Arthrex Synergy.net™ Management Software User Guide

The Arthrex Synergy.net™ Management Software User Guide provides important information for the safe operation of the Synergy.net Management Software network. Read this User Guide thoroughly prior to using this system and keep it in an easily accessible place for use by all operating personnel. Read and follow all safety warnings, cautions and precautions.

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950-0056-01  Revision 0
09/2020
This is not a warranty document. For all warranty information, including disclaimers, exclusions, terms, conditions and related provisions, refer to the "Arthrex U.S. Product Warranty" section of the Arthrex, Inc. website, found at www.arthrex.com whose provisions are incorporated herein by reference.
Table of Contents

1.0 Introduction ...................................................................................................................................... 4

1.1 Intended Use ...................................................................................................................................... 4

1.2 Contraindications .............................................................................................................................. 4

1.3 Warnings and Precautions .............................................................................................................. 5

1.4 Symbol Definitions ............................................................................................................................ 5

1.5 Initial Use of the Device .................................................................................................................... 5

1.6 Contacting Arthrex Customer Service ............................................................................................ 5

2.0 Synergy.net Management Software and Hardware Specifications .................................................... 6

3.0 Synergy.net Management Software Equipment Interconnect Diagram ............................................ 7

4.0 Synergy.net Management Software Server Configuration ................................................................ 8

Server Configuration .......................................................................................................................... 8

First Login Configuration ................................................................................................................... 10

5.0 SYNERGY.NET MANAGEMENT SOFTWARE USE INSTRUCTIONS ........................................ 37

Accessing Synergy.net Management Software .................................................................................... 37

OR Command (applies to AR-3200-1030 and AR-3200-1044) ................................................................ 38

Cases .................................................................................................................................................... 43

Cases – Schedule ................................................................................................................................... 44

Cases – New Cases ............................................................................................................................... 45

Cases – Archived Cases ...................................................................................................................... 50

Cases – Room Privacy ........................................................................................................................... 53

Procedures ............................................................................................................................................... 61

Reports (applies to AR-3200-1030 and AR-3200-1045) ........................................................................ 63

Matrix Screen .......................................................................................................................................... 65

Logging out of Synergy.net Management Software ............................................................................... 65

Synergy\textsuperscript{HD3/UHD4} Changes with Synergy.net Management Software .................................... 65

Audit Logs .............................................................................................................................................. 67

6.0 Maintenance ...................................................................................................................................... 69

6.1 Cleaning ............................................................................................................................................ 69

6.2 Troubleshooting ............................................................................................................................... 70
1.0 Introduction

It is recommended that personnel study this user guide before utilizing Synergy.net Management Software System. The safe and effective use of this system requires the understanding of and compliance with all warnings, precautionary notices, and instructions marked on the product, and included in this manual. Please refer to Synergy.net Management Software Installation Guide if Synergy.net Management Software needs to be installed. Synergy.net consists of the following part numbers:

- AR-3200-1030 Synergy.net Management Software
- AR-3200-1042 Synergy.net Pairing License
- AR-3200-1043 Synergy.net Printing
- AR-3200-1044 Synergy.net OR Command
- AR-3200-1045 Synergy.net Reporting
- AR-3200-1046 Synergy.net Text Notification

Facilities implement either the full Synergy.net system (AR-3200-1030) or select a subset of Synergy.net functionality à la carte (AR-3200-1042 through AR-3200-1046).

1.1 Intended Use

The intended use of this product is to be a Medical Device Data System [MDDS] that provides the functions defined below.

Synergy.net Management Software is a software application designed to work in conjunction with SynergyUHD and SynergyUHD4 (herein referred to as SynergyUHD3/UHD4) systems and to expand the capabilities of SynergyUHD3/UHD4. The Synergy.net Management Software application will run on server hardware which meets the requirements as defined in the “Specifications” section of this user guide.

Synergy.net Management Software offers the following functions:

- Ability to pass data from the Synergy system to harmonize settings between all Synergy devices on the network with settings passed through the server. This functionality provides the ability to input surgeon and device settings once and automatically update all Synergy devices (i.e., camera systems) on the facility’s network with those settings. If a surgeon wants to change a setting at a later time, the change is made once and again populates all the Synergy devices.

- HL7 capabilities for directly interfacing to EMRs and other HL7 based systems. This includes the ability to receive HL7 orders from an EMR and use those orders to populate the case list on Synergy devices, the ability to export HL7 reports back to an EHR, etc.

- Ability to present a single database of all cases captured from all Synergy devices on the network. Surgeons will be able to see a complete list of all of their cases regardless of where or when they were captured and will be able to retrieve any of those cases at any time.

- Further DICOM capabilities beyond what is available on Synergy. This includes the ability to send DICOM video to a PACS, send to multiple PACS or DICOM archives, etc.

- Nurse management capabilities such as the ability to get a real-time view into each OR from any location to determine the status of current cases, the ability to centrally schedule OR rooms, etc.

- Ability to allow staff to mine procedural data to look for opportunities to improve surgical turn-around times, to identify areas for operational improvements, etc.

- Ability to allow surgeons to easily create reports, post-op documents, video feedback, etc. for their patients.

- Ability to allow facilities to send surgery status updates to designated family members via text messaging.

1.2 Contraindications

The system is not intended to be used as a permanent archive (e.g., PACS) for data.
1.3 Warnings and Precautions

The words WARNING, PRECAUTION, and NOTE carry special meanings and they should be read carefully.

**WARNING**: The safety and/or health of the patient, user, or a third party are at risk. Comply with this warning to avoid injury to the patient, user, or third party.

**PRECAUTION**: This contains information concerning the intended use of the device or accessory. Damage to the equipment is possible if these instructions are not followed.

**NOTE**: A note is added to provide additional, focused, information.

### 1.3.1 WARNINGS

This equipment is designed for use by medical professionals completely familiar with the required techniques and instructions for use of the equipment. Prior to using the device, read and follow all warning and precautionary notices and instructions marked on the product and included in this user guide. Become familiar with the operation and function of this device and associated accessories.

### 1.3.2 PRECAUTIONS

- Prior to use, read the entire Arthrex, Inc. Synergy System video instruction manual [HD3: 950-0027-XX; UHD4: 950-0047-XX].
- Follow all warnings and cautions in these manuals.

### 1.4 Symbol Definitions

See System Component Manuals for Symbol Definitions.

### 1.6 Contacting Arthrex Customer Service

For questions or problems related to Synergy.net Management Software system or for technical assistance, contact Customer Service at 888-420-9393.
2.0 Synergy.net Management Software and Hardware Specifications

Synergy.net Server Specifications

<table>
<thead>
<tr>
<th>Synergy.net Database/Interface Server</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating System[*1,2]</td>
<td>Windows Server 2008 R2 SP1 or Microsoft Windows Server 2012</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Processor</td>
<td>Minimum 8 Cores, 2.4 Ghz</td>
<td>Minimum 16 Cores, 2.4 Ghz</td>
<td></td>
</tr>
<tr>
<td>Memory</td>
<td>Minimum 8 GB</td>
<td>Minimum 16 GB</td>
<td></td>
</tr>
<tr>
<td>Storage[*3]</td>
<td>Minimum 150 GB for C Drive; Case Media Storage(100GB X Number of CCUs)</td>
<td>Minimum 150 GB for C Drive; Case Media Storage(200GB X Number of CCUs)</td>
<td></td>
</tr>
<tr>
<td>Network Interface</td>
<td>1.0 Gbps</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- One Synergy.net Database/Interface Server is required. This server can be physical or virtual.
- Additional Video Handling = DICOM video export or video concatenation/watermarking features

Synergy.net Media (NMS) Server

| Synergy.net Media (NMS) Server | | |
|---|---|
| Operating System | Windows Server 2008 R2 SP1 or Microsoft Windows Server 2012 |
| Processor | Minimum 4 cores, 3.7GHz |
| Memory | Minimum 16 GB |
| Storage | Minimum 900GB 10K SAS HDD |
| Network | 1 Gbps |

A Synergy.net Media (NMS) Server(s) is only required if the Matrix feature in Synergy.net will be used. Synergy.net Media (NMS) Server must be a physical server.

The Synergy.net Media (NMS) Server and Database/Interface server cannot be combined into a single physical server.

*Notes:*


2. Install hotfix (KB2577795) for Windows server 2008 R2/([http://support.microsoft.com/kb/2577795](http://support.microsoft.com/kb/2577795))

3. Partition C : OS and other Installed programs only- No Media Data

Synergy.net Client Software Specifications

Synergy.net will run on the following client supported browsers:

- Internet Explorer 9 (pending open issues) or IE 10 or IE 11
- Google Chrome
3.0 Synergy.net Management Software Equipment Interconnect Diagram

Figure 1-Synergy.net Management Software Equipment Interconnect Diagram
4.0 **Synergy.net Management Software Server Configuration**

The below steps and screens assume that Synergy.net Management Software server has been installed and configured as per Installation Guide provided separately.

**Server Configuration**

The Synergy.net Management Software system can be configured from the following aspects:

- Manage ORs: Define operating rooms and specify the printer, room cameras and routing controllers for each room
- Printers: View all system available printers and their status
- Print Fields: Specify the fields to be printed in the case reports
- DICOM/HL7: Configure the DICOM/HL7 server properties
- Users: Manage the users for Synergy.net Management Software
- CCU Date & Time: Configure NTP servers, time zone and time format for connected SynergyHD3/UHD4 devices
- CCU Network Storage: Configure network storage location and access for all Synergy.net Management Software connected SynergyHD3/UHD4 devices
- CCUs: Manage the SynergyHD3/UHD4 membership of Synergy.net Management Software
- PACS Server: Manage the PACS server settings of one or more PACS for the Synergy.net Management Software
- Routing Controllers: Refer to the Matrix User Guide for this configuration
- System Settings: Manage server settings
- Network Export Settings: Manage network export settings, including watermarking and video concatenation
- Text Notification: Configure the text/sms notification on case start and end

Each of above aspects will be detailed in this section of the document.

To configure Synergy.net Management Software, a user with administrator rights should log on to Synergy.net Management Software. From the main Synergy.net Management Software menu shown in Figure 2, click on the settings icon in the upper right corner of the screen. This will open the Facility Settings screen shown in Figure 6.
Figure 2-Synergy.net Management Software main menu with settings icon identified
First Login Configuration

To connect a new Synergy\textsuperscript{HD3/UHD4} device to Synergy.net Management Software, click the +Add New button in the upper right corner of the screen as shown in Figure 3. This will bring up the Add CCUs to Synergy.net Management Software screen shown in Figure 4.

![Figure 3-Synergy.net Management Software menu after first Login](image-url)
All SynergyHD3/UHD4 systems present on the same sub-network as Synergy.net Management Software will appear in the list by name and IP address.

**Note:** Please make sure that the CCU is licensed to be paired with the Synergy.net Management Software. Please refer Installation Manual for guidance.

If the intended SynergyHD3/UHD4 device appears on the list, do not click on the Join button to the right of the IP address. Instead, manually enter the IP address and a user friendly name for the desired CCU. If it doesn’t appear on the list, then input the SynergyHD3/UHD4 host name and IP address into the blank fields at the bottom of the list and click the Join button next to the added IP address. In either case, a dialog box will appear confirming the request to join a device to Synergy.net Management Software. Click OK to confirm the request or Cancel to deny the request. Upon confirmation, the system will ask for the SynergyHD3/UHD4 device credentials as shown in Figure 5.
Select an administrator account for the device, enter the password in the password field, and click on the Login button in the lower right corner of the screen. After a successful login, a secure connection is established between the Synergy\textsuperscript{HD3/HD4} device and Synergy.net Management Software. The device will then appear on the CCUs list shown in Figure 22. The server will need to be re-licensed at this step (refer to the Synergy.net Installation Manual for more information).
Manage ORs
Synergy.net supports the ability to configure operating room details. From the Facility Settings screen shown in Figure 6, click on the Manage ORs link in the left column and click on the + Add New button in the upper right corner to display the operating room details screen to add an operating room as shown in Figure 7.

![Operating room details screen](image)

Figure 7-Operating room details screen

Enter the following information in the operating room details screen:

- **Name**: Name of the operating room.
- **Display Name**: Name displayed on the user interface.
- **Default Printer**: This is the default network printer for the particular operating room. The drop down list shows all printers currently configured on the Synergy.net Management Software server.
- **Media Server**: This is the media server assigned to the operating room.
- **Primary Video**: Either SynergyHD3/UHD4 (CCU) or one of the room cameras may be selected as the primary video displayed on OR Command.
- **Room Cameras**: Each operating room can have one or more room cameras associated with it. The name assigned to each room camera should be unique and the URI should be the RTSP stream as per the room camera’s configuration. After this information is entered, click the Add button to assign the room camera to the operating room. Multiple room cameras can be assigned to the same operating room using the Add button.
Once the information is entered, click on the Save button to add the operating room to the operating room list.

For details regarding Routing Controller, PIN Code and Routing Ports in the ‘Operating Room’ tab, ‘Video & Audio Sources’ tab and ‘Displays & Speakers’ tab, please refer to the Synergy Matrix User Guide.

The other configuration items on the operating room details screen are for future use and have no impact on the current software version.

To edit information for an existing operating room, move the cursor to the operating room requiring editing. This will highlight the operating room name and display two additional buttons next to the name as shown in Figure 8. Click on the “i” button to edit the information. This will display the operating room details screen shown in Figure 7 with the existing settings populated in each of the fields. Edit any of the existing information or add new information as needed. Click the Save button in the lower right corner of the screen to save the changes.

To delete an operating room from the list, click on the trash can icon that appears next to the highlighted operating room as shown in Figure 8. A prompt will request confirmation that the operating room should be deleted. Click Yes to confirm the deletion or No to cancel the deletion.

**Printers**
From the Facility Settings screen shown in Figure 6, click on the Printers link to show the list of all available printers connected to the Synergy.net Management Software server and their current status as shown in Figure 9. Any network printer available on the Synergy.net Management Software server will automatically appear on the Printers list. Click on the refresh button (the clockwise arrow button) in the upper right corner of the screen to refresh the list at any time. If a printer does not appear on the list, then...
it should be added to the Synergy.net Management Software server per normal Windows printer installation.

Note: A dummy printer should be set to default in case the server has no actual network printer installed and network export is to be enabled from Synergy.net.

![Printers screen](image)

**Figure 9-Printers screen**

**Print Settings**
From the Facility Settings screen shown in Figure 6, click on the Print Settings link to show print configuration options associated with Synergy.net. There are two print setting options: 1. Print Cover Page: If this is ON, a cover page that includes case demographics will print before each printed case and 2. Print When No Images: If this is ON, then a print job is still issued even when no images are captured in a case.
DICOM/HL7 Settings
From the Facility Settings screen shown in Figure 6, click on the DICOM/HL7 link to set up DICOM and HL7 configurations as shown in Figure 11. Please note that changing these settings may cause issues with DICOM and/or HL7 transactions to and from Synergy.net Management Software. Please contact Arthrex before modifying any information in this section. The settings in Figure 11 are sample settings and would need to be adjusted for an individual facility.

The General menu offers the following configuration settings:

<table>
<thead>
<tr>
<th>Setting</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Synergy.net AE Title</td>
<td>The Application Entity Title of Synergy.net Management Software.</td>
</tr>
<tr>
<td>Station Name</td>
<td>Machine/Station Name for the Synergy.net server.</td>
</tr>
<tr>
<td>Encoding</td>
<td>Encoding used for DICOM and HL7 (ISO-8859-1(Latin-1)).</td>
</tr>
<tr>
<td>Log Level</td>
<td>Logging level of DICOM/HL7 modules.</td>
</tr>
<tr>
<td>Operation Timeout</td>
<td>The general timeout for any DICOM or HL7 operation before which any retry occurs.</td>
</tr>
<tr>
<td>Settings Change Retry Count</td>
<td>The number of times changing settings for DICOM/HL7 is retried in the event of another DICOM/HL7 ongoing operation.</td>
</tr>
<tr>
<td>Settings Change Retry Interval</td>
<td>Time (in seconds) before another attempt to change the DICOM/HL7 settings occurs in case of failure.</td>
</tr>
</tbody>
</table>
The MWL menu offers the following configuration settings:

<table>
<thead>
<tr>
<th>Configuration Setting</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Synergy.net AE Title</td>
<td>The Application Entity Title of Synergy.net Management Software.</td>
</tr>
<tr>
<td>Station Name</td>
<td>Machine/Station Name for the Synergy.net server.</td>
</tr>
<tr>
<td>Encoding</td>
<td>Encoding used for DICOM and HL7 (ISO-8859-1(Latin-1)).</td>
</tr>
<tr>
<td>MWL Worklist Enable</td>
<td>Enable/disable modality worklist</td>
</tr>
<tr>
<td>Default Search Date Range</td>
<td>The time frame for which the worklist records are searched.</td>
</tr>
<tr>
<td>Default Search Modality</td>
<td>The modality for which the worklist is to be fetched</td>
</tr>
<tr>
<td>Max MWL Record Count</td>
<td>The maximum number of records to be displayed as a result of worklist query.</td>
</tr>
<tr>
<td>SCP AE Title</td>
<td>The Application Entity Title for the MWL SCP server from where the records are to be fetched.</td>
</tr>
<tr>
<td>SCP IP Address</td>
<td>IP Address for the MWL SCP server.</td>
</tr>
<tr>
<td>SCP Port</td>
<td>Port of the MWL SCP server.</td>
</tr>
<tr>
<td>Disable AE Title in Query</td>
<td>Indicates whether or not to send the Local AE Title in the search filter for the worklist.</td>
</tr>
<tr>
<td>Enable Verification</td>
<td>Enable/disable MWL verification.</td>
</tr>
</tbody>
</table>
Click on the Test Settings button at the bottom of the screen to check the saved MWL settings and the availability of the MWL SCP server. If the test is successful click the Save button in the lower right corner of the screen to save the changed settings.

The Store menu (as shown in Figure 13) offers the following configuration settings. (Note: The settings in Figure 13 are sample settings and need to be adjusted for individual facilities):

<table>
<thead>
<tr>
<th>Setting</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Synergy.net AE Title</td>
<td>The Application Entity Title of Synergy.net Management Software.</td>
</tr>
<tr>
<td>Station Name</td>
<td>Machine/Station Name for Synergy.net Server</td>
</tr>
<tr>
<td>Encoding</td>
<td>Encoding used for DICOM and HL7 (ISO-8859-1(Latin-1))</td>
</tr>
<tr>
<td>Send Enable</td>
<td>Enable DICOM store</td>
</tr>
<tr>
<td>Video Enable</td>
<td>Enable DICOM video store</td>
</tr>
<tr>
<td>Default Send Method</td>
<td>When the store request(s) are sent to Store SCP server (automatically at end of case, at each image capture, or manual mode only)</td>
</tr>
<tr>
<td>Send Retry Count</td>
<td>Number of DICOM store retries in event of a failed attempt</td>
</tr>
<tr>
<td>Send Timeout</td>
<td>DICOM store timeout value in seconds (before retrying the request).</td>
</tr>
<tr>
<td>Send Modality</td>
<td>DICOM store send modality(read from the default PACS server settings).</td>
</tr>
</tbody>
</table>
**Send Image Format**
JPEG lossy or raw DICOM image format (read from the default PACS server settings).

**SOP Class**
The SOP class being used to export images (read from the default PACS server settings).

**SCP AE Title**
The Application Entity Title for the Store SCP server (PACS read from the default PACS server settings).

**SCP IP Address**
IP address for the Store SCP server (read from the default PACS server settings).

**SCP Port**
Port of the Store SCP server (read from the default PACS server settings).

---

**Figure 13-DICOM/HL7 store screen**

Click on the Test Settings button at the bottom of the screen to check the saved Store settings and the availability of the Store SCP server. If the test is successful, click the Save button in the lower right corner of the screen to save the changed settings.
The Commitment menu offers the following configuration settings:

<table>
<thead>
<tr>
<th>Setting</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Synergy.net AE Title</td>
<td>The Application Entity Title of Synergy.net Management Software.</td>
</tr>
<tr>
<td>Station Name</td>
<td>Machine/Station Name for the Synergy.net server.</td>
</tr>
<tr>
<td>Encoding</td>
<td>Encoding used for DICOM and HL7 (ISO-8859-1(Latin-1)).</td>
</tr>
<tr>
<td>Storage Commit Enable</td>
<td>Enable/disable storage (read from the default PACS server settings).</td>
</tr>
<tr>
<td>SCP AE Title</td>
<td>The Application Entity Title for the storage commitment SCP server.</td>
</tr>
<tr>
<td>SCP IP Address</td>
<td>IP Address for the storage commitment SCP server (read from the default PACS server settings).</td>
</tr>
<tr>
<td>SCP Port</td>
<td>Port of the storage commitment SCP server (read from the default PACS server settings).</td>
</tr>
<tr>
<td>Separate Assoc. Enable</td>
<td>Indicates whether or not to send storage commitment requests on separate association from DICOM export association (read from the default PACS server settings).</td>
</tr>
<tr>
<td>Receiving Commit Port</td>
<td>Port of the storage commitment SCP server if it uses a different receiving port (read from the default PACS server settings).</td>
</tr>
</tbody>
</table>

![Figure 14-DICOM/HL7 Commitment screen](image-url)

Click on the Test Settings button at the bottom of the screen to check the saved Commit settings and the availability of the storage commitment SCP server. If the test is successful, click the Save button in the lower right corner of the screen to save the changed settings.
The HL7 menu offers the following configuration settings:

<table>
<thead>
<tr>
<th>Setting</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HL7 Outbound</td>
<td>Enables/disables ORU sending.</td>
</tr>
<tr>
<td>EHR IP Address</td>
<td>The IP Address of the HL7 Server where ORU is sent.</td>
</tr>
<tr>
<td>EHR Port</td>
<td>The port of the HL7 Server where ORU is sent.</td>
</tr>
<tr>
<td>Purge Days Threshold</td>
<td>The purge or removal threshold for HL7 SIU/ORM/ADT information on the local database</td>
</tr>
</tbody>
</table>

Figure 15-DICOM/HL7 HL7 screen

Click the Save button in the lower right corner of the screen to save the changed HL7 settings.

**Users**

From the Facility Settings screen shown in Figure 6, click on the Users link to set up system users and their access privileges, as shown in Figure 16. Synergy.net Management Software has a default user, “Admin, Server”, whose name may be altered later. After SynergyHD3/UHD4 devices join Synergy.net Management Software, more users may be observed in Users screen. For each user, Synergy.net Management Software displays the name and the corresponding role in the list. The Role column will show Admin for any user with administrative privileges. Only Admin users can access the facility settings.

Users can click on the refresh (clockwise arrow) icon in the upper right corner of the screen to refresh the displayed list at any time. If new data has been transferred to Synergy.net Management Software since the time the users list was last generated, then the refresh icon will flash to alert the user that new data is available.
Click the +Add New icon in the upper right corner of the screen to add a new Synergy.net Management Software user to the system. This will display the User Details screen shown in Figure 17. Input the user first and last names as well as the user password. Click the Clear Password button to clear the current password for the user, if necessary. Assign the user to one of the available roles. The Administrator role grants full system administration privileges to the system. The Manager role grants access to all system functionality except the Facility Settings tab. The Normal role is a view only role for staff. Users assigned this role can view OR Command, the case schedule, and the list of surgeons and procedures. These users however, cannot add new cases, edit the case schedule, create or modify surgeon preferences or procedure settings, run operational reports, or access the Facility Settings tab. After the user information has been added, click the Save button at the bottom of the screen to save the information.
If a user already exists in the Users list, then an administrator has the ability to modify the user demographics and also has the ability to delete a user from the system. This can be done from the Users list shown in Figure 16. Place the cursor over any user on the list. When this is done, the user name will be highlighted and two buttons will appear to the right of the highlighted name. To edit the user information, click on the “i” button. This will display the User Details screen shown in Figure 17. Edit any of the fields and click on the Save button to save the changes. To delete a user, click on the trash can icon. When this is done, a prompt appears requesting confirmation that the case should be deleted. Click on Yes to delete the user. Click on No to retain the user.

**LDAP Settings (for allowing Domain Users)**

To enable LDAP (Active Directory) sign on to Synergy.net from the Facility Settings screen shown in Figure 6, click on the Users link and then on the LDAP Settings button as shown in the upper right corner of Figure 16. This will bring up the LDAP settings screen shown in Figure 18.
To enable LDAP, input the following settings provided by the Active Directory administrator.

<table>
<thead>
<tr>
<th>Setting</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enable</td>
<td>Allows sign on via Active Directory</td>
</tr>
<tr>
<td>Domain</td>
<td>Facility domain name</td>
</tr>
<tr>
<td>LDAP Server IP</td>
<td>IP address of LDAP server</td>
</tr>
<tr>
<td>LDAP Server Port</td>
<td>Port of LDAP server (typically 389)</td>
</tr>
<tr>
<td>Offline</td>
<td>Number of days system remembers a user’s cached sign on credentials and allows login without successfully connecting to the LDAP server</td>
</tr>
<tr>
<td>Login</td>
<td>Allows LDAP and local user sign on if set to No; only allows sign on via LDAP if set to Yes. (If this is set to Yes, create an Arthrex vendor account, assign it to the Administrators group, and provide the sign on credentials to Arthrex. Otherwise, Arthrex will not be able to provide support for the system and the facility takes full responsibility for system support)</td>
</tr>
<tr>
<td>Administrators Group</td>
<td>Users within this Active Directory group have admin user rights on Synergy.net. (IT Staff will need to create and manage this group.)</td>
</tr>
<tr>
<td>Managers Group</td>
<td>Users within this Active Directory group have manager user rights on Synergy.net. (IT Staff will need to create and manage this group.)</td>
</tr>
<tr>
<td>Normal Users Group</td>
<td>Users within this Active Directory group have normal user rights on Synergy.net. (IT Staff will need to create and manage this group.)</td>
</tr>
</tbody>
</table>

After entering the settings, the Test Connection button can be used to verify the settings are correct. Upon clicking the Test Connection button, the user will be prompted to input a domain user account and password to validate connectivity to the assigned LDAP server. If authentication is unsuccessful, confirm the settings with the IT staff, correct any settings as needed, and test again. If authentication is successful, then click the Save button to save the settings.
**CCU System**

From the Facility Settings screen shown in Figure 6, click on the CCU System link to configure the system settings for all connected Synergy HD3/UHD4 systems, as shown in Figure 19. For the details of Synergy HD3/UHD4 system configuration, please refer to the Synergy HD3/UHD4 use manual.

![CCU System screen](image-url)

**Figure 19-CCU System screen**
**CCU Date & Time**

From the Facility Settings screen shown in Figure 6, click on the CCU Date & Time link to configure the date and time for all connected SynergyHD3/UHD4 systems as shown in Figure 20. The IP address of a primary and secondary network time server can be entered along with a time zone and date format. Once changes have been made, click Save in the lower right corner of the screen to save the changes.

![Figure 20-CCU Date & Time screen](image-url)
**CCU Network Storage**

From the Facility Settings screen shown in Figure 6, click on the CCU Network Storage link to configure the network storage settings for all connected Synergy\textsuperscript{HD3/UHD4} systems as shown in Figure 21. For details of Synergy\textsuperscript{HD3/UHD4} network storage configuration, please refer to the Synergy\textsuperscript{HD3/UHD4} Network Export Setup Guide.

![CCU Network Storage screen](image)

*Figure 21-CCU Network Storage screen*
CCUs
From the Facility Settings screen shown in Figure 6, click on the CCUs link to associate/dissociate Synergy HD3/UHD4 systems with Synergy.net Management Software as shown in Figure 22. The CCUs list displays each Synergy HD3/UHD4 device’s name and its current IP address if connected. If a Synergy HD3/UHD4 device is powered off or disconnected from the network or Synergy.net Management Software, then the IP field will be blank.

![Figure 22-CCUs screen](image-url)
To connect a new (licensed) Synergy\textsuperscript{HD3/UHD4} device to Synergy.net Management Software, click the +Add New button in the upper right corner of the screen. This will bring up the Add CCUs to Synergy.net Management Software screen shown in Figure 23.

![Figure 23-Add CCUs to Synergy.net Management Software screen](image)

All Synergy\textsuperscript{HD3/UHD4} systems present on the same subnetwork as Synergy.net Management Software will appear on the list by name and IP address. If the intended Synergy\textsuperscript{HD3/UHD4} device appears on the list, do not click on the Join button to the right of the IP address. Instead, manually enter the IP address and a user friendly name for device. If it doesn’t appear on the list, then input the Synergy\textsuperscript{HD3/UHD4} device host name and IP address in the blank fields at the bottom of the list and click the Join button next to the added IP address. In either case, a dialog box will appear requesting confirmation of the request to join a device to Synergy.net Management Software. Click on OK to confirm the request or Cancel to deny the request. Upon confirmation, the system will ask for the Synergy\textsuperscript{HD3/UHD4} credentials as shown in Figure 24.

![Figure 24-Enter CCU Credentials screen](image)
Select an administrator account for the device, enter the password in the password field, and click on the Login button in the lower right corner of the screen. After a successful login, a secure connection is established between the SynergyHD3/UHD4 device and Synergy.net Management Software. The device will appear in the CCUs list shown in Figure 22.

If a device already exists in the CCUs list, then an administrator has the ability to remove the device from Synergy.net Management Software. This can be done from the CCUs list shown in Figure 22. Place the cursor over any device in the list. When this is done, the device be highlighted and a delete button (trash can icon) will appear to the right of the device name. Click on the delete button. When this is done, a prompt appears to requesting confirmation that the device should be removed from Synergy.net Management Software. Click on OK to confirm the removal or Cancel to cancel the removal request. Upon confirmation, the system will ask for the SynergyHD3/UHD4 credentials as shown in Figure 24. Select an administrator account for the device, enter the password in the password field, and click on the Login button in the lower right corner of the screen. After a successful login, the device will be removed from the CCUs list shown in Figure 22.

**PACS Servers**

From the Facility Settings screen shown in Figure 6, click on the PACS Servers link to associate/dissociate PACS servers with the Synergy.net Management Software as shown in Figure 25. The PACS Servers list displays each PACS server’s name, storage AE title, and its current IP address. One PACS server must always be specified as the default PACS. The default PACS will appear on the list with a check mark in the Default column. The system supports DICOM exporting for up to three different PACS.

![Figure 25-PACS Servers screen](image)

The set up and configuration of PACS servers with Synergy.net should be done by Arthrex personnel only. Do not adjust PACS server settings, or add or edit PACS servers from Synergy.net as this may impact the system’s ability to export data to PACS.
**Routing Controllers**  
From the Facility Settings screen shown in Figure 6, click on the Routing Controllers link to configure the Synergy Matrix switch and routing software shown in Figure 26. For details related to Routing Controllers configuration, please refer to the Synergy Matrix User Guide.

![Routing Controllers](image)

*Figure 26-Routing Controllers screen*

**System Settings**  
From the Facility Settings screen shown in Figure 6, click on the System Settings link to configure the Synergy.net Management Software server as shown in Figure 27.
The current server media storage location appears in the Media Directory field on the screen. To modify the location, click on the Change button to the right of the Media Directory field. The screen shown in Figure 28 will appear.

Input the desired media storage location in the Directory field at the top of the screen. A valid media storage location can be on a local drive on the Synergy.net Management Software server or on a network location. If the data in the previous media directory needs to be moved to the new location, change the Move Files setting to Yes. Click on the Submit button in the lower right corner of the screen to make the change.
Since the Media Directory is generally local (e.g. d:\data\arthrex\media), the “username” field should be the local user name without any slashes. The “password” is the local user’s password. If the Media Directory is remote (e.g. \10.101.21.16\media), then this folder needs to be shared. The “username” field shall contain domain name and user name (e.g. “Arthrex\SynergyUser”). The “password” is the domain user’s password.

To generate a certificate signing request (CSR) for Synergy.net Management Software communication security, click on the Generate CSR button shown in Figure 27. This will bring up the Generate CSR screen shown in Figure 29.

![Figure 29-Generate CSR screen](Image)

Input the requested information for each field and click on the Submit button to generate the CSR. Do not modify these fields or create a CSR. Before using this screen, contact Arthrex for assistance.

The Set Response button shown in Figure 27 is used for creating a specialized CSR response. Clicking on this button brings up the screen shown in Figure 30. Before using this screen, contact Arthrex for assistance.

![Figure 30-Set CSR Response screen](Image)
If direct uploading of case media from Synergy.net to Surgeon Vault will be utilized, then the Surgeon Vault Sync button should be set to On. This option can be turned off if sending case media to Surgeon Vault is no longer required.

**Network Export Settings**

From the Facility Settings screen shown in Figure 6, click on the Network Export Settings link to configure the Synergy.net Management Software server as shown in Figure 31.

If network exporting will be used, then set the Enable Exporting button to On. The current network export storage location appears in the Export Directory field on the screen. To modify the location, click on the Change button to the right of the Export Directory field. The target Export Directory must be in the format \<IP>\folder. This folder must be shared. To export only PDFs into a single folder, click on the Export PDFs in Flat Format check box. Input the user name and password of an account with read and write privileges to the export directory into the appropriate fields. Click the Save and Test button to save the network export storage settings and test the export settings.

Enabling Watermark Video will add a logo as a watermark on the exported videos. Watermark position and size can be configured for the image via the respective settings. Watermark text can also be entered. This text will automatically appear on every video exported by the system.

A watermark image (PNG file only) with the name "logo.png" must be placed in a directory named "watermarks" in the media directory configured in Figure 27. This logo will be the default watermark image placed on all videos exported by Synergy.net.

If a surgeon needs a watermark image that is different than the default watermark image, then a surgeon watermark image (PNG file only) named as "logo.png" must be placed in directory ".../media/watermarks/SurgeonName" where SurgeonName is the actual name of the surgeon in Synergy.net. There is a unique SurgeonName directory for each surgeon that is created when a surgeon is added to the system.

The size of the watermark image is adjusted via the Watermark Size field as shown in Figure 31. The placement of the watermark image is adjusted via Watermark Position and can take one of four values (Upper Right, Upper Left, Lower Right, Lower Left). The default value is Lower Right.

Watermark Text that appears on every exported video can be up to 45 characters in length (split across 3 lines). It is placed on the video across from the location of the watermark image. By default it is located in the upper left corner of the video.
Text Notification
From the Facility Settings screen shown in Figure 6, click on the Text Notification link to configure the Synergy.net Management Software text notification functionality as shown in Figure 32.
Only three fields on the Text Notification screen should be used. In the Start Case Notification field, enter the message to text to designated family members at the start of a case on SynergyHD3/UHD4. Input in the End Case Notification the message to text to designated family members at the start of a case on SynergyHD3/UHD4 device. To test text notification, enter the test phone number into the Testing field and click the Test button.
5.0 SYNERGY.NET MANAGEMENT SOFTWARE USE INSTRUCTIONS

Some of the functionality detailed in this section is unavailable in some configurations of Synergy.net, depending on the licenses that have been activated. For sections that apply to only specific configurations, the applicable part numbers are listed next to the section title. Below is a list of features by part number that Arthrex currently has available.

- AR-3200-1030 Synergy.net Management Software
- AR-3200-1042 Synergy.net Pairing License
- AR-3200-1043 Synergy.net Printing
- AR-3200-1044 Synergy.net OR Command
- AR-3200-1045 Synergy.net Reporting
- AR-3200-1046 Synergy.net Text Notification

Clicking on the About link that appears in the upper right corner or each Synergy.net screen will display the features that are currently enabled on the system.

Accessing Synergy.net Management Software
To access Synergy.net Management Software, launch any of the supported web browsers listed in the specifications portion of this document.

Once the browser is launched, type the IP address (or host name) of the Synergy.net Management Software server into the browser address bar in the following format: <IP Address/Host Name>:8081/or-dashboard

This will bring up the login screen shown in Figure 33. Please note that the user list will vary depending on the individual users set up per facility.

![Figure 33-Synergy.net Management Software log in screen](image)

To log in, select a user name, enter the user password when prompted to do so, and click the Login button, as shown in Figure 34.
If the password is incorrect, then a "Login failed" message appears on the screen. If the password is correct, the screen shown in Figure 35 will be displayed.

Select any of the menu items to utilize that system functionality. The various functions are detailed in the sections that follow.

**OR Command (applies to AR-3200-1030 and AR-3200-1044)**

OR Command provides users with the ability to get a live look into each operating room connected to Synergy.net Management Software. Figure 36 shows a sample view of OR Command.
Each window within the OR Command screen represents a different operating room. Figure 36 shows four operating rooms. The number of operating rooms on the screen will vary depending on the number of rooms configured for an individual facility. Each operating room will include a descriptive label that is set up during system installation. Next to the label is the current status of the operating room. If a case is currently being performed using a SynergyHD3/UHD4 device within that operating room, then the status will appear as Active. If a case is not being performed using SynergyHD3/UHD4 device, then the status will appear as Idle. The larger image shows a static image either from the SynergyHD3/UHD4 camera or from a room camera depending on how the system is configured. This image updates every 5 seconds. Below the label and status are patient and case demographics for an active case. This includes patient name, the procedure description, and the start time for the case. Along the bottom of the window will be thumbnails of any images captured during the case and a thumbnail showing either a room camera view or a SynergyHD3/UHD4 camera view, if these views are available and set up for use with Synergy.net Management Software. For an idle case, the room camera thumbnail will still appear.

A live view into an operating room can be obtained by clicking anywhere in the window for that operating room. When this is done, the screen shown in Figure 37 will be displayed.
At the top left of the screen are case and patient demographics including the amount of time that Synergy\textsuperscript{HD3/UHD4} device has been in the active case. If the case is idle, then the demographics fields will be blank.

In the upper right corner is a printer status message. If the printer associated with the Synergy\textsuperscript{HD3/UHD4} device in the selected operating room is operational, then the status bar under the printer will appear green. If the printer is not working or is not connected, then the status bar will appear red (as is shown in Figure 37).

At the bottom of the screen are thumbnails of each image captured on the Synergy\textsuperscript{HD3/UHD4} device during the case. Clicking on any of these images will display a larger view of the image. The larger view can be closed using the x button in the upper right corner of the image. If multiple images are captured for a particular case, then the left and right arrows on either side of the thumbnails can be clicked to view additional thumbnails. The back (left) arrow shows earlier thumbnails and the forward (right) arrow shows more recently captured thumbnails.

To get a live view from the operating room, select one of the sources along the left side of the screen by clicking on it. This will populate the main portion of the screen with the selected source as shown in Figure 38. There is a short delay between the view that appears in Synergy.net Management Software and the actual view in the operating room.
To view a different source, click on it from the source list on the left side of the screen and it will become the actively viewed source. The number of sources available will be determined by the number of Synergy\textsuperscript{HD3/UHD4} device and room cameras configured for each room. If Synergy\textsuperscript{HD3/UHD4} is not in an active case, then it will not appear in the list of sources. Room cameras are always available as sources.

To view a different operating room, click on the Video Dashboard link at the top of the screen to return to the OR Command view shown in Figure 37.

Chatting with individuals inside an operating room is possible if chat capabilities are enabled as a preference. The Join Procedure button will appear in the upper right corner of the screen (as shown in Figure 38). Clicking this button will display a sign on screen as shown in Figure 39.
Type the user name in the Name field and the password selected by the surgeon for remote access in the Password field, and then click on the Login button. The screen shown in Figure 40 will be displayed.

On the right hand portion of the screen is the Conversation window. Messages can be entered into the lower portion of the window. Clicking Enter will place the chat message on the surgical monitor for several seconds after which the message will disappear from the monitor.
Privacy blocks may be applied to an OR when it is desired to block all views (Synergy and room cameras) in the OR Command screen. In such cases, images are replaced with a Private message as seen in Figure 41 above. No patient data is viewable from the OR Command screen for these cases.

A user requires manager or administrator privileges in order to create a privacy block. To create a privacy block, after signing on, select the Room Privacy button in the upper right corner of the OR Command screen. Details on creating a privacy block are provided in the next section (Cases) of this document.

**Cases**

To access the case list, click on the Case List menu item from the main Synergy.net Management Software menu shown in Figure 35 or click on the Cases link at the top of any Synergy.net Management Software screen. The Cases screen shown in Figure 42 will be displayed.
In the left column are four options: Schedule, New Cases, Archived Cases, Active Cases and Room Privacy (not shown in Figure 42). Active Cases and Room Privacy options are only available to certain users or under specific conditions. Click on any of these four options to select the Cases screen view. The Schedule (as shown in Figure 42) allows a view of the current case schedule for every operating room. Users can graphically see which cases have been completed, which cases are currently in progress, and which cases are scheduled for the future. Users can also easily reschedule cases to different times and/or operating rooms. The New Cases list (as shown in Figure 43) provides a table view of all currently scheduled cases for all operating rooms. It also allows scheduling of new cases and modification of patient or case demographics for scheduled cases. The Archived Case list (as shown in Figure 48) allows users to view images and video clips from any case that exists in Synergy.net Management Software. The Active Case option is visible when a case is Active. The Room Privacy option appears if a user has a manager or system administrator role.

**Cases – Schedule**

By default, Today’s schedule will be displayed when the Case List is first accessed. To choose a different date to display, click on the date in the upper right corner above the schedule. This will bring up a calendar. By default, the calendar will show the current month. Clicking on the arrows that appear above the calendar will display previous months (back arrows) or future months (forward arrows). After selecting a desired date, the calendar will disappear and the schedule for the selected date will be displayed.

A vertical red line on the schedule shows the current date/time.

To move the schedule within the currently displayed day, click and hold on the blue slider bar at the bottom of the schedule and move it forward or backward along the schedule to adjust the timeframe displayed on the screen. To show a longer or shorter timeframe at once on the screen, click on hold the
gray bar on either end of the blue slider bar and drag it away from the center of the blue slider bar to display a longer timeframe or toward the center of the blue slider bar to reduce the displayed timeframe. If the gray bars are at both ends of the schedule, then a full day is shown (scheduled items will appear very small on the screen). If the gray bars are nearly touching, then only a single hour is shown.

Cases appear as blocks on the schedule, representing either the actual time of the case or the amount of time scheduled for a case. Cases are defined on the schedule by the surgeon name, the patient name, and the procedure description. The surgeon name appears at the top of the case block. The patient name is in bold toward the bottom of the case block. The procedure description appears under the patient name.

Any cases that have been completed will appear gray on the schedule. Any cases that are currently in progress will appear blue on the schedule. And any cases scheduled for the future will appear yellow on the schedule. Cases that are complete or in progress cannot be moved or rescheduled. Cases that have not yet been started can be moved to a different time or operating room. To reschedule a case, click on the case, drag it to the new time or new operating room, and drop it into the desired location on the schedule. (Please note that the schedule only displays a single day. Rescheduling a case to a different day must be done via the New Cases list.)

**Cases – New Cases**

The New Cases screen is used to create new cases for the Case List. A sample New Cases screen is shown in Figure 43. If no cases are scheduled, then this screen will be blank. If cases have been scheduled, then they will appear in the list as shown in Figure 43. Click on the column headers to sort the list by that column. The small triangle that appears next to the column header name indicates what column is currently being used to sort the data. A triangle that points upward indicates the data in that column is sorted in ascending order. A triangle that points downward indicates the data in that column is sorted in descending order.

Click on the Refresh (clockwise arrow) icon in the upper right corner of the screen to refresh the displayed list at any time. This may be necessary when creating new cases from multiple locations simultaneously. If new schedule data has been transferred to Synergy.net Management Software since the New Cases list was last generated, then the Refresh icon will flash to alert the user that new data is available.

As cases are performed, they will drop off the New Cases list.
There are several different ways new cases can be added to the New Cases list. If a new case is scheduled directly on a SynergyHD3/UHD4 system connected to Synergy.net Management Software, then this newly scheduled case will appear on the New Cases list once the Refresh button is clicked.

A case can also be manually added within Synergy.net Management Software. To do this, click on the +Add New button in the upper right corner of the screen. This will bring up the screen shown in Figure 44.
Complete all required fields. Several fields are required by the application prior to the start of a case on a SynergyHD3/UHD4 device. These include the operating room, surgeon name, procedure, and patient name. Required fields must be completed in order to save a case. Failure to do so will result in a system generated alert that will notify the user of the missing information. System generated alerts will also be displayed when trying to schedule a case in the past or when trying to select an already scheduled operating room. In both cases, an opportunity to correct the problem will be provided. Selecting the Save button after all required fields are completed will schedule the case. It will then appear on the Case Schedule list.

A scheduled case may be deleted or modified, which includes changes to patient demographics, from the New Cases screen. To do this, place the cursor over any case in the New Cases list. The case will become highlighted and two buttons will appear to the right of the highlighted case as shown in Figure 45. To edit the case or patient information, click on the “i” button. This will pull up the case details screen shown in Figure 44. Edit any of the fields and click on the Save button to save the changes. To delete a case, click on the trash can icon. Doing so will generate a prompt requesting confirmation that the case should be deleted. Clicking Yes will delete the case. The case will remain in the New Cases list if No is selected.
A third way to generate the case list is via receipt of HL7 order messages from a third party scheduling system or electronic health record (EHR) system or via receipt of a DICOM modality worklist from a third party picture archiving and communication system (PACS) or worklist provider. Synergy.net Management Software must be configured to work with either of these options. When one of these options is available, the worklist provided by the third party system can be accessed by clicking on the blue tab at the very bottom of the screen. Clicking on this tab or dragging this tab upward will pull up a worklist screen as shown in Figure 46. This worklist will automatically populate based on the incoming order message stream to Synergy.net Management Software (regardless of whether it is an HL7 feed or DICOM feed).
In the upper right corner of the worklist screen is a status message that indicates when the worklist was last updated. To refresh the list, click on the refresh button (the clockwise arrow) to the right of the message. Next to the refresh button is a filter button. Clicking on this button allows a user to filter the worklist results to better locate individual results. The filter screen shown in Figure 47 will be displayed with the filter button is clicked.
To filter the worklist results, enter one or more of the criteria in the filter screen and then click on the Save button. The filtered results will then appear in the worklist screen.

To add any item from the worklist screen to the new cases list, highlight the item in the worklist. When this is done, a button appears to the right of the item allowing the user to add the item to the case list. Click on this button to see the add new case screen shown in Figure 44 with all the case and patient demographic information provided via the worklist interface pre-populated. Add any missing information or modify any existing information and click on the Save button to add the case to the new cases list.

**Cases – Archived Cases**
The Archived Cases screen shows the list of all cases that have been performed and sent to Synergy.net Management Software. Selecting any case from the list allows the user to view the images and/or video clips for that study. A sample Archived Cases screen is shown in Figure 48.

![Figure 48-Archived Cases screen](image)

Click on the column headers to sort the list by that column. The small triangle that appears next to the column header name indicates what column is currently being used to sort the data. A triangle that points upward indicates the data in that column is sorted in ascending order. A triangle that points downward indicates the data in that column is sorted in descending order.

The scroll bar in the web browser can be used to scroll through the list.

Click on the refresh (clockwise arrow) icon in the upper right corner of the screen to refresh the displayed list at any time. If new data has been transferred to Synergy.net Management Software since the time the archived cases list was last generated, then the refresh icon will flash to alert the user that new data is available.

Users can filter the case list using the filter icon that is circled in Figure 48. Clicking on this filter icon brings up the Archived Case List Filter screen shown in Figure 49. Filtering by one or more of the criteria can be done on in this screen. After all of the desired filter criteria have been set, click on the Save button to run the filter on the archived case list.
To review the images and/or video clips for a case, move the cursor to a particular case. This will highlight the case in the case list and display two buttons to the right of the highlighted case. One button is marked Review and the other is a Trash Can icon. The Case Review screen shown in Figure 50 will appear when the Review button is clicked.
At the top of the Case Review screen will be the patient and case demographics. Any static images captured for the case will appear on the screen in tile format. Two icons at the top left of the screen allow the user to toggle between image and video clip views. The left icon displays the thumbnails for images and the right (filmstrip) icon will display the video clip thumbnails. Clicking on an image or video clip thumbnail will display a larger version of the image/clip. When clicking on an image, the image is displayed in a larger window. Arrows will appear to either side of the image allowing the user to move forward or backward through the images. An image count indicator appears at the bottom of the screen showing the specific image being displayed out of the total number of images. After completing a review of images, click on the Done button in the lower right corner of the screen. Clicking on a video clip thumbnail brings up the same window as with the static image view with the same navigation. The only difference is that the video clip will play automatically. Controls at the bottom of the clip allow users to pause the playback if necessary. Once a clip has finished playing, an overlay appears on the clip allowing the user to play the clip again by clicking on the clip. After completing a review of video clips, click on the Done button in the lower right corner of the screen.

Click the Finish Review button in the lower right corner of the case review screen to return to the archived cases screen.

To permanently delete a study from Synergy.net Management Software, highlight a case in the archived cases screen and click on the Trash Can icon that appears next to the highlighted case. Clicking on this icon will display a prompt requesting confirmation to delete the case. By clicking Yes, the study will be permanently deleted from Synergy.net Management Software. (This action requires careful consideration as deleted files cannot be recovered.) The case will remain on Synergy.net Management Software if No is clicked.

If the synchronization of case data with SurgeonVault is enabled, then an additional column (SV Sync) will appear on the archived cases list. A sample Archived Cases screen with SV Sync is shown in Figure 51.

![Figure 51-Archived Cases screen with SV Sync enabled](image-url)
The SV Sync column provides status indicators to allow users to know the status of synchronizing cases to SurgeonVault. There are five statuses that may appear in this column as follows:

<table>
<thead>
<tr>
<th>Status Symbol</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Case is in queue waiting to be synchronized with SurgeonVault</td>
</tr>
<tr>
<td></td>
<td>Case is being synchronized to SurgeonVault</td>
</tr>
<tr>
<td></td>
<td>Case successfully synchronized to SurgeonVault</td>
</tr>
<tr>
<td></td>
<td>Case was not synchronized because surgeon doesn’t have a SurgeonVault account</td>
</tr>
<tr>
<td></td>
<td>Case was performed before SurgeonVault synchronization was enabled</td>
</tr>
</tbody>
</table>

If SurgeonVault synchronization is enabled, then Synergy.net will automatically synchronize case media and will automatically retry sending cases until synchronization is successful.

For any case that is not yet synchronized (i.e., is in queue, is being synchronized, or was not synchronized), click on the case to highlight it. A manual cloud synchronization button will appear to the right of the case information as shown in Figure 52. The button is a cloud with an arrow on it.

![Figure 52-Manual Cloud Synchronization](image)

Clicking on the cloud synchronization button initiates a manual synchronization of the case.

If a case existed on Synergy.net before synchronization to SurgeonVault was enabled, then the case will not automatically synchronize to SurgeonVault and will appear on the archived case list with a gray arrow in the SV Sync column. To have one of these cases synchronized, then the manual synchronization must be used to upload the case.

**Cases – Room Privacy**

The room privacy functionality allows a user to make a particular room private for a period of time so that anyone using Synergy.net cannot view any of the camera views or patient demographics from that room.
during the specified privacy block of time. A sample case schedule with privacy blocks is shown in Figure 53.

Figure 53-Schedule with privacy blocks

The Room Privacy option is available to users with manager or administrator privileges. Clicking on this option brings up a Room Privacy screen. A sample Room Privacy screen is shown in Figure 54.

Figure 54-Room Privacy screen

Click on the column headers to sort the list by that column. The small triangle that appears next to the column header name indicates what column is currently being used to sort the data. A triangle that points upward indicates the data in that column is sorted in ascending order. A triangle that points downward indicates the data in that column is sorted in descending order.

The scroll bar in the web browser can be used to scroll through the list.

Click on the refresh (clockwise arrow) icon in the upper right corner of the screen to refresh the displayed list at any time. If new data has been transferred to Synergy.net Management Software since the time the room privacy block list was last generated, then the refresh icon will flash to alert the user that new data is available.
To create a new privacy block, click on the + Add Room Privacy button in the upper right corner of the screen. This will bring up the screen shown in Figure 55.

![Room Privacy Details screen](image)

**Figure 55-Room Privacy Details screen**

Select the desired room to block, choose the date and starting time for the block, and select a time duration for the block. Once all the necessary data for the block has been entered, click on the Save button in the lower right corner of the screen to save the data and schedule the privacy block. As soon as the privacy block is scheduled, it will appear on the case schedule and will also appear in the room privacy list.

A privacy block can be modified or deleted after it has been scheduled. This can be done from the room privacy list. Place the cursor over any privacy block in the list. When this is done, the privacy block will appear highlighted in the list and two buttons will appear to the right of the highlighted privacy block. To edit the privacy block, click on the “i” button. This will pull up the room privacy details screen shown in Figure 55. Edit any of the fields and click on the Save button to save the changes. To delete a privacy block, click on the trash can icon. Clicking on this icon will display a prompt requesting confirmation to delete the privacy block. If the user clicks on Yes, then the privacy block will be deleted. If the user clicks on No, then the privacy block will remain active.

**Surgeons**

To access the Surgeon list, click on the Surgeon List menu item from the main Synergy.net Management Software menu shown in Figure 56 or click on the Surgeon link at the top of any Synergy.net Management Software screen. The Surgeons screen shown in Figure 56 will be displayed.
With the exception of the default Surgeon account, which will appear at the top of the list, the remainder of the surgeon list will automatically appear in alphabetical order by the surgeon’s last name.

Click on the refresh (clockwise arrow) icon in the upper right corner of the screen to refresh the displayed list at any time. If new data has been transferred to Synergy.net Management Software since the time the surgeons list was last generated, then the refresh icon will flash to alert the user that new data is available.

To add a new surgeon to Synergy.net Management Software, click on the + Add New button in the upper right corner of the screen. This will bring up the screen shown in Figure 57.
Enter the surgeon’s first and last names and email address in the appropriate fields. Available procedures (for the default surgeon) are automatically added to the surgeon’s procedure list. New procedures can be added from the Add Procedure drop-down menu.

To use the default preferences and procedure settings or to change these items at a later time, click on the Save button at the lower right corner of the screen to add the surgeon to the surgeon list. To change the surgeon’s preferences, click on the Preferences button to bring up the screen shown in Figure 58.
The menu along the left side of the screen contains the different surgeon preference categories that can be modified.

Button Settings can be used to configure a surgeon’s default button setting presets. Printer Settings can be used configure a surgeon’s print (or PDF creation) preferences (e.g., number of images per page, page orientation, number of prints).

Use Print Fields to configure what patient and case demographics appear on a printed page (or PDF) based on the surgeon’s preferences.

Use Multimedia to configure a surgeon’s autoexport file types per export destination, audio preferences, and video quality and length settings. All case videos can be automatically combined into a single video file by enabling appropriate option as shown in Figure 59.

Marketing video(s) with name “.._std.mp4” and/or “.._med.mp4” should be placed corresponding to each surgeon in the directory “..media/watermarks/SurgeonName”; in Media Directory configured in Figure 27. The SurgeonName directory should be pre-existing as it is created when a surgeon is added to the system. Also, marketing video(s) need to consider bandwidth constraints and can be combined only with Standard/Medium quality videos generated by SynergyHD3/UHD4.

Web Server Access allows a user to configure surgeon preferences related to remote access to the live video stream or still images (along with setting up the surgeon’s streaming password) and remote chat messaging.
Display allows a user to configure on screen icon preferences for display on a surgical monitor and the addition of a secondary input source.

BioOptico allows a user to configure a surgeon’s preferred BioOptico settings.

DICOM/HL7 allows a user to select a PACS for exporting the surgeon’s cases.

Once all of the surgeon’s preferences have been configured, click on the Done button in the lower right corner of the screen to return to the Surgeon Details screen. Click on the save button in the lower right corner of the screen to save the changes.

![Surgeon preferences screen - Multimedia](image)

Figure 59-Surgeon preferences screen - Multimedia

To change a surgeon’s camera preferences for a particular procedure type, click on the Procedure Settings button next to the procedure on the Surgeon Details screen shown in Error! Reference source not found.Figure 59. Clicking on this button will bring up the screen shown in Figure 60.
Configuration of surgeon preferences for the camera, printing, Arthrex Dualwave Arthroscopy Pump, Synergy Resection Console, and Synergy Insufflation settings can be done from this screen. (Note: Pump, Console, and Insufflator settings only apply if these devices are connected to the SynergyHD3/UHD4 system via the Shaver Data Display Accessory Kit, AR-3200-1040. For additional details, refer to the user manual for the Shaver Data Display Accessory Kit. Once all the settings changes have been made, click on the Save button to save the settings and return to the Surgeon Details screen. Please note that these settings changes only apply to the individual procedure selected. If the same preferences are desired for all a surgeon’s procedures, they will need to be entered for each individual procedure.

To remove a procedure from the surgeon’s procedure list, click on the trash can icon next to the procedure, as shown in Figure 57. A prompt to confirm the deletion will be displayed. Clicking Yes will remove the procedure from the list. If No is clicked, the procedure will remain on the list. After deleting a procedure, click on the Save button in the lower right corner of the screen to save the changes.

Surgeon preferences can be modified at any time once a surgeon has been added to the surgeon list as shown in Figure 56. To do this, move the cursor to the surgeon’s name on the surgeon list. This will highlight the surgeon’s name and display two buttons to the right of the highlighted name. The first button is an “i” button. Clicking on this button will take the user to the Surgeon Details screen shown in Figure 57. From this screen, surgeon preferences can be modified, procedures can added or removed, and procedure settings can be changed, per the instructions outlined in this section.

To remove a surgeon from the Surgeon list as shown in Figure 56, move the cursor to the surgeon’s name on the list, which will highlight the name and activate two buttons to the right of the highlighted name. Click on the trash can icon. A prompt requesting confirmation of the deletion will be displayed. Clicking Yes will delete the surgeon from the Synergy.net Management Software. By clicking No, then the surgeon will remain in Synergy.net Management Software.
**Procedures**

To access the Procedures screen (shown in Figure 61), click on the Procedures link in the title bar of any Synergy.net Management Software screen.

![Procedures screen](image)

**Figure 61-Procedures screen**

From the Procedures screen, the user can create new procedures, make changes to existing cases settings, or delete cases from the list.

Clicking the +Add New button in the upper right corner of the screen will allow the user to create a custom procedure. Clicking this button will bring up the screen displayed in Figure 62.

Click on the refresh (clockwise arrow) icon in the upper right corner of the screen to refresh the displayed list at any time. If new data has been transferred to Synergy.net Management Software since the time the Procedures list was last generated, then the refresh icon will flash to alert the user that new data is available.
Users can enter a new procedure name and adjust the settings for that particular case. If the Procedure has a laterality value ("Left/Right"), a “Has Laterality” flag should be turned on. Clicking on the Settings button brings up the screen displayed in Figure 63.

Refer to the end of the Surgeons section for additional information on configuring these settings. After all necessary changes have been made, click on the Done button to return to the screen shown in Figure 62. Click on the Save button in the lower right corner of the screen to save the new procedure.

Procedure settings can be modified at any time once a procedure has been added to the procedures list as shown in Figure 61. This can be done by moving the cursor to the procedure name on the procedures list. This will highlight the name and display two buttons to the right of the highlighted procedure name. The first button is an “I” button. Clicking on this button will take the user to the Procedure Details screen shown in Figure 62. Procedures can be modified from that screen.
To remove a procedure from the procedures list as shown in Figure 61, move the cursor to the procedure name on the list, which in turn will highlight the name and display two buttons to the right of the highlighted procedure name. Click on the trash can icon. A prompt requesting confirmation of the deletion will be displayed. Clicking Yes will delete the procedure from Synergy.net Management Software. By clicking No, the procedure will remain on the Synergy.net Management Software.

**Reports (applies to AR-3200-1030 and AR-3200-1045)**

The Reports feature allows users to track specific details about the cases performed in each operating room. This is useful for staff to record the time it takes to complete each case, the turnover time, and aid with scheduling. The Reports screen (shown in Figure 64) can be accessed from the Home page as well as by clicking the Reports link in the title bar from any Synergy.net Management Software screen.

![Figure 64-Reports screen](image)

The information in the Reports screen can be sorted by date, operating room, surgeon or procedure by clicking any of the column headers. The user can toggle between ascending and descending order, which is confirmed with a small arrow next to the sorted title.

The information on the case reports list can also be filtered and populated with specific information chosen by the user. The grey funnel button near the top right corner of the screen allows the user to filter the information by operating room, surgeon, procedure, and specific date range as shown in Figure 65.
From the Filter Case Report screen, select the specific information used to create the filter and click on the Save button on the lower right corner of the screen. The returned list in the Reports screen will have the filters applied.

The user can also choose to Print or Export the displayed data by clicking the Print or Export links near the top right of the screen. By choosing export, the data will be saved in a spreadsheet format (.csv) and will be available to open in a program such as Microsoft Excel.
Matrix Screen

Please refer Synergy Matrix User Guide for details on this screen.

![Figure 66-Matrix screen](image)

Logging out of Synergy.net Management Software

Log out of Synergy.net Management Software using the Logout menu item located in the upper right corner of every Synergy.net Management Software screen. After logging out, the system will return to the main sign on screen.

If the system is idle for 15 minutes, the Synergy.net Management Software session will expire. Login will be required to access the system again.

Synergy^HD3/UHD4 Changes with Synergy.net Management Software

Setup and configuration of the Synergy.net Management Software must be done within the Synergy.net Management Software application. Synergy^HD3/UHD4 devices must be connected to the same network as Synergy.net Management Software at the time of the set up. For details on how to pair Synergy^HD3/UHD4 devices to Synergy.net Management Software, refer to the set up section in this document. Once a Synergy^HD3/UHD4 device is paired to the Synergy.net Management Software, that device will automatically connect with Synergy.net Management Software at start up as long as the device is connected to the network and Synergy.net Management Software is available. No setup or configuration is required for the Synergy^HD3/UHD4 device to use Synergy.net Management Software.

Please note that facility settings will be locked out on the Synergy^HD3/UHD4 device when it is paired with Synergy.net Management Software. These settings are configured and controlled by Synergy.net Management Software. These include settings like facility print settings and DICOM settings. All surgeon and case preferences can be accessed and modified on the Synergy^HD3/UHD4 device even when it is paired with Synergy.net Management Software.

A case list generated by Synergy.net Management Software will automatically be seen after login. A case can be selected from the case list or a new case can be created. All other case list functionality remains the same as on a standalone Synergy^HD3/UHD4 device.
A key difference in the interface associated with the use of Synergy.net Management Software is that cases are assigned to a particular room as shown in Figure 67. This is a required field for devices connected to Synergy.net Management Software. The room list is generated from the Synergy.net Management Software. A room must be selected before starting a case.

![Figure 67- SynergyHD3/UHD4 Add New Case screen highlighting new Room field](image)
**Audit Logs**

An admin user can review the user activity related to the patient data using Windows “Event Viewer” software (Figure 69) on the Synergy.net server.

To open “Event Viewer”, type “Event Viewer” in the Windows Start Menu and select Event Viewer as shown in Figure 68.

![Figure 68-Access Event Viewer](image)

Select “Synergy” under the “Applications and Services Logs” section of left pane in “Event Viewer”. In the right side pane, the user can review the source and date-time of event generated from the Synergy.net Management Software.
The following event types are captured along with details for each event.

<table>
<thead>
<tr>
<th>Date/Time</th>
<th>Name</th>
<th>EventID</th>
<th>Event Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023-04-01 12:00 PM</td>
<td>Successful Login</td>
<td>100</td>
<td>System</td>
</tr>
<tr>
<td>2023-04-02 09:30 AM</td>
<td>Failed Login</td>
<td>101</td>
<td>Security</td>
</tr>
<tr>
<td>2023-04-03 01:20 AM</td>
<td>Delete User</td>
<td>102</td>
<td>Auditing</td>
</tr>
<tr>
<td>2023-04-04 03:15 PM</td>
<td>Reboot</td>
<td>103</td>
<td>System</td>
</tr>
<tr>
<td>2023-04-05 05:00 AM</td>
<td>Update</td>
<td>104</td>
<td>Maintenance</td>
</tr>
</tbody>
</table>

Figure 69-Event Viewer

Figure 70-Types of Events
6.0 Maintenance

Regular and proper maintenance of your Synergy.net Management Software System is the best way to protect your investment and avoid non-warranty repairs.

For Maintenance requirements, refer to the user manual for the Synergy$^{\text{HD3/UHD4}}$ device.

Your authorized Arthrex service department is the most knowledgeable about the Arthrex Medical Camera Systems and/or camera heads and will provide competent and efficient service. Any services and/or repairs done by any unauthorized repair facility may result in reduced performance of the instruments or instrument failure.

6.1 Cleaning

Refer to the Synergy$^{\text{HD3/UHD4}}$ System user manual for cleaning instructions.
# 6.2 Troubleshooting

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Possible Cause</th>
<th>Corrective Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Synergy.Net web access not working</td>
<td>• Server Down</td>
<td>• Check that the Synergy.net Management Software server is up and running</td>
</tr>
<tr>
<td>OR Command page does not show live streaming</td>
<td>• Synergy\textsuperscript{HD3/UHD4} shutdown/ not connected to network • Room camera not working • EvoStream Service not running</td>
<td>• Check Synergy\textsuperscript{HD3/UHD4} is switched on, connected and in a live case. • Check if Room camera is installed and configured correctly. • Check that EvoStream Service is running on Synergy.net Management Software server</td>
</tr>
<tr>
<td>Data Sync does not happen</td>
<td>• Synergy\textsuperscript{HD3/UHD4} shutdown/ not connected to network</td>
<td>• Check Synergy\textsuperscript{HD3/UHD4} is switched on, connected.</td>
</tr>
</tbody>
</table>