



Livewire User's Guide

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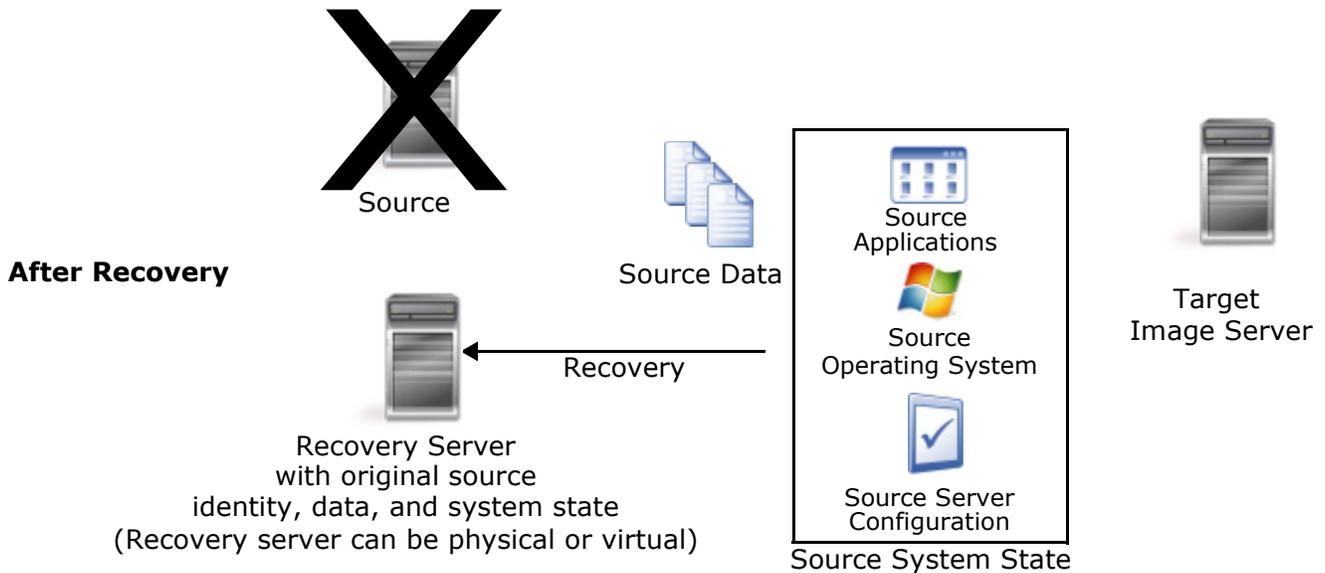
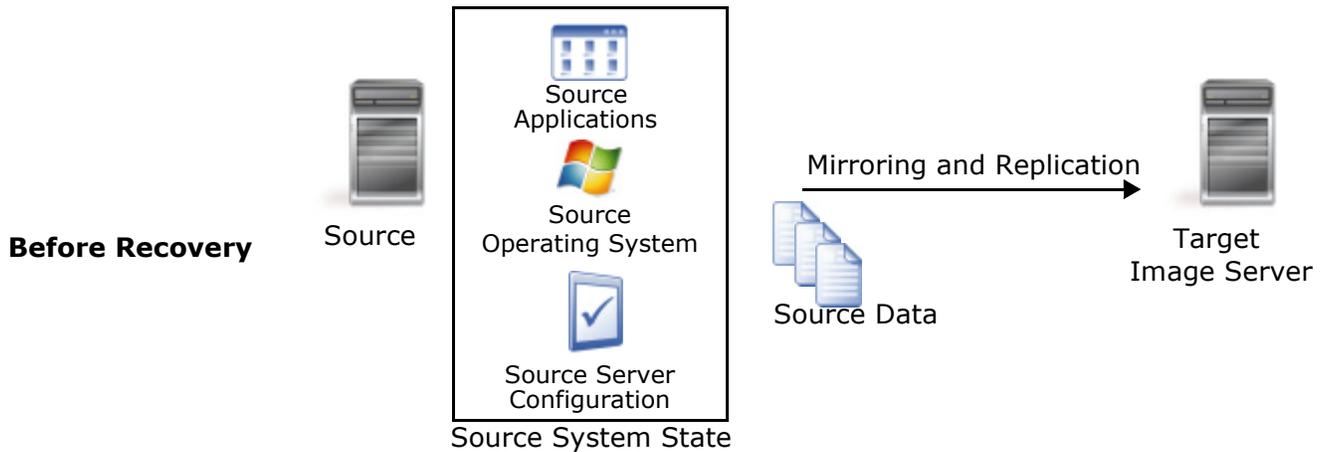
Introduction

1

Welcome to Livewire, which is dedicated to protecting your entire server. It allows you to protect a production server, known as a source, by replicating an image of the source to a target, known as the image server. The image that is replicated contains all of the source server's data and the source server's system state. The system state is the server's configured operating system and the installed applications.

Livewire is based on core Double-Take® technology, so as changes are made on the source, Double-Take mirroring and replication keeps the image of the source stored on the target image server up-to-date. Double-Take replicates, in real-time, only the file changes rather than copying entire files, allowing you to more efficiently use resources.

In the event the source should fail, you can use the image of the source, stored on the target image server, to quickly and easily create a new source, which can be a physical or virtual machine.



Livewire and Double-Take

Because Livewire is based on core Double-Take technology, it provides some of the same functionality as Double-Take. Review the following table to help you understand how Livewire compares with Double-Take.

Functionality	Double-Take	Livewire	Double-Take with the Livewire Option
Data replication	✓	✓	✓
Full-server high availability	✓		✓
Many-to-one full-server protection and recovery		✓	✓

Resources

You have many resources available to you when using Livewire.

- **Operating System and application documentation**—Make sure that you have complete documentation for your operating system and your applications.
- **Double-Take documentation**—If you are using Double-Take with the Livewire Option, check the Double-Take *User's Guide* for the list of all Double-Take documentation.
- **Readme**—Livewire includes a readme file which contains any last-minute information. This file is called Livewire readme.html and is located in the \DbITake\docs directory of the product CD and in the root of the installation directory you selected during the installation.
- **Other Resources**—Technical support, professional services, and training are all available for all Double-Take Software products.
 - **Technical Support**—If you need technical assistance, you can contact technical support. All basic configurations outlined in the documentation will be supported through technical support. Your technical support center is dependent on the reseller or distributor you purchased your product from and is identified on your service agreement. If you do not have access to this agreement, contact Double-Take Software Technical Support and they will direct you to the correct service provider. To contact Double-Take Software Technical Support, you will need your serial number and activation code. For a complete list of US and international phone numbers, see the Double-Take Software web site at www.doubletake.com. Online support is available at support.doubletake.com.
 - **Professional Services**—Assistance and support for advanced configurations may be referred to a Pre-Sales Systems Engineer or to Professional Services. See the Double-Take Software web site at www.doubletake.com for more information.
 - **Training**—Classroom and computer-based training are available. See the Double-Take Software web site at www.doubletake.com for more information.

Installing Livewire

2

Review the server requirements and when your servers meet the required conditions, continue with the installation instructions.

Server requirements

Each server must meet minimum server requirements. Verify that each of your Livewire servers meets the following requirements.

- **Operating system**—Livewire can be installed on any of the following Windows® operating systems editions.
 - Windows Server 2003 or 2003 R2 Enterprise, Standard, Web, Small Business Server, Enterprise x64, or Standard x64
 - Windows 2000 Advanced Server, Server, or Small Business Server with Service Pack 4 and the Update Rollup Package
- **Recovery server for provisioned virtual machine**—If you intend on recovering to a virtual machine and you want Livewire to automatically provision the virtual machine (meaning Livewire will automatically create the virtual machine as part of the recovery process), the recovery server must be a VMware® ESX physical server running VMware ESX 3.01 or later with HotRemove patch #6921838. The Virtual Recovery Appliance must be running Windows Server 2003 or 2003 R2 Enterprise or Standard Edition.
- **File system**—Livewire supports the same file system formats that core Double-Take and Microsoft® support: FAT, FAT32, and NTFS.
- **System memory**—There are different memory requirements depending on the operating system you are using. Be sure you have at least the minimum amount of memory for your environment. You may want to consider having at least the recommended amount of system memory.

Operating System	Minimum System Memory	Recommended System Memory
Any Windows 32-bit Operating System	128 MB	At least 512 MB
Any Windows 64-bit Operating System	512 MB	At least 1024 MB

- **Disk usage**—There are different types of disk usage related to different aspects of Livewire.
 - **Program files**—This is the amount of disk space on all Livewire servers to hold the Livewire program files, which is approximately 130 MB.
 - **Data files**—This is the amount of disk space on the target image server and recovery server to hold all of the source data and applications. This will be dependent on your applications and data.
 - **System state image**—This is the amount of disk space on the target image server and recovery server to hold the image of the source system state. You should have at least 5 GB of space on the target image server for each source image you are storing. Also, you should have at least 5 GB of space on the recovery server for the recovery process. The more applications you are running on the source, the larger the system state will be. Therefore, you may need additional space if your source has many applications.
- **Server Name**—Livewire and core Double-Take include Unicode file system support, but your server name must be in ASCII format.
- **Network Protocols**—Your servers must use TCP/IP with static IP addressing.
- **ESX disks**—Thin-provisioned virtual disks on VMware ESX are not supported because they cannot be shared by two virtual machines simultaneously.
- **Junction points**—Only domain controller junction points will be replicated. Any user-created junction points will be replicated as two unlinked copies of the data.

Installing or upgrading Livewire

Use these instructions to install Livewire or upgrading an existing Livewire installation. If you are using the same installation files as your existing Livewire installation, you can modify or repair the existing installation.

1. Close any open applications.
2. Start the installation program using the appropriate instructions, depending on your media source.
 - **CD**—Load the Livewire CD into the local CD-ROM drive. If auto-run is enabled, the installation program will start automatically. To manually start the program, select **Start, Run** and specify `<cd_drive>:\autorun.exe`.
 - **Web download**—Launch the .exe file that you downloaded from the web.
3. When the installation program begins, the Double-Take Setup Launcher appears allowing you to install software and view documentation for various applications from Double-Take Software. The listed applications will depend on which products are included on the CD or in the web download. To install Livewire, select **Livewire** from the list of products and then select **Install Livewire**.
4. Depending on your version of Windows and the components installed, you may be prompted before the installation begins to install the Microsoft .NET 2.0 Framework. If you are not prompted, your server already has .NET version 2.0 or later.
 - If you do not want to install .NET, select **No**. You cannot use Livewire without Microsoft .NET. You must install it before running Livewire.
 - If you want to install .NET, select **Yes**. The installation program will establish an Internet connection from your server to the Microsoft web site, download, and install the software. If an Internet connection cannot be established, you must obtain .NET version 2.0 or later by another method. If you are using a CD from Double-Take Software, you can install the software from the CD media.
5. When the Livewire installation begins, you will be given the opportunity to check for a more recent version of the software.

NOTE: If you are upgrading an existing installation, you will see an upgrade note in bold text in the center of the Welcome screen. This informs you of the upgrade. If you do not want to upgrade, cancel the installation.

- 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 Double-Take Software 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.
6. Review and accept the Double-Take Software license agreement to continue with the installation program. Click **Next** to continue.
 7. If you already have Livewire installed and you are using the same installation files, you will be prompted to modify, repair, or remove the existing installation. Select **Modify** or **Repair** and complete the remaining steps in the installation.

8. There are three types of installations you can perform.

- **Client and Server Components**—Installs the Livewire server and client components
- **Client Components Only**—Installs the Livewire client components only
- **Server Components Only**—Installs the Livewire server components only

Select the option appropriate for your environment. You can also specify where the files will be installed.

Click **Next** to continue.

NOTE: If you selected the **Client Components Only** installation type, the remaining setup screens are skipped.

9. You will be prompted to enter your activation code information. Your **Activation Code** is a 24-character, alpha-numeric activation code which applies the appropriate license to your installation. You must have a valid activation code to use Livewire. Add-on codes are optional. If you purchased any add-on components, enter each **Add-on Code** individually and click **Add**. The code type and the expiration date, if any, will be displayed. After you have entered all of your codes, click **Next** to continue.
10. The next screen will depend on the activation code you entered.
- If you have entered a valid activation code, you will be prompted to confirm the code. Click **Next** to continue the installation.
 - If you have entered an invalid activation code, you will be prompted that the code is incorrect and that the source and target modules will not load. Click **Back** and reenter your activation code.
 - If you have entered an evaluation activation code, the expiration date will be displayed and you will be prompted that the source and target modules will not load after that date. Click **Next** to continue the installation. You must update the activation code to a valid one before the expiration date, otherwise, on the expiration date, Livewire functionality will be disabled.
 - If you have entered a node-locked license activation code, you will be prompted that the code is temporary and will not be activated until you login to the server. Once the temporary license is activated, you have 14 days to update it to a permanent, node-locked license. See the *Double-Take User's Guide* for more information.
11. Livewire relies on core Double-Take to handle system memory. Double-Take uses system memory to store data in queues. Specify the maximum amount of system memory to be used for the Double-Take queues and click **Next** to continue. The default setting is 128 MB. If you set it 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. In general, the amount of memory Double-Take and other applications on the server are configured to use should be less than the amount of physical memory on the system to prevent low memory conditions.
12. When the Double-Take system memory queue is exhausted, Double-Take will queue to disk. Specify the size and location of the disk queue. By default, the disk space is set to **Unlimited** which will allow the queue usage to automatically expand whenever the available disk space expands. Click **Next** to continue.
13. Livewire also relies on Double-Take to handle security. The Double-Take security information screen appears next. Review this information and click **Next** to continue with the installation.
14. If you are satisfied with the selections you have made and are ready to begin copying the Livewire files, click **Install**.
15. After the files have completed copying, click **Finish** to exit the installation program.

NOTE: If you do not restart your computer when prompted, you must reboot the system prior to starting Livewire.

The Livewire installation is complete.

Uninstalling Livewire

Use these instructions if you want to uninstall an existing Livewire installation. If you want to use the product installation files to perform the uninstallation, you have to use the same installation files as the currently installed version. If you do not have the same installation files as the currently installed version, you will need to use the Windows Add/Remove Programs feature to uninstall the software.

1. Close any open applications.
2. If you are using the Windows Add/Remove Programs feature, confirm that you want to remove the program and then continue with step 9.
3. If you are using the same installation files as the currently installed version, start the uninstallation program using the appropriate instructions, depending on your media source.
 - **CD**—Load the Livewire CD into the local CD-ROM drive. If auto-run is enabled, the program will start automatically. To manually start the program, select **Start, Run** and specify `<cd_drive>:\autorun.exe`.
 - **Web download**—Launch the .exe file that you downloaded from the web.
4. When the program begins, the Double-Take Setup Launcher appears allowing you to install software and view documentation for various applications from Double-Take Software. The listed applications will depend on which products are included on the CD or in the web download. To uninstall Livewire, select **Livewire** from the list of products and then select **Install Livewire**.
5. When the program begins, you will be given the opportunity to check for a more recent version of the software. Select **No** and click **Next**.
6. Review and accept the Double-Take Software license agreement to continue with the uninstallation program. Click **Next** to continue.
7. When prompted to modify, repair, or remove the existing installation, select **Remove** and click **Next** to continue.
8. The uninstallation program is immediately ready to begin removing the Livewire files. Click **Remove** to continue.
9. You will be prompted to indicate whether or not you want to remove the security groups. Click **Yes** to continue.
10. A message prompt informs you that the uninstall program has completed successfully. Click **OK** and reboot the server, if prompted.

Livewire has been removed from your server.

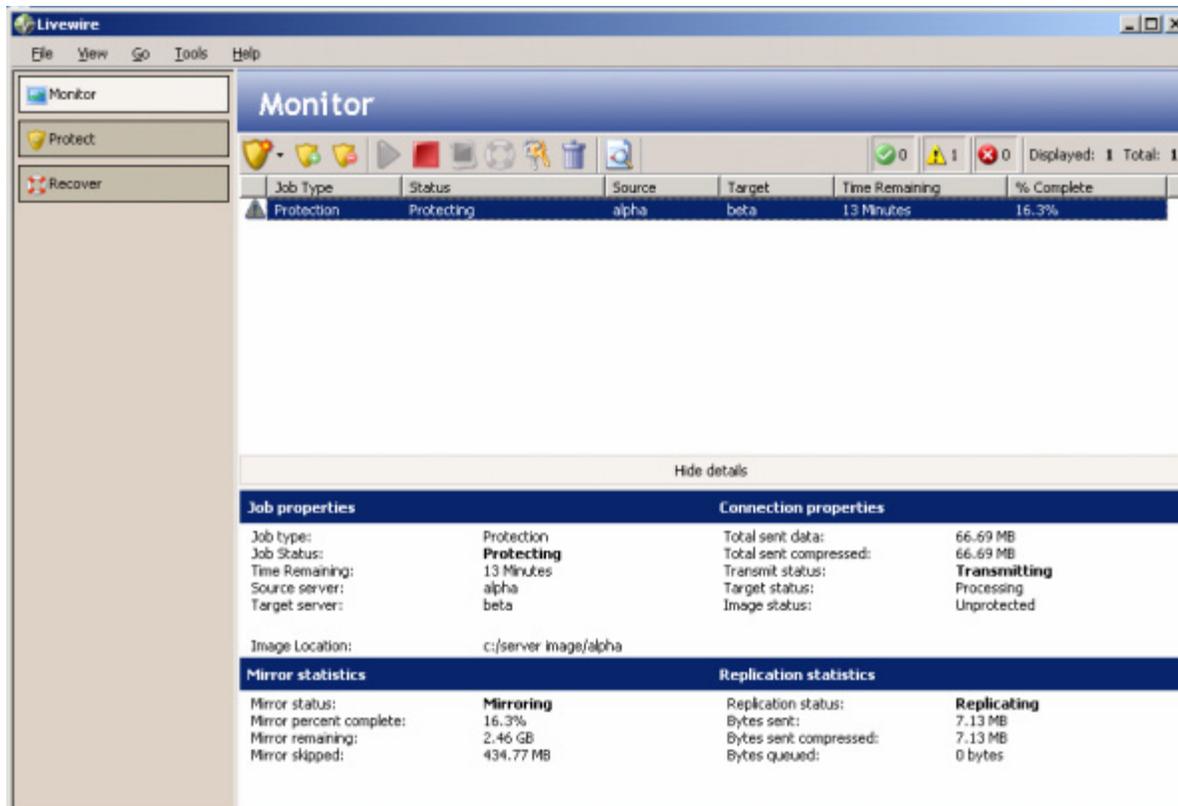
NOTE: If you changed the location where the disk queue files are stored, these directories will not be removed during the installation. You will need to manually remove them.

Any files created by the Microsoft Windows Installer during the Livewire installation can be safely deleted after an uninstall.

Understanding the Console

3

The Livewire console is the user interface that manages, monitors, and controls your full-server protection solutions. On the left are static navigation buttons which initiate workflows and display monitoring pages. In essence, these navigation buttons control what is displayed in the main window. When viewing the **Monitor** page, the main window is divided into two sections. The top pane displays overview monitoring information. The bottom pane displays detailed data. You can hide the details pane by clicking on the **Hide details** text. You can display the details pane by clicking on the **Show details** text.



NOTE: The Livewire console requires a 1024x768 minimum screen resolution.

Each time you open the Livewire console, it will automatically open to the **Monitor** page. Any existing jobs will be displayed. If there are no existing jobs, the display will be blank.

- **Source protection**—If you want to protect a source, see [Setting Up Source Protection](#) on page 4-1.
- **Import job**—If you want to import an existing job, see [Importing a Job](#) on page 5-1.
- **Monitoring jobs**—For details on the controls and statistics on the monitoring page, see [Monitoring Jobs](#) on page 6-1.
- **Recovery to an existing physical or virtual machine** —If you want to recover a source to an existing physical or virtual machine, see [Recovering to an Existing Machine](#) on page 7-1.
- **Recovery to an automatically provisioned virtual machine** —If you want to recover a source to an automatically provisioned virtual machine, see [Recovering to an Automatically Provisioned Virtual Machine](#) on page 8-1.

Security credentials

By default, the Livewire console caches security credentials. Also by default, the cache is saved when you close the console, allowing you to reuse the credentials when you reuse the console. This setting is controlled by the **Tools, Save credentials cache** menu option. When the option is selected with a checkmark, the security credentials cache will be saved. When the option is disabled and no checkmark is displayed, the security credentials cache will be deleted when the console is closed. At any time, you can clear the security credentials cache by selecting **Tools, Clear credentials cache**.

Setting Up Source Protection

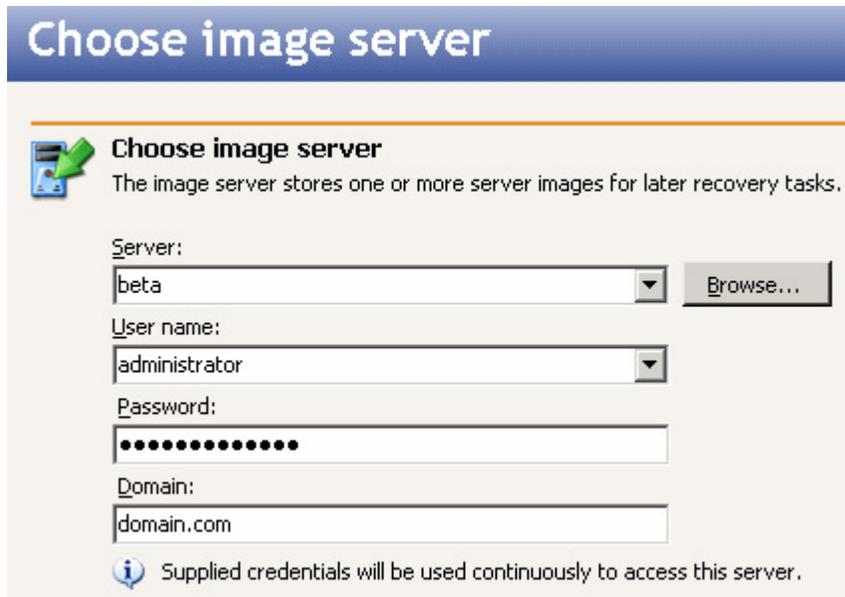
4

The Livewire console makes setting up source protection easy by walking you through each of the required steps. There are also optional advanced settings that you can configure, if desired.

1. Click **Protect** from the left navigation pane, or select **Go, Protect**. If you are on the **Monitor** page, you can also select **New activity** on the toolbar and then select **Protect**.
2. Identify the source server that you want to protect.

- **Server**—Specify the name of the source server. You can also click **Browse** to select the name from Active Directory or from a network drill-down list.
 - **User name**—Specify a user that is a member of the **Double-Take Admin** security group on the source.
 - **Password**—Specify the password associated with the **User name** you entered.
 - **Domain**—If you are working in a domain environment, specify the **Domain**.
3. Click **Next** to continue.

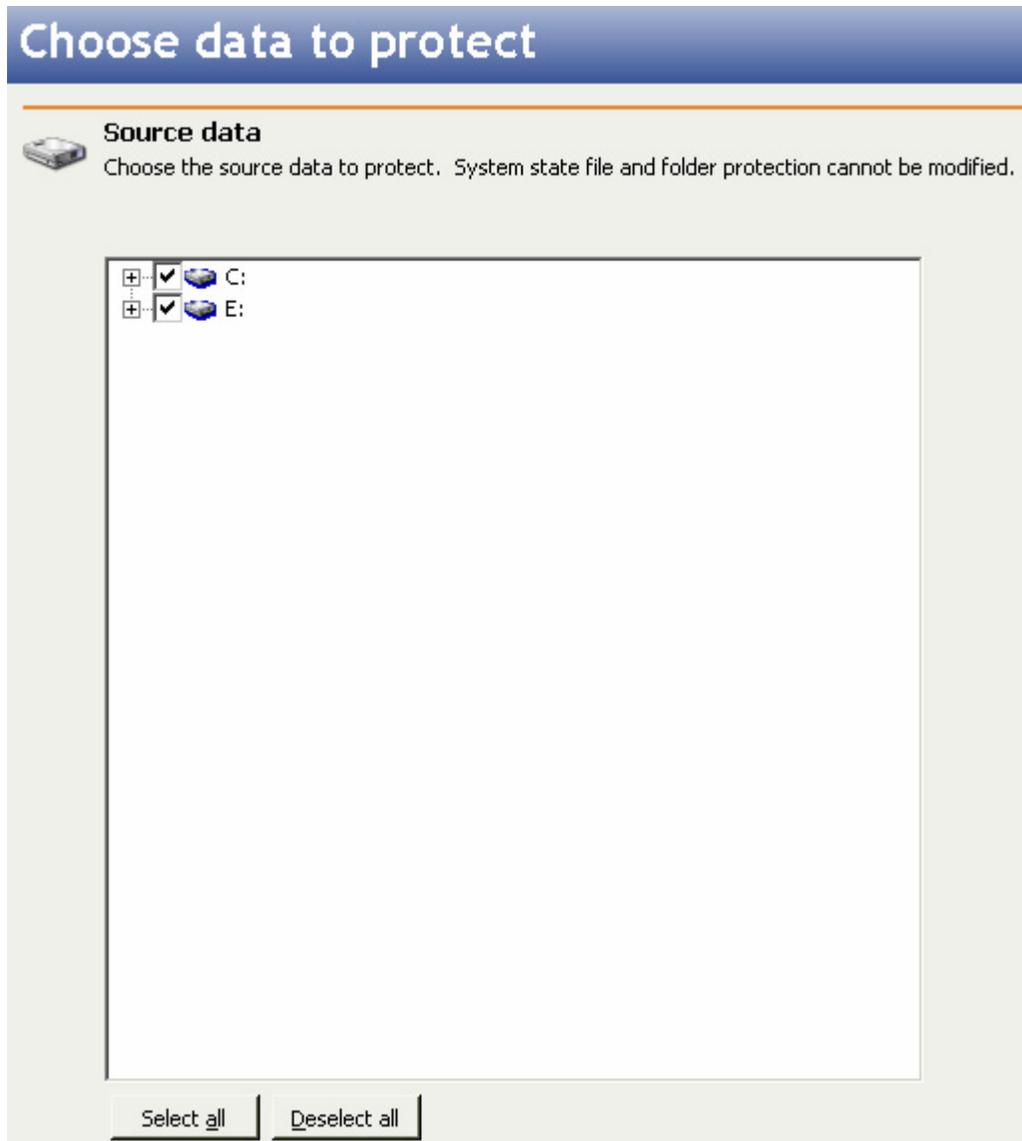
-
4. Identify the target image server that will store the image of the source.



- **Server**—Specify the name of the target image server. You can also click **Browse** to select the name from Active Directory or from a network drill-down list.
 - **User name**—Specify a user that is a member of the **Double-Take Admin** security group on the target image server.
 - **Password**—Specify the password associated with the **User name** you entered.
 - **Domain**—If you are working in a domain environment, specify the **Domain**.
5. Click **Next** to continue.

-
6. By default, Livewire selects your entire source for protection. It automatically excludes particular files that cannot be used during a recovery. If desired, you can exclude other files that you do not want to protect, 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 that you will be unable to exclude, because they are required for recovery. For example, the boot volume cannot be excluded because that is where the system state information is stored.



Volumes, folders, and files that are marked with a checkmark are included. If there is no checkmark, the item is excluded. Expand and collapse the directory tree and click on an item to add or remove a checkmark. Once you have configured the data to protect, click **Next** to continue.

NOTE: The **Select all** and **Deselect all** buttons allow you to quickly select or deselect all user data on your server. These buttons do not change the selection of system state data, which is defined by Livewire and cannot be modified manually.

-
7. A snapshot is an image of data taken at a single point in time. Snapshots allow you to view files and folders as they existed at points of time in the past, so you can, for example, recover from cases where corrupted source data was replicated to the source image on the target image server. If desired, you can take periodic snapshots of the data on the target image server, thus protecting your source images.

Choose point-in-time strategy

 **Snapshots**
Snapshots taken on the failover server can be used to recover to an earlier point in time.

Enable scheduled snapshots

Take snapshots on the following interval:

1

Hours

Begin immediately

Begin at:

Tuesday , August 26, 2008

10:14:11 AM

- **Enable scheduled snapshots**—By default, periodic snapshots are disabled. If desired, enable snapshots by selecting this option.
Because Livewire uses the Microsoft Volume Shadow Copy service to create snapshots, your target must be running Windows 2003 Service Pack 1 or later. If you are using an earlier version of Windows, this option will not be available. Additionally, your source and target must be using the NTFS file system. If you are using a FAT file system, the FAT volumes will not be included in the snapshot set, and when the snapshots are reverted, the FAT volume will not be time-consistent with the NTFS volumes.
 - **Take snapshots on the following interval**—By default, Livewire will take a snapshot of the target data every hour. If desired, increase or decrease the interval between snapshots.
 - **Begin immediately**—If you want to start taking snapshots immediately after the Livewire job is established, select this option.
 - **Begin at**—If you want to start taking snapshots at a specific date and time, select this option and specify the date and time parameters.
8. Click **Next** to continue.

-
9. Select a location on the target image server to store the location of the source's image. The location you specify for **Path prefix** will automatically have the source server name appended to it, in order to distinguish the image from other images.

Choose image storage location

 **Image storage location**
Select a location on the image server to store this image. The source name will automatically be appended to the path.

Path prefix:

Full Path:
C:\Server Image\alpha

10. Click **Next** to continue.
11. At the **Protection Summary** page, you can review the choices you have made and you can also set optional data transmission and e-mail notification settings. If you need to make any changes to the selections you made, click **Back** to return to the previous pages. If you want to configure the optional settings, click **Configure**. See [Configuring Advanced Settings](#) on page 9-1 for details on the data transmission and e-mail notification settings.
12. Once you have completed your configuration, click **Finish** to establish your source protection. The **Monitor** page will automatically appear with the new job. See [Monitoring Jobs](#) on page 6-1 for details on monitoring this new job.

Importing a Job

5

You can import existing Livewire jobs into the console using the following instructions.

1. From the **Monitor** page, select **Import jobs** on the toolbar.
2. Identify the import server. This is the target image server that contains the source images that you are protecting.

- **Server**—Specify the name of the target image server. You can also click **Browse** to select the name from Active Directory or from a network drill-down list.
 - **User name**—Specify a user that is a member of the **Double-Take Admin** security group on the source.
 - **Password**—Specify the password associated with the **User name** you entered.
 - **Domain**—If you are working in a domain environment, specify the **Domain**.
3. Click **Next** to continue.
 4. Select the job(s) on this target image server that you want to import into the console.

5. Click **Finish** to complete the import. The **Monitor** page will automatically appear with each of the imported jobs. See *Monitoring Jobs* on page 6-1 for details on monitoring jobs.

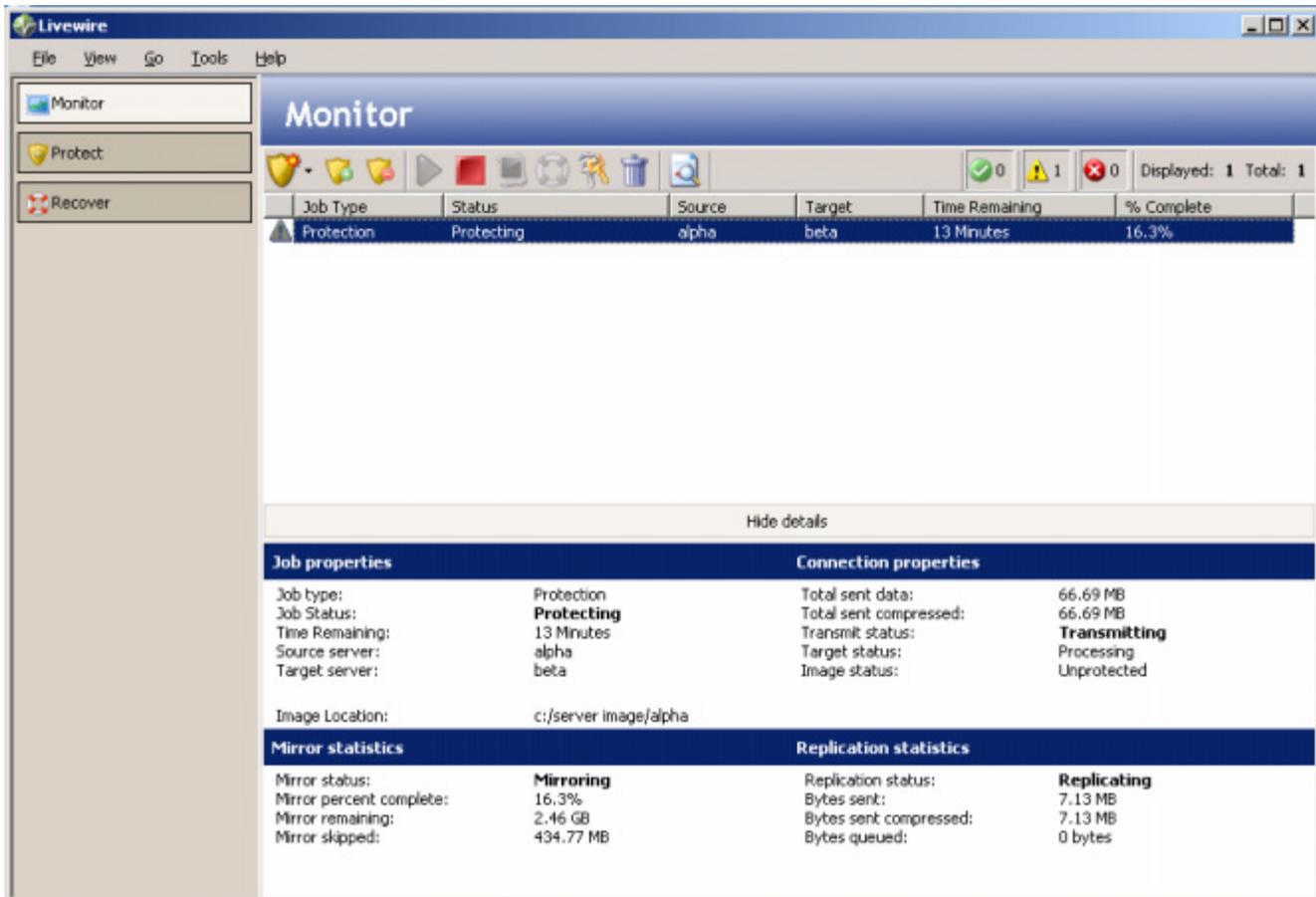
Monitoring Jobs

6

Once you have a job established or imported, you can easily monitor the status of the protection from the **Monitor** page.

When viewing the **Monitor** page, the main window is divided into two sections. The top pane displays overview monitoring information, while the bottom pane displays detailed data. You can hide the details pane by clicking on the **Hide details** text. You can display the details pane by clicking on the **Show details** text.

There is also a toolbar on the **Monitor** page for specific job and monitoring controls.



See the following tables for information on the various parts of the **Monitor** page.

- **Job status**—See the table *Job Status* on page 6-2 for a description of the overview information provided for each job at the top of the **Monitor** page.
- **Detailed status**—See the table *Detailed status* on page 6-3 for a description of the detailed job status information displayed at the bottom of the **Monitor** page.
- **Controls**—See the table *Monitor page controls* on page 6-5 for a description of the job and monitoring controls on the **Monitor** page toolbar.

Job Status

Column	Description
<no label>	<p>The first unlabeled column is an icon that indicates at-a-glance the status of the job.</p> <ul style="list-style-type: none">  —The black, moving circular icon indicates the console is attempting to process the job to determine the status and statistics.  —The white checkmark inside a green circle indicates the job is in a good state.  —The black exclamation point inside a yellow triangle indicates the job is in a warning state.  —The white X inside a red circle indicates the job is in a bad state.
Job Type	<ul style="list-style-type: none"> • Protection—Protects the source by replicating an image of it to the target image server • Recovery—Recovers an image of a source to a recovery server
Status	<p>There are many different status messages that keep you informed of the progress of your jobs. Most of the status messages are informational and do not require any administrator interaction. If you see error messages, check the job details. You can also view the Double-Take log file for additional information.</p>
Source	<p>The Source indicates which server is transmitting mirror and replication data.</p> <ul style="list-style-type: none"> • Original source server for Protection jobs—When the Job Type is Protection, this is the name of your original source. The image of the original source is being transmitted from the original source and is being received by the target image server. • Target image server for Recovery jobs—When the Job Type is Recovery, this is the name of the target image server. The image of the original source is being transmitted from the target image server and is being received by the recovery server.
Target	<p>The Target indicates which server is receiving mirror and replication data.</p> <ul style="list-style-type: none"> • Target image server for Protection jobs—When the Job Type is Protection, this is the name of your target image server. The image of the original source is being transmitted from the original source and is being received by the target image server. • Recovery server for Recovery jobs—When the Job Type is Recovery, this is the name of the recovery server. The image of the original source is being transmitted from the target image server and is being received by the recovery server.
Time remaining	<p>When mirroring, this is the estimated time remaining to complete the mirror. For various reasons, this calculation is an estimate. For example, some file components, like alternate data streams, cannot be included in mirror calculations, or the size of the data set may have changed after the mirror started.</p>
% Complete	<p>When mirroring, this is the estimated percentage of the mirror that is complete. For various reasons, this calculation is an estimate. For example, some file components, like alternate data streams, cannot be included in mirror calculations, or the size of the data set may have changed after the mirror started.</p>

Detailed status

Section	Detailed Item	Description
Job properties	Job type	These detailed items display the same information as the overview status in the upper pane of the Monitor page. See the table <i>Job Status</i> on page 6-2 for details on these items.
	Job Status	
	Time Remaining	
	Source server	
	Target server	
	Image Location	This is the location on the target image server where the source image is stored.
Connection properties	Total sent data	This is the total amount of data (mirroring and replication) that has been sent from the source to the target.
	Total sent compressed	This is the total amount of compressed data (mirroring and replication) that has been sent from the source to the target. If compression is disabled, this statistic will be the same as Total sent data .
	Transmit status	<ul style="list-style-type: none"> • Transmitting—The job is transmitting data. • Stopped—The job is stopped. • Scheduled—The job is scheduled to transmit data in the future. • Paused—The job is paused. • Error—There is a transmission error.
	Target status	<ul style="list-style-type: none"> • Processing—The target is processing data. • Paused—The target is paused.
	Image status	<ul style="list-style-type: none"> • Protected—The mirror is complete and replication is continuing. The image is valid. • Unprotected—The mirror is not yet complete, so the image is not yet valid. • Recoverable—The image is valid, but not up-to-date. This may be because the mirror completed, but the job has been disconnected, so it is no longer replicating; there is a replication error; the image is of a snapshot; and so on.

Section	Detailed Item	Description
Mirror statistics	Mirror status	<ul style="list-style-type: none"> • Calculating—The amount of mirror data is being calculated. • Mirroring—Data is being mirrored. • Idle—There is no data to mirror. • Verifying—Data is being verified between the source and target. • Removing Orphans—Orphan files are being removed on the target. • Paused—The mirror is paused. • Stopped—The mirror is stopped. • Unknown—The console is trying or unable to determine the mirror status.
	Mirror percent complete	This detailed item displays the same information as the overview status in the upper pane of the Monitor page. See the table <i>Job Status</i> on page 6-2 for details on this item.
	Mirror remaining	This is the estimated amount of mirroring data that still has to be transmitted. For various reasons, this calculation is an estimate. For example, some file components, like alternate data streams, cannot be included in mirror calculations, or the size of the data set may have changed after the mirror started.
	Mirror skipped	This is the amount of mirroring data that has been skipped (because the data is not different on the source and target).
Replication statistics	Replication status	<ul style="list-style-type: none"> • Replicating—Data is being replicated. • Pending—Replication is pending. • Stopped—Replication is stopped. • Out of memory—Kernel memory has been exhausted. • Watchdog—The Double-Take service is not receiving replication operations from the Double-Take driver. • Unknown—The console is trying or unable to determine the replication status.
	Bytes sent	This is the total amount of replication data that has been sent from the source to the target.
	Bytes sent compressed	This is the total amount of compressed replication data that has been sent from the source to the target. If compression is disabled, this statistic will be the same as Bytes sent .
	Bytes queued	This is the total amount of replication data that is in queue on the source.

Monitor page controls

Toolbar Icon	Tooltip Text	Description
	New activity	The large shield icon on the far left of the toolbar opens a small menu that lets you select an action to perform. Select Protect or Recover .
	Import jobs	The smaller shield icon with the green circle with white plus sign allows you to launch the import jobs workflow.
	Stop monitoring job	The smaller shield icon with the red circle with white line removes the job from the console Monitor page. The job remains active, but is no longer visible from the console. To see the job again, import it using the Import jobs button. If you want to permanently delete the job, use the Delete job button.
	Resume	The green triangle icon resumes the selected job.
	Stop	The red square icon stops the selected job. The image of the source, at the time the job was stopped, is still available for recovery, but the image is no longer being updated with data changes from the source. If you want to use the job again, you must restart it using the Resume button. When you restart a job, a remirror will automatically be performed.
	Take a snapshot	The blue icon resembling a photograph takes an immediate snapshot of the data on the target. A pop-up dialog box will notify you of the success or failure of the snapshot.
	Recover	The life preserver icon starts the recovery process for the selected job.
	Update credentials	The keys icon allows you to specify credentials for the source and target. If the Password associated with a specified User name changes after a job has been started, Livewire will attempt to update the credentials it is using. If the automatic update is not successful, the monitor page will report Invalid credentials . In this case, you will need to manually update the credentials that the job is using using the Update credentials button.
	Delete job	The trash can icon permanently deletes the selected job. The image of the source, at the time the job was deleted, is still available for recovery, but the image is no longer being updated with data changes from the source. If you want to use the job again, you must re-create it using the New activity button.
	View details	The paper with magnifying glass icon toggles between displaying and hiding the details at the bottom of the Monitor page.
	OK	The green circle with the white checkmark icon toggles between displaying and hiding those jobs that are in a good state. The number of jobs in the good state is also displayed on the toolbar button.
	Warning	The yellow triangle with the black exclamation point icon toggles between displaying and hiding those jobs that are in a warning state. The number of jobs in the warning state is also displayed on the toolbar button.

Toolbar Icon	Tooltip Text	Description
	Errors	The red circle with the white X icon toggles between displaying and hiding those jobs that are in an error state. The number of jobs in the error state is also displayed on the toolbar button.
		To the right of all of the toolbar buttons is a summary of the number of jobs displayed by the good, warning, and error state toggle buttons. The total number of jobs available for display in this console is also displayed.

Recovering to an Existing Machine

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In the event the source should fail, you can use the image of the source, stored on the target image server, to quickly and easily create a new source on a physical machine or on an existing virtual machine. If you want the recovery process to automatically create a virtual machine during the recovery process, see [Recovering to an Automatically Provisioned Virtual Machine](#) on page 8-1.

Before you begin the recovery process, understand that the flow of data is going to change. When you were protecting your source, the data was being transmitted from the source to the target image server. During recovery, the data will be transmitted from the target image server to the recovery server. This means your target image server is now your source, and your recovery server is your target.

If your recovery server does not have Livewire installed on it, see [Preparing your recovery server](#) on page 7-2. After you have prepared your recovery server or if your recovery server already has Livewire installed on it, see [Recovering your data](#) on page 7-3.

Preparing your recovery server

Because the recovery server becomes the original source after a recovery, the recovery server, as it exists prior to the recovery, will no longer exist after the recovery. Therefore, the recovery server is not usually an active server and will probably not have Livewire installed on it.

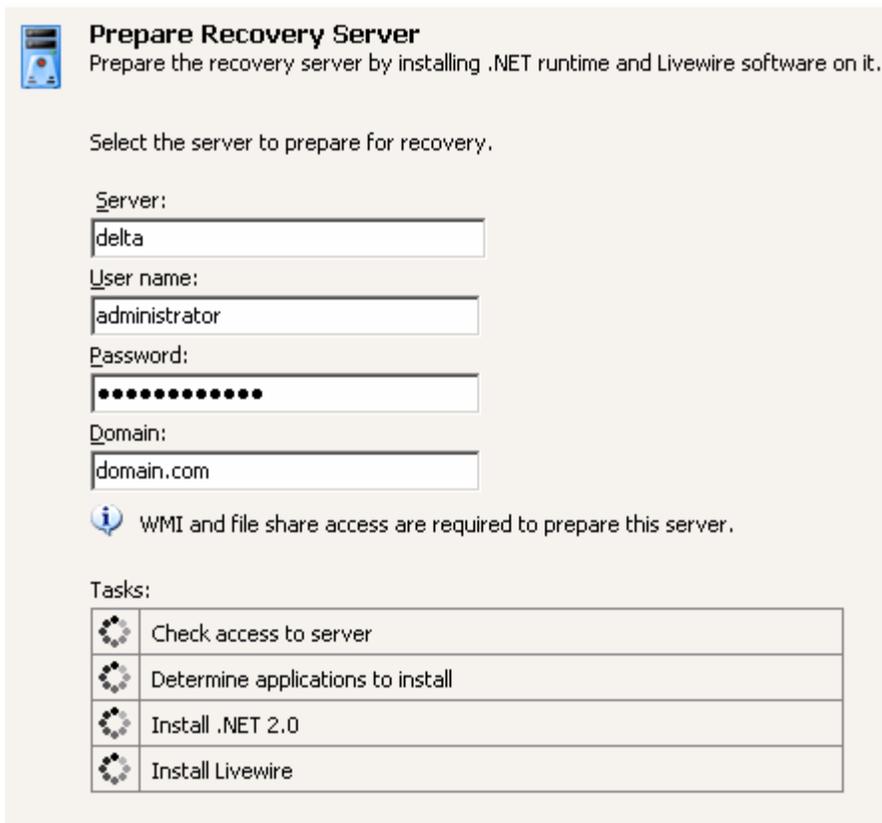
In order for the recovery process to function, Livewire must be installed on the recovery server before you start the recovery process. However, you do not need to install Livewire from a CD or web download or have a valid activation code for the recovery server. Livewire has a built-in installation feature that installs a valid, unactivated, copy of Livewire on the recovery server. At any time before the recovery, you can use this built-in installation feature to push a copy of Livewire to your recovery server.

NOTE: Do not use the copy of Livewire that was pushed to your recovery server outside of the recovery process because it will automatically activate the software. Once activated, it will automatically deactivate after five days.

If your recovery server has a previously installed, properly licensed and activated copy of Livewire, these preparation steps are not necessary.

Use the following instructions to push a copy of Livewire to your recovery server.

1. Select **Tools, Prepare Recovery Server**.
2. Specify the recovery server information.



Prepare Recovery Server
Prepare the recovery server by installing .NET runtime and Livewire software on it.

Select the server to prepare for recovery.

Server:
delta

User name:
administrator

Password:
●●●●●●●●

Domain:
domain.com

 WMI and file share access are required to prepare this server.

Tasks:

	Check access to server
	Determine applications to install
	Install .NET 2.0
	Install Livewire

- **Server**—Specify the name of the recovery server.
 - **User name**—Specify a user that has WMI and file share access on the server.
 - **Password**—Specify the password associated with the **User name** you entered.
 - **Domain**—If you are working in a domain environment, specify the **Domain**.
3. Click **Install** and monitor the status of the various installation tasks.

Recovering your data

1. There are two ways to initiate a recovery.
 - From the **Monitor** page, highlight the job you want to recover and select **Recover** on the toolbar (the curved arrow icon). Confirm you want to recover this job and then begin with step 4.
 - Use any of the following methods to start the recovery process and then begin with step 2.
 - From the **Monitor** page, select **New Activity** on the toolbar (the shield icon), and then select **Recover**.
 - Click **Recover** from the left navigation pane.
 - Select **Go, Recover**.
2. Identify your image server that contains the image of the source you need to recover.

Choose image server

The image server stores one or more server images for later recovery tasks.

Server: beta

User name: administrator

Password: ●●●●●●●●●●

Domain: domain.com

Supplied credentials will be used continuously to access this server.

- **Server**—Specify the name of the target image server. You can also click **Browse** to select the name from Active Directory or from a network drill-down list.
 - **User name**—Specify a user that is a member of the **Double-Take Admin** security group on the target image server.
 - **Password**—Specify the password associated with the **User name** you entered.
 - **Domain**—If you are working in a domain environment, specify the **Domain**.
3. Click **Next** to continue.

4. Select the image of the source that you want to recover. If the image is not displayed, click **Browse** to look for the location of the server image. Additionally, you can select an earlier snapshot of the source image if you want to recover to an earlier point-in-time.

Choose image to recover

 **Source server image**
Select an image to recover.

Available images:

Image Name	Image Location	Image State
alpha	C:/server image/alpha	Good

[Browse...](#)

Select the point in time to recover to:

Date	Type	Status
9/29/2008 4:00:00 AM	Scheduled	Ok
9/29/2008 9:50:58 AM	User Request	Ok

5. Click **Next** to continue.
6. Identify the recovery server. This is the server that, after the recovery, will become your new source.

NOTE: If you used the Livewire built-in installation to push a copy of Livewire to the recovery server, that copy will automatically be activated when you select it as a recovery server. The copy will automatically deactivate after five days.

Choose recovery server

 **Choose recovery server**
Select a server onto which to recover

VMware ESX server host

gamma [Browse...](#)

User name:
administrator

Password:
●●●●●●●●

Domain:
domain.com

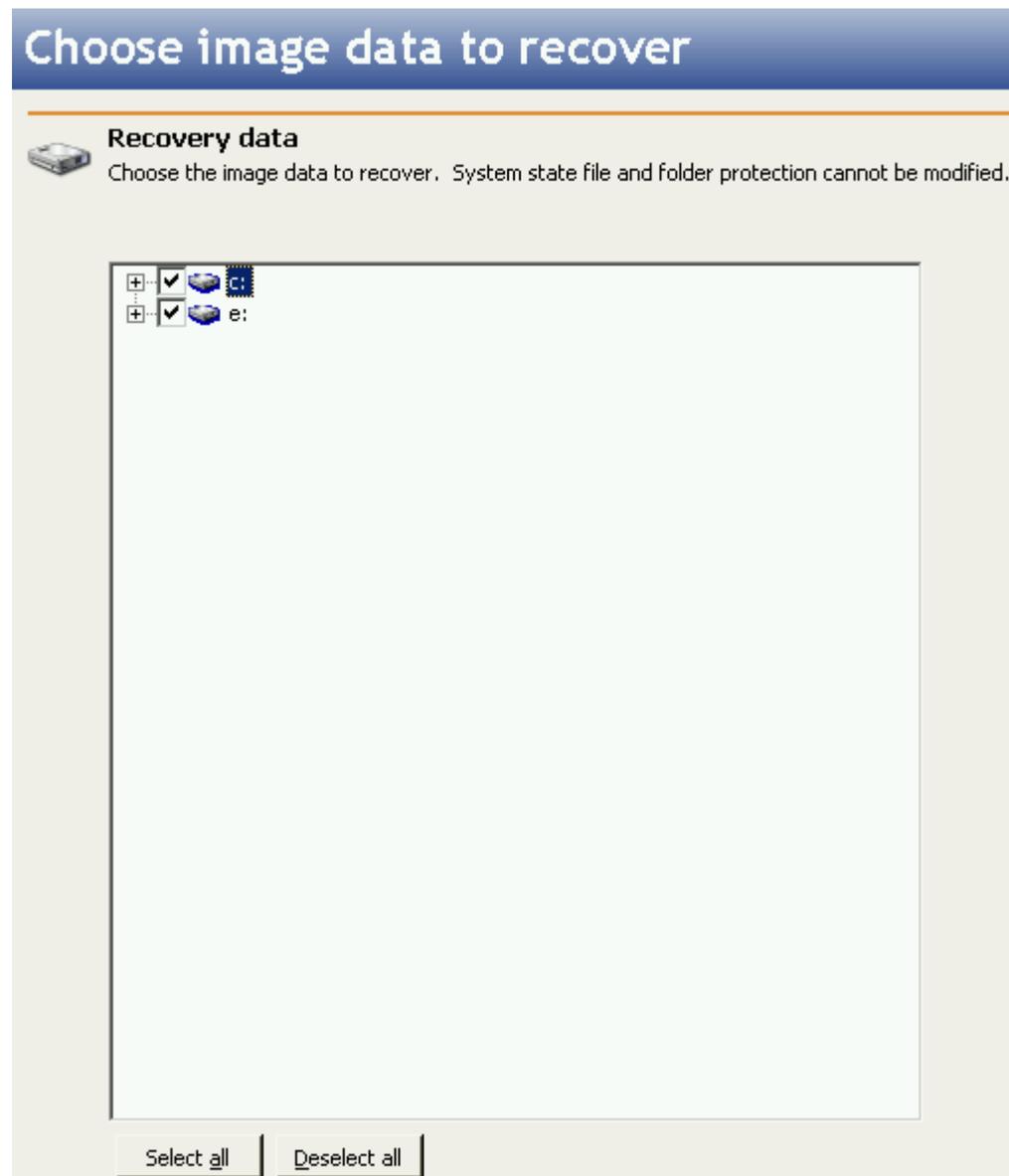
 Supplied credentials will be used continuously to access this server.

- **VMware ESX server host**—Do not enable this option. This setting is only if you are recovering to an automatically provisioned virtual machine hosted on an ESX server.

- **Server**—Specify the name of the recovery server. You can also click **Browse** to select the name from Active Directory or from a network drill-down list.

NOTE: You can select your target image server as the recovery server, but keep in mind that the image server role and any other source images will be lost.

- **User name**—Specify a user that is a member of the **Double-Take Admin** security group on the recovery server.
 - **Password**—Specify the password associated with the **User name** you entered.
 - **Domain**—If you are working in a domain environment, specify the **Domain**.
7. Click **Next** to continue.
 8. By default, Livewire selects all of the data in the source image to recover. If desired, you can exclude files that you do not want to recover, but be careful when excluding data. Excluded volumes, folders, and/or files may compromise the integrity of your installed applications.



Volumes, folders, and files that are marked with a checkmark are included. If there is no checkmark, the item is excluded. Expand and collapse the directory tree and click on an item to add or remove a checkmark. Once you have configured the data to recover, click **Next** to continue.

NOTE: The **Select all** and **Deselect all** buttons allow you to quickly select or deselect all user data on your server. These buttons do not change the selection of system state data, which is defined by Livewire and cannot be modified manually.

- Specify if your recovery server is in a LAN or WAN environment with respect to your original source.

Set recovery type

Recovery type
Identify if your original source and your recovery server are in a LAN or WAN environment.

LAN recovery
For a LAN recovery, the network identity of the original source will be applied to the recovery server. The mapping between original source NICs and recovery server NICs must be configured.

Map network adapters:

Source Network Adapter	Target Network Adapter
Public network	Public network
Public network	[None]

WAN recovery
For a WAN recovery, the name of the source server is applied to the recovery server, however the IP addresses of the recovery server are used and DNS updates are made to point the server name to the new IP addresses. Additional IP addresses can be added.

Update DNS Servers

- **LAN recovery**—If your recovery server is on a LAN with your original source, the original source name and the IP address(es) will be applied to the recovery server. Specify which network adapters on the recovery server that you want to take over for the network adapters on the original source.
 - **WAN recovery**—If your recovery server is located across a WAN from your original source, the original source name will be applied to the recovery server, but the IP address(es) of the original source will not be used. Instead, the IP address(es) of the recovery server will be used. If desired, you can select to **Update DNS servers**, which will allow you to specify how to resolve server names and IP addresses. If you do not select **Update DNS Servers**, you must manually modify DNS after the recovery is complete.
- Click **Next** to continue.
 - If you selected to update your DNS servers for a WAN recovery type, specify your DNS update options.
 - **DNS Domains**—Click **Add** and specify the name of your DNS Domain. Repeat this for each DNS domain. If you want to remove a domain, highlight the name and click **Remove**.
 - **User name**—Highlight a DNS domain and specify a user account that has privileges to update DNS.
 - **Password**—Specify the password associated with the user account you entered.

- **DNS Servers**—Click **Add** and specify the IP address of a DNS server in the DNS domain. Repeat this for each DNS server in the DNS domain. If you want to remove a server, highlight the address and click **Remove**.
- **IP addresses**—For each IP address on the source, select an IP address on the recovery server that will take over for that source IP address.

Once you have your DNS updates configured, click **Test DNS** to determine if your DNS updates will be successful.

12. Click **Next** to continue.

13. Specify your recovery shutdown options.

Set recovery shutdown options



Pause recovery

The recovery process can be paused before applying system state, allowing for coordination of any user performed tasks.

Pause the recovery before applying system state.



Shutdown Source Server

If the original protected server is detected on the network, it can be shutdown before the final reboot of the recovered server to avoid identity conflicts.

Shut down the source server from the original protection job.



Original Protection Job

Any updates to the image during recovery could corrupt the recovered server.

 If the original source server is already unavailable, this choice will not be observed.

Delete the original protection job.

Stop the original protection job. The job can be restarted after recovery.

Leave the original protection job running. The recovered server could be corrupted, however the original source will remain protected.

- **Pause recovery**—Specify if you want to pause the recovery process after the original source image has been mirrored to the recovery server, which allows you time to coordinate any other tasks. If you do not pause the recovery, the original source system state will be processed on the recovery server immediately after the mirror is complete. (The recovery server will automatically reboot after the system state processing is completed.)
- **Shutdown Source Server**—Specify if you want to shutdown the source server before the original source system state is processed on the recovery server, which avoids identity conflicts on the network. The shutdown will occur after the original source image is mirrored to the recovery server but before the original source system state is applied to the recovery server.
- **Original Protection Job**—Specify what to do with the original protection job, if the original source is still running. If the source is not running, these options will be discarded because they cannot be performed. If you are recovering to the original source, these options will not be available.
 - **Delete the original protection job**—The original protection job is stopped and then deleted.
 - **Stop the original protection job**—The original protection job is stopped but is not deleted.
 - **Leave the original protection job running**—The original protection job is not stopped or deleted.

14. Click **Next** to continue.

15. At this point, Livewire validates that your recovery server is compatible to become your original source. Errors are designated by a red circle with a white X. (A question mark icon is an unknown error.) Warnings are designated by a yellow triangle with a black exclamation point. A successful validation is designated by a green circle with a white checkmark.

You must correct any errors before you can enable protection. Double-click on any of the validation items to see details. Depending on the error, you may be able to click **Fix** or **Fix All** and let Livewire correct the problem for you. For those errors that Livewire cannot correct automatically, you will need to modify the recovery server to correct the error, or you can select a different server. You must revalidate the selected server until the validation check passes without errors. Once the validation is successful, click **Next** to continue.

16. At the **Recovery summary** page, you can review the choices you have made and you can also set optional data transmission and e-mail notification settings. If you need to make any changes to the selections you made, click **Back** to return to the previous pages. If you want to configure optional settings, click **Configure**. See *Configuring Advanced Settings* on page 9-1 for details on the data transmission and e-mail notification settings. Once you have completed your configuration, click **Finish** to start the recovery.
17. Monitor the progress of the recovery mirror on the **Monitor** page. See *Monitoring Jobs* on page 6-1 for details.
18. When the recovery mirror has completed, the recovery server will automatically reboot to complete the recovery process. If you specified to pause the recovery before applying the system state, when the mirror is complete, the **Activity** will change to **Protected**. Use this time to complete any necessary tasks. When you are ready to complete the recovery, click **Resume** on the **Monitor** page toolbar (the green triangle) to complete the recovery process.
Once the recovery server has been rebooted, it will become the original source server.

Recovering to an Automatically Provisioned Virtual Machine

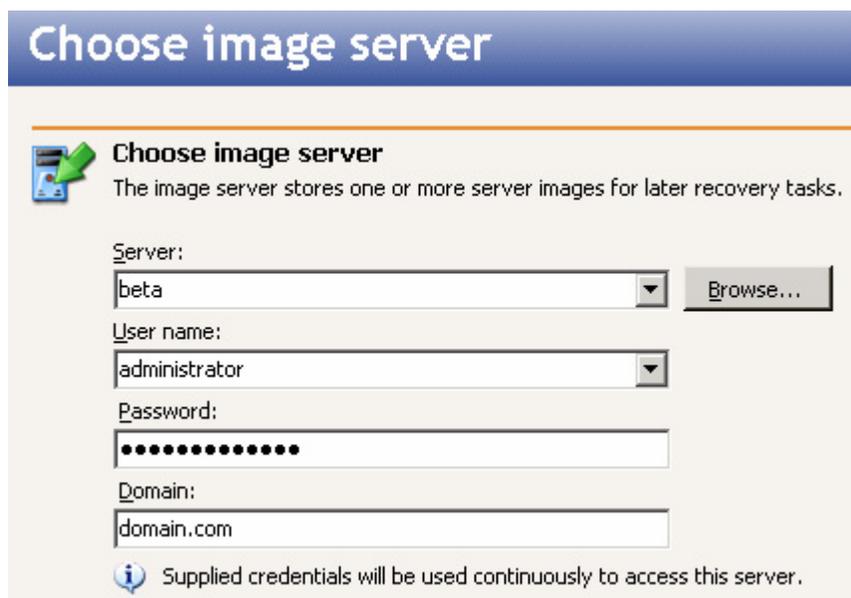
8

In the event the source should fail, you can use the image of the source, stored on the target image server, to quickly and easily create a new source on a virtual machine that does not yet exist. Livewire will automatically create the virtual machine during the recovery process. If you want to recover to an existing physical or virtual machine, see [Recovering to an Existing Machine](#) on page 7-1.

Before you begin the recovery process, understand that the flow of data is going to change. When you were protecting your source, the data was being transmitted from the source to the target image server. During recovery, the data will be transmitted from the target image server to the recovery server. This means your target image server is now your source, and your recovery server is your target.

NOTE: Your virtual recovery appliance must have an installed, licensed copy of Livewire before beginning the recovery process.

1. There are two ways to initiate a recovery.
 - From the **Monitor** page, highlight the job you want to recover and select **Recover** on the toolbar (the curved arrow icon). Confirm you want to recover this job and then begin with step 4.
 - Use any of the following methods to start the recovery process and then begin with step 2.
 - From the **Monitor** page, select **New Activity** on the toolbar (the shield icon), and then select **Recover**.
 - Click **Recover** from the left navigation pane.
 - Select **Go, Recover**.
2. Identify your image server that contains the image of the source you need to recover.



The screenshot shows a dialog box titled "Choose image server" with a blue header bar. Below the title is a green arrow icon pointing to the right. The main text reads: "The image server stores one or more server images for later recovery tasks." The form contains the following fields and controls:

- Server:** A dropdown menu with "beta" selected and a "Browse..." button to its right.
- User name:** A dropdown menu with "administrator" selected.
- Password:** A text input field with 10 black dots for masking.
- Domain:** A text input field with "domain.com" entered.

At the bottom left, there is an information icon (i) followed by the text: "Supplied credentials will be used continuously to access this server."

- **Server**—Specify the name of the target image server. You can also click **Browse** to select the name from Active Directory or from a network drill-down list.
 - **User name**—Specify a user that is a member of the **Double-Take Admin** security group on the target image server.
 - **Password**—Specify the password associated with the **User name** you entered.
 - **Domain**—If you are working in a domain environment, specify the **Domain**.
3. Click **Next** to continue.
 4. Select the image of the source that you want to recover. If the image is not displayed, click **Browse** to look for the location of the server image. Additionally, you can select an earlier snapshot of the source image if you want to recover to an earlier point-in-time.

Choose image to recover

 **Source server image**
Select an image to recover.

Available images:

Image Name	Image Location	Image State
alpha	C:/server image/alpha	Good

[Browse...](#)

Select the point in time to recover to:

Date	Type	Status
9/29/2008 4:00:00 AM	Scheduled	Ok
9/29/2008 9:50:58 AM	User Request	Ok

5. Click **Next** to continue.
6. Identify the recovery server. This is the ESX server that will host the virtual server that, after the recovery, will become your new source.

Choose recovery server

 **Choose VMware ESX recovery server**
The recovery server is the VMware ESX Server where the virtual recovery appliance and replica virtual machines are hosted.

VMware ESX server host

gamma-virtual [Browse...](#)

User name:
root

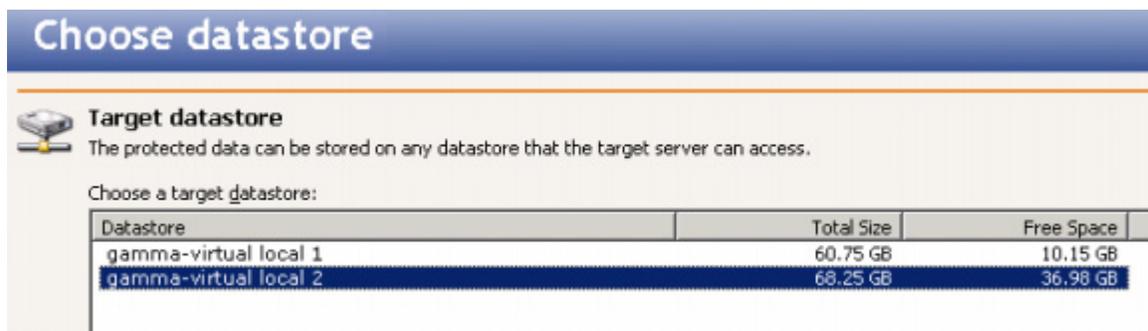
Password:
●●●●●●●●

Domain:

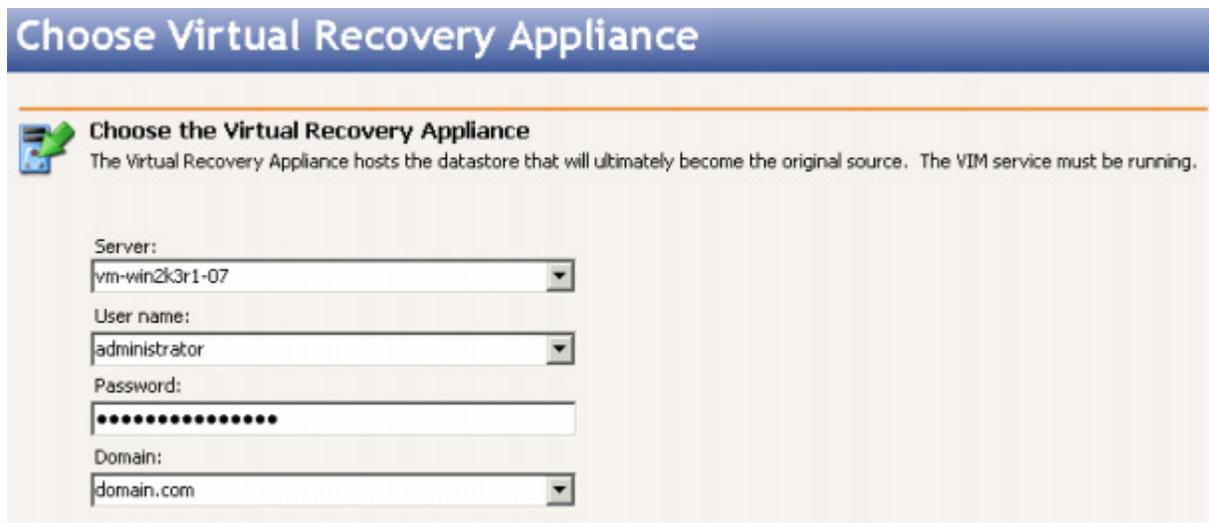
 Supplied credentials will be used continuously to access this server.

- **VMware ESX server host**—Enable this option to recover to an automatically provisioned virtual machine hosted on an ESX server.
 - **Server**—Specify the name of the ESX server. You can also click **Browse** to select the name from Active Directory or from a network drill-down list.
 - **User name**—Specify a user that is a member of the **Double-Take Admin** security group on the recovery server.
 - **Password**—Specify the password associated with the **User name** you entered.
 - **Domain**—This option is not necessary for an ESX server.
7. Click **Next** to continue.
 8. Choose a datastore on the recovery server to store the protected data and system state information. You can only select a target datastore that has enough free space available. The amount of necessary disk space is noted at the bottom of the page.

NOTE: If the size of the datastore is identical to the size of the disk on original source and there is less than 20 MB of free space on that original source, you may run out of disk space on the datastore due to differences in how the virtual disk block size is formatted. In this case, make sure that your datastore has at least 20 MB more disk space than the size of the disk on the original source.



9. Click **Next** to continue.
10. Choose the virtual recovery appliance that is hosting the datastore you selected.



- **Server**—Specify the name of the helper VM. The drop-down list will only display virtual machines that are running and have a guest operating system capable of performing a recovery (for example, a 64-bit original source can only be recovered to a virtual machine running a 64-bit operating system).
- **User name**—Specify a user that is a member of the **Double-Take Admin** security group on the target image 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. Configure the virtual machine that will become the source after the recovery.

Edit replica settings

Replica virtual machine
Configure the virtual machine that will take over for the source server after cutover.

Replica virtual machine name:

Map replica virtual network IP to target networks:

Replica VM Network IP	Target Network
169.254.23.12	Public network
192.168.1.102	Private network

Number of processors: Processors on the source server:

Amount of memory (MB): Memory on the source server (MB):

- **Replica virtual machine name**—By default, the original source name will be used. If desired, you can change the name, but your applications and end-users will have to use the modified name.
- **Map replica virtual network IP to target networks**—You will need to identify how you want to handle the network mapping. The **Replica VM Network IP** lists the IP addresses contained in the image of the original source. Map each one to a **Target Network**, which is a virtual network on the ESX server.
- **Number of processors**—Specify how many processors to configure on the virtual machine. The number of processors from the original source image is displayed.
- **Amount of memory**—Specify the amount of memory to configure on the virtual machine. The amount of memory from the original source image is displayed.

13. Click **Next** to continue.

14. Specify your recovery shutdown options.

Set recovery shutdown options

Pause recovery
The recovery process can be paused before applying system state, allowing for coordination of any user performed tasks.

Pause the recovery before applying system state.

Shutdown Source Server
If the original protected server is detected on the network, it can be shutdown before the final reboot of the recovered server to avoid identity conflicts.

Shut down the source server from the original protection job.

Original Protection Job
Any updates to the image during recovery could corrupt the recovered server.

If the original source server is already unavailable, this choice will not be observed.

Delete the original protection job.

Stop the original protection job. The job can be restarted after recovery.

Leave the original protection job running. The recovered server could be corrupted, however the original source will remain protected.

- **Pause recovery**—Specify if you want to pause the recovery process after the original source image has been mirrored to the recovery server, which allows you time to coordinate any other tasks. If you do not pause the recovery, the original source system state will be processed on the recovery server immediately after the mirror is complete. (The recovery server will automatically reboot after the system state processing is completed.)
- **Shutdown Server Source**—Specify if you want to shutdown the source server before the original source system state is processed on the recovery server, which avoids identity conflicts on the network. The shutdown will occur after the original source image is mirrored to the recovery server but before the original source system state is applied to the recovery server.
- **Original Protection Job**—Specify what to do with the original protection job, if the original source is still running. If the source is not running, these options will be discarded because they cannot be performed.
 - **Delete the original protection job**—The original protection job is stopped and then deleted.
 - **Stop the original protection job**—The original protection job is stopped but is not deleted.
 - **Leave the original protection job running**—The original protection job is not stopped or deleted.

15. Click **Finish** to start the recovery.

16. Monitor the progress of the recovery mirror on the **Monitor** page. See *Monitoring Jobs* on page 6-1 for details.

When the recovery mirror has completed, the virtual machine will automatically start. Once the virtual machine is online, it will be the original source server.

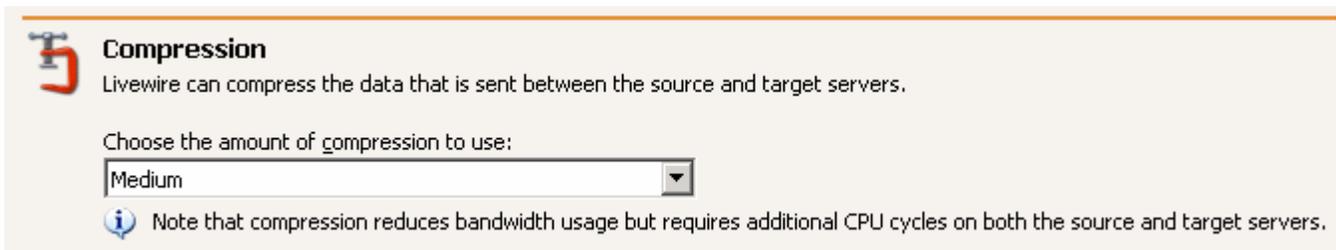
Configuring Advanced Settings

9

When configuring a protection or recovery job, you can set data transmission and e-mail notification options. For a recovery job, you can also set existing protection settings. You can access these options from the **Protection Summary** or **Recovery Summary** page of the job creation workflow.

Compression

To help reduce the amount of bandwidth needed to transmit Livewire 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 uncompresses it and then writes it to disk.



Compression
Livewire can compress the data that is sent between the source and target servers.

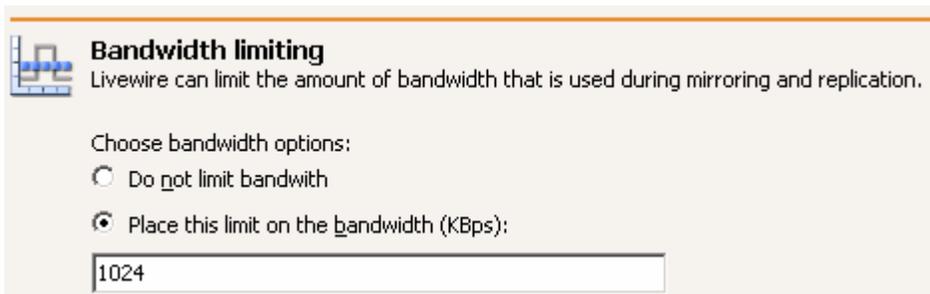
Choose the amount of compression to use:
Medium

Note that compression reduces bandwidth usage but requires additional CPU cycles on both the source and target servers.

By default, compression is set to **None**, which means it is disabled. The compression levels can be set at **Minimum**, **Medium**, or **Maximum**. Each level requires more overhead than the previous level of compression. 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.

Bandwidth limiting

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



Bandwidth limiting
Livewire can limit the amount of bandwidth that is used during mirroring and replication.

Choose bandwidth options:

- Do not limit bandwidth
- Place this limit on the bandwidth (KBps):

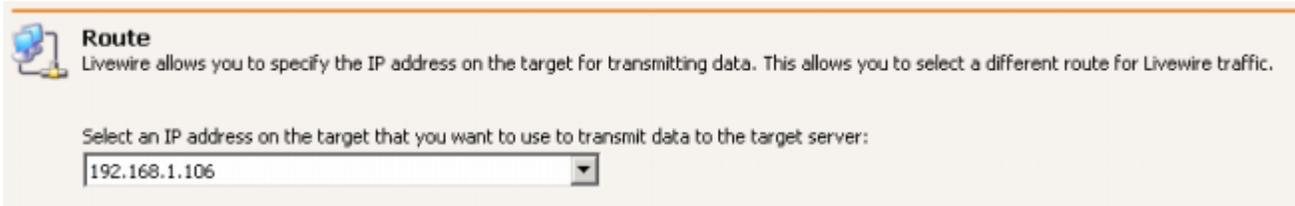
1024

- **Do not limit bandwidth**—Livewire will transmit data using 100% bandwidth availability.
- **Place this limit on the bandwidth**—Enter a value in kilobytes per second to limit data transmission. This is the maximum amount of data that will be transmitted per second.

NOTE: Bandwidth limiting is maintained for each target. Therefore, all jobs to the same target will have the same bandwidth limitations imposed.

Route

By default, Livewire will select the default route for transmissions. If desired, select a different IP address on the target that will be used to receive Livewire transmissions.



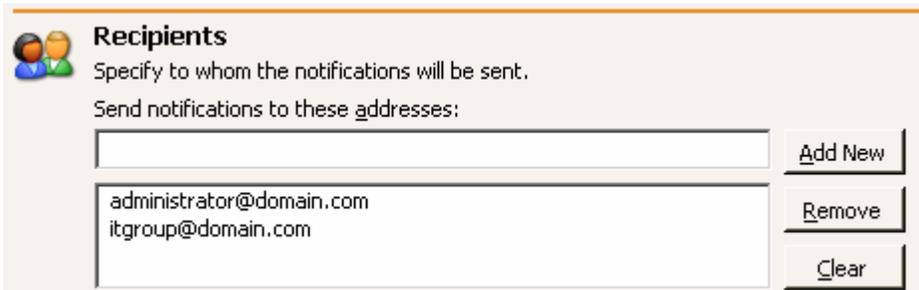
Route
Livewire allows you to specify the IP address on the target for transmitting data. This allows you to select a different route for Livewire traffic.

Select an IP address on the target that you want to use to transmit data to the target server:

E-mail notification

E-mail notification sends specific Livewire events to user-defined e-mail addresses. If you want to use e-mail notification, you will need to identify who will receive the messages, what messages they will receive, and your e-mail server configuration.

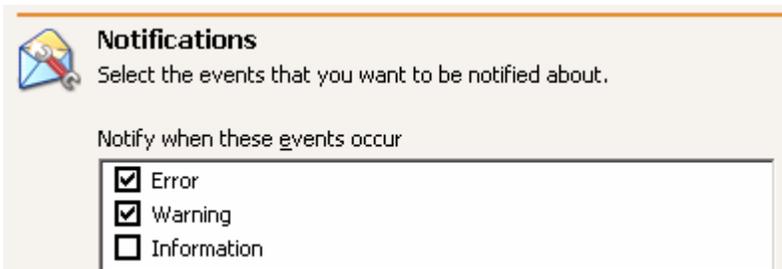
- **Recipients**—Specify the e-mail address that each Livewire e-mail message should be sent to and click **Add New**. The e-mail address will be inserted into the list of addresses. Each address is limited to 256 characters, and you can add up to 256 e-mail addresses. If you want to remove an address from the list, highlight the address and click **Remove**. If you want to remove all of the addresses from the list, click **Clear**.



Recipients
Specify to whom the notifications will be sent.

Send notifications to these addresses:

- **Notifications**—Specify which events that you want to be sent via e-mail. You can select **Error**, **Warning**, and/or **Information**.

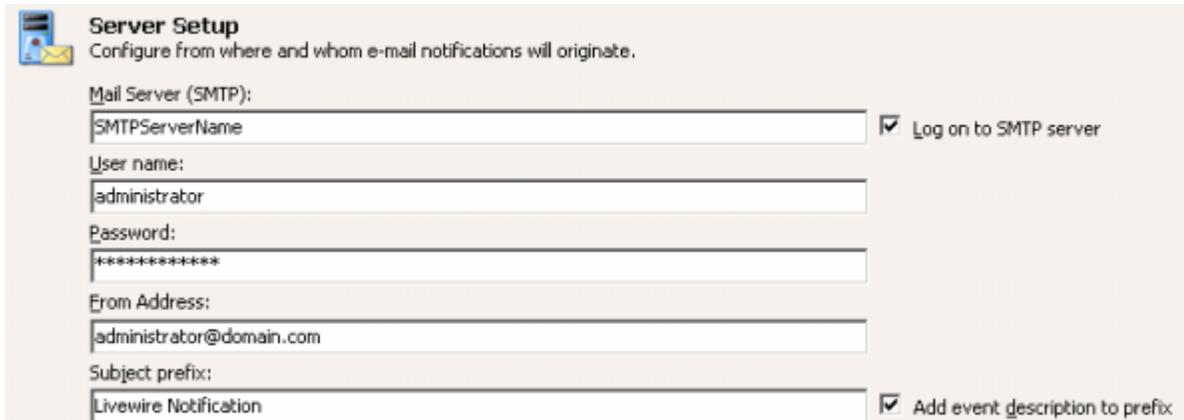


Notifications
Select the events that you want to be notified about.

Notify when these events occur

 Error
 Warning
 Information

- **Server Setup**—Specify your e-mail server configuration.



Server Setup
Configure from where and whom e-mail notifications will originate.

Mail Server (SMTP):
SMTPServerName Log on to SMTP server

User name:
administrator

Password:

From Address:
administrator@domain.com

Subject prefix:
Livewire Notification Add event description to prefix

- **Mail Server**—Specify the name of your SMTP mail server.
- **Log on to SMTP server**—If your SMTP server requires a login, enable this option and specify a **User name** and **Password**.
- **User name**—Specify a user account with privileges to send e-mail messages from your SMTP server.
- **Password**—Specify the password associated with the **User Name** you entered.
- **From Address**—Specify the e-mail address that you want to appear in the **From** field of each Livewire e-mail message. The address is limited to 256 characters.
- **Subject prefix**—Specify default text that will appear on every Livewire e-mail message. This will help distinguish Livewire messages from other messages.
- **Add event description to prefix**—Specify if you want the description of the event appended to the **Subject prefix**. The subject line is limited to 150 characters, so only the first 150 characters of the combined **Subject prefix** and event description will be displayed.