



How to Configure SHOWCASE® Image Center to Forward Studies to Another Image Center

Your ShowCase Image Center can be configured to automatically forward incoming studies to another Image Center in a different location over VPN. This can be very handy if you have two clinics and you scan and read in both, but you'd like to be able to have your studies all sent to a central Image Center in your main office.

This guide is in two parts:

First, you will set up and configure access to the Remote Image Center.

Second, you will test and troubleshoot your setup.

Before You Start

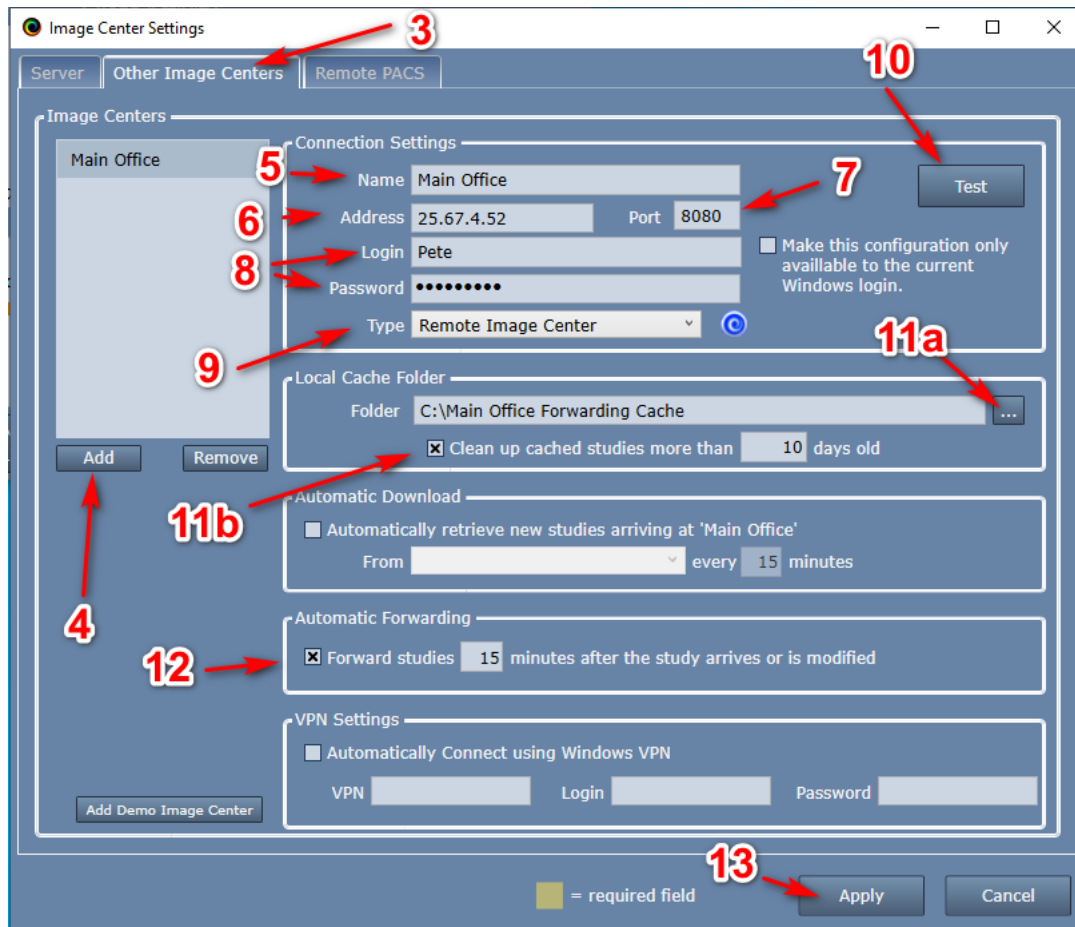
- Make sure that the Image Center you want to forward to is operating properly.
- Make sure your VPN is installed and can make the network bridge between this PC and the remote Image Center computer, and that your firewalls are properly configured at the Image Center computer.
- Make sure ShowCase Image Center is installed and licensed on your PC

How Forwarding To Another Image Center Works

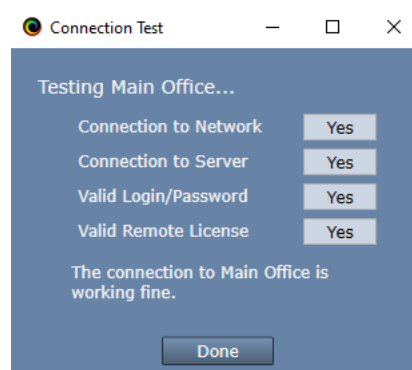
When you set up the connection to your remote Image Center, you specify a local cache folder. When a study is sent to this Image Center, it lands in two places: the primary Image Center storage and the local cache folder you specified in your remote Image Center configuration. Forwarding is done using the study in the local cache, not the main Image Center store. After the forwarding is complete, and the 'clean up cached studies more than XX days old' interval has transpired, the study is removed from the local cache. If it helps, you can think of the local cache as your 'outbound queue'. If you're having problems sending studies, you'll go to the tab for the remote Image Center in Manage Studies window to diagnose the issue.

Configure Communication with the Remote Image Center

1. Launch the Image Center Console
2. Click the **Admin** button.
3. Select the **Other Image Centers** tab.
4. Click the **Add** button. A new Image Center entry will be created named "New Image Center":



5. Enter a name for your Image Center in the **Name** field. It can be any name that is helpful.
6. Enter the Image Center machine's IP address in the **Address** field. You may need to get this from your IT group. If you're using a VPN, you will need to VPN's IP address.
7. Enter the communication **Port**. This must match the Image Center's Image Access Port (default is 8080).
8. Enter the Windows Account **Login Name** and **Password** of a User that has been added to the remote Image Center.
9. Change the Type to "Remote Image Center". This tells ShowCase it will be communicating over conventional internet (VPN) and not a local network. When you do this, the Remote Settings section of the screen (not shown here) will be enabled.
10. Click the **Test** button to see if ShowCase Image Center can contact the Image Center.



(If the tests do not all say “Yes”, see the Troubleshooting section at the end of this guide.)

11. Set Up A Local Cache Folder to receive studies

- a. Click on the “...” button on the right and select a local folder. The folder should be a fresh, empty folder with about 300G of free space. Here are some tips for setting up this folder:
 - i. If you use an **external USB hard drive** use a USB 3.0 drive with a USB 3.0 port.
 - ii. **Avoid** using network file shares, unless they are very, very reliable.
 - iii. If you want to use your **C:** drive but it doesn't have **a lot of free space**, use another drive.
 - iv. **Do not ever** use the same local cache for two different tabs on your study list.
 - v. **Do not ever** configure your local cache to use an Image Center folder.
 - vi. **Do not** use third party Dicom tools to work with the contents of your local cache folder.
 - vii. **Do not** set up a local cache on cloud storage like DropBox, OneDrive, GoogleDrive, etc.
- b. Check the “Clean up cached studies more than XX days old” if you'd like to have this folder automatically clean up studies that have been forwarded to the remote Image Center. **Note:** Studies are only automatically cleaned up if they have been successfully sent to the remote Image Center.

12. Enable Forwarding

- a. Check the box next to “**Forward studies NN minutes after the study arrives**”
- b. Change **NN** minutes to be the amount of time to wait before forwarding shall begin *after* the last image arrives for the study.

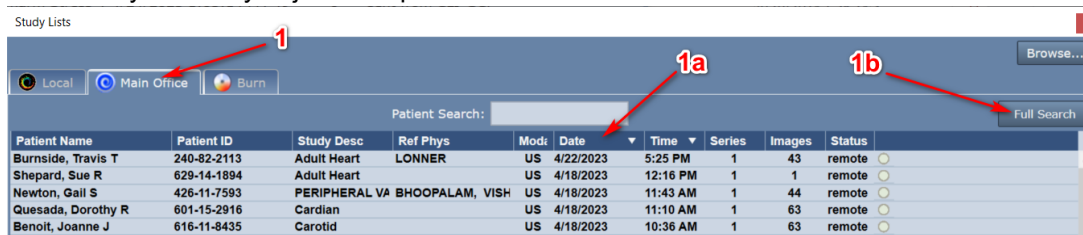
13. Click the **Apply** button

Testing

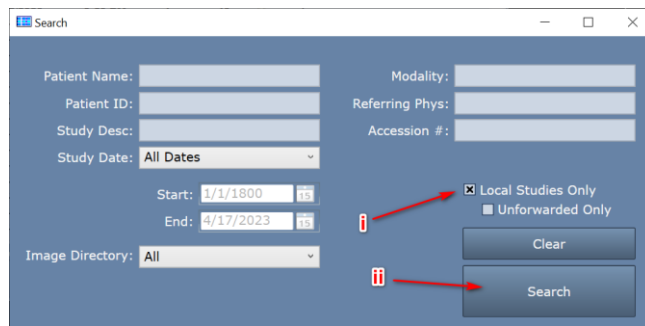
To test your connections, go to the Image Center Console and click the Manage Studies button to bring up your study list.

Test Forwarding Studies to the remote Image Center tab from the Imaging Machine

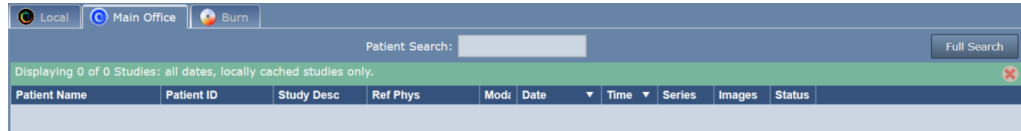
1. Click on the Study List tab you just set up.



- a. Click on the Date column until the arrow is pointing down, which means the newest studies will appear at the top of the study list.
- b. Click the Full Search button. A dialog will appear.



- i. Check the Local Studies Only option.
- ii. Click Search. The study list will look like this:



2. Go to your ultrasound machine and send a study to this Image Center. Your study should appear in the study list for both the Local Image Center and the remote Image Center.



If the study does not show up, see the Study Transfer Troubleshooting section below.

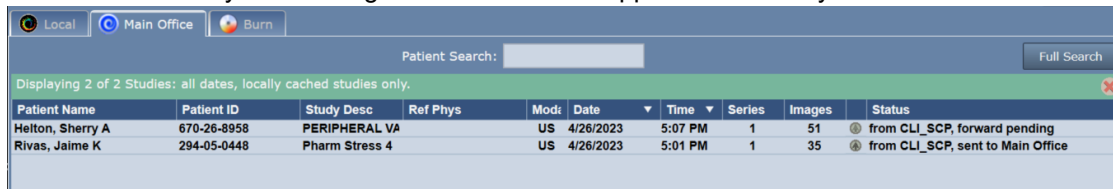
3. If the study transfers, double-click on the study to open and view the images.

Testing Sending Studies to the Remote Image Center Manually

1. Select the study you just received in the Study List and press the **Send** button. The study status should change to “send pending” and then immediately start sending the study.
 - a. If you get an error, see if the error message gives any hint as to what is wrong.
 - b. Click the **More...** button at the bottom of the study list and select **Test Connection**.
2. If the study transfers, you are ready to test automatic forwarding. Go to the next test.

Testing Automatic Forwarding of Incoming Studies

1. Send another study to the Image Center. It should appear in the study list.



Note that the **Status** will say ‘forward pending’ for that study.

2. Wait for one minute past the wait time you specified in step 11 above, where you set the forwarding delay.
3. You should see the study’s **Status** change to ‘send pending’ and then ‘sent to <image center name>’ after the study has automatically been sent to the Remote Image Center.



Troubleshooting and Testing

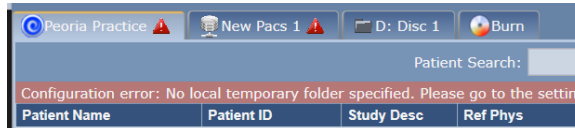
Open the tab for the Remote Image Center you've just configured. Here is a quick tour of what this screen is telling you.

The screenshot shows the 'Study Lists' window with a table of study entries. Annotations A-F point to specific features:

- A:** Points to the top status bar showing 'CLI_SCP sent Kelly, Marsha S 1 hour ago (63 files)'. A red bar indicates an error.
- B:** Points to the 'Retrieve' button in the bottom toolbar.
- C:** Points to a 'C' icon in the 'Status' column of the study list.
- D:** Points to the 'Browse...' button in the top right corner.
- E:** Points to the 'E' icon in the 'Status' column of the study list.
- F:** Points to the 'Done' button in the bottom right corner.

Patient Name	Patient ID	Study Desc	Ref Phys	Mod:	Date	Time	Series	Images	Status
Kelly, Marsha S	587-42-9212	Carotid		US	4/27/2023	9:04 AM	1	63	from CLI_SCP, sent to Main Office
Helton, Sherry A	670-26-8958	PERIPHERAL VA		US	4/26/2023	5:07 PM	1	51	from CLI_SCP, sent to Main Office
Rivas, Jaime K	294-05-0448	Pharm Stress 4		US	4/26/2023	5:01 PM	1	35	from CLI_SCP, sent to Main Office
Burnside, Travis T	240-82-2113	Adult Heart	LONNER	US	4/22/2023	5:25 PM	1	43	remote
Shepard, Sue R	629-14-1894	Adult Heart		US	4/18/2023	12:16 PM	1	1	remote
Newton, Gail S	426-11-7593	PERIPHERAL VA	BHOOPALAM, VISH	US	4/18/2023	11:43 AM	1	44	remote
Quesada, Dorothy R	601-15-2916	Cardian		US	4/18/2023	11:10 AM	1	63	remote
Benoit, Joanne J	616-11-8435	Carotid		US	4/18/2023	10:36 AM	1	63	remote
Martinez, Kimberly M	122-94-0878	Abdomen	HAGE	US	4/18/2023	10:04 AM	1	62	remote
Nguyen, Virginia J	528-07-3901	Mouse Heart		US	4/18/2023	9:34 AM	2	41	remote
Blanchard, Bruce E	154-09-3226	Small Parts		US	4/18/2023	9:01 AM	1	35	remote
Vaughan, Donald H	149-20-8741	Cardian		US	4/18/2023	8:30 AM	2	57	remote
Riddell, Gertrude B	607-34-5873	Carotid		US	4/18/2023	8:00 AM	1	59	remote
Donahue, Bertha G	414-24-8331	BLOOD POOL	SMITH	US	4/17/2023	3:39 PM	1	53	remote
Ennis, Stacy N	401-82-7875	Small Parts		US	4/17/2023	3:06 PM	1	64	remote
Coffey, Jean R	422-42-0169	Mouse Heart		US	4/17/2023	2:33 PM	1	55	remote
Curry, Merlin E	378-54-5286	TEE	BHOOPALAM, VISH	US	4/17/2023	2:00 PM	1	52	remote
Alvarado, Warren J	189-26-7549	Renal		US	4/17/2023	1:28 PM	1	48	remote
Bullen, Eunice M	254-59-4787	Abdomen	JIM STILLWELL	US	4/17/2023	12:55 PM	1	35	remote

- A. **Errors** - The top of the study list is where errors will be reported. They will appear in a red bar, something like this:

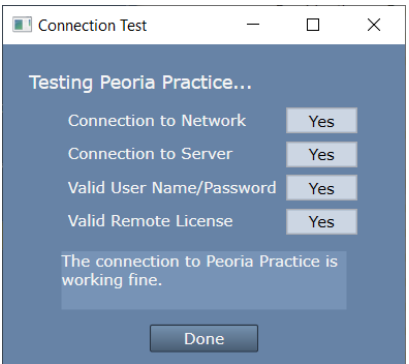


If any errors are present, they will need to be addressed before continuing. The error message will give you tips as to what is wrong.

- B. **Incoming DICOM Status** - The bottom bar of the screen shows the most recent incoming DICOM activity, i.e. when an ultrasound machine sends a study, how full your cache is, and if there are any forwarding errors. Clicking on this status message will bring up a detailed screen on the cache and network status of your study list.
- C. **Study List** - This is a list of studies that are on the Remote Image Center, as well as those studies that are cached locally. If you see studies here marked 'remote', you know you've been able to contact the Remote Image Center and get a study list. You control the content of this list by doing a **Patient Search**: or **Full Search**.
- D. **Study Status** - The current status of the studies in the list, e.g. remote, send pending, sent, etc.
- E. **Cache Status** - The number of studies in the local cache. If the cache is full, there will be warning messages here.
- F. **Outbound Status** - The number of studies scheduled for forwarding.

Testing the Connection to your Remote Image Center

You can test the connection to your Remote Image Center in either the Admin Screen under the Other Image Centers tab or from the study list via the **More...** button. When you test the connection you get a dialog that looks like this:



Helpful messages will appear if any of these tests fail. Here is some further insight as to what may cause each test to fail. You may find that you need assistance from your IT group to resolve some of these.

Connection to Network failed – Means that the Image Center cannot find the other Image Center computer on the network

- Is the IP address correct?
- Can you 'ping' the Image Center computer from a Windows cmd window?

Connection to Server failed – Means that the Image Center software cannot talk to the other Image Center software

- Is the firewall on the Image Center open to port 8080?
- Is the other Image Center running? Look at the Image Center console – are there errors displayed?

Valid User Name/Password failed

- Has the specified Login (User) been added to the other Image Center?
- Did you enter the password correctly? [Password mismatch is the most common reason this test fails]

Valid Remote License failed

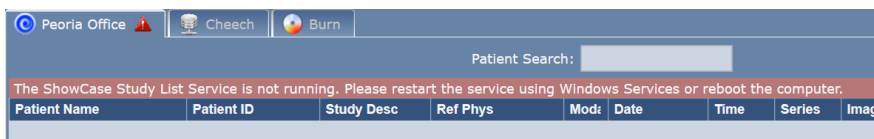
- Does the other Image Center have a valid license? Go to the other Image Center computer and check the other Image Center Console. Are there any errors?

Trouble Receiving Studies from the Imaging Device

So, you sent a study to your Image Center but nothing showed up in the study list. Here's how to troubleshoot that.

1. Is there a red bar at the top of the study list with an error message?

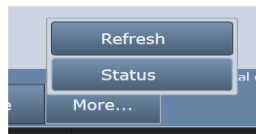
If there is, it will look like this:



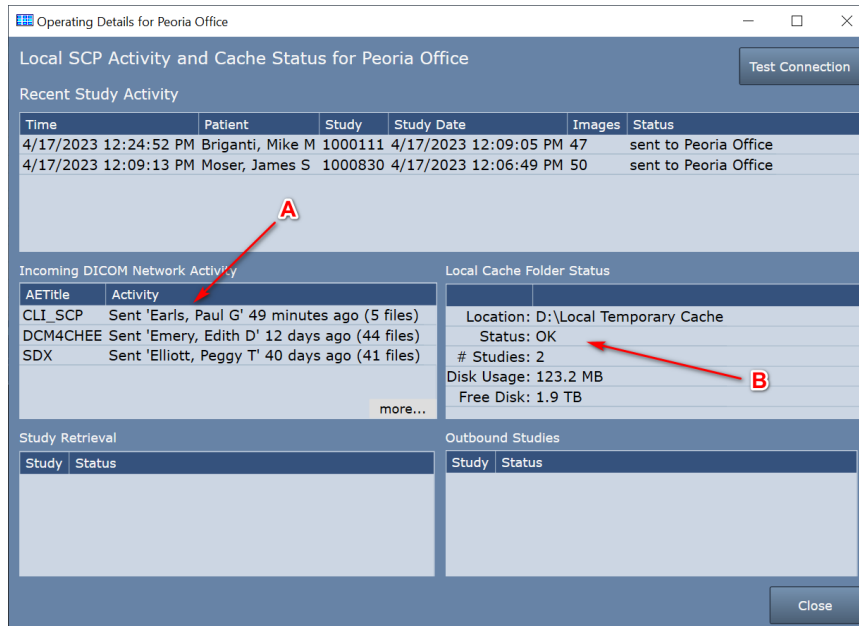
To resolve this, read the error message and follow the instructions there. There might be a [\[click here for help\]](#) option, which you can click to read more about resolving the error shown.

2. No Red Bar?

Click the **More...** button at the bottom of the study list and select **Status**.



An Operating Details screen will appear:



- A. The first thing to check is the **Incoming DICOM Network Activity** window. It lists incoming DICOM activity from imaging machines sending studies to the Image Center.
 - a. Try sending a study to the Image Center
 - b. If you don't see any activity for AE Title of the machine that sent the study, then no DICOM network messages are making it to the Workstation. Try the following:
 - i. Turn off the firewall on the Image Center computer. Try sending a study. If that doesn't fix the problem, leave the firewall off and continue.
 - ii. Check that the ultrasound machine is configured with the correct IP address for the Workstation computer. In ShowCase, go to the **Edit menu**, select **ShowCase Settings** and click on the **Dicom SCP tab**. Do the settings in there match the AE title and port configured at the ultrasound machine?
 - iii. Check the imaging machine's DICOM logs for errors.
 - iv. Clear the DICOM queues on the imaging machine.
 - v. Reboot the imaging machine.
 - vi. Reboot the Image Center computer.
 - vii. Do a DICOM CECHO on the imaging machine and see what it tells you.
 - viii. Turn the firewall back on if it was turned off earlier.
 - c. If you do see activity from the imaging machine, but some studies are not coming across, click **more...** and the DICOM messaging log will appear. Look for errors in this log (highlighted in red). If you need help interpreting the errors, go to the **Help menu** in ShowCase, select **Submit A Support Request...** and fill out the form so our support engineers can help you diagnose the problem.
- B. The second thing to check is the **Local Cache Folder Status**.

- a. Does the Status: field say anything but OK? If it does, you have problems with your local cache and the Image Center will be unable to receive studies until the problem is resolved. Here are some possible local cache problems:
 - i. **Cache full, limit is 1000 studies** – When this happens you will need to clean up studies in your cache. If these are real patient studies, see the section on “Freeing Up Cache Space”
 - ii. **Out of Disk Space** – This happens when your disk is full. Free up space on your disk or migrate your cache to a new location.
 - iii. **Cache almost full, limit is 1000 studies** – This will not prevent studies from transferring but is alerting you to the fact that you’re about to hit the 1000 study limit of your cache.
 - iv. **Low Disk Space** – This will not prevent studies from transferring but it is alerting you to the fact that pretty soon you won’t have enough disk space available to receive studies.
 - v. **Cache Folder Missing** – Your cache folder was removed and you will need to set up a new folder in the settings screen. Or, if you can, restore the original cache folder.

Other Things to Check

- If Storage Commitment and/or MPPS are being proposed by the imaging machine, turn it off.
- Check for conflicts on the IP Address and/or Image Center listening port (default 11112), change the port number to a number above 1000; the port number must be changed in both Image Center and imaging machines.
- Check for hardware problems by replacing network cables, using different ports on the network switch and replacing network cards
- Check to make sure multi-frame images (clips) are being compressed. Transferring huge uncompressed clips can aggravate network problems.

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