



StorageCraft ShadowStream User Guide

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StorageCraft ShadowStream User Guide

Understanding ShadowStream

Welcome to the StorageCraft ShadowStream User Guide. This guide will help you understand how to install, configure and use ShadowStream to perform ImageManager replication jobs.

 **Important:** ShadowStream is a premium feature which requires a license. Each ShadowStream license supports one Remote Replication (off-site) job.

The new StorageCraft ShadowStream is a high-performance transfer tool (for off-site replication) that lets you send backup image files to a destination system. In some situations (bad network traffic-high latency or heavy loss) ShadowStream is considerably faster than legacy ShadowStream and much faster than using traditional FTP.

ShadowStream greatly reduces the time needed to replicate data over noisy or high latency (>150-200ms) networks even when replicating full backup images. It is also simpler to configure and maintain than conventional FTP.

ShadowStream has two parts:

- ShadowStream service (server)
- Administrator console (client)

After configuring ShadowStream you can use ImageManager to create ShadowStream replication jobs. See [Configuring Locations](#) in the ImageManager User Guide.

 **Note:** Multiple ImageManager agents can use the same ShadowStream service.

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1 ShadowStream System Requirements

Supported Operating Systems for the ShadowStream service and administrator console:

- Windows Server 2003
- Windows Server 2008
- Windows Server 2008 R2
- Windows Server 2012
- Windows Server 2012 R2

 **Note:** ShadowStream can be installed on a 64-bit or 32-bit version of Windows Server. However, StorageCraft recommends installing on a 64-bit operating system. On a 64-bit OS, the 64-bit version of ShadowStream will be installed. This allows access to more memory and a higher number of concurrent file transfers.

Ports

ShadowStream uses these ports by default:

Port	Purpose
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4366	Data connection control port
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4367	Admin connection port
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Confirm access to these ports through your firewalls to run ShadowStream.

2 Install ShadowStream

To install the ShadowStream service:

The Administrator password is required when installing the service.

Note: The older version of ShadowStream (legacy ShadowStream) and the new ShadowStream can coexist on the same system. You can continue using legacy ShadowStream until all your old ImageManager legacy replication jobs are complete and your new replication jobs to the new ShadowStream are configured and working. See the [FAQ](#) for additional upgrade information.

1. Run the ShadowStream setup program.
The installation file can be found on the [StorageCraft Updates](#) page.
2. Select the Installation Language for your location then click **Next**.
This displays the Setup Wizard window.
3. Click **Next** to continue.
This displays the End-User License Agreement.
4. Check the box next to "I accept the terms in the License Agreement", then click **Next**.
5. Click **Next** to accept the default destination folder or click **Change** to select a custom destination folder.
6. Click **Next** to accept the default share location or click **Change** to select a custom share location folder.
7. Define your database administrator password in the Enter Password field. Enter the password a second time in the Verify Password field then click **Next**.
Note: The ShadowStream admin user password can be changed with the ShadowStream Admin Tool.
8. On the Ready to install StorageCraft ShadowStream page, Click **Next** to start the installation.
9. Click **Finish** when the installation is complete.

You can now configure the new ShadowStream for use with ImageManager.

3 Configure ShadowStream

While running the ShadowStream Admin Tool you can:

1. [Select ShadowStream user roles](#)
2. [Add a ShadowStream user](#) to execute replication jobs
3. [Create a ShadowStream share](#) as the destination file folder
4. [Configure the port settings](#) for access through the firewall
5. [Change a User Password](#)

3.1 ShadowStream User Roles

There are 2 ShadowStream "user" roles:

- User
- Administrator

User

The User role only has the rights that allow ImageManager to process replication jobs.

Administrator

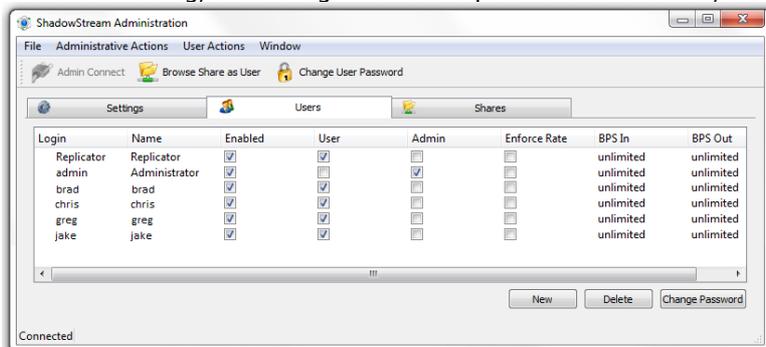
The Administrator role is required to administer the ShadowStream service. Administrators also have rights to process replication jobs.

See [Add a New User](#) for information on adding a new user or changing the role for an existing user.

3.2 Add and Configure Users

To add a new ShadowStream user:

1. Click the **Users** tab.
2. Click **New**.
3. In the User dialog, enter a login name and password for the user, then click **OK**.



Configure Users

You can also change settings for new or existing users:

Setting	Description
Enabled	(Default: Enabled). Enables the ShadowStream user.
User	The user is not a ShadowStream administrator.
Admin	The user is a ShadowStream administrator.
Enforce Rate	Enforces the bandwidth limit for this user.
BPS In	Specifies the maximum (per connection) bitrate (in Mbps) available to this user for downloads. The range is from 1 to 1000Mbps or unlimited.
BPS Out	Specifies the maximum (per connection) bitrate (in Mbps) available to this user for uploads. The range is from 1 to 1000Mbps or unlimited.

ShadowStream automatically updates the list on the Users tab after you make the changes.

The refresh button syncs the client with the server.

⚠ Important: Throttling is enforced per connection in the new ShadowStream, not per user. For example: If any given user has throttling maximum (BPS) set to 1 MB and that user has 10 replication jobs, up to 10 MB of bandwidth could be used by that user.

To Change ShadowStream user passwords:

1. Click the **Users** tab.
2. Select the user.
3. Click **Change Password**.
4. Enter a new password for the user, then click **OK**.

3.3 Create and Configure Shares

With ShadowStream installed, ImageManager can replicate data to a shared ShadowStream folder. ShadowStream creates a default folder:

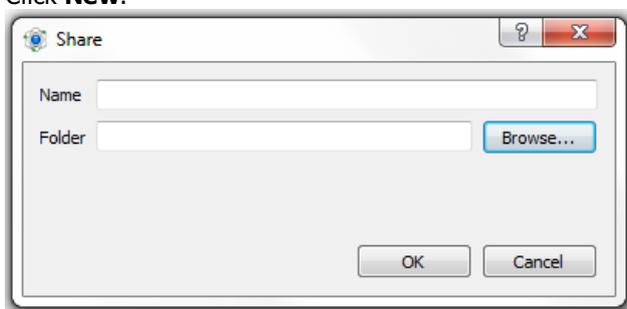
- **Name:** DefaultShare
- **Location:** ProgramData/StorageCraft/ShadowStream/DefaultShare
- **Permissions:** Share (all)

ImageManager can use this DefaultShare folder as its target, but you may want to add one or more additional shares in order to:

- Better differentiate between jobs.
- Restrict users to a specific share rather than to the general DefaultShare folder.

To add a share

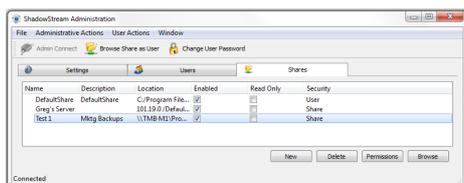
1. Create the destination folder(s) on the target ShadowStream server.
2. In the ShadowStream console, click the **Shares** tab.
3. Click **New**.



4. In the Share dialog specify the share Name.
5. Click **Browse** to locate the destination folder for this share.

Note: Browse to the destination only if you are running the Administration tool from the ShadowStream server because it only browses the file system on the local machine. If you run the Administration tool from a remote system, type the path instead of browsing to the folder.

6. Click on the folder to highlight it.
7. Click **Select Folder**.
8. Click **OK**.



ShadowStream adds this new share to the list:

Share Settings

These options can be used to configure settings for the new share:

Setting	Description
Name	Double-click on the name to modify it. Keep in mind that ImageManager might use this name in a replication job. Changing the name when it is in use by a job causes the job to fail.
Description	Double-click on the Description to enter descriptive information about the share.

- Location** Displays the path selected for this share. Modifying this lets you change the destination folder for this share. If you change the location, StorageCraft recommends that you move the contents of the previous destination folder to the new path so the ImageManager replication jobs are not affected by the change and will run normally. This prevents ImageManager from re-sending all the contents intended for the folder instead of only the updates.
- Enabled** (Default: Enabled) Unchecking the "Enabled" box disables a share. (Click **Delete** to permanently remove a ShadowStream share.)
- Read Only** Makes a share read-only.
- Security** Displays the Permissions setting for this share. The settings are Share, and User. (Click **Permissions** to modify the setting.)

Configure Share Permissions

Note: ShadowStream maintains its own database of users and shares. These users and shares are unique to ShadowStream and are not the same as a Windows user or Share (even if there are existing Windows shares on the target server).

To modify the Share permissions for the highlighted share:

1. Click **Permissions**.



2. In the Share Permissions dialog, select the desired permission setting, then click **OK**.

Permission Description

- Share** This is the default setting. Grants all rights to the Share to ShadowStream users. (This does not include the right to change folder permissions. Only administrators can change folder permissions.)
- User** Choose User to grant specific ShadowStream users permissions to this share. These permissions are listed below the Users field.

ShadowStream automatically updates the Shares tab to reflect changes in permissions.

3.4 Configure Settings

The ShadowStream Settings tab allows you to configure the Control Port and the Administration Port.

Configuration Port Options

Setting	Value
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Control Port	Default: 4366. Use the default unless your firewall policy requires a different port.
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Administration

Remote access is always enabled. Use the default port setting if possible.

Setting	Value
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Administration Port	Default: 4367. The port that the ShadowStream server uses for the administrative connection. Leave this at the default unless your firewall policy requires a different port.
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3.5 Change a User Password

Password Management

To change a ShadowStream user password:

1. Click **Change User Password**.
2. Enter these details, then click **OK**.

Field	Comment
Server	Enter the name of the local ShadowStream server.
Control Port	Default: 4367. Leave this default unless your administrator specifically changed it.
Username	Enter your ShadowStream username.
Password	Enter your current password.
New Password	Enter the new password.
Confirm New Password	Repeat the new password.

ShadowStream asks for the new password the next time you log into the administrator tool.

- 📌 **Note:** Changing the password of a user (used by ImageManager during replication) will cause the replications to fail unless the ImageManager settings for the replication job are updated to match the new password.

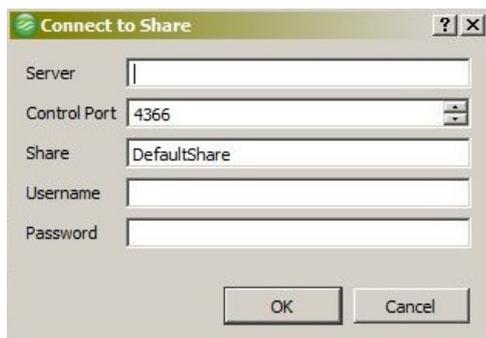
4 Browsing a Shared Folder

The primary purpose of ShadowStream is to perform ImageManager replication jobs. The ShadowStream administrator tool can also be used to:

- Confirm that remote site backup image replications have completed
- Download backup image files from remote sites to the workstation.
- Upload backup image files to remote server shared folder.

Accessing the console

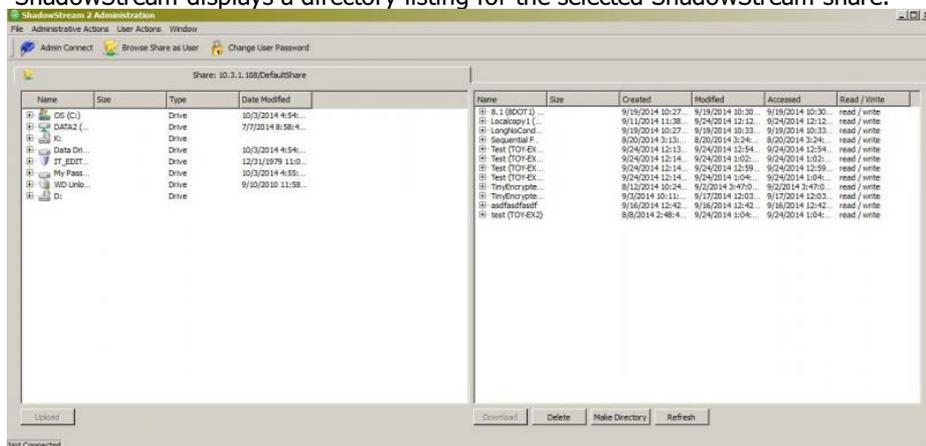
1. Click **Start>StorageCraft>ShadowStream Admin Tool**.
2. Click **Browse Share as User**. The Connect to Share dialog box will be displayed.



3. In the Connect to Share (user login) dialog:
 - o Enter the Server name
 - o Verify the Control Port is correct
 - o Verify the Share is correct
 - o Enter the Username
 - o Enter the Password

Then click **OK**.

4. ShadowStream displays a directory listing for the selected ShadowStream share:



In the directory listings page (the image shown above):

- o The left panel shows the local file system
- o The right panel shows the ShadowStream "share" file system.

Folder and File Actions

You can perform various actions on the files or folders based on user permissions set by the administrator.

Note: By default, all ShadowStream users have the full permission to the ShadowStream shares. They do not, however, have permission to change permissions.

Action	Result
Double-click a folder	Opens the folder and displays a list of its contents.
Click Delete	Deletes the highlighted files/folders.
Click Download	Opens a local directory dialog so you can select where you want to download the selected files to.
Click Refresh	Refreshes the listing to show the changes you've made.

5 FAQ and Examples

This page covers the most commonly asked questions about ShadowStream. If the information you need isn't here, you can also check the StorageCraft user forum and Knowledge Base articles.

Question

How do I upgrade from the original (legacy) ShadowStream to the new ShadowStream?

Answer

This is a manual 2-part process. Follow these steps to complete the upgrade process:

In ShadowStream

1. Stop the legacy ShadowStream service (ShadowStream Service).
2. Copy the old (legacy) ShadowStreamServer.db file from the *C:\Program Files\StorageCraft\ShadowStream folder.
3. Uninstall the legacy ShadowStream.

Note: You can alternately uninstall legacy ShadowStream after you finish configuring all ImageManager replication settings for the new ShadowStream. This is the preferred method if you have a large number of managed folders, across multiple machines which are replicating to the ShadowStream server. If you keep legacy ShadowStream running it will prevent replication failures that could be caused by uninstalling the legacy ShadowStream server before the new ShadowStream is fully configured.

4. Install the new ShadowStream.
5. Stop the new ShadowStream service (StorageCraft ShadowStream Server).
6. Paste (copy) the legacy ShadowStreamServer.db into the C:\Program Files\StorageCraft\ShadowStream folder and replace the new ShadowStreamServer.db.

Note: *The Program Data folder is hidden by default.

7. Restart the new ShadowStream service.

Note 1: If you modified the credentials used to run the legacy ShadowStream service to connect with network devices, you need to configure the new ShadowStream service with the same credentials to continue using those network resources.

Note 2: If you are waiting to uninstall legacy ShadowStream (as described in step 3) then restart the legacy ShadowStream service and the new ShadowStream service.

8. Login to the admin tool using the password for the legacy ShadowStream database.

Note: Admin passwords created during the new ShadowStream installation are overwritten if the database is copied. If you don't remember the admin password that was used in Legacy ShadowStream try 'password' which was the default password.

The new ShadowStream will adjust the Control and Data ports to their new default ShadowStream values of 4366 (control) and 4367 (admin). It will also use the shares and users from the legacy database.

In ImageManager

You also need to make the following ImageManager changes to take advantage of the new ShadowStream:

1. Install ImageManager 6.6.0 (or newer) if it hasn't already been installed.
2. After starting ImageManager, delete any existing ShadowStream replication jobs that use the Legacy ShadowStream replication type.
3. Create a new replication jobs by selecting the "StorageCraft ShadowStream Server" type.
4. Configure the new replication jobs with the same settings as in the original (deleted) jobs.

Note: New ShadowStream uses UDP ports 4366 and 4367 (different ports than used by Legacy ShadowStream). You need to modify your firewall and router configurations to allow traffic on these ports.

Question

What is Storm Control and how does it affect the new ShadowStream transfer rates?

Answer

If Storm control is turned on, it regulates the rate used by ethernet switches to forward broadcast and multicast traffic. Storm Control is typically OFF by default on most switches. It is normally possible to configure Storm Control throughput (packets per second) or turn it on and off on a per-port basis.

StorageCraft recommends that you review the switch configuration used at both the Source and Destination locations to make sure you have the appropriate Storm Control settings in place when using the new ShadowStream.

Question

If I click on a filename that is currently being downloaded with the new ShadowStream Admin Tool, why does it show the file size as 0 (zero)?

Answer

The new ShadowStream doesn't determine the changing file size (the increasing file size) during the download so it reports 0 bytes. To see the correct file size after the download is finished:

1. Close the browse session.
2. Click on the Browse button to open a new browse session.
3. Click on the filename again. ShadowStream now reports the correct file size.

Note: StorageCraft recommends that you don't click on a filename in the new ShadowStream Admin Tool until the file is completely downloaded. Taking this precaution will prevent the problem described here from happening.

Question

We need to backup to a secondary site over the internet using ShadowStream. The client has many GBs of data (which is obviously too much to send over the internet for an initial backup). Can you tell us the best way to facilitate the initial data transfer to the secondary site?

Answer

With the latest version of ImageManager you can configure a ShadowStream replication job so it doesn't replicate the large, Full (base) back-up file. To do this, keep the default "Do not replicate base image" option selected. ImageManager then immediately allows you to start replicating all incremental files to the remote site. To complete this process you need to physically transport the Full backup file to the remote site and copy it into the managed folder containing the other replicated files for that backup chain.

StorageCraft recommends this process:

1. Open ImageManager and create a new ShadowStream replication job.
If you don't want to replicate the large Full (base) backup file, leave the "Do not replicate base image" option selected.
2. ImageManager will start replicating all incremental backup image files to the target site.
3. Copy the base Full backup file to a locally-attached external drive.
4. Physically take the external drive to the secondary site.
5. Connect the external drive to the ShadowStream replication target computer.
6. Copy the base Full backup file from the locally-attached external drive to the directory specified when the ShadowStream replication target was created.

Question

Do the backup files get verified by ShadowStream with an MD5 check at the target server running the ShadowStream service?

Answer

The ShadowStream Service checks to verify that file data was transferred correctly but doesn't use an MD5 file. To do an MD5 check, you need to use ImageManager on the machine running the ShadowStream service in order to periodically verify the backup

image files. You can also use ImageManager to consolidate chains, and perform recurring MD5 checksum verifications.

Question

We are currently using ShadowStream server for many servers. I am upgrading the server that is running ShadowStream and wanting to know what files etc I need to bring over from the old server so that I do not have to recreate all of the users/shares and permissions. Any and all help would be appreciated.

Answer

Currently there is no way to export settings from the ShadowStream Admin Console. There are also no registry keys to export for this application. If you need to move it to a different machine where you are starting fresh, you need to rebuild the Users/Shares/Settings.

If all the share paths on the new server are the same as on the old server, then after ShadowStream is installed you can:

1. Stop the StorageCraft ShadowStream Server service.
2. Copy the ShadowStream.db file from the old server over the top of the file that was created during the install to the new server
3. All the settings will be present.

To submit a feature request follow [this link](#).

Question

ShadowStream saves the original default password. Clicking **OK** lets you log in. However, if you change the password, why doesn't ShadowStream remember, where the password is stored so we can update with the current version?

Answer

ShadowStream does not store the password in plain text. For security reasons StorageCraft does not pre-populate the password field.

Question

ShadowStream Monitoring

Is there a way to see what sources are currently replicating to a target ShadowStream server? We have more than one ImageManager replicating to a single ShadowStream server in a colocation facility - but would like to see who is currently replicating at any given time. Is this possible and how can it be done?

Answer

ShadowStream doesn't currently have this functionality. To submit a feature request follow [this link](#).

Question

What is the best way to configure throughput throttling for the new ShadowStream?

Answer

Per Connection Throttling

Throughput Throttling in the new ShadowStream is enforced per connection (not per user). For example: If your throttling maximum (BPS in) is set to 1 MB, and you have 10 replication jobs, you could use up to 10 MB of bandwidth.

Client Throttling

StorageCraft recommends that you adjust throttling on the ImageManager (client) side and that you keep the default (maximum) Throttling level on the ShadowStream Server side. This generally provides better and more consistent results and makes it easier to manage throttling.

Throttling for the Highest Throughput

StorageCraft recommends adjusting ImageManager (client) throttling slightly lower than the throughput of the slowest connection. For example: If you have a 1Gbps connection into the ShadowStream Server side and just 10Mbps on the ImageManager (Client) side, you'll get the best throughput by setting the ImageManager "ShadowStream Replication Job throttle" to 9Mbps.

ShadowStream automatically throttles up and down to make use of available bandwidth, however, in some tests StorageCraft has determined that the highest throughput is achieved when the ImageManager throttling is set to just below speed of the slowest link.

On a slow ADSL connection where the client has an average upload speed of about 250kbps you can set the ImageManager throttling close to this value and increase it later if you want. However, the speed won't exceed the throughput of the slowest link.