**—Ports 6320, 6325, and 6326 are used for Double-Take communications and must be open on your firewall.
- **Microsoft WMI and RPC ports**—Some features of Double-Take and the Double-Take Console use WMI (Windows Management Instrumentation) which uses RPC (Remote Procedure Call). By default, RPC will use ports at random above 1024, and these ports must be open on your firewall. RPC ports can be configured to a specific range by specific registry changes and a reboot. See the Microsoft Knowledge Base article 154596 for instructions.
- **Microsoft File Share and Directory ports**—Double-Take push installations will also rely on File Share and Directory ports, which must be open on your firewall. Check your Microsoft documentation if you need to modify these ports.
  - Microsoft File Share uses ports 135 through 139 for TCP and UDP communications.
  - Microsoft Directory uses port 445 for TCP and UDP communications.
- ESX ports—If you are using VirtualCenter or an ESX host, port 443 is also required and must be opened.

You need to configure your hardware so that the Double-Take ports, Microsoft Windows ports, and ESX ports. applicable to your environment are open. Since communication occurs bidirectionally, make sure you configure both incoming and outgoing traffic.

There are many types of hardware on the market, and each can be configured differently. See your hardware reference manual for instructions on setting up your particular router.

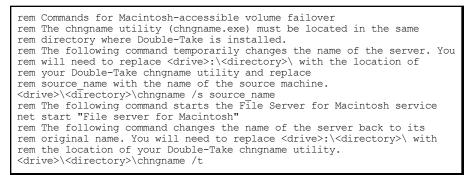
## **Macintosh shares**

A share is any volume, drive, or directory resource that is shared across a network. During failover, the target can assume or add any source shares so that they remain accessible to the end users. Automatic share failover only occurs for standard Windows file system shares. Other shares, including Macintosh volumes, must be configured for failover through the failover scripts or created manually on the target.

- 1. On your target, set the File Server for Macintosh service to manual startup. This allows the postfailover script on the target to control when the service starts on the target.
- 2. Create each volume on the target machine exactly as it exists on the source. Use the Shared Folder wizard to configure each volume as a Macintosh-accessible volume. Follow these steps to start the wizard.
  - a. Open the Control Panel and click Administrative Tools.
  - b. Select Configure Your Server.
  - c. In the Configure Your Server window, click the File Server link.
  - d. Click **Start the Shared Folder wizard** to start the wizard, and then follow the directions provided by the wizard. On the Create Shared Folders screen, you must enable **Apple Macintosh**.

You can automate the creation of the volumes during the failover process by using the macfile volume command in the post-failover batch file. For detailed information on how to use this command, see your Windows reference guide.

- On the target machine, copy the chngname utility, chngname.exe, from the \tools\Win2K directory
  of the Double-Take DVD or from the Vision Solutions <u>support web site</u> to the directory where
  Double-Take is installed.
- 4. Add the following to your failover script.

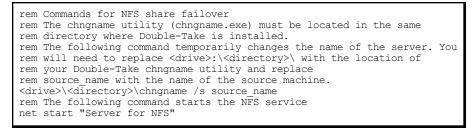


In the event of a failure, the Macintosh clients must remap the volume in order to access it. From the Macintosh client, use the Chooser to select the volume that needs to be remapped.

## **NFS Shares**

A share is any volume, drive, or directory resource that is shared across a network. During failover, the target can assume or add any source shares so that they remain accessible to the end users. Automatic share failover only occurs for standard Windows file system shares. Other shares, including NFS shares, must be configured for failover through the failover scripts or created manually on the target.

- 1. On your target, set the NFS service to manual startup. This allows the post-failover script on the target to control when the service starts on the target.
- 2. Create each shared drive or directory on the target exactly as it exists on the source. Configure each drive or directory as an NFS share by following these steps.
  - a. Right-click the drive or directory that you want to share, select **Sharing**, and click the **NFS Sharing** tab on the Program Files Properties dialog box.
  - b. Enable Share this folder, provide the name of the share, and click OK.
- 3. On the target machine, copy the chngname utility, chngname.exe, from the \tools\Win2K directory of the Double-Take DVD or from the <u>support web site</u> to the directory where Double-Take is installed.
- 4. Add the following to your failover script.



In the event of a failure, the clients must remount the shares in order to access them.

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