

A Nemaris, Inc. Product

PACS Connection

For Surgimap version 2.2.15 and higher

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REVISION 3.0

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Overview

This guide explains how to connect the Surgimap software to a hospital PACS system to:

- Push images (export/send) from PACS into Surgimap
- Pull images (query/retrieve) into Surgimap from PACS



At a Glance

Connect to PACS on the DICOM Nodes tab within Surgimap Settings:

- To import via PACS export, add new Local IP Address, AE Title, and Port at bottom
- To import via query/retrieve from PACS, add Local IP Address, AE Title, and Port at bottom and enter Hospital IP Address, AE Title, and Port at top

DICOM N	odes									
	Address	AE Title	Port			Source Na	me			
0.0.	0.0	PACS	12346	👫 Hospital	PACS					
							Marife Calantad	Demons Coloridad		- 4-
							verify selected	Remove Selected	Add new n	lode
Local Cor	figuration (SCP)									
Surgima	n Defaults	-	Apply				Reset	DICOM Serv	ice Status	
Devia	pocradito							Dicontocit		·
Basic										•
Local Po	ort:				12346	Maximum # Associations:	20		-	
	Add Local AE	Title	IP Address	Local AE 1	litle .	IP Address List:	XX.X	(.x.xx		
	Add Local AL		localhost	SURGIMAP		i Address cista				
	Remove Selec	ted								
	Add Transfer S	votav	EXS_BigEndia	nExplicit	^	Maximum # of Patients:	200		-	
	Add Hanster 5	ynux	EXS_JPEG2000	l andar Only		Maximum # of Studies:	200			
	e Selected Trans	sfer Syntaxes	EXS_IPEG2000	colace		Haxinan # of Statics.	200			~
Remov										
	Add Transfer S	yntax	EXS_BigEndia EXS_JPEG2000 EXS_JPEG2000 EXS_JPEG2000	nExplicit LosslessOnly	^	Maximum # of Patients: Maximum # of Studies:	200		÷	

Pushing images from PACS into Surgimap

Warning: Any PACS system connection with Surgimap must be on a computer/device with a **static IP address**. Most hospital PACS are configured to only send DICOM images to hospital computers.

1. GATHER THE APPROPRIATE INFORMATION FOR YOUR LOCAL CONFIGURATION

Please collect the following information for the computer you would like to connect between Surgimap and PACS to fill out the chart below:

AE Title	
Port Number	
IP Address (es)	

- AE Title: Please contact your hospital's PACS administrator to assign you the appropriate <u>AE Title</u>. We suggest a convention such as the room/office number or end user name e.g., SURGIMAP_RM317, SURGIMAP_DR_SAMPLE. Extensions such as Win or Mac help if the user has multiple computers.
- Port Number & IP Address: Your computer's personal IP Address can be found within the Surgimap software:
 - a. Open Surgimap
 - b. Click on the <u>Settings</u> icon at top right
 - c. Go to the DICOM Nodes tab
 - d. Find your <u>Port Number</u> (unless another Port Number is specified, use '12346') and <u>static IP Address</u> (top of the IP Address List on right side, ex: xx.x.xx). If multiple IP addresses are displayed, then submit all to your PACS admin.

Local Configuration (SCP)						
Surgimap Defaults	Apply			Reset D	ICOM Service Status	V
Basic						
Local Port:		12346	Maximum # Associations:	20		Â
Add Local AE Title	IP Address	Local AE Title	IP Address List:	xx.x.x.xx		
	localhost	SURGIMAP				
Remove Selected						

2. CONTACT YOUR HOSPITAL PACS ADMINISTRATOR WITH INFORMATION IN STEP #1

- Supply your PACS administrator with the information from step #1 to create this node for you in PACS.
- When they confirm node creation is complete, make sure they inform you of your personal <u>AE Title</u> to enter into Surgimap in Step #3.

3. Use your AE Title to connect with PACS

- Follow steps a-c in Step #1 above to get to <u>DICOM Nodes</u> tab.
- Within the Basic section type '12346' as the Local Port Number unless told otherwise by your PACS Administrator.
- Press the 'Add Local AE Title' button.
- Enter the <u>AE Title</u> provided to you by your PACS administrator in the dialogue box and press "OK".

Basic						
Local Port:			12346	Maximum # Associations:	20	^
Add Local AE Title	IP Address	Local AE Title		IP Address List:		
	XX.X.X.XX	SURGIMAP				
Remove Selected						

- 4. CLOSE SURGIMAP THEN LOG BACK IN TO USE THE PACS EXPORT FUNCTION.
 - Within PACS, export a patient to your Surgimap DICOM destination.
 - Within Surgimap, go to the Patients tab of the Database screen to locate the exported patient.

Note: Surgimap must be open during the PACS export/send process in order to receive the patient images.

Pulling images into Surgimap from PACS (Query/Retrieve)

Warning: Any PACS system connection with Surgimap must be on a computer/device with a **static IP address**. Most hospital PACS are configured to only send DICOM images to hospital computers.

FOLLOW STEPS #1-3 FROM PREVIOUS SECTION

4. CREATE A NODE FOR YOUR PACS NETWORK IN SURGIMAP

Note: For this step, you will need to consult your PACS administrator for the PACS network static <u>IP Address</u>, <u>AE Title</u>, & <u>Port Number</u>.

DIC	OM Nodes						
ſ	Address	AE Title	Port		Source Name		
	0.0.0.0	PACS	12346	Hospital PACS			
					Verify Selected	Remove Selected	Add new node

Click on "Add new node"

- Enter the following information into the 'Node parameters' dialogue box and press "OK" (Note: Most of this information will be given to you by your PACS admin):
 - IP Address: for your PACS network that you received from your PACS Admin (not your computer's IP address)
 - AE Title: provided by your PACS Admin (not your Local AE Title)
 - Port Number: provided by your PACS Admin; if they do not specify one, use default value '12346'
 - Source Name: create a recognizable name to help you locate the node on the Import screen's finder/file tree

💽 Node p	arame	ters	?	×
IP Address:				
AE Title:				
Port:				
Name:				
		OK	Cancel	

5. CLOSE SURGIMAP THEN LOG BACK IN TO IMPORT VIA QUERY/RETRIEVE. SEE NEXT SECTION.

Importing DICOMS via Query/Retrieve

1. GO TO YOUR IMPORT SCREEN AND LOCATE THE 'SOURCE NAME' OF YOUR CONNECTED PACS SYSTEM (E.G. DCM4CHEE)



2. SELECT A VARIABLE FROM THE DROP-DOWN SELECTOR TO SEARCH FOR PATIENT IMAGES. ENTER INFORMATION IN THE SEARCH FIELD & CLICK THE 'SEARCH' BUTTON.



3. ONCE RESULTS ARE DISPLAYED IN THE IMPORT PANEL, CLICK TO HIGHLIGHT THE PATIENT, STUDIES, OR SERIES YOU WISH TO IMPORT AND CLICK THE 'IMPORT' BUTTON.

S DCM4CHEE	DCM4CHEE						Cancel Search Import
Nemariss-Mac-mini.local	Name	 new patient 					Search successfully completed (6 Results)
= ++ -0	Nam	e ID	Modality	# 🕀 🖉	Date	O	Progress
#o Mac Server	> (2) NEW						0%
🖳 My Computer	> (2) NEW						0%
Local Disk (C:)	> 🗷 NEW						0%
(\\newserver\nemaris) (X:)	> 🗷 NEW	PATIENT 09121	51	1	09/12/2016		0%
(\\10.0.10.4\Surgimap) (Y:)	> 🗷 NEW	PATIENT 10101	i0	1	10/10/2016		0%
(\/newserver/home/ykong	> 🗷 NEW	PATIENT 11291	51	1	11/29/2016		0%
Desktop							
📙 Home							
📙 Documents							
📙 Downloads							
📙 Pictures							
Screenshot							

You can also right click or double-finger click (Mac) on a patient and select 'Import'

4. CLICKING 'IMPORT' WILL QUEUE THE DATA TRANSFER. YOU WILL SEE THE PROGRESS OF YOUR IMPORT SELECTION ON THE 'PROGRESS COLUMN'.

Note: If your 'Progress' bar is stuck on 'queued' or 'pending' and does not finish the import (no green checkmark), there is an error with the PACS/Surgimap connection setup. Please go back and double-check all the settings you created. In order for the connection to be established, all <u>IP Addresses</u>, <u>AE Titles</u>, and <u>Port Numbers</u> in Surgimap must match those in PACS **verbatim**, and vice versa.



Using PACS link through VPN connection

When connecting to the hospital PACS using a VPN connection, you will need to make sure that the user picks up the same static IP address as assigned. Please note, this configuration is on a Windows Domain based server.

1. Hospital IT Admin creates a NEW GROUP IN ACTIVE DIRECTORY SUCH AS VPNUSER1 AND ADD YOUR ACTIVE DIRECTORY USER(S) TO THAT GROUP.



2. OPEN THE RRAS CONSOLE, RIGHT CLICK ON REMOTE ACCESS LOGGING & POLICIES AND CHOOSE LAUNCH NPS.



3. IN THE NETWORK POLICY SERVER CONSOLE, RIGHT-CLICK ON NETWORK POLICIES, AND SELECT NEW



- 4. NAME THE POLICY, SELECT REMOTE ACCESS SERVER (VPN-DIAL UP) IN THE DROP DOWN LIST, AND THEN NEXT.
- 5. UNDER CONDITIONS, CLICK ADD, SELECT USER GROUPS, AND ADD.
- 6. CLICK THE ADD GROUPS 'BUTTON" AND LOCATE YOUR GROUP USING THE OBJECT TYPE (GROUPS), LOCATIONS (YOUR DOMAIN SERVER), ADVANCED, AND FIND NOW "BUTTONS".

🌍 Netwo	New Netw	ork Policy			
File Ac		Specify C Specify the cor of one condition	onditions ditions that determine whether this network policy is evaluated for a connection request. A minimum is required.		
- 2	Select co	ndition		< es	ccess
	Coloctio	and then all	-	-	ployin
	Select a	condition, and then clic	Add.	S	sions
	<u>undaps</u>	Windows Groups The Windows Groups (groups,	ondition specifies that the connecting user or computer must belong to one of the selected	B U U	
		Machine Groups The Machine Groups o	undition specifies that the connecting computer must belong to one of the selected groups.		
	.	User Groups The User Groups cond	ion specifies that the connecting user must belong to one of the selected groups.	_	
	HCAP				
	2	Location Groups	User Groups		
	3-3	The HLAP Location G required to match this	Specify the group membership required to match this policy.		
		network access server	· · · · · · · · · · · · · · · · · · ·		
			Groups		
			Lancel		
-			<u>H</u> emove		
Action: In			Add Groups Remove Cancel		
			UKCancel		
			Select Group	?	×
			Select this object type:		
			Group	ject Types	
			From this location:		
			Lab.local L	ocations	
			Enter the object name to select (<u>examples</u>):		
			Nemaris/VPN CH	ieck Names	
			Advanced OK	Cancel	

- 7. IN THE SPECIFY ACCESS PERMISSIONS WINDOW, SELECT ACCESS GRANTED AND NEXT.
- 8. ACCEPT ALL DEFAULTS IN THE FOLLOWING TWO WINDOWS; CONFIGURE AUTHENTICATION METHODS, CONFIGURE CONSTRAINTS.
- 9. UNDER CONFIGURE SETTINGS CHOOSE IP SETTINGS, THEN ASSIGN A STATIC IPv4 ADDRESS, AND INSERT YOUR CHOSEN STATIC IP (SAME ONE AS IN THE SURGIMAP PACS CONFIGURATION). THIS MUST OF COURSE BE PART OF YOUR LAN SUBNET.

New Network F	olicy		×
	Configure Se NPS applies settings t are matched.	.ttings to the connection request if all of the network policy conditions and constraints for the policy	
Configure the If conditions a Settings: RADIUS A	settings for this network nd constraints match the ttributes	policy. s connection request and the policy grants access, settings are applied.	_
 Standa Vendor Routing ar Access Multini Multini Bandw Protocc IP Filter Encrypi IP Setti 	rd Specific and Remote (and (MAP) \$ s tion ngs	Specing the client if aduless a assignment rules for this pullcy. Server must supply an IP address Server settings determine IP address Assign a static IPv4 address To configure IPv6 settings, go to the Standard page of RADIUS Attributes.	
		PreviousNextFinishCancel]

10. UNDER THE COMPLETING NEW NETWORK POLICY CLICK FINISH.

w Network Policy	×
Complet	ing New Network Policy
You have successfully created	the following network policy:
Policy conditions:	
User Groupe	
NAC IDud Address	
Policy settings:	
Condition	Value 🔺
Authentication Method	MS-CHAP v2 OR MS-CHAP v2 (User can change password after it has expired)
Access Permission	Grant Access
Update Noncompliant Clients	True
NAP Enforcement	Allow full network access
E 15.1	PPP
Framed-Protocol	
Service-Type	Framed
Framed-Protocol Service-Type To close this wizard, click Finish	Framed
Framed-Protocol Service-Type To close this wizard, click Finish	Framed

11. Now you can configure your static IP address in the added AD User Dial-in Tab in Active Directory Users and Computers.

Rer	mote Desk	top S	Services Pr	ofile 🗍	Per	sonal Vir	tual	Desktop	0	DM+
Gene	ral 🛛 Addre	ess	Account	Profile	Tele	ephones	0	rganization	Men	nber Of
D	ial-in		Environme	nt [S	essions		Remo	te con	trol
Ne	twork Acc	ess l	Permission							1
0	Allow acc	ess								
0	Deny acc	ess								
۲	Control ac	ces:	s through N	PS Netv	vork P	olicy				
	Verify Call	er-IC):		[
_ Ca	llback Opti	ions							_	1
•	No Callba	ack								
0	Set by Ca	aller (Routing an	d Remol	e Acc	ess Serv	rice	only)		
0	Always C	allba	ick to:							
	Assign Sta	atic I	P Addresse	es —— 20						1
Di	efine IP ad ial-in conne	ldres ectio	ises to enat in.	ole for th	is	Stati	ic IF	P Addresses		
Stati	ic IP Add	ress	ses							×
	Assign a	stati	ic IPv4 add	ress:		10 .	0	. 6 .	130	
	Assign a	stati	ic IPv6 add	ress:						F
-	🗖 Pre	efix;		Γ						1 =
	🗖 Int	erfa	ce ID;	Γ						1
		[OK			Cancel]		

Connecting to PACS for multiple Surgimap accounts on a single computer

When connecting to PACS on a single Windows or MAC based computer for multiple Surgimap user accounts to go on to, input the following parameters to the settings.ini file located with the rest of the software contents.

Please note this addition to the settings.ini needs to be at the start of the file while the last line item needs to be within the [application] section. If you want to add, for instance, 3 different DICOM nodes with the following parameters:

DICOM Node #1

IP address: 1.1.1.1

AE Title: AETITLE1

Port: 11112

Name: PACSNODE1

DICOM Node #2

IP address: 2.2.2.2

AE Title: AETITLE2

Port: 21112

Name: PACSNODE2

DICOM Node #3

IP address: 3.3.3.3

AE Title: AETITLE3

Port: 31112

Name: PACSNODE3

The local port is 12346.

Add the following information on the settings.ini file:

Note: Place this at the top of the file

Also, please make sure that each IP Address inside the AETITLES_TABLE entry is unique.

```
NODE_ADDRESSES=1.1.1.1/%/2.2.2.2/%/3.3.3
NODE_AETITLES=AETITLE1/%/AETITLE2/%/AETITLE3
NODE_PORTS=11112/%/21112/%/31112
NODE_NAMES=PACSNODE1/%/PACSNODE2/%/PACSNODE3
AETITLES_TABLE=10.10.10.10/@/SURGIMAP1/%/20.20.20.20/@/SURGIMAP2
SCP_PORT=12346
[application]
PACSSettingsFromINIOverride=true
```

If the settings.ini file name is not visible, hidden folders/files will need to be disabled. To do this, navigate to:

- Windows Open the Control Panel & locate the Folder Options. Select the radio button "Show hidden files, folders and drives"
- MAC Launch Terminal and type in "Defaults write com.apple.finder AppleShowAllFiles YES – boolean TRUE;" Hold the "Option/Alt" key, then right click on the Finder icon in the click Relaunch.



Push User Information Implementation Details

Surgimap's Query and Retrieve operations (C-FIND and C-MOVE), "Push User Information" is an optional parameter that may be enabled to provide additional identifying information of the user using PACS functionality via a Surgimap client. To activate/deactivate the setting, go to User Settings > DICOM Nodes > Advanced > Push User information > select or deselect the checkbox. If this option is enabled, the DcmDataset object that is sent for C-FIND and C-MOVE operations will contain an additional tag: DCM_ImagingServiceRequestComments (0040, 2400). The contents of this tag will contain the current logged-in Surgimap user's email address in the following format as a string: user=user@example.com . Utilizing this tag is implementation-specific on the PACS Server side, but the contents of it should typically show up in the Debug-level logs of the target PACS Server implementation. It is recommended to make a provision for it in the implementation if it is to be used for record keeping or other purposes.

Troubleshooting the PACS connection

If send from PACS and/or query/retrieve does not work after inputting the DICOM node information in both Surgimap and PACS:

- Ensure there is only once instance of Surgimap running (no instances of Surgimap running in the background). To verify this go to Task Manager > Processes > scroll down to Surgimap. If there are multiple Surgimap processes, close all of them and relaunch the Surgimap application. It is recommended that you regularly shut down or restart your computer to avoid multiple processes being generated.
- Use the 12346 port for the local DICOM node in both PACS and Surgimap. If that does not work, try port 104.
- Change the Surgimap settings in the Local Configuration (SCP) section according to your PACS provider by using the below drop-down menu and hitting Apply. This is a one-time application and does not need to be updated with each new login. Expand the Advanced section to view the default settings for each PACS provider and to customize additional DICOM settings.

Surgimap Defaults	-	Apply
Surgimap Defaults	^	
AZE Phoenix v1.20		
DCM4CHEE v3.x		
FUJIFILM Synapse v4.0.0		
GE Centricity v3.2		
MCKESSON Radiology v12.0		
MEDSTRAT Joints		
MERGE v7.0		10.2
PHILIPS IntelliSpace v4.0		
PHILIPS iSite v3.5	¥	

Additional PACS Settings INI override options

A comprehensive list of PACS Settings INI Override options can be found below. All of these can be found in the software. For those options that have a checkbox, true or false can be entered. For those options that are numeric, the number can be entered. Options with other properties are explained in either the above summary, or under the option below.

NODE_ADDRESSES ADVANCED LOGS NODE AETITLES NODE PORTS SCU DECOMPRESSION NODE NAMES - Options: NODE LOCALAETITLES 0 - Automatic AETITLES TABLE 1 - Compress SCP PORT 2 - Decompress SCP MAXASSOCIATIONS SCP MAXPDU WILDCARD POLICY SCP FILEPAD - Options: SCP ITEMPAD 0 - None SCP ACSETIMEOUT 1 - Only trailing SCP DIMSETIMEOUT 2 - Leading and trailing SCP SINGLEPROCESS SCP SUPPORTPATIENTROOT LOGGING LEVEL SCP SUPPORTPATIENTSTUDYONLY - Options: SCP SUPPORTSTUDYROOT 60000 - Off SCP REFUSEMULTIPLESTORAGEASSOCIATION 50000 - Fatal Errors S 40000 - Errors SCP IGNORESTOREDATA 30000 - Warnings SCP BITPRESERVING 20000 - Info SCP CORRECTUIDPADDING 10000 - Debug SCP USEMETAHEADER 0 - Trace SCP KEEPDBHANDLEDURINGASSOCIATION SCP DIMSEBLOCKINGMODE SCU HALTONFAILURE

SCU ALTERNATEPROPOSALMODE

UNIQUE KEYS FOR HIGHER LEVELS

MAX_NUM_PATIENTS MAX NUM STUDIES

IF YOU ARE STILL EXPERIENCING TROUBLE, PLEASE CONTACT US AT <u>SUPPORT@SURGIMAP.COM</u>