



Configuring SHOWCASE® Workstation to connect with your PACS

Use this guide to configure ShowCase Workstation to connect to your PACS so you can Query/Retrieve studies for viewing and/or 'push' studies to your PACS. We recommend that you talk to your PACS administrator before setting up the Workstation, or even have your PACS administrator configure ShowCase Workstation for you. If the latter, please give them this guide.

Before You Start

- Make sure your PACS has been configured to accept DICOM C-ECHO, C-STORE, DICOM C-FIND (Query) and C-MOVE (Retrieve) events from this workstation.
- Make sure your PACS is configured so it does not use storage commit on the CMOVE operation.
- Make sure ShowCase Workstation is installed and licensed on your PC.

Configure Communication with the PACS

1. Launch the ShowCase Workstation
2. From the **Edit Menu**, select **ShowCase Settings...**

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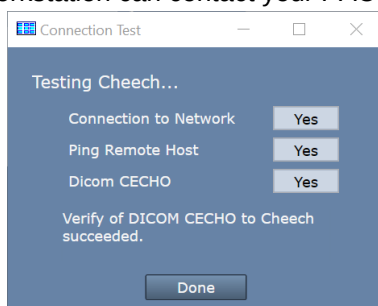
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3. Select the **Remote PACS** tab
4. Click the **Add** button. A new Remote PACS entry will be created named "New PACS 1":
5. Enter a name for your PACS in the **Name** field. It can be any name that is helpful.
6. Enter the PACS's AE Title in the **AE Title** field. You should get this from your PACS administrator.
7. Enter the PACS's IP address in the **Address** field. You should get this from your PACS administrator.

8. Enter the PACS's Dicom **Port**. You should get this from your PACS administrator.
9. Click the **Test** button to see if the Workstation can contact your PACS.



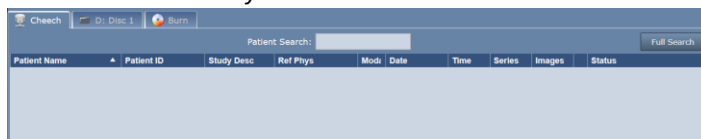
(If the tests do not all say “Yes”, see the Troubleshooting section at the end of this guide.)

10. 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. It should also be on an internal hard drive with about 300G of free space. Do not try to use network shares or external hard drives as these can often cause problems.
 - 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.
11. Click the **Apply** button in the lower right to save these settings. A new tab will appear in your study list, with the name you entered from step 5.
12. (Optional) For **Philips Intellispace**. Some PACS use one AE Title for the Query portion of their product and another AE Title for the SCU that will be sending studies to ShowCase as part of the Retrieve (CMOVE). If your PACS does this, you will need to set the Retrieve AE Title to that used by the Retrieve portion of your PACS. We have only seen this behavior in Philips Intellispace. Unless you have a Philips Intellispace PACS, it is unlikely you will have to do anything with this setting.

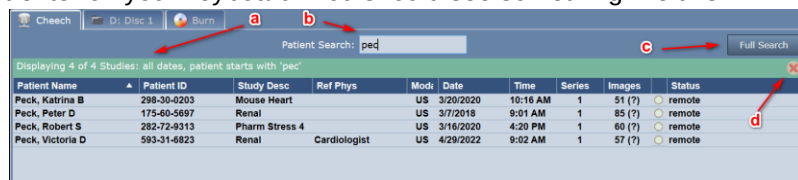
Testing and Troubleshooting

Test Searching for a Study

1. Click on the tab you just created in the study list. It should look like this:



2. Enter the first letters of the last name of a patient that you know exists in the PACS into the Patient Search field and hit enter on your keyboard. You should see something like this:



A few things worth noting:

- a. A green bar appears at the top of the study list, indicating the number of studies that match the patient name you typed in.
- b. Patient name search is case insensitive.
- c. You can clear the search by clicking on the red X on the right side of the green bar.
- d. The Full Search button allows you to search for studies using a number of search criteria: date ranges, Patient ID, Referring Physician, etc.

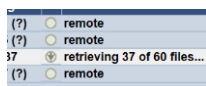
If you were able to successfully query your PACS, move on to the next section, **Test Retrieving a Study**.

If you get a red bar at the top of the Study List (instead of a green bar), then proceed to the **Troubleshooting Query Issues** section later in this guide.

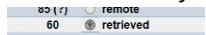
Test Retrieving a Study



1. Select the study by clicking on it with the mouse
2. Press the **Retrieve** button at the bottom of the study list.
3. Watch the **Status** column on the right of the study list.
 - a. The status should change from **remote** to **retrieving nn of NN files...**



- b. When the study is fully retrieved, the status will say **retrieved**



4. To view the study, press the **Show** button

Tip: To retrieve and show a study, simply double-click on it, or select the study and click the Show button.

If you get an error during retrieve, it will appear in the Status field, looking something like this:

retrieve failed - DCM4CHEE unable to handle retrieve. Check your DICOM logs and contact your PACS administrator.

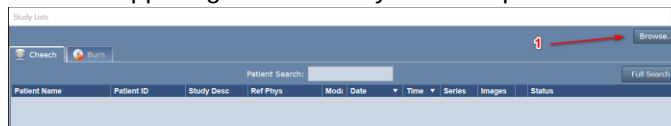
If this occurs, please see the section **Troubleshooting Retrieve Issues** later in this document.

If you have a Philips Intellispace PACS, please see step 12 in the Configure Communication with the PACS section of this document.

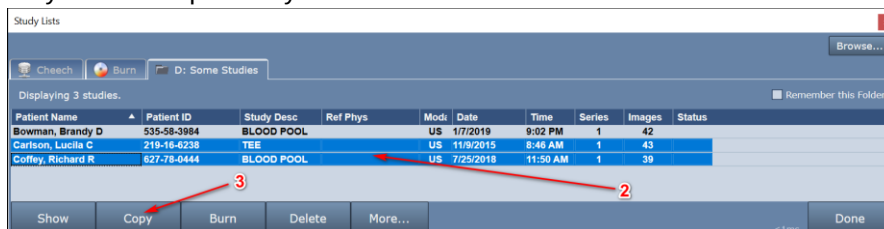
Test Pushing to the PACS

Before you begin, locate a folder or CD or USB stick with some studies that you want to send to your PACS.

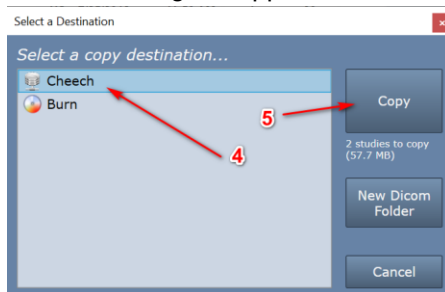
1. Click the **Browse...** button in the upper right of the study list and open a folder with some studies in it.



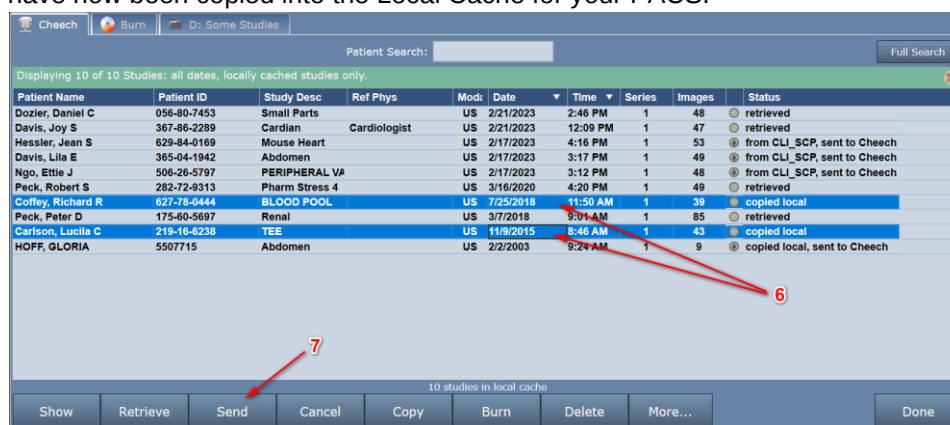
2. Select the studies you want to push to your PACS



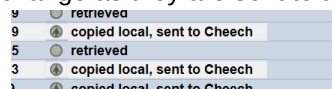
- Press the **Copy** button. A copy destination dialog will appear.



- Select the PACS as your destination
- Press the **Copy** button
- The studies have now been copied into the Local Cache for your PACS.



- Select the studies and click the **Send** button.
- You will see the **Status** of the studies change as they are sent to the PACS.



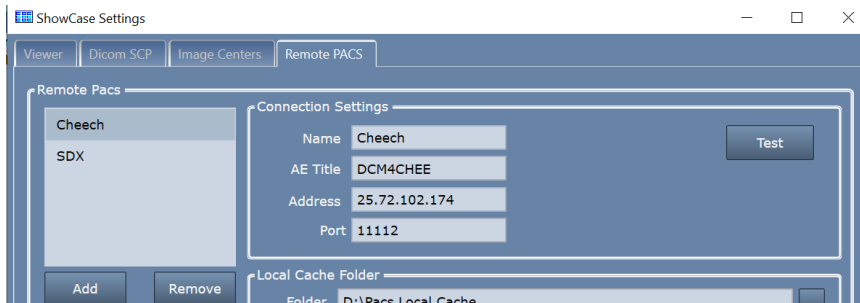
- Once the studies are sent, they are still in your Local Cache folder.
 - You can delete them manually by selecting the studies and pressing the **Delete** button.
 - If you have automatic cache cleanup set up in your PACS configuration screen, they will be cleaned up automatically after the number of days specified in your configuration screen.

Note: studies will only be automatically cleaned up if they were successfully sent to the PACS.

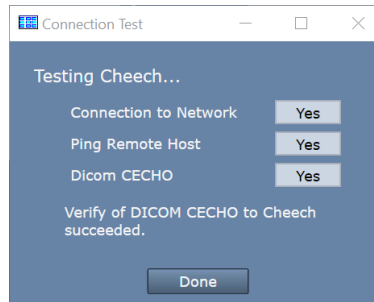
Trouble Connecting to the PACS

If you're having trouble connecting to your PACS, it would be a good idea to get your PACS administrator involved. PACS often require a PACS administrator to configure the PACS to retrieve studies to your Workstation. If it looks like your PACS is properly configured, and you are still unable to connect to your PACS follow the steps below to try and figure out where your problem lies.

- From the **Edit Menu**, select **ShowCase Settings...**
- Click on the **Remote PACS** tab and select your PACS



- Check that the **AE Title**, **Address**, and **Port** for the PACS are correct
- Click the **Test** button. A test dialog will appear.



Look for clues in the messages in this dialog 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 these issues.

Connection to Network failed – Means that the Workstation computer cannot find any networks connected to your computer.

- Can other applications connect to the network, e.g. Chrome?

Ping Remote Host failed – Means that the Workstation computer cannot ping the PACS computer with a conventional ethernet ping.

- Is the firewall on the PACS properly configured?
- Is the IP address of the PACS correct?
- Is the PACS computer configured to respond to Ping?

DICOM CECHO failed – Means that the Workstation computer was unable to send a DICOM CECHO to the PACS.

- Is the firewall on the PACS configured to allow DICOM traffic on the specified port?
- Is the port of the PACS correct?
- Is the AE Title of the PACS correct?
- In the PACS: Is the AE Title for the Workstation correct?
- Is the PACS configured to respond to DICOM CECHO from this workstation's AE Title?

Troubleshooting Query Issues

Once again, you will probably want to get your PACS administrator involved in troubleshooting this. Here are some things to look for when you get errors:

There are CFIND errors at the top of my study list...

- Is your PACS set up to respond to classic Dicom Study-Series hierarchical queries? If you don't know, consult with your PACS administrator. Please note that ShowCase does not do relational queries.

My searches just hang...

- Click on the **More...** button at the bottom of the study list and select **Test Connection**.
 - If the connection test passes, try increasing the Receive timeout. See the section *Connection Timeouts* for details.
 - If the connection test fails, see the previous section on *Trouble Connecting to the PACS*

I can't find the patient I'm looking for...

- Click the **Full Search** button and then in the search dialog, click **Clear** to clear out any other search criteria that may have escaped your notice. Now try doing the search again.

If you're not getting any traction with these suggestions, see the section *Digging Deep: The SCU and Dicom Logs* below.

Troubleshooting Retrieve Issues

Retrieve is complex. Have your PACS administrator check the following:

- Is your PACS properly configured with the right settings for the Workstation to talk with it?
 - Check the Workstation AE Title configured with your PACS.
 - Check the Workstation IP Address (or machine name) in your PACS.
 - Check the configured Workstation Port in your PACS configuration screen.
 - Is your PACS properly configured so that it knows the Workstation AE Title is allowed to do Query/Retrieve?
- Is the incoming firewall port open on your Workstation PC to allow connections from your PACS?

It says my PACS is "Out of Resources". What does that mean?

- This can mean anything from a bad configuration (bad IP address, AE title, etc.) to the PACS being overloaded or busy. You will want your PACS administrator's help on this one.

I start retrieving my study, but the retrieve often fails...

This is often caused by an overloaded PACS or a sluggish network. Try increasing the Receive timeout at the Workstation. See the section *Connection Timeouts* for details.

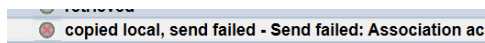
When I do a retrieve, the study does not actually retrieve...

Do you have a **Philips Intellispace PACS**? If so, please see step 12 in the *Configure Communication with the PACS* section of this document.

Also talk to your PACS administrator about increasing the Send timeouts at the PACS. Lastly, you might want to check your with network administrators to see if your network is having issues or if there is a means to increase the speed or reliability of your network.

Troubleshooting Send Issues

Look for clues in the **Status** field of the study list, e.g.



In this case, there was a DICOM association failure. Associations can fail for a variety of reasons, and you'll likely end up working with your PACS administrator to figure out the underlying cause with the help of the DICOM logs. See the section *Digging Deep: The SCU and Dicom Logs* below for how to access those.

I start sending my study, but the send often fails...

This can be caused by an overloaded PACS or a sluggish network. Try increasing the Send timeout at the Workstation. See the section *Connection Timeouts* for details. Your PACS administrator may need to increase the Receive timeouts at the PACS.

Connection Timeouts

If your PACS is being accessed over a VPN or a sluggish network, or if your PACS is overloaded, you may need to consider increasing your Dicom Connection Timeouts. Open the **Edit** menu and select **ShowCase Settings....** Now click on the Remote PACS tab and select your PACS. There are three timeouts at the bottom of the screen.

Connect – This timeout controls the amount of time the network socket will wait when trying to connect to the PACS itself.

Send – This controls how long the workstation will wait for the PACS to respond when it is sending DICOM networking packets.

Receive - This controls how long the workstation will wait for the PACS to respond when it is waiting for the PACS to send DICOM networking packets.

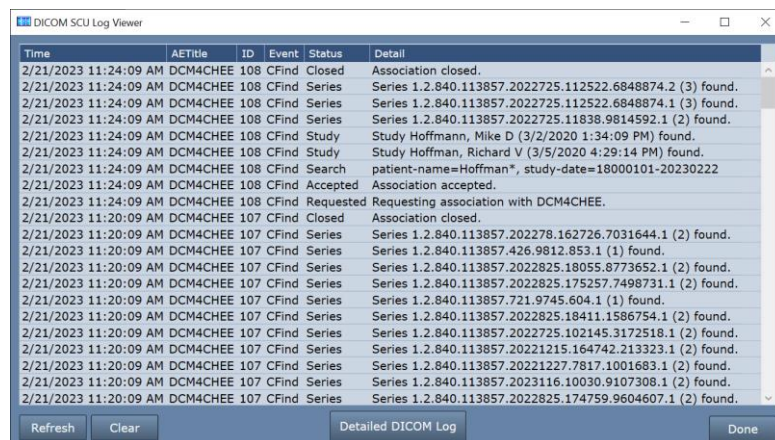
All timeouts are specified in milliseconds.

Digging Deep: The SCU and Dicom Logs

If these suggestions don't help, you can have your PACS administrator look at the SCU and DICOM logs.

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

In the lower left of the dialog that appears there is a button called **DICOM SCU Log**. Click it.



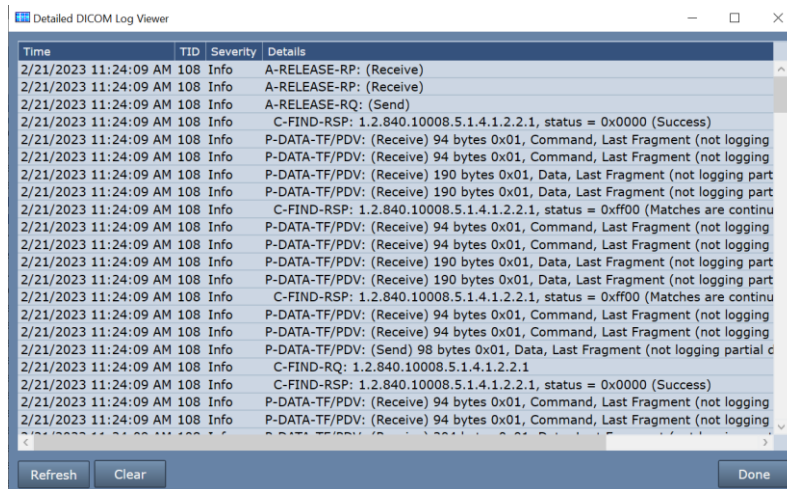
The screenshot shows a window titled "DICOM SCU Log Viewer". It contains a table with the following columns: Time, AETitle, ID, Event, Status, and Detail. The table lists various DICOM events, including CFind, CFind Series, CFind Study, CFind Search, CFind Accepted, CFind Requested, and CFind Closed. The events are sorted by time, with the most recent at the top. The table is scrollable, and the bottom of the window has buttons for "Refresh", "Clear", "Detailed DICOM Log", and "Done".

Time	AETitle	ID	Event	Status	Detail
2/21/2023 11:24:09 AM	DCM4CHEE	108	CFind	Closed	Association closed.
2/21/2023 11:24:09 AM	DCM4CHEE	108	CFind	Series	Series 1.2.840.113857.2022725.112522.6848874.2 (3) found.
2/21/2023 11:24:09 AM	DCM4CHEE	108	CFind	Series	Series 1.2.840.113857.2022725.112522.6848874.1 (3) found.
2/21/2023 11:24:09 AM	DCM4CHEE	108	CFind	Series	Series 1.2.840.113857.2022725.11838.9814592.1 (2) found.
2/21/2023 11:24:09 AM	DCM4CHEE	108	CFind	Study	Study Hoffmann, Mike D (3/2/2020 1:34:09 PM) found.
2/21/2023 11:24:09 AM	DCM4CHEE	108	CFind	Study	Study Hoffman, Richard V (3/5/2020 4:29:14 PM) found.
2/21/2023 11:24:09 AM	DCM4CHEE	108	CFind	Search	patient-name=Hoffman*, study-date=18000101-20230222
2/21/2023 11:24:09 AM	DCM4CHEE	108	CFind	Accepted	Association accepted.
2/21/2023 11:24:09 AM	DCM4CHEE	108	CFind	Requested	Requesting association with DCM4CHEE.
2/21/2023 11:20:09 AM	DCM4CHEE	107	CFind	Closed	Association closed.
2/21/2023 11:20:09 AM	DCM4CHEE	107	CFind	Series	Series 1.2.840.113857.202278.162726.7031644.1 (2) found.
2/21/2023 11:20:09 AM	DCM4CHEE	107	CFind	Series	Series 1.2.840.113857.426.9812.853.1 (1) found.
2/21/2023 11:20:09 AM	DCM4CHEE	107	CFind	Series	Series 1.2.840.113857.2022825.18055.8773652.1 (2) found.
2/21/2023 11:20:09 AM	DCM4CHEE	107	CFind	Series	Series 1.2.840.113857.2022825.175257.7498731.1 (2) found.
2/21/2023 11:20:09 AM	DCM4CHEE	107	CFind	Series	Series 1.2.840.113857.721.9745.604.1 (1) found.
2/21/2023 11:20:09 AM	DCM4CHEE	107	CFind	Series	Series 1.2.840.113857.2022825.18411.1586754.1 (2) found.
2/21/2023 11:20:09 AM	DCM4CHEE	107	CFind	Series	Series 1.2.840.113857.2022725.102145.3172518.1 (2) found.
2/21/2023 11:20:09 AM	DCM4CHEE	107	CFind	Series	Series 1.2.840.113857.20221215.164742.213323.1 (2) found.
2/21/2023 11:20:09 AM	DCM4CHEE	107	CFind	Series	Series 1.2.840.113857.20221227.7817.1001683.1 (2) found.
2/21/2023 11:20:09 AM	DCM4CHEE	107	CFind	Series	Series 1.2.840.113857.2023116.10030.9107308.1 (2) found.
2/21/2023 11:20:09 AM	DCM4CHEE	107	CFind	Series	Series 1.2.840.113857.2022825.174759.9604607.1 (2) found.

This is a summary log of all of the SCU Dicom activity between the Workstation (the SCU) and your PACS (the SCP). A few things worth noting:

- The log is time-sorted with the most recent events *at the top* of the list, and shows events going backward in time.
- The log only shows activity with the AE Title of the PACS this tab is configured to talk to.
- The ID listed is the association ID.

Look for errors in this log. See if it tells you anything about what might be going wrong. This is a 'high-level' summary log of SCU Dicom Activity. If you want to go deeper, click the **Detailed DICOM Log** button:



Time	TID	Severity	Details
2/21/2023 11:24:09 AM	108	Info	A-RELEASE-RP: (Receive)
2/21/2023 11:24:09 AM	108	Info	A-RELEASE-RP: (Receive)
2/21/2023 11:24:09 AM	108	Info	A-RELEASE-RQ: (Send)
2/21/2023 11:24:09 AM	108	Info	C-FIND-RSP: 1.2.840.10008.5.1.4.1.2.2.1, status = 0x0000 (Success)
2/21/2023 11:24:09 AM	108	Info	P-DATA-TF/PDV: (Receive) 94 bytes 0x01, Command, Last Fragment (not logging
2/21/2023 11:24:09 AM	108	Info	P-DATA-TF/PDV: (Receive) 94 bytes 0x01, Command, Last Fragment (not logging
2/21/2023 11:24:09 AM	108	Info	P-DATA-TF/PDV: (Receive) 190 bytes 0x01, Data, Last Fragment (not logging part
2/21/2023 11:24:09 AM	108	Info	P-DATA-TF/PDV: (Receive) 190 bytes 0x01, Data, Last Fragment (not logging part
2/21/2023 11:24:09 AM	108	Info	C-FIND-RSP: 1.2.840.10008.5.1.4.1.2.2.1, status = 0xff00 (Matches are continu
2/21/2023 11:24:09 AM	108	Info	P-DATA-TF/PDV: (Receive) 94 bytes 0x01, Command, Last Fragment (not logging
2/21/2023 11:24:09 AM	108	Info	P-DATA-TF/PDV: (Receive) 94 bytes 0x01, Command, Last Fragment (not logging
2/21/2023 11:24:09 AM	108	Info	P-DATA-TF/PDV: (Receive) 190 bytes 0x01, Data, Last Fragment (not logging part
2/21/2023 11:24:09 AM	108	Info	P-DATA-TF/PDV: (Receive) 190 bytes 0x01, Data, Last Fragment (not logging part
2/21/2023 11:24:09 AM	108	Info	C-FIND-RSP: 1.2.840.10008.5.1.4.1.2.2.1, status = 0xff00 (Matches are continu
2/21/2023 11:24:09 AM	108	Info	P-DATA-TF/PDV: (Receive) 94 bytes 0x01, Command, Last Fragment (not logging
2/21/2023 11:24:09 AM	108	Info	P-DATA-TF/PDV: (Receive) 94 bytes 0x01, Command, Last Fragment (not logging
2/21/2023 11:24:09 AM	108	Info	P-DATA-TF/PDV: (Send) 98 bytes 0x01, Data, Last Fragment (not logging partial c
2/21/2023 11:24:09 AM	108	Info	C-FIND-RQ: 1.2.840.10008.5.1.4.1.2.2.1
2/21/2023 11:24:09 AM	108	Info	C-FIND-RSP: 1.2.840.10008.5.1.4.1.2.2.1, status = 0x0000 (Success)
2/21/2023 11:24:09 AM	108	Info	P-DATA-TF/PDV: (Receive) 94 bytes 0x01, Command, Last Fragment (not logging
2/21/2023 11:24:09 AM	108	Info	P-DATA-TF/PDV: (Receive) 94 bytes 0x01, Command, Last Fragment (not logging

This is a detailed log of all DICOM activity coming into and out of the Workstation in its role as SCP *and* SCU. Interpreting this log requires detailed knowledge of the DICOM standard.

Alternately, if you'd like to look at the raw log files themselves, you can find them in C:\ProgramData\TrilTech\ShowCase. There are three files of interest: scu_log.txt, scp_log.txt, and dicom_log.txt.

Contacting Trillium for Help

Click on the **Help** menu in ShowCase and select **Submit A Support Request...** A form will appear. Fill it in and send it to us. Please describe the problem you're having as best you can. This support request will package up all of your log files (encrypted) and send them to us for review. A couple of things:

- Recreate the problem immediately before sending these logs off. Logs are size-capped and will throw out old log messages when they get too big. If you had the error several days ago, it may no longer appear in the logs, so take a moment and re-create the problem before sending the support request.
- When it comes to PACS connectivity errors, we'll do our best to help, but it is very likely you will need to engage the assistance of your PACS administrator.
- You will need an active support plan for us to assist you.

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