



SHOWCASE® Image Center Administrator's Guide

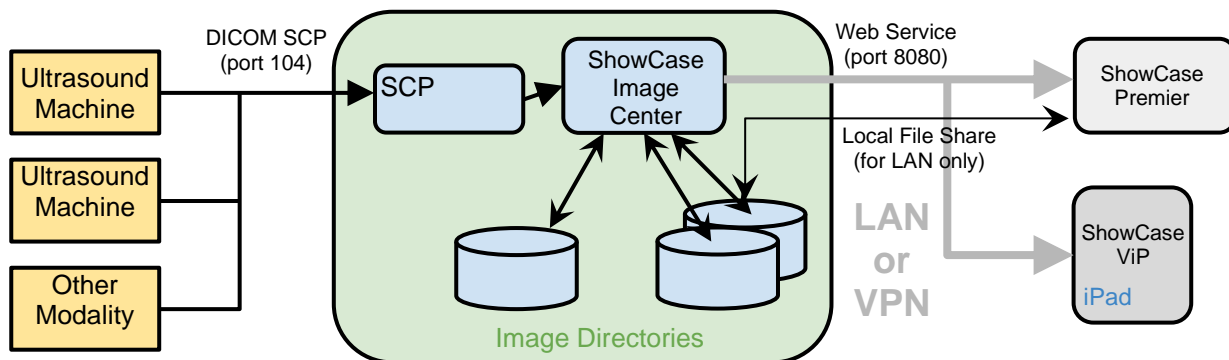
The ShowCase Image Center is designed to receive and store millions of DICOM images sent from imaging modalities. Images may then be accessed locally or remotely using ShowCase Premier and the ShowCase Image Viewer for iPad (ShowCase ViP). Images are stored in their native DICOM format, exactly as received.

Hardware and Software Requirements

- 2.0 GHz or better CPU, 4 GB RAM, 500GB or more of free disk space
- 64 bit OS: Windows 10, 11 and Server 2012R2, 2016, 2019, 2022
- Static IP address
- 100T LAN, 1000T network
- VPN recommended for remote access

Deployment

The following is a sample single clinic deployment:



Images, clips, and other DICOM objects are sent using standard DICOM protocols to the Image Center SCP service, which sends them to the Image Center for storage in an Image Directory. If the Image directory is configured for use with ShowCase ViP, iPad compatible images and clips are generated.

Local (LAN) ShowCase Premier Deployment: ShowCase Premier is configured to access all studies in all Image Directories through LAN file shares. You can search for studies by patient name, referring physician, etc. Image display performance is limited by the speed of your LAN. ShowCase Premier can be configured to access one or more Image Centers.

Remote (VPN) ShowCase Premier Deployment: ShowCase Premier is configured to access an Image Center remotely. Accessing the list of studies is fast. Studies are then brought over for viewing from a local cache folder for viewing at full diagnostic quality. This can be done automatically, configuring Premier to periodically poll the Image Center for new studies, and download these studies in the background for immediate access when the physician sits down to read. This is done through a windows service, so Premier does not have to be running. ShowCase Premier can be configured to work with one or more Image Centers.

Remote/Local ShowCase ViP Deployment: ViP can be configured to download images automatically, or images can be downloaded manually. Search is provided, as in Premier. ShowCase ViP displays iPad-ready images, which are created by the Image Center. These are reference quality images, not intended for diagnostic use. The iPad-ready images take time to generate, so there may be some lag between when the DICOM images arrive and they are available on the iPad. This can take several minutes depending on the speed of your CPU and disk IO subsystems. If the system gets backed up trying to process images because they are coming in faster than it can process, the wait time can be considerably longer. Much depends on the number of studies being done simultaneously by your modalities. ShowCase ViP can only be configured to access one Image Center at a time.

Combined Workstation Deployment: ShowCase Premier can be installed on the same machine as the Image Center, with no degradation in performance on modestly priced hardware.

Multi-site Deployment: For deployment across several geographic locations, please see the Multi-site ShowCase Deployment guide available on <http://www.triltech.com/download.html> for details on deployment and network strategies.

Backup

All data is stored in the Image Directory folders. Data is stored in DICOM native format, except for the ViP images, which are stored as .png and .mp4 files. Conventional backup programs should be used to backup these Image Directories, preferably off-site. The Image Center uses a SQL Server Express database, and this should be backed up too. Specific instructions for backup are discussed later in this guide.

Image Directories and Storage

Image Directories serve two purposes:

1. They allow you to spread your storage needs across multiple disk volumes.
2. They allow you to control access (based on login) to particular studies, like a personalized physician's 'mailbox'.

Image Directories as Storage Partitions

The Image Center always presents as exactly one tab in ShowCase Premier. If you have multiple image directories spanning several disk volumes, all studies in all volumes are presented to the end user as one unified list of studies. In other words, Image Directories are not something that the end-user of ShowCase Premier need be aware of.

Image Directories as Mailboxes

An individual Image Directory can be restricted so that only certain user will see its contents. In this way, you could designate an Image Directory as "Dr. Smith's" folder of studies. When Dr. Smith uses ShowCase Premier configured with his credentials, he will only see those studies in Image Directories he has permission to use.

Licensing

The Image Center license is locked down to the server hardware. If the Image Center needs to be moved to new hardware, the license can be transferred back to the ShowCase license server for re-use.

Premier Licensing

ShowCase Premier requires a license for each PC it is installed on. Any copy of ShowCase Premier version 6.0 or higher can connect to an Image Center.

ViP Licensing

There is no licensing required to use the ShowCase Viewer for iPad.

Number of Ultrasound Machines (or other imaging devices / DICOM SCUs)

The number of imaging devices or other DICOM SCUs sending images to the Image Center is licensed. The default is two. Additional licenses can be purchased at any time.

Security

Login

The user accesses the Image Center using a login name and password. The Image Center uses existing Windows logins and passwords on the server. Credentials are encrypted and cached on the client, getting rid of the need to 'log in' every time you want to use the software. Logins must be 'added' to the Image Center as users. Domain logins are supported.

Some sites create an account for every individual workstation (for tracking purposes) while others create a single "remote user" account, (for easier administration). Accounts must have a password. Accounts do not need administrator privileges.

Web Service Security

The Image Center presents a secure web service interface using a variation of the OAUTH protocol for all transactions. Passwords are always encrypted. The system uses a transaction specific authorization token with a limited lifetime. As such, the client and server's clocks cannot be off by more than 15 minutes. The system uses universal time and works across time zones. Authentication and access is secure, but transmission of data is not encrypted. Use of a VPN is recommended. HTTPS is not supported.

Network Security

When accessing remotely outside your local area network (via the internet), it is strongly recommended to use a VPN.

Firewall

There are two ports you will need to allow through the firewall, both of which can be reconfigured on the Admin screen in the Image Center:

Premier/ViP access (default 8080) - This is the port used by the ShowCase Premier and ShowCase Viewer for iPad clients to retrieve studies from the Image Center.

Incoming DICOM SCP (default 104) - This is the port that ultrasound machines or other DICOM SCUs will use to send studies to the Image Center via the DICOM protocol.

Local Data Security - ShowCase Premier Remote Deployment

Remote deployment of ShowCase Premier caches DICOM data locally for responsive offline viewing. If local storage of image data is a concern, it is recommended to encrypt the file system where the DICOM images are stored using Windows. Local deployment of Premier does not cache data.

Local Data Security - ShowCase ViP

ShowCase ViP caches iPad-ready images locally for offline viewing. It is recommended to configure your iPad to use a Passcode.

User Access Logging

The Image Center logs all access activity. The log tracks logging in and individual study access, noting the time, login, device, patient, and IP address. The log can be exported in .csv format for use in spreadsheets, like Microsoft Excel.

How to Track Multiple Users Sharing One Computer

Let's say you have ShowCase installed on one computer that is used by several people in your clinic, and you need to track who is accessing studies by who is logged into the computer.

1. Add all of the users that will be using the computer to the Image Center through the Manage Users screen.
2. Go to the computer where ShowCase is installed. You will need to log into each person's Windows account to configure their access to the Image Center.
3. For each login on that computer:
 - a. Log in to the computer.
 - b. Start ShowCase
 - c. Configure access to the Image Center following the instructions in either the *Configuring Premier For Local Image Center Access* or *Configuring Premier For Remote Image Center Access* guides, but...
 - i. ...instead of entering a User Name, check the **Make this configuration only available to the current windows login** option. The User Name will be automatically filled in with the current Windows login.
 - ii. If you are configuring remote access, make sure each login uses its own local storage. *Do not try to re-use the same folder. This will not work.*
 - d. Test the connection.
 - e. Click the Done button.
 - f. Check the study list to make sure you're seeing the Image Center tab.
 - g. Exit ShowCase
 - h. Log out of the computer.
 - i. Repeat.

DICOM Formats / Objects Supported

The Image Center will accept and store nearly any DICOM file sent to it: images, key notes, structured reports, raw data objects, etc. All DICOM is stored exactly as sent, as true DICOM files inside of Image Directories. The Image Center supports C-STORE and C-ECHO. It does not support Storage Commit. See the Image Center DICOM Conformance Statement for details on DICOM conformance.

Installation

Installation is as simple as double-clicking on the installer, agreeing to the license and following the prompts. When the installer is done (which may take a few minutes), the Image Center will start under a 30-day trial license. Detailed, step-by-step installation and configuration guides are available.

Software installed by the Image Center

The Image Center uses SQL Server Express to store study information. You will see this application appear in your task manager after an Image Center installation.

Virtual Machines

The Image Center works on virtual machines and is tested regularly on VMWare. Amazon Web Services EC2 is also supported. It is likely the Image Center will work in most virtual machines, but we do not test outside VMWare and Amazon.

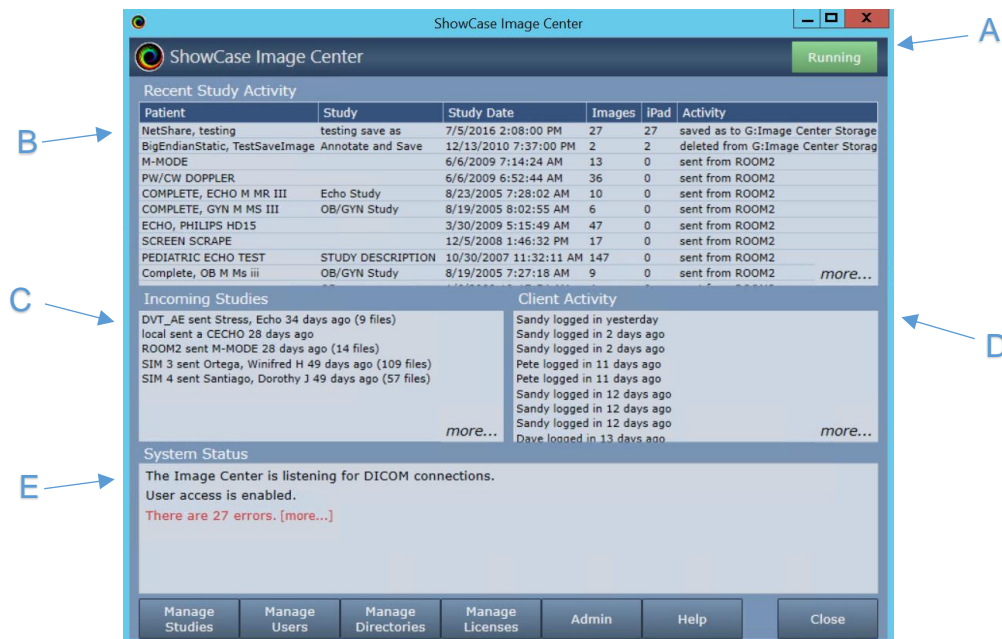
Uninstalling

Uninstalling the Image Center does not remove any of your configuration files, license files, or any of your Image Directories. Your database is left completely intact. This allows an Image Center to be un-installed and re-installed for upgrades or patches.

Operation

The Image Center runs as three Windows Services: ShowCase Image Center Service, ShowCase Image Center SCP, and ShowCase Image Center Web Service. All services are configured to auto-restart in the event of critical errors. The Image Center and Image Center Web services depend on SQL Server services.

Control and configuration of the Image Center is through the Image Center Console:



The Console provides system status at a glance.

- The green "Running" light in the upper right corner tells you if the Image Center is running, stopped, or unlicensed. You can Stop the Image Center at any time, which will halt processing of any DICOM files, by pressing the Stop button.
- The **Recent Study Activity** window gives you a list of studies that have come in from an ultrasound machine via the SCP or imported from the Manage Studies windows. It also lists studies that have been copied, saved, or deleted in ShowCase. This is a good place to look if you

want to see if a study has recently arrived from an ultrasound machine. The *more...* opens a detailed window with a much longer history.

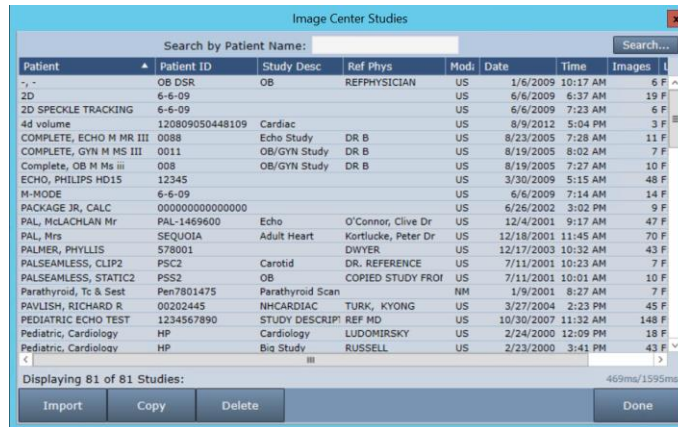
- C) The **Incoming Studies** window is a list of all of the ultrasound machines (or other modalities) that are sending data to the Image Center. There's one line for each machine, listing its AE title and the last activity it had with the Image Center. This is a good place to look if you're trying to diagnose connectivity issues with the ultrasound machine. Click *more...* to access detailed DICOM logs.
- D) **Client Activity** tells you which copies of Premier have been accessing the Image Center and what studies they have accessed. A full log of all client access is available through the *more...* button.
- E) The Image Center Status window tells you if there are any errors, and will also warn you if you are low on disk space. If there are error, a *more...* link appears next to it to look into the details.

The Console does not have to be running for the Image Center to work. All work is done in the Image Center services.

Along the bottom of the Image Center are a set of buttons.

Manage Studies

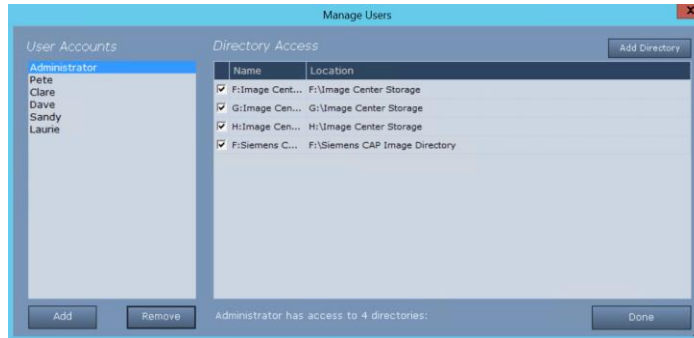
The Manage Studies button brings up the Manage Studies screen.



On this screen, you can **Import** studies from DICOM folders into the Image Center, **Copy** studies from one Image Directory to another, and **Delete** studies. Search functions are provided.

Manage Users

The Image Center uses Windows User accounts for login verification. The Users button brings up the user configuration screen:



Click on a user on the left. The Directory Access pane shows you which Image Directories that user is allowed to access. Check or uncheck directories to allow or restrict access.

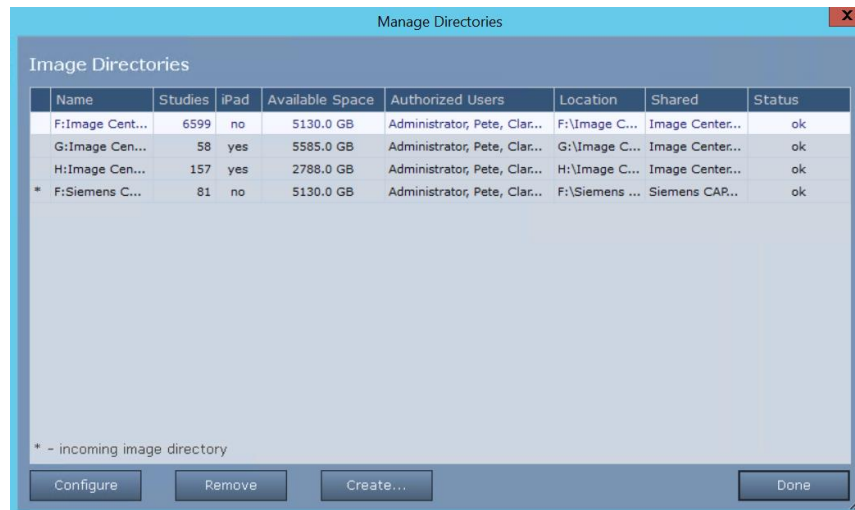
To add a user to the Image Center, click the Add button...



... and enter the user's Windows login. Domains are supported.

Manage Directories

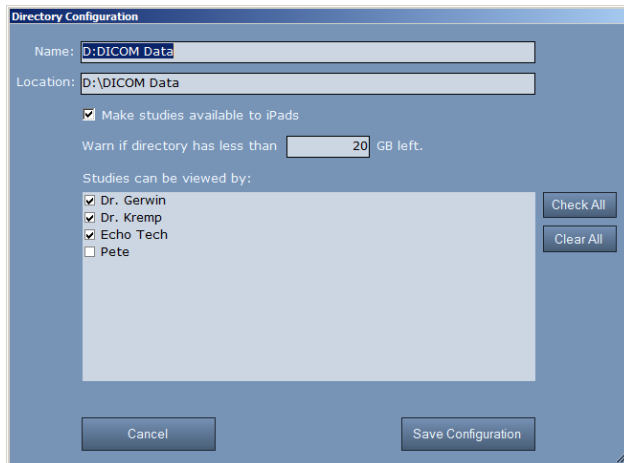
The Manage Directories button brings up the Image Directories screen.



Key things to note on this screen:

- The * on the left is the image directory that will be receiving incoming images from the DICOM SCP.
- The “Shared” column gives you the share name for the Image Directory. This is a good place to look and see if your Image Directories are properly shared for local Premier viewing.

From here you can add, remove, and configure Image Directories:



You can set the name, whether or not the Image Directory will generate iPad images, the threshold for low disk warnings, and the users that are allowed access to the Image Directory. You cannot change the location of an Image Directory after it has been created.

When you create an Image Directory, the Image Center will do its best to try and share the folder you've created, which is necessary for local (LAN) installations of Premier. If it can't accomplish this, or if you prefer to have total control over your network shares, you will want to configure the Image Directory yourself as a share using the Windows operating system.

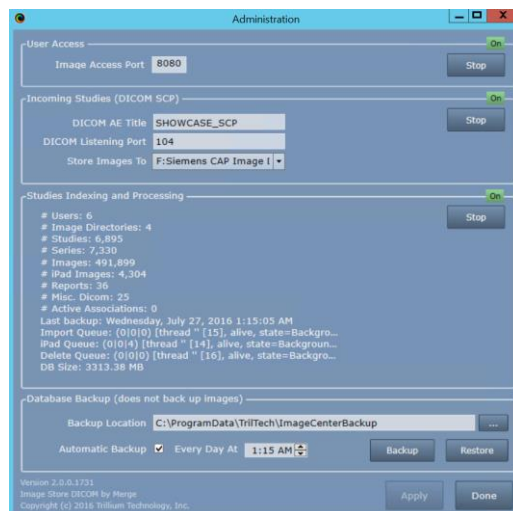
Tips for managing and migrating Image Directories are discussed later in this document.

Manage Licenses

Use this screen to license the Image Center.

Admin

The Admin button brings up the Admin screen:



User Access

At the top of the Admin screen you can change the Image Center's image access port used by Premier and ViP. You may also disable Image Center user access by clicking the "Stop" button.

Incoming Studies

This is the configuration for the Image Center's DICOM SCP, AE title and port. This is also where you designate which of your Image Directories will store incoming images.

Studies Indexing and Processing

This is the heart of the image center that indexes your DICOM data for quick access through ShowCase. There are a number of statistics presented on the status of the Image Center.

Database Backup

This is where you can set where your backups go, as well as a daily backup time. As noted in the screen, this only backs up your Image Center database, not the data in the Image Directories. The Backup and Restore functions are covered in detail in the Backups section, later in this document.

Error Logging

The Image Center produces three logs in the C:\ProgramData\TriiTech\ImageCenter folder:

image_center_log.txt – Core image center logging.

image_center_scp_log.txt – SCP logging.

image_center_web_log.txt – client access logging.

These logs are simple text files, and are self-limiting to keep them under 10MB.

Hardware, Performance, and Load

The Image Center is designed to run on everything from a laptop to a dedicated server to a VM. In general, we recommend quality hardware, with server-grade hardware preferred for reliability.

CPU

Dual core is recommended, quad core preferred. The Image Center's greatest CPU demands comes from SQL Server and the iPad image compressor. It is rare for even a low-end system to run at 100% CPU for any extended period of time.

Memory

4-8 GB is recommended. Adding more memory will not necessarily improve performance.

Storage

The **amount** of storage you need depends completely on the volume of studies you do and the length of time you need to keep those studies around, which varies by state. Here is a rough metric for calculating your disk space needs:

On average, a study takes up 150 MB of disk space. To budget two years of disk space, use the formula:

$$150 \text{ MB} \times (\# \text{ studies/day}) \times (250 \text{ working days/year}) \times (2 \text{ years}) = ? \text{ MB}$$

Example: 150MB x 40 studies/day x 250 working days x 2 years = 3,000,000 MB or 3 Terabytes

The **type** of storage you use also depends, somewhat, on the size of your storage. For smaller clinics, regularly backed up internal hard drives will do just fine. If you have a very large, multi-terabyte archive, then a minimum of RAID 1 (mirroring) is recommended, with RAID 5 or RAID 10 highly recommended. Image Center works well with high-performance network drives (NAS) or other distributed storage systems.

Avoid the use of low-cost external hard drives, as these are known to have poor reliability and may fail completely and without warning after only a year or two of use.

In all cases, we recommend an external, off-site backup in case of catastrophe (fire, equipment theft, etc.). If you decide to use a “cloud” backup solution, we recommend that it be PHI/HIPAA compliant.

Local Area Network (LAN)

1000T is recommended, although 100T will work. Wireless networks will work, but are not recommended, as their performance degrades quickly when multiple devices are accessing them.

Remote Network (VPN Recommended)

Network bottlenecks occur at the “weakest link” in the network chain from the Image Center to the remote computer. This is typically your site’s outbound internet connection and/or VPN performance, and not the Image Center itself or the network hardware in the server.

A Dedicated Server is not Required for Smaller Clinics

The Image Center is frequently installed alongside other server applications, or on servers that host file shares, and there is usually very little problem with that. However, if you have a server that is already struggling and sometimes unresponsive, we do not recommend installing the Image Center on such a machine.

Image Directory Recommendations

The Image Center stores your DICOM images and DICOM data in folders called Image Directories. A single Image Directory will easily manage 200,000+ studies. This study data is vitally important to your practice. Most states require that you maintain an archive of this data for 7 years or more, so the choice of where you store your data is important. We strongly recommend using quality hard drives with lots of space in conjunction with offsite backup (like Carbonite, for example).

The Image Center maintains an index of all the files in your Image Directories in a SQL Server database. If this gets out of sync with what is on disk, recovery is a very tedious process. As a result, it is important that you follow the recommendations in the following paragraph:

Warning: Image Directories are managed solely by the Image Center. **Do not** move, delete, or modify the files stored in an Image Directory, or you may lose all access to your studies or even experience permanent loss of your study data. **Do not** “Browse” to an Image Directory using ShowCase; Instead, configure access through the Image Center Settings in the ShowCase Edit menu. **Do not** move an image directory without following the instructions outlined in this guide.

Migrating to a New Server

There are many different ways to move to a new server. Some are presented here for your consideration.

One thing to consider when choosing a migration strategy is how much Image Directory data you have, and how you will move it. How long will it take to copy to the new machine? Will you do it over the network? Will you copy to an external hard drive and walk it to the new computer? If you have several terabytes of data, it may take many hours to copy it all to an external hard drive or even longer to transfer it over the network. Before you choose a migration strategy, it would be a good idea to do the following:

- Assess how much space your Image Directories are using.

- ❑ If you want to use your network, trying copying one of your Image Directories to the new computer. How long is it taking?
- ❑ If you want to use an external hard drive, trying copying one of your Image Directories to the hard drive. How long is it taking?

We highly recommend a quick test of moving your data before you begin. This is usually the most time consuming part of the migration.

“Backup” Migration – Local Storage

Migration using backup is the simplest approach, but when you have local storage, it results in the most downtime, as you must move all of your data to the new server before you can start operations again. Backup migration requires that your existing Image Center be upgraded to the latest version of the software and that you are migrating to the latest version of the software.

1. At the original Image Center, turn off the SCP using the Image Center Console Admin screen.
2. Backup the Image Center database to a hard drive or network folder, using the Admin screen.
3. Install the Image Center on the new computer.
4. Change the IP address of the original server.
5. Change the IP address on the new server to that of the old server
6. Move your Image Directories to the new machine. (likely to take the most time)
7. Restore the Image Center using the “Catastrophe Recovery” Restore procedure.
8. Send a test study to the new Image Center

“Backup” Migration – Network Storage

Backup migration when your Image Directories are on a NAS or other network storage is the easiest and fastest way to move to a new computer. Backup migration requires that your existing Image Center be upgraded to the latest version of the software and that you are migrating to the latest version of the software.

1. At the original Image Center, turn off the SCP using the Image Center Console Admin screen.
2. Backup the Image Center database to a hard drive or network folder, using the Admin screen.
3. Open the Windows Services application. If you have special Log On permissions set for the Image Center services, write them down. The services are:
 - a. ShowCase Image Center Service
 - b. ShowCase Image Center SCP Service
 - c. ShowCase Image Center Web Service
4. Install the Image Center on the new computer.
5. Apply the Log On permissions to the Image Center Windows Services from step 3.
6. Change the IP address of the original server.
7. Change the IP address on the new server to that of the old server
8. Restore the Image Center using the “Catastrophe Recovery” Restore procedure.
9. Send a test study to the new Image Center

“Two Part” Migration

The following procedure is intended to result in the least amount of downtime and inconvenience to the working physician, however, it does mean that they will not have access to prior studies until Part 2 of the migration is complete.

Part 1: Get The New Image Center Up And Running

1. Install the Image Center on the new server
2. Create a new Image Directory where you wish to store your data.
3. Add users to the Image Center. (Requires same logins as the old server)
4. Turn off the SCP at the old Image Center.
5. Change the IP address of the original server to something new.
6. Change the IP address on the new server to that of the old server
7. Test your new deployment
 - a. Send a study from an ultrasound machine
 - b. Verify it appears in the new Image Center
 - c. Verify you can access it in a copy of ShowCase Premier

Physicians will now be able to read new studies coming into the system.

Part 2: Migration of Prior Studies

1. If the Image Center on the new system has network file access to the Image Directories on the old system, go to Manage Studies and Import. If not, you will need to copy the old Image Directory onto a portable hard drive.
2. Select the root of the Image Directory folder you want to import.
3. Select the Image Directory on the new server you want to import the studies to.
4. Click Import. It will run in the background. You will see progress information in the Status area on the Image Center Console. Depending on the size of your image directory, this may take considerable time, from several hours to several days.

Moving Image Directories

Moving an Image Directory requires shutting down the Image Center during the migration.

1. **Shut off the Image Center**

At the Image Center Console, open the Admin screen. Stop all three services: User Access, Incoming Studies, and Studies Indexing and Processing.
2. **Move the Image Directory**

Using Microsoft Windows, move the Image Directory to its new location. Make sure the new Image Directory and its contents are writable.
3. **Delete or rename the Image Directory**

If you did a copy in the previous step, you will need to either delete or rename the original Image Directory.
4. **Share the new Image Directory**

Share the new Image Directory with Read permission for the Everyone user. It does not have to have the same name as the old share.
5. **Start Studies Indexing and Processing**

In the Admin screen, turn only Studies Indexing and Processing back on. An error should appear in the Image Center Status window letting you know the old Image Directory is not available.
6. **“Create” the Image Directory**

From the main console, click the Directories button. The directory dialog will appear. Click the

Create button. Navigate to the new location for the Image Directory. Click OK. The settings dialog will appear. Don't bother modifying any settings, instead click the Save Configuration button. The Image Center will recognize the migrated Image Directory, import its old settings, and activate the directory. The red warning in the directory dialog should disappear for that directory.

7. Turn on User Access and Incoming Studies

In the Admin screen, turn User Access and Incoming Studies back on.

8. Clear the errors

Go back to the main console and click the *more...* link below the Image Center Status window. The error dialog will appear. Click the Clear button, then click "Yes" when the confirmation dialog appears.

Setting up Image Directories on Network Shares

When creating a new Image Directory, use full UNC path names. Mounted drives or other folder sharing techniques that rely on the login credentials of the current user will not work. Full UNC names are the most reliable means to place an Image Directory on a shared folder.

The Image Center has two services that access Image Directories: the ShowCase Image Center Service and the ShowCase Image Center Web Service. In order for the Image Center to use network shares, these two services must have read/write/create permission for the network share. One way to accomplish this is to configure the services to use login credentials that have access to those shares.

1. Open Windows Services

Using the Control Panel, open the Windows Services dialog.

2. Right click on the ShowCase Image Center Service and select Properties

A properties window for the ShowCase Image Center Service will appear.

3. Click the Log On tab

The Log On tab allows you to set the permissions for the service.

4. Select the "This account:" option and enter the account name and password

You may need to Browse to get the exact name for the account you want to use. Make sure this account has full access to the folder share.

5. Stop and Start the ShowCase Image Center Service

You must do this for your changes to take effect.

6. Repeat this procedure for the ShowCase Image Center Web Service

You need to update both services for this to work.

These steps may vary, depending on the Windows operating system you are using. This is only one way to approach providing proper access to the network shares for your services. Your IT policies may dictate another.

This is only one way to approach providing proper access to the network shares for your services. Your IT policies may dictate another.

Increasing Your Image Center Storage

Adding more storage to your Image Center is fairly straightforward: simply add more Image Directories on new disk volumes with lots of available free space. The Image Center aggregates all study list queries across all Image Directory volumes into one coherent study list.

1. Locate a disk or file share that has plenty of free storage. Make sure it has the same Windows sharing and security permissions as the other folders you have used for Image Directories.
2. Open the Image Center Console
3. Click the **Image Directories** button.
4. Click the **Create** button. A folder browser will appear.
5. Select an empty folder (or click **Make New Folder**) on the storage from step 1 and click OK.
6. A **Configuration** dialog appears. Configure this new Image Directory with the same users and settings as your other Image Directories.
7. Click **Save Configuration**.
8. Click **Done** to close the Image Directories dialog.

Now you're ready to switch storage over to the new Image Directory. **Note:** Only do this when the practice is not sending studies to the Image Center, otherwise you will have studies partially stored across different Image Directories.

9. Click the **Admin** button on the main console.
10. Under *Incoming Studies (DICOM SCP)* click the dropdown arrow on the **Store Images To** and choose the new Image Directory you just created.
11. Click the **Done** button.

All incoming images from this point forward will now be stored in the new Image Directory. Time to test your work.

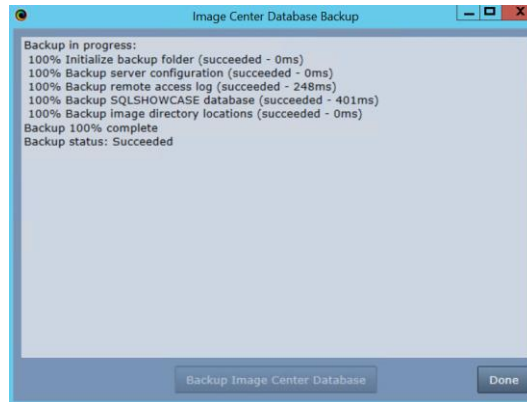
12. Create a test study at your imaging device and send it to the Image Center.
13. Check the **Incoming Studies** window on the Image Center Console to ensure it arrived.
14. Go to a ShowCase Viewer and open the study. If you have any problems viewing the new study, see the **Image Center "Sharing Enabled" Troubleshooting** guide for help on troubleshooting any security and sharing problems with the folder you created.

Backups

The Image Center can be configured to backup all configuration settings, the remote access log, and Image Center database once per day. The purpose of the backup is to provide a relatively quick restore should the database become damaged, due to disk failure, etc. The backup does not back up image data. It is recommended that backups be made to a disk volume physically separate from the main disks that the Image Center is using. Backups are configured in the Admin screen.

Manual Backup

15. Click the **Admin** button.
16. Click the **Backup** button. A dialog will appear.
17. Click the **Backup Image Center Database** button. This is what the dialog will look like if it succeeds:



You do not have to stop or disable the Image Center during a backup.

Automatic Backup

The Image Center comes with automatic backup turned on by default. We do not recommend turning it off. It's best to schedule automatic backups during idle hours.

Backing up Image Directories

The Image Center does not backup Image Directories. We recommend you backup your Image Directories to separate disk volumes, preferably off-site.

Restoring an Image Center from a Backup

Scenario 1: Catastrophe Recovery

In this case, your Image Center PC has been completely destroyed, along with all disks associated with it, except for offsite backup copies. You have been making offsite backups of your Image Directories (through some other mechanism) and running the Image Center automatic backup nightly, saving to an offsite location.

1. Locate your Image Center backup files. There are four of them: `access_log.csv`, `image_directory_locations.xml`, `server_configuration.xml`, `sqlshowcase.backup`.
2. In Windows, re-create the user accounts if they were lost when the machine crashed.
3. Install and License the Image Center.
4. Stop the Image Center using the Stop button in the Studies Indexing and Processing portion of the Admin screen:

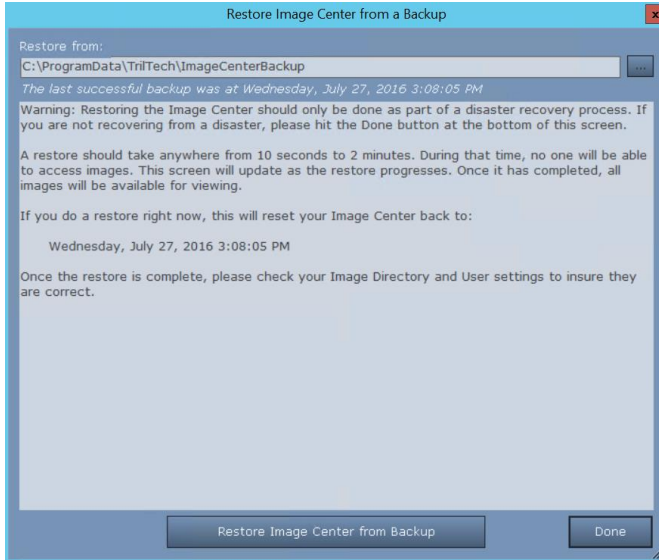


5. Restore your Image Directories to the exact same locations that they were originally. You can find these locations in the `image_directory_locations.xml` file in your Image Center backup set.
6. Copy your Image Center backup files to the backup location specified in the Admin screen of your Image Center.

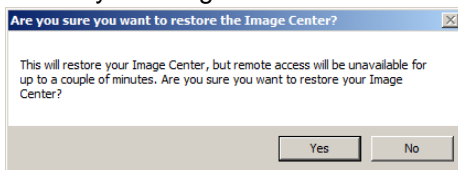
- Copy your backup server_configuration.xml file to the C:\ProgramData\TriiTech\ImageCenter folder. Delete the existing configuration.xml file and rename server_configuration.xml to configuration.xml.
- Start the Image Center using the Start button in the Studies Indexing and Processing portion of the Admin screen:



- At the bottom of the Admin screen, click the Restore... button.

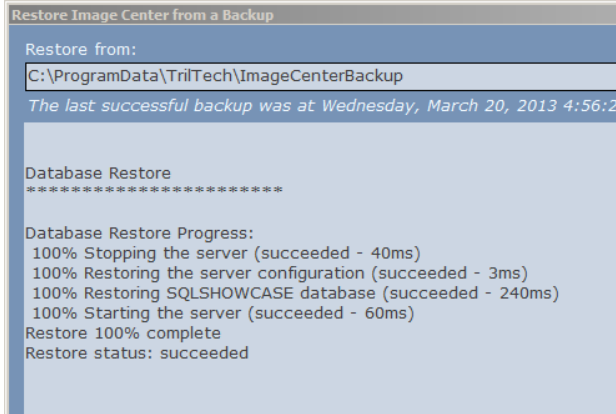


- Click the Restore Image Center from Backup button. A dialog will pop up asking if you want to restore your Image Center.



- Click Yes.

If the restore was successful, you will see this:



If it wasn't, and you can't figure out why it failed, contact support@triltech.com.

After the restore has completed, it is a good idea to check the User and Image Directory settings to make sure everything is in order.

Scenario 2: Database Drive Crash

In this case, the hard drive that has your database on it has crashed, but all of your Image Directories are still there.

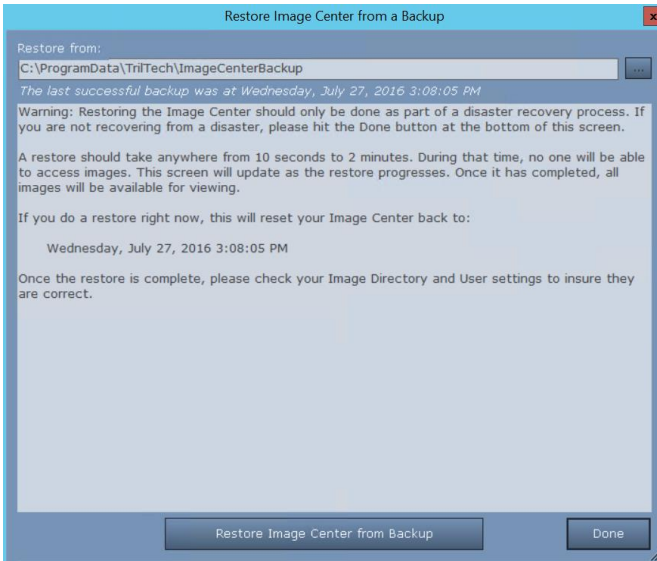
1. Locate your Image Center backup files. There are four of them: access_log.csv, image_directory_locations.xml, server_configuration.xml, sqlshowcase.backup.
2. Install and License the Image Center.
3. Stop the Image Center using the Stop button in the Studies Indexing and Processing portion of the Admin screen:



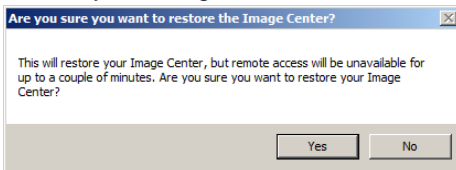
4. Start the Image Center using the Start button in the Studies Indexing and Processing portion of the Admin screen:



- At the bottom of the Admin screen, click the Restore... button.

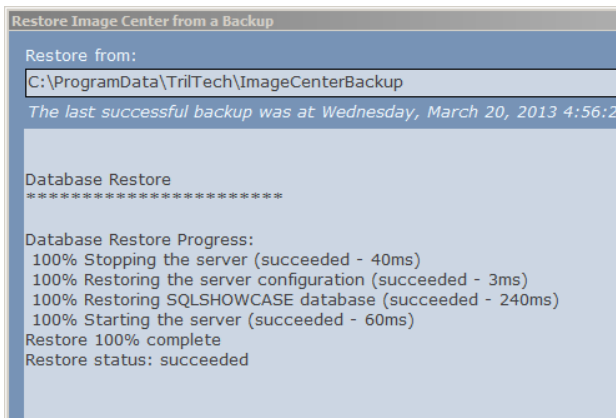


- Click the Restore Image Center from Backup button. A dialog will pop up asking if you want to restore your Image Center.



- Click Yes.

If the restore was successful, you will see this:



If it wasn't successful, and you can't figure out why it failed, contact support@triltech.com.

Scenario 3: Image Directory Drive Crash

In this case, one or more of your Image Directories have had a hard drive crash. You have been backing them up to a different disk volume.

1. Stop the Image Center using the Stop button in the Studies Indexing and Processing portion of the Admin screen:



2. Restore your Image Directory to the exact same location that it was originally. You can find this location in the image_directory_locations.xml file in your Image Center backup set.
3. Start the Image Center using the Start button in the Studies Indexing and Processing portion of the Admin screen:



4. Click on the Manage Directories button to make sure the Image Directory has no errors.

Scenario 4: Corrupt Database Recovery

In this case, malware, power failure, or some other unexpected cause has corrupted your database, and you cannot access it. This usually means the Image Center windows services will not start. You may see errors about not being able to connect to the database.

1. Locate your Image Center backup files. They'll be in your database backup folder, which by default is C:\ProgramData\TrilTech\ImageCenterBackup. You may have specified a different folder. If so, you will need to locate it. Once you have, copy the contents of this folder to a safe location, and leave the original in place.
2. Uninstall the Image Center
3. Uninstall the SQLSHOWCASE SQL Server Instance
 - a. In the Control Panel uninstall dialog, select Microsoft SQL Server 2008 R2 (64 bit)
 - b. Click Uninstall. A dialog will appear.
 - c. Select Remove. (If prompted to install .Net 3.5, please do so)
 - d. A Setup Support Rules dialog will appear. Click OK
 - e. A Select Instance dialog will appear. Select SQLSHOWCASE and click Next
 - f. A Select Features dialog will appear. Under SQLSHOWCASE, check Database Engine Services. SQL Server Replication will automatically check itself. That's fine. Click Next
 - g. A Removal Rules dialog will appear. Click Next
 - h. A Ready to Remove dialog will appear. Click Remove
 - i. Wait... it'll take a little while... when it finishes, click Close
4. Install the Image Center
5. Open the Image Center Console if it's not already open
6. Click the Admin button
7. Now we'll restore your Image Center... look to the bottom of the Admin screen
 - a. Set the backup location to the location you copied the backup files to in step 1
 - b. Click the Restore button. A dialog will appear with a bunch of warnings.
 - c. Click the Restore Image Center from Backup button
 - d. A dialog will appear. Click Yes
 - e. When the restore is complete, click Done.
8. Look to your Image Center Console for any errors.
9. Start ShowCase and attempt to access studies at your Image Center.

If this restore does not succeed, contact support@triltech.com.

Scenario 5: When a Restore Fails - Command Line Restore

In this scenario, attempting a restore during one of the other scenarios has failed. When restoring from the Image Center Admin screen does not work, you can do the following.

1. Shut off the Showcase Image Center Service in Windows Services
2. Shut off the Showcase Image Center Web Service in Windows Services
3. Shut off the ShowCase Image Center SCP Service in Windows Services
4. Copy the server_configuration.xml file into the C:\ProgramData\TrilTech\ImageCenter folder.
5. Rename the existing configuration.xml file to configuration_old.xml
6. Rename the server_configuration.xml file to configuration.xml
7. Run a cmd prompt as Administrator.
8. Enter the following command:

```
"sqlcmd -E -S .\SQLSHOWCASE -Q "RESTORE DATABASE showcase FROM DISK='C:\ProgramData\TrilTech\ImageCenterBackup\sqlshowcase.backup'"
```

changing the disk location to be your .backup file, if necessary.
You should get output that looks like this:
 - i. Processed 608 pages for database 'showcase', file 'showcase' on file 1.
 - ii. Processed 4 pages for database 'showcase', file 'showcase_log' on file 1.
 - iii. RESTORE DATABASE successfully processed 612 pages in 1.321 seconds (3.614 MB/sec).
9. Start the Showcase Image Center Service
10. Start the Showcase Image Center Web Service
11. Start the ShowCase Image Center SCP Service in Windows Services

If this does not succeed, contact support@triltech.com.

Using Your Own SQL Server with Image Center

Image Center 2.1 and later can be configured to use your own SQL Server installation, instead of the embedded SQL Server Express installer built into the full Image Center installer. SQL Server 2014 or later is supported.

Note: The Image Center is a high performance system, performing hundreds of database transactions a second under peak loads. It is designed to work with a local SQL Server installation. Issues with performance or behavior may result if your SQL Server installation is not properly configured to handle that level of activity. Issues with customer SQL Server integration are purely the responsibility of your IT group to solve should they occur.

Prerequisites

You will need SQL Server 2014 or later installed and configured with SA authentication, password of your choosing.

Installation

Use this procedure if you are installing on a machine that has never had the Image Center installed on it before.

1. Download the Image Center No Database installer from <http://www.triltech.com/download.html>
2. Run the installer
3. When prompted, enter the Server Name and SA password for the database server.
4. Click "Test SA Password" to verify your server is accessible and your password is good.

5. Click OK

The installation should complete and your Image Center should start working as soon as you license it.

Migration

Migration requires a complete re-import of all of your image files. This can be time consuming, so plan accordingly. Please read through all of the steps before beginning.

Use this procedure if you are installing on a machine that has had Image Center installed on it before.

1. Open the Image Center Console of your existing install.
2. Click the Admin button and write down your settings.
3. Click the Manage Directories button and make a note of your Image Directories
4. Click the Manage Users button and make a note of your Users.
5. If you have previously installed Image Center **2.0** or earlier on this computer, uninstall the SQLSHOWCASE SQL Server Instance
 - a. In the Control Panel uninstall dialog, select Microsoft SQL Server 2008 R2 (64 bit)
 - b. Click Uninstall. A dialog will appear.
 - c. Select Remove. (If prompted to install .Net 3.5, please do so)
 - d. A Setup Support Rules dialog will appear. Click OK
 - e. A Select Instance dialog will appear. Select SQLSHOWCASE and click Next
 - f. A Select Features dialog will appear. Under SQLSHOWCASE, check Database Engine Services. SQL Server Replication will automatically check itself. That's fine. Click Next
 - g. A Removal Rules dialog will appear. Click Next
 - h. A Ready to Remove dialog will appear. Click Remove
 - i. Wait... it'll take a little while... when it finishes, click Close
6. Download the Image Center No Database installer from <http://www.triltech.com/download.html>
7. Run the installer
8. When prompted, enter the Server Name and SA password for the database server.
9. Click "Test SA Password" to verify your server is accessible and your password is good.
10. Click OK
11. In the new Image Center Console, make sure your Admin and Users are set up like your old installation.
12. Create a new Image Directory with enough space to hold all of your images. *Do not try to re-use your existing Image Directory. This will not work.*
13. Send a test study to the Image Center to ensure it is receiving images your imaging devices.
14. Click the Manage Studies button
15. Click the Import button
16. Select the root of your old Image Directory.
 - a. This will take some time. It will be *copying* the files.
 - b. Do not reboot your computer while this is running or you'll have to start over.
 - c. Repeat this for every Image Directory you had in your original installation
17. Once your old Image Directories have been imported and you have verified that they studies are available in your new install.

SHOWCASE® is a registered trademark of Trillium Technology, Inc.