



How to Configure SHOWCASE® Workstation to Forward Studies to a Remote Image Center

Your ShowCase Workstation can be configured to automatically forward incoming studies to a Remote Image Center in a different location over VPN. Study forwarding to a remote Image Center is typically used when you have remote imaging location and you want those studies sent to a central location, usually the main office of your practice. It's also useful if you are running a portable scanning service and need to be on-the-move, uploading when convenient.

This guide is in three parts:

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

Second, you will set up your ultrasound machine or other imaging device to send to the Workstation.

Third, 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 Workstation is installed and licensed on your PC

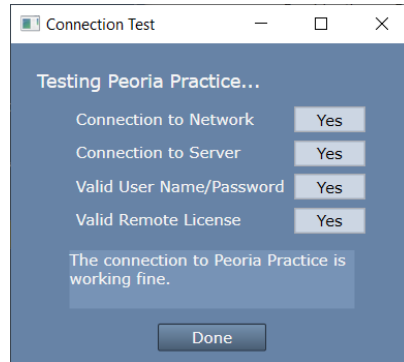
Configure Communication with the Remote Image Center

1. Launch the ShowCase Workstation
2. From the **Edit Menu**, select **ShowCase Settings...**
3. Select the **Image Centers** tab
4. Click the **Add** button. A new Image Center entry will be created named "New Image Center":

The screenshot shows the 'ShowCase Settings' window with the 'Image Centers' tab selected. The window title is 'ShowCase Settings'. There are four tabs: 'Viewer', 'Dicom SCP', 'Image Centers', and 'Remote PACS'. The 'Image Centers' tab is active, showing a list of image centers on the left with one entry 'Peoria Office'. Below the list are 'Add' and 'Remove' buttons. The main area contains configuration fields for the selected center, with red callouts 3 through 13 pointing to various elements: 3 points to the 'Image Centers' tab; 4 points to the 'Add' button; 5 points to the 'Name' field (containing 'Peoria Office'); 6 points to the 'Address' field (containing '25.67.4.52'); 7 points to the 'Port' field (containing '8080'); 8 points to the 'Login' field (containing 'Pete'); 9 points to the 'Type' dropdown (set to 'Remote Image Center'); 10 points to the 'Test' button; 11a points to the 'Local Cache Folder' field (containing 'D:\Local Temporary Cache'); 11b points to the 'Clean up cached studies more than' dropdown (set to '10 days old'); 12 points to the 'Automatic Forwarding' checkbox (checked); 13 points to the 'Apply' button at the bottom right. Other sections include 'Connection Settings', 'Local Cache Folder', 'Automatic Download', and 'VPN Settings'.

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 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 Workstation can contact the Image Center.



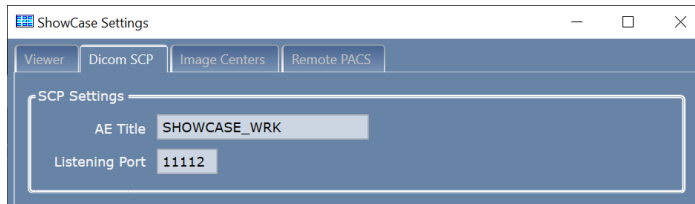
(If the tests do not all say "Yes", see the Troubleshooting section at the end of this guide.)

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 PACS. **Note:** Studies are only automatically cleaned up if they have been successfully sent to the PACS.
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

Setting Up Your Ultrasound Machine to Send to the Workstation

You need to know three things to configure your ultrasound machine to send to the Workstation: the Workstation's **AE Title** (default is SHOWCASE_WRK), the Workstation's DICOM **Port** (default is 11112), and the PC's **IP Address**.

1. Click on the **Dicom SCP** tab in the ShowCase Settings... dialog:



2. Write down the AE Title and Port. You will need these to configure your ultrasound machine.
3. Determine the IPv4 address of the computer the Workstation is installed on.
 - a. Open a Windows Command Prompt
 - b. Enter the command "ipconfig".
 - c. You will likely see several network adapters. If you're using cables to send to the Workstation, use the "Ethernet adapter Ethernet" adapter. If you're using wireless to send to the Workstation, use the wireless adapter. If you're unsure which IPv4 address to use, ask your IT support.

Tip: You will want to set your PC up with a 'fixed' IP address. Ask your IT support how to do that.

Once you've got these three pieces of information, you will need to consult the user manual for your ultrasound machine for how to configure the machine itself, or work with your ultrasound machine's service technician to get it configured. You can also find some quick guides for common ultrasound models at <https://www.triltech.com/documents.html>. These are 'quick guides' and not intended as a substitute for your machine's user manual.

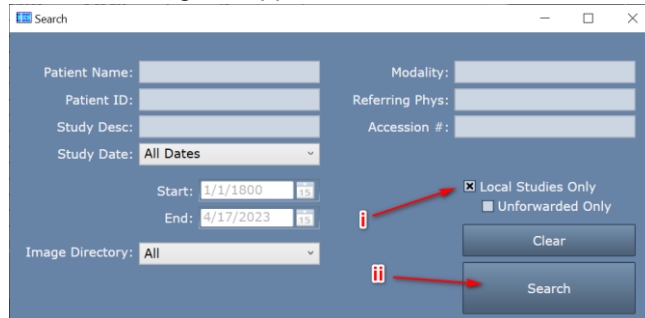
Testing

Test Sending Studies to the Workstation from the Imaging Machine

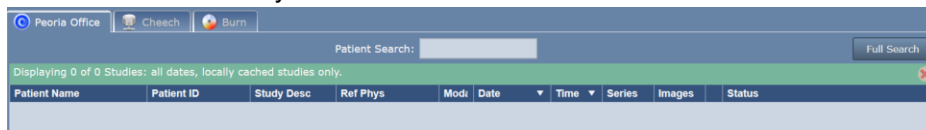
1. Click on the Study List tab you just set up.



- 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 the Workstation. Your study should appear in the study list.

Patient Name	Patient ID	Study Desc	Ref Phys	Mod:	Date	Time	Series	Images	Status
Moser, James S	310-90-4211	Cardian		US	4/17/2023	12:06 PM	1	50	from CLI_SCP, forward pending

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 PACS 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 Workstation. It should appear in the study list.

Patient Name	Patient ID	Study Desc	Ref Phys	Mod:	Date	Time	Series	Images	Status
Briganti, Mike M	771-09-8776	Small Parts		US	4/17/2023	12:09 PM	1	47	from CLI_SCP, forward pending
Moser, James S	310-90-4211	Cardian		US	4/17/2023	12:06 PM	1	50	from CLI_SCP, sent to Peoria Office

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.

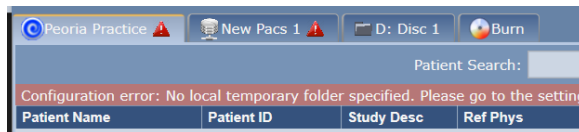
Patient Name	Patient ID	Study Desc	Ref Phys	Mod:	Date	Time	Series	Images	Status
Briganti, Mike M	771-09-8776	Small Parts		US	4/17/2023	12:09 PM	1	47	from CLI_SCP, sent to Peoria Office
Moser, James S	310-90-4211	Cardian		US	4/17/2023	12:06 PM	1	50	from CLI_SCP, sent to Peoria Office

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.

Patient Name	Patient ID	Study Desc	Ref Phys	Mod:	Date	Time	Series	Images	Status
Briganti, Mike M	771-09-8776	Small Parts		US	4/17/2023	12:09 PM	1	47	from CLI_SCP, sent to Peoria Office
Moser, James S	310-90-4211	Cardian		US	4/17/2023	12:06 PM	1	50	from CLI_SCP, sent to Peoria Office
Lewis, Lauren C	518-46-4077	Cardian		US	4/17/2023	9:22 AM	1	43	remote
McKinney, Dale B	031-54-8601	Acunave		US	4/17/2023	9:07 AM	1	55	remote
Graham, Eileen J	574-84-1036	Carotid		US	4/17/2023	8:53 AM	1	56	remote
Young, Shannon R	760-01-8670	Abdomen		US	4/17/2023	8:39 AM	1	62	remote
Rehberg, Chris D	538-02-4684	Renal		US	4/17/2023	8:26 AM	1	38	remote
Avalos, Robert C	614-01-0191	Carotid		US	4/17/2023	8:10 AM	1	57	remote
Dargan, Dolores J	605-01-3117	Adult Heart		US	4/17/2023	7:57 AM	1	38	remote
Edwards, Elizabeth C	431-58-5955	Cardian		US	4/10/2023	7:47 AM	1	43	remote
Buie, Lois A	265-58-1580	Cardian		US	4/10/2023	7:31 AM	1	41	remote

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

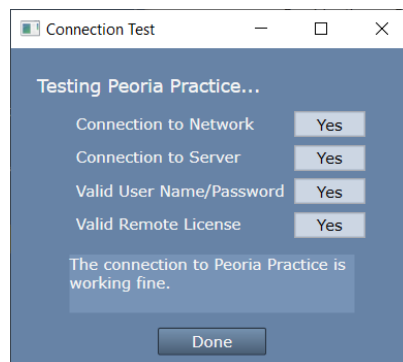


If any errors are present, they will need to be addressed before continuing. The error message will give you tips as to what is wrong.

- 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 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 Edit => ShowCase Settings... dialog 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 ShowCase cannot find the 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 ShowCase software cannot talk to the Image Center software

- Is the firewall on the Image Center open to port 8080?
- Is the 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 Image Center?
- Did you enter the password correctly? [Password mismatch is the most common reason this test fails]

Valid Remote License failed

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

Trouble Receiving Studies from the Imaging Device

So, you sent a study to your workstation 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?

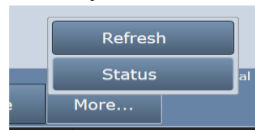
If there is, it will look like this:



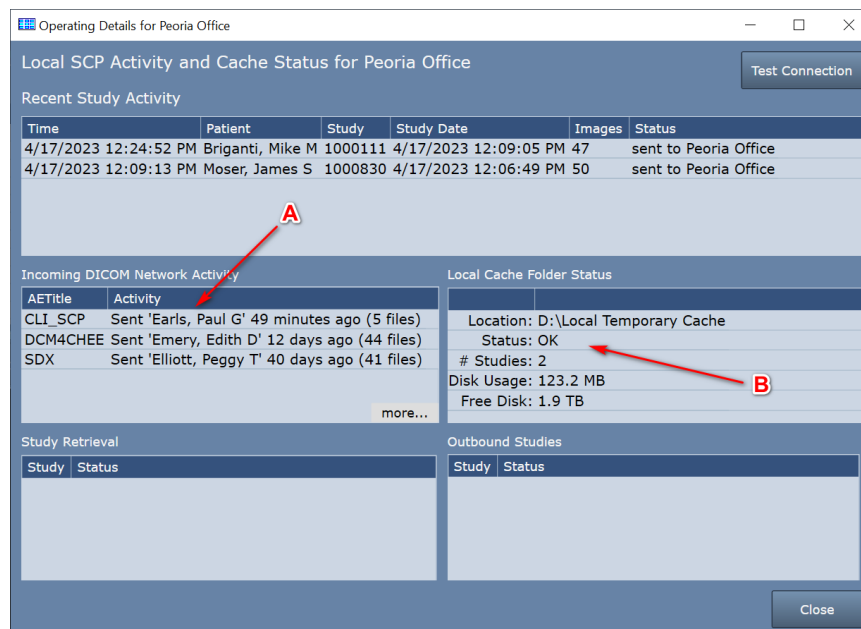
To resolve this, read the error message and follow the instructions there. There might be a [\[click here for help\]](#) option, which you can click to read more about resolving the error shown.

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 Workstation.
- Try sending a study to the Workstation
 - 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 Workstation 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 Workstation 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 Workstation 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 Workstation listening port (default 11112), change the port number to a number above 1000; the port number must be changed in both Workstation 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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