Welch Allyn Connex® CS Central Station

Install Guide
Platform CPU
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This device complies with Part 15 of the FCC rules and with the rules of the Canadian ICES-003. Operation is subject to the following two conditions: (1) This device may not cause harmful interference and (2) this device must accept any interference received, including interference that may cause undesired operation.

Caution! Changes or modifications not expressly approved by Welch Allyn could void the purchaser's authority to operate the equipment.

DIR 20012793 Ver. H

This manual applies to REP 901066 Monitoring Station

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Quick Reference Guide

The quick reference guide provides a high level sequence overview to the process of installing a Connex CS system and milestone checklist to measure progress. Complete details can be referenced within this document as needed.

Overall Sequence

1. Unbox, inventory, and stage all equipment.
2. Install Connex server hardware (if applicable) first.
   a. Alternately, provide the virtual Connex server appliance (USB flash drive media) to the customer for installation on their virtual server (if applicable).
   b. Import Corepoint configuration file / configure inbound & outbound HL7 connections (if applicable).
   c. Establish Teamviewer remote access to Connex server to minimize time in the data center.
3. Install Central Station(s).
4. Install Warm Spare station (if applicable).
5. Confirm basic system operation.
6. Install a Repeater Display (if applicable).
7. Perform other configuration changes (if needed).
   a. Import configuration file for custom data (if needed).
   b. Configure Alarm Gateway Service (if needed).
   c. Configure device clinician authentication (if needed).
8. Export (backup) system configuration when changes are complete.
9. Verify system (Central Stations, Warm Spare, Connex server, and Device communication).
10. Repeat steps 1 to 9 for a Test Network, including Test Connex server and Test Central Station (as applicable).
11. Perform customer admin training with technical team (Biomed, IT, etc.).
### Milestone Checklist

The following table includes some high-level milestones when installing a Central Station or Warm Spare Station, and may be used as a checklist to assist in tracking progress.

<table>
<thead>
<tr>
<th>Complete</th>
<th>Task No.</th>
<th>Milestone</th>
</tr>
</thead>
<tbody>
<tr>
<td>✔️</td>
<td>1</td>
<td>Confirm that Connex Server (Hardware or Virtual) installation is complete and available on the network (if applicable). Refer to <em>Connex CS Server Install Guide</em> for instructions.</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Connect USB keyboard and mouse</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Connect network cable.</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>Connect video cable to computer and display.</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>Connect power to computer and display. Turn on both units.</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>Confirm boot and startup sequence. Confirm basic system operation, including device connectivity (Spot and Continuous profiles). Confirm Teamviewer access.</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>Setup printer and install drivers. OR Install drivers for customer supplied printer.</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>Update configuration as needed. <strong>Note:</strong> A reboot is required when adding licenses, updating Covered Areas, updating the Master Bed List, or updating NRS settings.</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>Export (backup) configuration and users file. <strong>Note:</strong> Complete this task on the Connex server if present (backs up all systems to 1 file).</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>Complete all tests as applicable to verify the Central Station or Warm Spare station installation. Refer to the <em>Connex CS Install Verification Guide</em> for instructions.</td>
</tr>
</tbody>
</table>
Introduction

About this manual

This *Connex CS Central Station Install Guide* provides information needed to plan and perform the installation of the central station CPU and its peripheral components. This information describes how to:

- Plan and stage the equipment
- Install and configure the equipment
- Confirm basic proper system operation.

Scope

This guide includes information for installing the central station CPU and associated peripheral equipment including:

- Keyboard / Mouse
- Video Display
- Laser Printer
- Repeater Displays

For installing other items not mentioned above refer to Related Documents.

Responsibilities

The processes described herein are to be completed by an authorized Welch Allyn representative or qualified service agent responsible for the central station.

Familiarity with Windows operating system is assumed. Windows experience assumes familiarity with basic commands, navigating directories, editing files, modify or restore the database.

Welch Allyn Service Engineering is responsible for the creation and maintenance of this document.
Related Documents

<table>
<thead>
<tr>
<th>Document Number</th>
<th>Document Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>20012794</td>
<td>Connex CS Server Install Guide</td>
</tr>
<tr>
<td>20012800</td>
<td>Connex CS Install Verification Guide</td>
</tr>
<tr>
<td>80017306</td>
<td>Connex CS Customer Project Req. Form</td>
</tr>
<tr>
<td>80018045</td>
<td>Connex CS Pre-Install Checklist</td>
</tr>
</tbody>
</table>

Symbols used in this manual

⚠️ **WARNING** Warning statements identify conditions or practices that could result in personal injury.

⚠️ **CAUTION** Caution statements identify conditions or practices that could result in damage to the equipment or property.

**Note** Notes provide additional important information. The content of the note may not be contained elsewhere in the document.

Required Equipment

The person performing this installation should have the following tools and supplies;

- One pair of 5 inch (12.7 cm) diagonal cutting pliers, electronic, narrow jaw for cable dressing as needed.
- One #2 Phillips Screwdriver, for mounting Server in equipment rack as required.
- Approximately 10 each 8 inch (20 cm) nylon cable ties or equivalent for cable dressing as needed.
- Approximately 10 each 15 inch (38 cm) nylon cable ties or equivalent for cable dressing as needed.

Quantities shown above are typical. The actual install project may consume more or less depending on size or complexity.
### Definitions

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGS</td>
<td>Alarm Gateway Service, a licensable feature which provides alarm messages in a data stream to a 3rd party system.</td>
</tr>
<tr>
<td>BIOS</td>
<td>Basic Input / Output System, the boot firmware program that controls the server on startup until the operating system takes over. Also performs POST functions and error reporting.</td>
</tr>
<tr>
<td>Client-Server</td>
<td>A topology in Connex CS with a central station PC (client) and a Connex server (hardware or virtual server). In the client-server model, data is replicated between the client and the server via the Welch Allyn Connex Data Synchronization Service.</td>
</tr>
<tr>
<td>CPU</td>
<td>Central Processing Unit, a desktop PC in the case of Connex CS.</td>
</tr>
<tr>
<td>Component</td>
<td>A major subassembly of the central station or network (e.g. CPU, Video Display, Printer, Ethernet Switch, etc.).</td>
</tr>
<tr>
<td>EMR</td>
<td>Electronic Medical Record, the record system maintained by the facility with patient information and data, including vital signs.</td>
</tr>
<tr>
<td>HDD</td>
<td>Hard Disk Drive, the internal media which contains the operating system along with all software required to run the server and installed applications</td>
</tr>
<tr>
<td>HIS</td>
<td>Hospital Information System, the network in use by the facility that supports network communication with various systems and devices, including Connex CS central station, Connex server, and devices.</td>
</tr>
<tr>
<td>Installation</td>
<td>The on-site process for installing the hardware, network infrastructure, and system configuration at the customer’s location of business.</td>
</tr>
<tr>
<td>LAN</td>
<td>Local Area Network, a network of computers connected together in a local environment. Typical communication includes standard Ethernet protocols.</td>
</tr>
<tr>
<td>PDR</td>
<td>Project Data Repository, an electronic archive of content for a customer specific project, from pre-sales to installation phases. Examples of documents in the PDR may include the completed forms of the Connex CS Customer Project Req Form, Pre-Install Checklists, Statement of Work documents, etc.</td>
</tr>
<tr>
<td>POST</td>
<td>Power On Self Test - An integrity check within the CPU and/or device to ensure that all expected components are present and working (e.g. memory tests).</td>
</tr>
<tr>
<td>Upgrade</td>
<td>On-site service activity to enhance or add functionality to a device or system. An upgrade can be accomplished with changes to hardware, software, configuration, or combinations of all three.</td>
</tr>
<tr>
<td>UPS</td>
<td>Uninterruptable Power Supply, a unit which provides battery back-up power for connected devices.</td>
</tr>
<tr>
<td>Virtual Connex Server</td>
<td>A server instance which has been virtualized to an appliance form (includes Operating System, Connex Applications, and Database) and installed within the customer’s Virtual Server environment.</td>
</tr>
</tbody>
</table>
Overview

The Connex Central Monitoring Station is intended to be use by clinicians for the central monitoring of neonatal, pediatric, and adult patients in health care facilities.

In addition to the central monitoring of patient data, alarms and alerts, the Connex software can include optional modules to provide extended recording of patient data, including full disclosure.

The Connex CS system consists of a central station that receives and displays information from connected devices. In this configuration, continuous and episodic devices communicate over the network to the central station. The central station contains all of the software needed to monitor patients’ continuous parameters and episodic data on a single computer. The devices in Fig are shown as wireless, but wired-network devices may also be used.

The central station also monitors connected continuous devices for proper operation, and displays an alarm if a continuous monitor stops working or is improperly disconnected.

Figure 2-1: Connex CS conceptual model
Planning for the Install

To install the central station and peripheral components you will:

- Verify that the site is ready for the installation
- Check and stage all components.
- Set up and connect the central station components.
- Configure central station components.

Depending on the size of the system and the customer readiness, the install could take from 2 to 8 hours.

As most central stations are uniquely configured to the customer’s requirements, always refer to the accompanying documentation which includes a Connex CS Customer Project Req Form detailing the planned implementation.

Install system components as described within the Connex CS Customer Project Req Form.

Site Preparation and Inspection

First locate the equipment and the accompanying documentation package.

**Note** The documentation package is typically included in a large envelope within the CPU shipping box, and contains important reference information that will be used throughout the install project. **DO NOT MISPLACE THESE DOCUMENTS. Make working copies for reference.**

Confirm that all items have been completed per Pre-Installation Checklist, if applicable, including installation of all electrical service, data cabling, and fixture installations (e.g. desk-top space, shelving, equipment rack, etc.). These should have all been prepared prior to your arrival at the facility.

**CAUTION** To minimize the risk of electrical interference over exposed network cables, ensure that all network connections, including those at the central station, network equipment closet, and hallway areas, can be made using network patch cables which are no longer than 10 ft (3m) in length.

1. **Locate the network jack for the CPU.**
   a. Ensure that the distance will be reachable using standard network patch cable lengths of five or ten feet.

2. **Locate available AC Power outlets.** Ensure distance within 5 ft (1.5 m) of where each component will be place (e.g. CPU, video display, etc.).

   **WARNING** It is strongly recommended that the central station is installed with redundant power supplies, such as an uninterrupted power supply (UPS). The facility is responsible to provide 100 percent reliable power to the central station. The Central Station will only work with reliable AC power.

3. **Observe desk and/or cabinetry from adequate access.**
   a. Access holes may be required if some components are planned to be mounted below the desktop area.
   b. Access holes should be a minimum of 2.5 in. (75 mm) in diameter for allow power, data and video cables to run between components.
Equipment Staging and Inspection

1. All components should have arrived prior to your arrival on-site, however some parts may need to be special ordered and shipped while you are installing the system (e.g. special cables). Contact the field Project Coordinator, via Welch Allyn technical support as necessary.

2. Visually compare the components received against the Sales Order contained within the documentation package to ensure that all of the proper components have arrived.

3. As you unbox each component, visually inspect for damage which may have been sustained during shipment.

4. Contact the field Project Coordinator, via Welch Allyn technical support as necessary, to report damaged or missing components.

5. Move the following components to the central station location:
   - CPU (Desktop PC)
   - Keyboard / Mouse
   - Video Display
   - Laser Printer
   - Power Cables
   - Video and data cables.

   **Note** Some components may be customer supplied (Printer), and may be a shared network resource, connected to the hospital general network.

6. Review Figure 2-2: CPU Front Panel controls and connectors and

7. Figure 2-3: CPU Rear Panel connectors.

8. Familiarize yourself with the location of all features, controls, indicators, and connectors on the CPU.
**Figure 2-2: CPU Front Panel controls and connectors**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Power LED</td>
</tr>
<tr>
<td>B</td>
<td>Power Switch. Press and release to turn on the CPU. Push and hold to turn off.</td>
</tr>
<tr>
<td>C</td>
<td>Hard disk LED. Turns on when the computer reads or writes data to the hard disk.</td>
</tr>
<tr>
<td>D</td>
<td>Front Panel USB ports (Qty. 2)</td>
</tr>
</tbody>
</table>
Figure 2-3: CPU Rear Panel connectors

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>AC Power inlet (100 - 240 VAC)</td>
<td>E</td>
<td>Network RJ45</td>
</tr>
<tr>
<td>B</td>
<td>USB 2.0 ports (Qty. 3)</td>
<td>F</td>
<td>Audio out (Green)</td>
</tr>
<tr>
<td>C</td>
<td>On-board VGA video HD15</td>
<td>G</td>
<td>DisplayPort Video connector (for repeater display)</td>
</tr>
<tr>
<td>D</td>
<td>USB 2.0 ports (Qty. 2)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
3 Setup

General Setup

1. Place the CPU, keyboard, mouse, and video display in their intended locations.
2. Remove the plastic covers from the CPU panels if not already done.
   
   **CAUTION** Do not operate the CPU with the protective covers attached. Reduced airflow from partially blocked vents may result in the CPU overheating and internal damage.
3. Connect USB devices as follows:
   a. Connect the keyboard to one of the USB jacks located on the rear of the CPU.
   b. Connect the mouse to an adjacent USB jack on the rear of the CPU.
   c. Connect the optional barcode scanner to one of the USB jacks located on the front or rear of the CPU.
   d. Use a single USB extension cable for each device if required for longer distances.
   
   **Note** Only a single USB extension cable may be used for each device. Attaching 2 or more USB extension cables in series may result in intermittent problems with input type devices.
4. Attach an RJ45 type network cable from the CPU to the nearest wall mounted network jack identified for use with the central station.
5. Attach the power cord to the AC power inlet on the rear of the CPU and route to area near a designated AC power outlet. **DO NOT PLUG INTO AC POWER OUTLET YET.**
6. Choose a stereo audio cable to be installed between the CPU and the video display.
   a. The video display has built-in speakers to provide primary audio for the central station.
   b. Typically there is a shorter stereo audio cable provided with the video display. Use this cable for shorter distance needs.
   c. Use 25 feet or similar long stereo audio cable to accommodate installations where the CPU and the video display are farther distance apart.
7. Attach one end of the audio cable to the green audio out jack on the rear of the CPU. Route the other end of the cable to near the video display.
Setup a Video Display

The material may have included various lengths of audio cables, video cables and video extender cables. Choose an appropriate length of cables for your installation.

**Note** Use no more than one video cable and one extender video cable in series. DO NOT ATTACH ADDITIONAL CABLES TO EXTEND THE LENGTH.

1. Connect one end of the VGA video cable to the display.
2. Connect the other end of the video cable to the back of the computer.
3. Connect the audio cable to the audio input jack on the display.
4. Attach a power cable to the video display and plug into an available AC power outlet.
5. Dress all cables as needed using cable ties or equivalent material.

Setup a Welch Allyn Printer

1. Place the laser printer in the final desired location.
2. Connect the power cord to the AC power inlet on the laser printer, typically on the rear of the unit, and to a designated AC power outlet.
3. Attach an RJ45 type network cable from the laser printer to the nearest wall mounted network jack identified for use with the central station.
4. Power on the laser printer.
5. Refer to the network information table from the Connext CS Customer Project Req Form, Appendix B1, to confirm network settings for laser printer if known.
6. Refer to the manufacturer’s user guide to configure network settings for the laser printer if required.

Setup a Customer Supplied Printer

The project may include the use of a customer supplied printer, typically a shared network resource. See “Add a Customer Supplied Printer” for additional information.

**Note** It is the facility responsibility to provide a driver for the printer.

Consult with the facility IT staff to identify the network printer and obtain a driver compatible with Windows 7 - 64 bit. Refer to the Connext CS Customer Project Req Form, Appendix B1 for additional information.

Warm Spare installation

A system configured for Warm Spare operation is licensed and configured to contact and synchronize its local database with that of the Connex server. The Warm Spare does not perform any other functions than to maintain a state of readiness to be put into place as a replacement central station when needed.
Setup

Install the Warm Spare in the same manner as a Central Station. It requires power, a network connection with link to the Connex server, keyboard, mouse, and a display (for administration).

Consult with the facility Biomedical Engineering team as needed to determine the location for placing the Warm Spare station.

Refer to all instructions in Setup for these general steps.

Note: A Warm Spare station is not required to be installed in the local area near a Central Station. A Warm Spare station may be installed anywhere within the facility that supports network connectivity to the Connex server.

Note: If the Warm Spare station is not located on the same IP subnet as the station being replaced, some network changes may be necessary. Refer to the Connex CS Server Install Guide for assistance in making changes to network settings on the Warm Spare station if required.
Different startup

Depending on the system configuration from manufacturing, the CPU may be configured as a networked central station with a shared Connex server, a warm spare station, or a stand-alone central station. The station behavior at startup differs based on the configuration.

Networked environment (Client / Server) considerations

In the networked environment, where there is a Connex server, it is preferred that the Connex server be started first. The Connex server hosts the main database that all central stations attempt to synchronize with on startup, using the Welch Allyn Connex Data Synchronization Service. Refer to the Connex CS Server Install Guide for additional information and startup behavior for the Connex server.

A central station configured as part of a network (client-server) model will start up with the central station application and run by itself, but may take much longer during the startup process if the Connex server is unreachable. The central station may also be running in a degraded mode until the Connex server is brought online (e.g. ADT services may not be available).

Warm Spare station considerations

A system configured for Warm Spare operation is licensed and configured to contact and synchronize its local database with that of the Connex server. The Warm Spare does not perform any other functions than to maintain a state of readiness to be put into place as a replacement central station when needed. Refer to Standard central station startup below for startup behavior of a Warm Spare station.

A Warm Spare is part of a network environment, with a server as well. It is preferred that the Connex server be started first. Central stations, including a warm spare should be started after the Connex server is running. Refer to the Connex CS Server Install Guide for additional information and startup behavior for the Connex server.

Stand-alone central station considerations

In the stand-alone central station, all required services are self-contained within the CPU. Thus, there are no other systems to consider in terms of startup order.
Power on the system

Once all peripheral items have been attached to the central station CPU, complete these final steps to finish the install.

1. Ensure that all components are connected to a AC power outlet.

2. Power on the displays and any other peripherals which require power.

3. Turn the power ON for the main CPU using the power control switch on the front bezel. The Power On Self Test (POST) runs and displays a message on the screen.

4. On the main CPU, verify the following:

<table>
<thead>
<tr>
<th>LED Indicator - front bezel</th>
<th>State or Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power LED.</td>
<td>Glows a constant GREEN when on.</td>
</tr>
<tr>
<td>Hard drive LED</td>
<td>Turns on after POST and CPU attempts to boot.</td>
</tr>
</tbody>
</table>


Standard central station startup

1. Upon successful start-up of the Connex CS application, the main screen is displayed. An example is shown in "Figure 4-2: Connex CS main screen example".

2. Some additional configuration may be required on site. Refer to “Configuration Details” for additional information on that subject.

3. Refer to Appendix A “Troubleshooting” if problems are encountered with starting up the Connex CS Central Station CPU.

4. If the central station includes a repeater display as part of the installation, refer to “Repeater Display Install” for additional instructions.

Figure 4-2: Connex CS main screen example
Warm Spare station startup

If the station is configured as a Warm Spare:

1. Upon successful start-up of the Connex CS application, the Warm Spare screen is displayed. An example is shown in Figure 4-1: Warm Spare main screen example.

2. With the exception of print drivers installation, typically no additional configuration is required beyond this point.
   a. Print drivers may be required to work with customer supplied printers. Refer to “Network, Printer, Date & Time config” for additional information on installing print drivers.

Figure 4-1: Warm Spare main screen example

3. Refer to Appendix A “Troubleshooting” if problems are encountered with starting up the Connex CS Central Station CPU.
5 Connex CS Configuration

Some configuration may be required

Some additional steps may be required to configure the Central Station or network to meet some customer needs.

1. Refer to “Configuration Details” for more specific instructions on tasks related to the following list of Connex CS configuration topics.
   - General Configuration - Warm Spare
   - Add a Station
   - Add a Master Bed List
   - Add a Covered area
   - Configure Network Rendezvous services
   - Configure the License Pool
   - Assign a Warm Spare
   - Create a View
   - Add Devices
   - Localize stations for the clinical setting
   - Configure continuous vital signs outbound
   - Configure units of measure
   - Configure auto discharge settings

2. Refer to “Configure Alarm Gateway Service” for instructions on tasks related to alarm gateway service.

3. Refer to “Network, Printer, Date & Time config” for instructions on tasks related to:
   - Connex CS shell versus Windows shell
   - Network changes, including IP address and subnet
   - Add the central station to a Windows domain
   - Add a customer supplied printer
   - Change the date and time
Final Steps

Before placing the system into use by clinicians, the system installation must be verified. Confirm proper configuration and operation by completing steps detailed in the Connex CS Install Verification Guide. See “Related Documents” for additional information.

Backup users and configuration

The Administration tool tab has functionality to backup and restore configuration information for the system and users. Tasks may be completed at any central station or the Connex server, and only needs to be done once for the entire network of central stations and Connex server.

To backup Connex CS users and configuration information:

1. Insert a USB flash drive into one of the USB ports on the CPU front panel.
2. On the navigation area, click on Settings. The login screen appears.
3. Login using the service account User ID and Password information. Upon success the Settings window appears.
4. Select the Admin tools tab > Export data > Settings. The Settings window appears. An example is shown in Figure 6-1: Export data settings users and configuration window.
5. Select User Account Settings and Server Configuration Settings.
6. Select **Export data**.

7. Navigate to the USB flash drive. Choose a folder location for the backup.

8. Choose a file name for the saved file. By default, the file will be called `WAConfigurationSettings.xml`, but should be changed to the following format for consistency:

   - **System S/N.config.Country or State.Facility Name.Date**
   - An example – CN01087.config.NY.UHS-Wilson.2013.08.08

**Note** The system name or covered area does not need to be described in the backup file name as the entire network is backed up for all systems and users in this method.
9. Also save a local copy on the system at the following location:
   - **C:\ProgramData\Welchallyn\@Config.Backup.**

**Note**  
*ProgramData* is typically a hidden file. You may need to type location by hand into the folder location bar using the keyboard.  
The folder *@Config.Backup* may not exist if this is a new installation. Create this folder as necessary.

10. Upon success, click **OK**.
# Troubleshooting

## CPU Startup

<table>
<thead>
<tr>
<th>Problem</th>
<th>Steps</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power On LED is not on. CPU is not running.</td>
<td>Make sure that the ACAC power cord is firmly attached to the CPU and to the outlet. Ensure that the AC power outlet is “live”. Clear any paper or debris that may be blocking any of the fans on the rear of the CPU or vented covers. Press the POWER ON control in the front bezel to restart the CPU.</td>
</tr>
<tr>
<td>Connex CS Central Station screen are blank or frozen.</td>
<td>Ensure that the power is turned on for the display. Press the Input or Source control button on the display. Ensure that the correct input is being viewed. Make sure the display’s AC power cord is firmly attached to the display and to the outlet. Check all of the video cables between the CPU and the display to ensure there are no loose connections. Reboot the CPU and test again. If no video is present on screen during startup, the BIOS may have become corrupt. Refer to “BIOS Recovery process” for steps to correct.</td>
</tr>
<tr>
<td>Keyboard does not respond Mouse does not respond.</td>
<td>Check the USB connectors, and extender cables if in use, to ensure that all connection are firm. Move the item to another USB connector and try. Reboot the CPU and test again.</td>
</tr>
</tbody>
</table>
Configuration Details

The configuration details section includes information for configuring Connex CS Central Stations, and is not intended to be followed in exact sequence. Instead refer the specific task area or section to accomplish configuration changes as needed. Chapter titles and main topic titles are listed within the Table of Contents at the beginning of this document.

General Configuration - Warm Spare

This section provides information about how to manually configure a system from a default Warm Spare state all the way through to a basic use state. While this will generally not be an activity that is exercised on-site, the configuration steps are applicable for all configuration needs, including pre-clinical go live or post go-live activities.

An example of the Warm Spare mode view below in “Figure B-1: Warm Spare mode example”.

Figure B-1: Warm Spare mode example
Overview

During the configuration of the system, the following sequence or steps will be performed:

- “Add a Station”
- “Add a Master bed list”
- “Add a covered area”
- “Configure Network Rendezvous Services”
- “Configure the License pool”
- “Assign a Warm Spare”
- “Create a View”
- “Managing Device Assignments”
- “Localize Stations for the clinical environment”
- “Configure continuous vital signs outbound”
- “Configure units of measure”
- “Configure auto discharge settings”

**Note**  If configuration updates to a central station are needed, refer to the appropriate starting point above and make changes as needed.

**CAUTION** If you are manually configuring a central station from the Warm Spare state, performing steps in sequence is key to the overall success of the installation. Failure to follow steps in this section sequentially may result in a problem with system operation.

Add a Station

To add a station:

1. On the navigation area, click on **Settings**. The login screen appears.
2. Login using the **service** account User ID and Password information. Upon success the Settings window appears.
3. Select the **Admin tools** tab. From the left side menu, select **Stations**, nested under Settings.
4. Select **Location management**. The Location management window appears. An example is shown below in “Figure B-2: Location management window example”.
5. Click on Stations. The Stations window appears.

6. To add or delete a station, click on Edit near the bottom of the window.

7. To add a new station, click in the Add station field and type a name for the station. Refer to the Connex CS Customer Project Req Form, Appendix B1 and B2 as needed to determine the proper entry for the station.

Figure B-3: Add Station window

8. Click Add when finished. The station name now appears in the Stations window by name. An example is shown below in “Figure B-4: Newly added station example”.
9. Click **Save** when finished.

10. Click on the **Back** button in the window header.
Add a Master bed list

1. From the **Settings > Admin tools > Stations > Location management** menu, click on **Master bed list**. The Master bed list window appears. An example is show below in “Figure B-5: Master bed list default window example”.

![Figure B-5: Master bed list default window example](image)

2. Observe that there are two sub-windows within the Master bed list main window.

3. Click on **Edit** near the bottom of the window.

4. Create a new Master bed list if there are no units present.

   **CAUTION** Fields in the Master bed list control which units, rooms, and beds appear on the Central Station and associated patient monitors. In a networked environment with more than one Central Station, the Master bed list controls this information for all systems. Always **Connex CS Customer Project Req Form, Appendix B2** when entering information in these fields.
Create a New Unit

1. In the Units window, click in the **Facility** field and enter the facility name.

2. Continue for the **Building**, **Floor**, and **Unit** fields. An example is shown below in “Figure B-6: Facility, Building, Floor and Unit entry field examples”.

3. When finished, click **Add**. A new entry for the Unit appears in the Units window. “Figure B-7: Newly created Unit example”.

**Figure B-6: Facility, Building, Floor and Unit entry field examples**

<table>
<thead>
<tr>
<th>Facility</th>
<th>Building</th>
<th>Floor</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>StMaryMedCtr</td>
<td>Main</td>
<td>3</td>
<td>3SMS</td>
</tr>
</tbody>
</table>

**Figure B-7: Newly created Unit example**
Add a New Room and Bed

In the Units window, click on the newly created Unit name, 3SMS in the above example. The Unit name appears in the header for the lower Rooms and Beds windows.

There are a number of different methods that can be used to add a room and bed including:

- Add a single room and bed.
- Add a range of rooms and beds.
- Change room and bed values.
- Copy rooms and beds info from a CSV file.

To add a single room and bed:

1. In the Master bed list window, click Edit to make changes.
2. Click in the Room field and enter a room name or number.
3. Click in the Bed field and enter a bed name or number. See “Figure B-8: Single Room and Bed entry fields example”

Figure B-8: Single Room and Bed entry fields example

4. Click Add. Then new room and bed information appear in the respective fields.
5. Repeat steps 1 through 3 to additional rooms and beds. See “Figure B-9: Newly added Room and Bed examples” for an example.

Note For a single bed, it may be desired to display with just a room name or number, without a bed present. This is also supported. Simply leave the Bed field blank in this case.

Note Rooms and beds will be displayed in descending order for the Unit, not the order in which they were entered.

6. Click Save when finished.
Figure B-9: Newly added Room and Bed examples

<table>
<thead>
<tr>
<th>Rooms</th>
<th>Beds</th>
</tr>
</thead>
<tbody>
<tr>
<td>321</td>
<td>A</td>
</tr>
<tr>
<td>322</td>
<td>B</td>
</tr>
<tr>
<td>323</td>
<td></td>
</tr>
<tr>
<td>324</td>
<td></td>
</tr>
<tr>
<td>325</td>
<td></td>
</tr>
</tbody>
</table>

Room: [Enter room]  Bed: [Enter bed]  Add  Delete

Advanced options
To add a range of rooms and beds:

1. In the Master bed list window, click **Edit** to make changes.
2. Click on the **expander to the left of Advanced options**. Two additional windows appear. An example is shown in “Figure B-10: Advanced options default”.

![Figure B-10: Advanced options default](image)

3. Click in the **Room Start** field to enter the first room number of a range.
4. Click in the **Room End** field to enter the last room number of a range.
5. Click in the **Bed Start** field to enter the first bed name of the range.
6. Click in the **Bed End** field to enter the last bed name of the range. An example is shown in “Figure B-11: Advanced options default”.

![Figure B-11: Advanced options default](image)

1. Click **Add range** when finished. The new range of beds and rooms appears in the list.

**Note** Ranges of beds and rooms must be continuous. The Add range function may be used as many times as needed. Single rooms and beds may be specified by using the same start and end value (i.e. Room 318 - 318).

2. Click **Save** when finished.
To change room or bed values:

**Note**  When making changes to rooms and beds ensure that the bed is not currently in use or assigned to a patient.

1. In the Master bed list window, click **Edit** to make changes.

2. If corrections are needed to a room value, click on the room to be changed and then click **Delete**.

3. A pop-up window appears asking to confirm the removal. Click **Yes** to confirm the removal, or **No** to cancel.

4. Re-enter the room and bed information as needed.

**Note**  Removal of a room with more than one bed will also all remove associated beds.

5. If corrections are needed to a single bed value, click on the room and bed to be changed and then click **Delete**.

6. A pop-up window appears asking to confirm the removal. Click **Yes** to confirm the removal, or **No** to cancel.

7. Re-enter room and bed information as needed.
To copy from a CSV file to add rooms and beds

This feature is available beginning in Connex CS v1.2 and higher.

1. In the Master bed list window, click Edit to make changes.

2. Click on the expander to the left of Advanced options.

3. Continue to scroll down to the bottom of the window. The Copy and paste from a CSV file window is viewable. An example is shown in “Figure B-12: CSV entry fields available in advanced options.”

**Figure B-12: CSV entry fields available in advanced options.**

4. Click on the gray text within the CSV file window.

5. Copy and paste room and bed information from a CSV file into the window. An example is shown in “Figure B-13: Copy and paste from CSV file window with data example”.

   a. Alternately type room and bed info directly into the window.

   b. Text should be of the format room,bed with no spaces.

   c. Type **room info only** as in the case of a single bed room with bed name.

   d. The use of the comma in the room or bed file name is not allowed.
6. Click **Add** to add the rooms and beds to the unit.

7. Click **Save** when finished.

**When complete...**

1. Confirm that all information listed in the Master bed list is complete, and matches the information contained in the *Connex CS Customer Project Req Form, Appendix B2*.

2. Click **Save** when finished.

3. Click on the **Back** button in the window header. The Location management menu appears.

4. Navigate to Covered Area to make additional configuration changes.

**CAUTION** All beds within the Master Bed List need to be included within a Covered Area for proper operation with the Patient List and Location functions on connected devices.

**CAUTION** Additionally, when changes are made to the Master Bed List and Covered area, the affected central station must be rebooted for changes to take complete affect.
Add a covered area

The Covered area window contains configuration tools that bind all of the previously entered location information together with a station. The process described in this section includes:

- Add a new covered area
- Assign default location
- Assign bed to the covered area
- Assign a station to the covered area.

**CAUTION** Anytime changes are made to the Central Station Covered area, the system must be rebooted for changes to take complete effect.

To get started:

1. From the **Settings > Admin tools > Stations > Location management** menu, click on **Covered Areas**. The Covered areas window appears. An example is show below in “Figure B-14: Master bed list default window example”.

**Figure B-14: Master bed list default window example**

![Master bed list default window example](image)

2. Observe that there are four sub-windows within the Covered areas main window.
3. Click on **Edit** near the bottom of the window.

4. Create a new covered area if there are none present.

   **CAUTION** The covered area name will appear in the upper left corner of the Connex CS display screen. Always refer to the *Connex CS Customer Project Req Form, Appendix B2* when entering information in these fields.

5. Click in the **Enter new covered area** field and enter the covered area name. An example is shown in “Figure B-15: Add covered area example”.

6. Click **Add** when finished. The newly create covered area appears above in the Covered areas window by name.

7. Click on the new covered area, 3 South in this example, and click on **Mark as default** if this is the default system for the network. See “Figure B-16: Covered areas window example” for an example.

   **Note** The default covered area provides a setting for all new devices to connect to the network for the first time, prior to being assigned to a location. There can be only one default covered area for a network. For a stand-alone central station, where there is only a single covered area, always mark the covered area as default.

8. Observe the hierarchy within the **Assign beds to covered area window** to the right, click on the **expander** arrow next to the previously configured facility name.

9. Keep expanding all layers until the previously configured rooms and beds are viewable.
10. Note that the hierarchy is displayed in the following order with values previously entered in the Master bed list:
   
   **Facility > Building > Floor > Unit > Room > Bed**

11. If the covered area will be on a stand-alone central station, simply click on the Facility to select all items underneath. A check mark appears in the box next to each selected location in the hierarchy. An example is shown in “Figure B-17: Assign beds to covered area window example”.

12. If the covered area is part of a network where multiple stations will be present, select only the unit and/or rooms and beds to be assigned only to covered area chosen.

   **Note** Refer to the **Connex CS Customer Project Req Form, Appendix B2** as needed for additional information about specific units, bed and rooms per covered area.

   **Figure B-17: Assign beds to covered area window example**

13. In the Stations sub-window, use the drop-down menu to select a station name previously created. An example is shown in “Figure B-18: Add covered area example”.

   **Figure B-18: Add covered area example**

14. Confirm that all information listed in the Covered area is complete, and matches the information contained in the **Connex CS Customer Project Req Form, Appendix B2**.

15. Click **Save** when finished.
16. Click on the Back button in the window header. The Location management menu appears.

**CAUTION** Anytime changes are made to the Central Station Covered area, the system must be rebooted for changes to take complete effect.
Configure Network Rendezvous Services

1. From the Settings > Admin tools > Stations menu, click on Networked Rendezvous Services. The Network Rendezvous Services (NRS) window appears. An example is show below in “Figure B-19: Network Rendezvous Services window example”.

2. Select Edit at the bottom of the screen.

3. In the Services to be resolved by DCP window, click on the entry with the Connex server’s old IP Address info and then select Delete.

   a. Create an entry with the following attributes:

   | Service type | 0 |
   | Host (If stand-alone Central Station) | <IP address of central station> |
   | Host (If client/server environment) | <IP address of Connex server> |
   | Port | 281 |
   | Protocol | UDP |

   b. When finished, click Add. An updated entry appears in the window. An example is shown below in “Figure B-19: Network Rendezvous Services window example”.
4. In the Services to be resolved by DCP Network Rendezvous window, click on the entry with the Connex server's old IP Address info and then select **Delete**.

   a. Create an entry for episodic data with the following attributes:

<table>
<thead>
<tr>
<th>Ordinal</th>
<th>Host (If stand-alone Central Station)</th>
<th>Host (If client/server environment)</th>
<th>Port</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>&lt;IP address of central station&gt;</td>
<td>&lt;IP address of Connex server&gt;</td>
<td>281</td>
</tr>
</tbody>
</table>

   b. When finished, click **Add**. An updated entry appears in the window.

   c. Create an additional entry for Service Monitor data with the following attributes:
d. When finished, click Add. An updated entry appears in the window.

e. Create an additional entry for Secure Episodic data with the following attributes:

<table>
<thead>
<tr>
<th>Ordinal</th>
<th>14 – Secure Patient spot upload connection request - WACP over TCP using TLS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Host (If stand-alone Central Station)</td>
<td>&lt;IP address of central station&gt;</td>
</tr>
<tr>
<td>Host (If client/server environment)</td>
<td>&lt;IP address of Connex server&gt;</td>
</tr>
<tr>
<td>Port</td>
<td>7750</td>
</tr>
</tbody>
</table>

f. When finished, click Add. An updated entry appears in the window.

g. Click Save when finished.

5. Click on the Service Tools tab.

6. Click anywhere in the Command Line window to display the cursor.

7. Type `shutdown /r <Enter>` to reboot the CPU with a 30 second delay.

8. Repeat all steps for each additional client workstation associated with the Connex server.

### Change Server Ports

**CAUTION** Generally, the **Server ports for DCP Listener and Network Rendezvous listener** should never be changed.

**Note** Refer to the **Connex CS Customer Project Req Form** for port number information as needed. In general, these port numbers will never need to change. These port numbers should only be changed if:

- Connex VM and Connex CS are both running on the same network.
- Multiple stand-alone central stations are running on the same network.

1. In the Server window, click on the radio button next to the specific port numbers for DCP Listener Port, and NRS Listener Port.

2. Make port number changes as needed.
3. Confirm proper communication by connecting a device and sending data to Connex CS.

When NRS all settings are complete...

1. Confirm that all information listed in the Networked Rendezvous Service window is complete, and matches the information contained in the Connex CS Customer Project Req Form, Appendix B1.

2. Click Save when finished.

3. Click on the Back button in the window header. The Stations menu appears.

4. Reboot the Central Station for changes to take effect.

5. If changes are made to a system that is in use, it may also be required to reboot all attached devices to obtain updates NRS settings information.

Configure the License pool

Licenses for Connex CS are distributed from Welch Allyn as a pool model for an entire network and assigned as needed during configuration.

1. From the Settings > Admin tools, click on Pool Configuration nested under Licensing. The Pool Configuration window appears. An example is show below in “Figure B-20: License Pool Configuration window example”.

   **Figure B-20: License Pool Configuration window example**

   ![License Pool Configuration window example](image)

   2. Observe that there are two sub-windows within the Pool Configuration main window.

   3. Each licensable feature is shown as a separate row.
4. The values contained in the **Total Units** column for each row correspond with the quantity of licenses purchased for that feature.

5. In the example above, 288 units corresponds with the maximum support for a network. Each central station can monitor up to 48 patients, and there are 6 central stations per network. (48 x 6 = 288).

6. By default, all new licenses are unassigned, and must be assigned to a unit for proper operation.

7. Click on **Edit** near the bottom of the window.

**Automatically assign per covered area licenses**

If the network is configured with only a single covered area, the **Allocate button** appears as available.

1. Click on **Allocate All** button to assign all available licenses from the Total Units to the single covered area. See “Figure B-20: License Pool Configuration window example” for an example.

2. The UNASSIGNED license pool automatically decreases as license are assigned to the covered area.

*Note*  The Allocate All function limits the quantity of licenses for any one feature to no more than 48 per covered area by design.

**Manually assign per covered area licenses**

Licenses must be manually assigned when more than 1 covered area is configured on the network. The **Allocate All** button appears as unavailable as well.

1. Identify the column associated with the Covered Area name for the central station.

2. Double click in a field for the Unit, and **enter a quantity** of licenses to be allocated for each feature. Refer to the **Connex CS Customer Project Req Form, Appendix B2** as needed for additional information.

3. A common licensing model involves assigning licenses for ContinuousMonitoringView, ContinuousTrends, FlowSheet, GraphicalTrend, and one of the FullDisclosure features. See “Figure B-21: Per Covered Area Licenses assignment example” below.
**Figure B-21: Per Covered Area Licenses assignment example**

<table>
<thead>
<tr>
<th>Feature Name</th>
<th>Total Units</th>
<th>UNASSIGNED</th>
<th>3 South</th>
</tr>
</thead>
<tbody>
<tr>
<td>ContinuousMonitoringView</td>
<td>480</td>
<td>456 (0 Consumed)</td>
<td>24 (0 Consumed)</td>
</tr>
<tr>
<td>ContinuousTrends</td>
<td>480</td>
<td>456 (0 Consumed)</td>
<td>24 (0 Consumed)</td>
</tr>
<tr>
<td>FlowSheet</td>
<td>480</td>
<td>456 (0 Consumed)</td>
<td>24 (0 Consumed)</td>
</tr>
<tr>
<td>FullDisclosure1Day</td>
<td>480</td>
<td>480 (0 Consumed)</td>
<td>0 (0 Consumed)</td>
</tr>
<tr>
<td>FullDisclosure2Day</td>
<td>480</td>
<td>480 (0 Consumed)</td>
<td>0 (0 Consumed)</td>
</tr>
<tr>
<td>FullDisclosure3Day</td>
<td>480</td>
<td>480 (0 Consumed)</td>
<td>0 (0 Consumed)</td>
</tr>
<tr>
<td>FullDisclosure4Day</td>
<td>480</td>
<td>480 (0 Consumed)</td>
<td>0 (0 Consumed)</td>
</tr>
<tr>
<td>FullDisclosure5Day</td>
<td>480</td>
<td>480 (0 Consumed)</td>
<td>0 (0 Consumed)</td>
</tr>
<tr>
<td>FullDisclosure6Day</td>
<td>480</td>
<td>480 (0 Consumed)</td>
<td>0 (0 Consumed)</td>
</tr>
<tr>
<td>FullDisclosure7Day</td>
<td>480</td>
<td>456 (0 Consumed)</td>
<td>24 (0 Consumed)</td>
</tr>
<tr>
<td>ReviewGraphicalTrend</td>
<td>480</td>
<td>456 (0 Consumed)</td>
<td>24 (0 Consumed)</td>
</tr>
</tbody>
</table>

4. Licenses are automatically removed from the UNASSIGNED column.

5. Repeat steps 1 through 4 for each Covered Area on the network.
Assign Per Care Unit Licenses

Per Care Unit Licenses are **only used for HL7 interfaces** with the customer's EMR, and are deployed as one per unit, on or off. Refer to the Connex CS Customer Project Req Form, Appendix B2 when configuring Per Care Unit Licenses.

1. Identify the column associated with the Unit name for the central station.
2. Click in the box for the Unit, to enable a license for each feature. Refer to the Connex CS Customer Project Req Form, Appendix B2 as needed.
3. If there are more than one Unit on the network, repeat steps 1 through 2 for each Unit.

When Complete...

1. Confirm that all information listed in the Licensing Pool configuration is complete, and matches the information contained in the Connex CS Customer Project Req Form, Appendix B2.
2. Click **Save** when finished.
Assign a Warm Spare

Once a complete profile has been created for a station, a warm spare can be assigned to fill the role of hosting station. This is a key step where all configuration information will be bound to a host CPU.

Warm Spare assignment can only take place on the Warm Spare station itself. The Warm Spare tab is only available there.

⚠️ **CAUTION** One a Warm Spare host is assigned to a station, it will no longer function as a Warm Spare. The CPU will also be rebooted at the end of the process to complete the station assignment.

1. From **Settings** click on the **Warm Spare** tab. The Warm Spare Assignment window appears. An example is show below in “Figure B-22: Warm Spare Assignment window example”.

**Figure B-22: Warm Spare Assignment window example**

2. Observe that the newly created station is not assigned to a host CPU yet.

3. To assign the station, click on the **Station name** (i.e. 3S Med Surg in the example above).

4. Click **Assign Station** near the bottom of the window.
5. A pop-up window appears asking to confirm the assignment. An example is shown in “Figure B-23: Confirm warm spare assignment example” below.

**Figure B-23: Confirm warm spare assignment example**

![Confirm Action Window](image)

6. Click **Yes** to continue. Click **No** to cancel.

7. The system must be rebooted to apply changes from Warm Spare mapping. An example is shown in “Figure B-24: Warm spare mapping complete now reboot message example” below.

**Figure B-24: Warm spare mapping complete now reboot message example**

![Warm Spare Mapping](image)

8. Click **OK** reboot the CPU automatically.
Create a View

The Connex Central Station allows users with certain privileges to create and manage customized tile layout or views. More information about view configuration can be found in the Directions of Use.

1. Upon completion, the Connex CS application should start automatically and come up with default view.

2. If the station was newly assigned to the CPU (from a warm spare) there will be no view present. An example is shown below in “Figure B-25: Main screen with no views yet created example”.

Figure B-25: Main screen with no views yet created example

3. Observe that the Covered Area name for the station is displayed in the upper left corner of the screen. No rooms and beds are yet viewable at this point.

4. On the navigation area, click on Views. The login screen appears.

5. Login using the service account User ID and Password information. Upon success the Views window appears. An example is shown below in “Figure B-26: Views window with no views created yet example”.

6. Observe there are two tabs available in the Views window.
   a. If views have been previously created for the station, the View Selection tab will be displayed by default.
   b. If no views have been previously created, the View Configuration tab will be displayed by default, as in the example below.
7. Click **Add** to create a new view. The window changes to display the View Configuration fields. An example is shown below in “Figure B-27: View creation starting window example”.

---

**Figure B-27: View creation starting window example**

![View creation starting window example](image-url)
8. **Enter a descriptive name** for the view or tile layout in the top field.

9. Use the drop down menu to **select the number of patient tiles** the layout will display. Patient tiles can be displayed in 8-, 12-, 24-, 36-, or 48-tile grids.

10. Use the drop down menu to select the **way in which the patient tiles will be organized**. Patient tiles can be automatically sorted, mapped by patient location, or manually placed in a tile location. An example view configuration is shown below in “Figure B-28: View configuration example”.

    a. For an **Automatically sorted** view, choose the customization order from the samples provided.

    b. For a **Manually placed in a tile location** view, no additional customizations are required. Users will be required to drag and drop a selected device from the Waiting Area to assign a view location.

    c. For a **Mapped by patient location** view, some additional steps are required. See View Customizations for Mapped by patient location “View Customizations for Mapped by patient location” below.

11. Click **Save** when finished.

12. Repeat steps 7 through 11 to create additional views as desired.
13. Once a view has been saved, it will appear in the View Configuration window. An example with multiple views is shown below in “Figure B-29: View configuration with multiple views created example”.

   a. Change the view display order with the **Move Up** and **Move Down** buttons on the right side.
   
   b. Modify a view with the **Edit** button.
   
   c. Remove a view with the **Delete** button.

   **CAUTION** No confirmation step is required to delete a view. There is no means to cancel or recover once a view is deleted.
Figure B-29: View configuration with multiple views created example

<table>
<thead>
<tr>
<th>Views</th>
<th>View Configuration</th>
</tr>
</thead>
<tbody>
<tr>
<td>24 Mapped Vertical</td>
<td>Layout Mode: Mapped 24</td>
</tr>
<tr>
<td>36 Mapped Vertical</td>
<td>Layout Mode: Mapped 36</td>
</tr>
</tbody>
</table>
View Customizations for Mapped by patient location

As previously described, some additional steps are required when creating a view which is to be organized for Mapped by patient location.

1. Customization windows appear when this view organization is chosen. An example is shown below in “Figure B-30: Mapped by patient location view configuration example”.

Figure B-30: Mapped by patient location view configuration example

2. Observe that there are two sub-areas.
   - One area contains a bed list with rooms and beds in ascending order as previously configured for the covered area.
   - The second area contains a layout map for the view chosen.

3. To map a room and be to a tile location:
   a. In the bed list, **click on the first room and bed** at the top.
   b. **Click on the desired tile location** in layout map. The room and bed now appear in the layout map.
   c. Once placed on the layout map, the room and bed are removed from the bed list.
d. The **next room and bed are automatically selected** in the bed list and ready to be placed. An example is shown in “Figure B-31: Mapping a bed to a tile layout example” below.

e. **Click on another tile** to place the next bed from the list.

**Figure B-31: Mapping a bed to a tile layout example**

<table>
<thead>
<tr>
<th>Customizations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Map patients to tiles based on patient location</td>
</tr>
<tr>
<td>1) Select a value to map:</td>
</tr>
<tr>
<td><img src="image" alt="" /></td>
</tr>
<tr>
<td>2) Click on the tile that will be used for the selected value:</td>
</tr>
<tr>
<td><img src="image" alt="" /></td>
</tr>
</tbody>
</table>

f. Repeat until all desired beds are placed into a tile location.

**CAUTION** While it is not required that all beds assigned to the covered area be displayed in all views, remember that unmapped beds will not be available. Use care to ensure that all desired beds are mapped to the view. An example use case may be creating a view where a number of beds will not be in use for some period of time due to construction or low census conditions.

4. To **undo a mapped bed**, simply **click on the tile location** to send the room and bed back to the bed list.

5. Click **Save** when customizations are finished.
Managing Device Assignments

Connex central stations keep track of which devices are assigned to which station.

In the stand-alone environment, this fairly simple as there is only one central station for devices to connect to.

In a multi-system environment, devices are typically configured to connect with an assigned central station.

Assignment of devices to a central station can be managed at any central station.

Add a new device

As you will be interacting with both the Central Station and a device, it is recommended that you locate a device near the Central Station. By default, all new devices will attach to the central station designated as the default covered area. Refer to "Add a Covered area" for additional information on configuring the default covered area.

1. Power on a device with continuous mode support.
2. Connect the device to the network.
3. Enter some manual data on the device, such as height or weight.
4. After a few moments, the device appears in the Waiting area of the main screen on the Central Station.
5. Perform a controlled power down the device to cleanly break the connection between the device and the Central Station.

**Note** Other methods of disconnecting the device, such as an uncontrolled power down, or disconnecting the network cable, may present alarms on both the device and the Central Station. Some alerts and alarm conditions may not be simple to clear or may present other issues.

6. On the Central Station, navigate to **Settings > Devices** tab.
7. Confirm there is now an entry corresponding to the device Serial Number. An example is shown below in “Figure B-32: Devices tab example with one device”.

8. Click **Edit** near the bottom of the window.

9. Click on the **Serial Number** of the recently connected device. The Device Configuration window populates with information from the selected device.

   a. Devices which are currently in use appear with a wave symbol 🧵 on the left side.
   
   b. Devices which are idle do not appear with a wave symbol on the left side.

*Note*  Assignment of devices can only be taken when a device is not currently in use.

10. Use the Location drop down menu to select a Unit name to assign the device. An example is shown in “Figure B-33: Device Location assignment drop down menu example”.

*Note*  Typically assignments for devices are made on an Unit basis. This allows clinical user flexibility to move the device from any room/bed location throughout the covered area.
11. If the device will always be located to a specific room, use the location drop down menu to select a **Unit, Room** and **Bed** location. Check the **Assigned** box to designate the monitor as permanently assigned to the select bed. An example is shown below in “Figure B-34: Device Location assigned to a fixed room and bed example”.

**Figure B-34: Device Location assigned to a fixed room and bed example**

Change device assignments  
During the course of using the system, it may become necessary to move a device from one location to another, such as another unit.

**To change a device assignment:**

1. On any central station, go to **Settings > Devices** tab.
2. Click **Edit** near the bottom of the window.
3. Click on the **Serial Number** of the device to be assigned to a different location. The Device Configuration window populates with information from the selected device.

**Note** Assignment of devices can only be taken when a device is not currently in use.

4. Use the Location drop down menu to select the new desired location, typically a Unit name. An example is shown in “Figure B-35: Location drop down menu with multiple units example”.

**Figure B-33: Device Location assignment drop down menu example**

![Device Location assignment drop down menu example](image)

![Device Location assigned to a fixed room and bed example](image)
5. In the example above, the device is currently assigned to the WIRED unit.

**Note** Typically assignments for devices are made on an Unit basis. This allows clinical user flexibility to move the device from any room/bed location throughout the covered area.

6. Upon selecting a new location, the new assigned location appears for the device in the table. An example is shown in “Figure B-36: Device Location for a Bolted room and bed example” below.
7. Repeat steps 1 through 6 to change locations for additional continuous mode devices.
8. Select **Save** when finished to store all updated device assignments.
9. Click **Back** to return to the Station Setting tab main menu.
Localize Stations for the clinical environment

Additional configuration may be needed to meet customer desired settings, again using the Settings menu and tool structure. Desired settings for the clinical environment are captured in the *Connex CS Customer Project Req Form, section C.*

Global settings and defaults, applied to all Central Stations, are controlled in **Settings > Admin tools > Settings > Stations.**

To change Vital Signs settings

1. From the **Settings > Admin tools > Settings** menu, click on **Stations.** The Station Settings window appears.
2. Select **Vital Signs > General** to display a list of support episodic parameters made available to all clinicians. An example is show below in “Figure B-37: Vital Signs General Parameters configuration window example”.
3. By default, all parameters are enabled. To change settings, select **Edit**, make changes to the available measurements list, and select **Save** when finished.
4. Select the **Back** button to return to the previous menu.
5. By default, all Vital Signs modifiers are enabled and available at Connex CS. If changes for Vital Signs modifiers are requested, such as disabling modifiers, select each desired parameter and navigate to the appropriate screen menus, make changes and save as desired.
6. Use the **Back** button to navigate back to **Station Settings** when complete.
To change Patient Management settings

1. From the Settings > Admin tools > Settings menu, click on Stations. The Station Settings window appears.

2. Select Patient management.

3. Select the General setting to control how long a discharged patient is retained in the patient list. The default value is 24 hours, and can be changed using the drop down menu choices. An example is shown in “Figure B-38: General Patient management configuration window example”.

4. Use the Back button, and select Patient tags to control settings for Fall Risk, Bio Hazard, and Diet. All three tags are enabled by default.

5. Tags can be hidden from display by using the Edit function and un-checking the value.
6. Additionally, on-screen helper text can be modified for a tag value by double-clicking on the text field and typing in a new string.

Figure B-38: General Patient management configuration window example

7. Use the Back button, and select Patient tags to control settings for Fall Risk, Bio Hazard, and Diet symbols. All three tags are enabled by default.

8. To make changed, first select Edit and then Enabled to allow override of the default Patient tag values.

9. To hide a tag from view, un-check it.

10. Additionally, on-screen helper text can be modified for a tag value by double-clicking on the text field and typing in a new string. An example is shown in “Figure B-39: General Patient management Patient tag configuration window example”.

Figure B-39: General Patient management Patient tag configuration window example
11. Select Save when finished, and Back to return to the Station Settings menu.

To change Display and Sound settings

1. From the Settings > Admin tools > Settings menu, click on Stations. The Station Settings window appears.

2. Select Display and sounds. By default, the controls are all disabled.

3. Select the Edit and Enabled button to make changes for manual volume override and hourly volume control settings if desired.

4. Changes can also be made for Language, Name format, Location format, Date format and Time format in this window, using the various drop-down menus for each. An example is shown below in “Figure B-40: Display and sounds configuration window example”.

**Figure B-40: Display and sounds configuration window example**

![Figure B-40: Display and sounds configuration window example](image-url)
To configure Alarm audio

By default, all alarms are set to zero seconds of **Alarm holdoff**, meaning they will be displayed and annunciated by alarm sound immediately upon occurrence. Hold off settings are configurable on a per level basis from zero to twenty seconds. The **Alarm audio threshold** setting determines which alarm levels include an audio alarm.

1. From the **Settings > Stations Settings** tab, click on **Alarm audio**. The alarm audio configuration window appears.
2. Select **Edit** to make changes.
3. Click and drag the desired slider for each alarm level Lethal, High, Medium, and Low as desired. An example is shown in “Figure B-41: Alarm audio configuration window example” below.
4. Select the desired **Alarm audio threshold** by clicking on the corresponding radio button as circled in “Figure B-41: Alarm audio configuration window example”.
5. Click **Save** when finished, and click **Back** to return to the main Station Settings tab.

**Figure B-41: Alarm audio configuration window example**

To configure Patient rest mode

When enabled, Patient rest mode introduces a layer after the Settings window but before the requirement enter a User ID and Password. This allows clinical users to quickly manage **Patient rest mode (on / off)** without having to login with their user credentials. See “Figure B-42: Settings > Patient rest mode control screen composite example” for a sample of controls available. The **“Advanced settings”** button takes users to the login control window to manage Connex CS settings on the central station.
From the **Settings > Stations Settings** tab, click on **Patient rest mode**. The Patient rest mode configuration window appears.

1. Select the **Edit** to make changes.

2. The **Patient rest mode allowed** checkbox enables this feature.

3. The **Patient rest mode schedule** radio buttons determine whether this feature is controlled by the On/Off button alone (Manual) or if the scheduling capability is enabled (Automatic).

   **Note**  The manual On/Off control capability is enabled even when schedule is set to Automatic. This allows the user to override the scheduled on/off function.

4. When using the Automatic schedule feature, select the desired start and end times as shown in "Figure B-43: Patient rest mode configuration window example".

5. Click **Save** when finished, and click **Back** to return to the main Station Settings tab.
When the station is placed into Patient Rest mode by selecting **On > OK**, all enabled devices connected to the station and running in Continuous profile will enter the rest mode.

“Figure B-44: Central station patient tiles in normal state (left) and rest state (right)” illustrates the change in appearance of a patient tile at the Central station.

Additionally, all enabled devices that connect to the central station inherit the current rest state.

Refer to the *Welch Allyn Connex CS Directions for Use* section titled “Patient rest mode” for additional information about this feature.

**Note** Rest mode will terminate when the device connection to the central station is lost.
and an alarm condition occurs.
Configure continuous vital signs outbound

1. From the Settings > Stations Settings tab, click on Continuous vital signs outbound. The Continuous vital signs outbound window appears.

2. Select the Edit to make changes.

3. By default, the station is configured to use the global inherited value. Click disabled to make a change, and use the drop-down menu to select an interval for sending continuous vitals data to the HIS application. An example is shown if “Figure B-45: Continuous vital signs outbound configuration window example” below.

   **Note**  Only change the port number if directed by Welch Allyn Applications Engineering. This port is used for internal communication only between the central station and the Connex server Corepoint integration engine. This is not the port used for external communication with the facility’s HIS application.

4. Click Save when finished, and click Back to return to the main Station Settings tab.

   **Figure B-45: Continuous vital signs outbound configuration window example**

   ![Continuous vital signs outbound configuration window example](image)
Configure units of measure

Changes to the Connex CS units of measure may be required as driven by customer preferences.

**CAUTION** Making changes to Units of measure on a live system or network will require a reboot of the Central Station / ALL Central Stations and all attached devices to ensure that all affected systems and devices are operating with the new settings. Plan your work and inform the clinical staff accordingly.

To change units of measure:

1. From the **Settings > Admin tools > Settings** menu, click on **Stations**. The Station Settings window appears.

2. Above the Station Settings window header, click on Settings for: CONNEX. A menu tree appears. An example is shown below in “Figure B-46: Stations Settings menu tree and hierarchy”.

**Figure B-46: Stations Settings menu tree and hierarchy**

3. Click on **STATIONS** to make change that affect all Central Stations on the network. The station settings menu changes and the units of measure choice appears.

**CAUTION** Although the menu tree allows for making changes to a specific Central Station, it is generally not recommended to have Central Stations and devices configured with different units of measure. In typically practice, units of measure are usually set at the facility level and applied to all systems and devices.

4. Click on **Units of Measure**. The Stations Settings menu tree window closes, and the hierarchy label appears as **Settings for: CONNEX/STATIONS**.

5. Click on **Units of measure again**. The Units of measure window appears. Click **Edit** to view options and make changes. See an example in “Figure B-47: Units of measure window”.

---

*Configuration Details*
6. Use the drop down to select available units of measure for specific parameters.

7. Make changes as needed, and click on **Save** when complete.

**Note**

The Central Station controls the units of measure for connected devices, upon startup and connection to the Central Station. Thus devices inherit the same units of measure as the Central Station.

If changes are made to the Units of Measure at the Central Station while devices are connected, those devices received the updated setting upon reconnecting to the station. To affect an immediate change at the device, power cycle the device and reconnect to the Central Station.

8. Reboot all Central Stations and all connected devices to ensure that all components are operating with the same values for units of measure.
Configure auto discharge settings

The Welch Allyn ADT Task Scheduler Service provides a configurable service that runs automatically in the background to assist in managing the Patient List contents and remove old entries.

**Note** The automatic discharge feature is only applied to patients that are not currently being monitored on the Central Station.

1. From a Central Station, navigate to **Settings > Admin tools > Settings** menu, click on **Server**.

2. From Connex Server, launch the **Admin Tools launcher > Admin tools** tab > **Settings** menu, click on **Server**.

3. The server available settings window appears. An example is shown in “Figure B-48: Automatic discharge settings controls available in Server settings window” below.

4. Select **Edit** to make changes.

**Figure B-48: Automatic discharge settings controls available in Server settings window**
5. There are 3 different areas within auto discharge functions that can be managed, and are described in the tables below.

6. Refer to the Welch Allyn Connex CS Directions for Use, section titled “Automatic discharge” for general clinical information about this feature.

7. Make changes as needed.

8. Click Save when changes are complete.

**ADT auto discharge settings**

1. Settings starting with “ADTAUTODISCHARGE” controls automatic discharge behavior for patients which have received an ADT message.

**Figure B-49: ADT patients auto discharge related settings**

<table>
<thead>
<tr>
<th>Setting Label</th>
<th>Function</th>
<th>Default value</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADTAUTODISCHARGE.ACTIVITY.STALEPERIOD.MINUTES</td>
<td>Turns Auto Discharge functions on/off for patients which have received an ADT message.</td>
<td>10080 (7 days)</td>
</tr>
<tr>
<td>ADTAUTODISCHARGE.ENABLED</td>
<td></td>
<td>FALSE</td>
</tr>
<tr>
<td>ADTAUTODISCHARGE.EXECUTIONFREQUENCY.MINUTES</td>
<td>Controls how often the process runs, in MINUTES</td>
<td>60</td>
</tr>
<tr>
<td>ADTAUTODISCHARGE.EXECUTIONSEQUENCE</td>
<td>Controls the run order between Late ADT Matching, Confirmed Auto Discharger, and ADT Auto Discharger processes.</td>
<td>3 (third)</td>
</tr>
</tbody>
</table>

2. The following table describes the function of each setting.

**Table B-4: ADTAUTODISCHARGE setting functions and default values**

<table>
<thead>
<tr>
<th>Setting Label</th>
<th>Function</th>
<th>Default value</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENABLED</td>
<td>Turns Auto Discharge functions on/off for patients which have received an ADT message.</td>
<td>TRUE (on)</td>
</tr>
<tr>
<td>EXECUTIONFREQUENCY.MINUTES</td>
<td>Controls how often the process runs, in MINUTES</td>
<td>60</td>
</tr>
<tr>
<td>EXECUTIONSEQUENCE</td>
<td>Controls the run order between Late ADT Matching, Confirmed Auto Discharger, and ADT Auto Discharger processes.</td>
<td>3 (third)</td>
</tr>
<tr>
<td>ACTIVITY.STALEPERIOD.MINUTES</td>
<td>Determines a period of time in MINUTES for which no activity has taken place for the patient including ADT messages, monitoring, test taken, edits to demographics or visit data.</td>
<td>10080 (7 days)</td>
</tr>
</tbody>
</table>

**CAUTION** Do not change settings for EXECUTION SEQUENCE unless directed by Welch Allyn Engineering.
Auto discharge settings for confirmed patients

1. Settings starting with “AUTODISCHARGE” control automatic discharge behavior for confirmed patients.

Figure B-50: Confirmed patients auto discharge related settings

<table>
<thead>
<tr>
<th>Setting Label</th>
<th>Function</th>
<th>Default value</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUTODISCHARGE.ADTLINKED.STALEPERIOD.DISCHARGE.MI</td>
<td>Turns Auto Discharge functions on/off for confirmed patients</td>
<td>TRUE (on)</td>
</tr>
<tr>
<td>NUTES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AUTODISCHARGE.ADTLINKED.STALEPERIOD.TRANSFER.MI</td>
<td></td>
<td>720</td>
</tr>
<tr>
<td>NUTES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AUTODISCHARGE.ENABLED</td>
<td></td>
<td>TRUE</td>
</tr>
<tr>
<td>AUTODISCHARGE.EXECUTIONFREQUENCY.MINUTES</td>
<td></td>
<td>60</td>
</tr>
<tr>
<td>AUTODISCHARGE.EXECUTIONSEQUENCE</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>AUTODISCHARGE.UNLINKED.STALEPERIOD.MINUTES</td>
<td></td>
<td>1440</td>
</tr>
</tbody>
</table>

2. The following table describes the function of each setting.

Table B-5: AUTODISCHARGE setting functions and default values

<table>
<thead>
<tr>
<th>Setting Label</th>
<th>Function</th>
<th>Default value</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENABLED</td>
<td>Turns Auto Discharge functions on/off for confirmed patients</td>
<td>TRUE (on)</td>
</tr>
<tr>
<td>EXECUTIONFREQUENCY.MINUTES</td>
<td>Controls how often the process runs, in MINUTES</td>
<td>60</td>
</tr>
<tr>
<td>EXECUTIONSEQUENCE</td>
<td>Controls the run order between Late ADT Matching, Confirmed Auto Discharger, and ADT Auto Discharger processes.</td>
<td>2 (second)</td>
</tr>
<tr>
<td>UNLINKED.STALEPERIOD.MINUTES</td>
<td>Determines a period of time in MINUTES until automatic discharge of a patient for which no activity has taken place for the patient including ADT messages, Continuous Monitoring, Spot Vitals taken, edits to demographics or visit data.</td>
<td>1440 (24 hours)</td>
</tr>
<tr>
<td>ADTLINKED.STALEPERIOD.DISCHARGE.MINUTES</td>
<td>Determines a period of time in MINUTES until automatic discharge of a patient after: receipt of an ADT discharge message, and time of the last Spot Vitals taken or Continuous Monitoring sessions ends.</td>
<td>240 (4 hours)</td>
</tr>
<tr>
<td>ADTLINKED.STALEPERIOD.TRANSFER.MINUTES</td>
<td>Determines a period of time in MINUTES until automatic discharge of a patient after: receipt of an ADT transfer message, and time of the last Spot Vitals taken or Continuous Monitoring sessions ends.</td>
<td>720 (12 hours)</td>
</tr>
</tbody>
</table>
CAUTION  Do not change settings for EXECUTION SEQUENCE unless directed by Welch Allyn Engineering.

Late ADT settings

1. Settings starting with “LATEADT” control behavior for patients which have been under Continuous Monitoring or Spot Vitals taken, but the ADT message arrived late or after the fact. Some addition settings also control behavior related to late ADT settings.

Figure B-51: Late ADT auto discharge related settings

2. The table below describes the function of each setting.

Table B-6: LATEADT setting related functions and default values

<table>
<thead>
<tr>
<th>Setting Label</th>
<th>Function</th>
<th>Default value</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENABLED</td>
<td>Turns function on/off for patients who have been under Continuous Monitoring or Spot Vitals taken, but the ADT message arrived late or after the fact.</td>
<td>TRUE (on)</td>
</tr>
<tr>
<td>EXECUTIONFREQUENCY.MINUTES</td>
<td>Controls how often the process runs, in MINUTES</td>
<td>2</td>
</tr>
<tr>
<td>EXECUTIONSEQUENCE</td>
<td>Controls the run order between Late ADT Matching, Confirmed Auto Discharger, and ADT Auto Discharger processes.</td>
<td>1(first)</td>
</tr>
<tr>
<td>INCLUDENULLADMITDATES</td>
<td>Turns the null admit inclusion feature on or off. When on, late ADT matching includes ADT visits with null admit dates in its search criteria.</td>
<td>FALSE (no)</td>
</tr>
<tr>
<td>PATIENMATCHINGRULE</td>
<td>Determines which matching rule to apply.</td>
<td>1</td>
</tr>
<tr>
<td>PATIENTOPENVISIT.TIMEELAPSEDMINUTES</td>
<td>Determines a period of time in MINUTES for how far back in history search for a patient match.</td>
<td>1440 (24 hours)</td>
</tr>
</tbody>
</table>
CAUTION  Do not change settings for EXECUTION SEQUENCE unless directed by Welch Allyn Engineering.

Configure a custom facility logo

It may be desired to place the facility logo on some printouts from Connex CS. Custom logos are available for use on printouts from the Patient Review and Station Review functions.

The facility logo can be changed by replacing a file in 2 locations within the file system.

Note Connex CS supports logos up to the design layout size of 3.76"w x 0.72"h (271 x 52 pixels @ 72 dpi).

To insert a custom facility logo:

1. Obtain the logo file from the customer and copy the facility logo file onto the central station desktop.
2. Each central station must be updated separately to support using a custom facility logo.
3. In Windows shell, open a Windows Explorer window.
4. Navigate to the following location:
   
   C:\Program Files (x86)\Welch Allyn\Connex\CS<CS Version>\Components\PatientReview\Images

5. Rename the file FacilityLogo.png to WA-logo.png to make a backup copy.
6. Copy the custom facility logo into the Images directory, and rename the file as FacilityLogo.
7. Navigate to the following location:

   C:\Program Files (x86)\Welch Allyn\Connex\CS<CS Version>\Components\StationReview\Images

8. Rename the file FacilityLogo.png to WA-logo.png to make a backup copy.
9. Copy the custom facility logo into the Images directory, and rename the file as FacilityLogo.
10. Reboot the central station for changes to take effect.
11. After the Connex CS application restarts, open the Review function for a patient and perform a print function from one of the tabs.
12. Confirm that the logo is appears in the upper right corner of the printout as desired.

Note It may be necessary to resize the logo if the logo does not fit or appears skewed in the print out.
Configure Alarm Gateway Service

This section is only applicable to systems which are configured and licensed for the Alarm Gateway Service (AGS) interface, available in Connex CS v1.5 and higher.

For a stand-alone central station, all of the configuration takes place on the local system. In the client / server environment, configuration of the AGS takes place on both the local central station (client) and the Connex server.

Each central station configured for communication with the AGS interface must be configured locally.

Configure alarm gateway on central station

1. At the central station, navigate to Settings > Admin tools > Alarm Gateway. Menu choices for managing the alarm gateway function appear.

2. Click on Alarm Gateway > Input / Output < Server Name>. The Edit settings window appears for the server. An example is shown in "Figure C-1: Client side alarm gateway input / output configuration window example".
3. **Output configuration settings will vary** depending on the central station topology, (stand alone central station versus client/server). Identify which type of central station is being configured and follow the respective sections below.

**Input / output configuration for AGS, client / server topology**

The AGS configuration example shown above in “Figure C-1: Client side alarm gateway input / output configuration window example” is typical for a client side configuration.
Configure client side AGS Input / Output connections

1. Refer to the Input configuration area first. Confirm that the configuration settings are as follows.

<table>
<thead>
<tr>
<th>Input Type (CHECKED)</th>
<th>CCS Inputs</th>
</tr>
</thead>
<tbody>
<tr>
<td>IP Address</td>
<td>127.0.0.1</td>
</tr>
<tr>
<td>Port</td>
<td>51500</td>
</tr>
</tbody>
</table>

DO NOT USE (UNCHECKED) AGS Inputs (Covered areas grayed out)

2. Review Output configuration settings next. Confirm that the configuration settings are as follows.

<table>
<thead>
<tr>
<th>Output Type</th>
<th>AGS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Port</td>
<td>400</td>
</tr>
</tbody>
</table>

3. If any changes are made to settings, select Save when complete.

Input / output configuration, stand-alone topology

An example configuration for a stand-alone central station is shown in “Figure C-2: Stand alone central station alarm gateway input / output configuration window example”.
Figure C-2: Stand alone central station alarm gateway input / output configuration window example

<table>
<thead>
<tr>
<th>Settings</th>
<th>Devices</th>
<th>Print jobs</th>
<th>Service tools</th>
</tr>
</thead>
<tbody>
<tr>
<td>Admin tools</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Roles</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Station settings</td>
<td>Users</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Alarm Gateway
  - Input/Output - JR-STANDALONE
    - Priority filter
  - Data Services
    - Release locks
  - Export data
  - Import data
    - Patients
    - Settings
  - Users
  - Licensing
    - Pool Configuration
    - Status
  - Logs
    - Audit
    - Log Viewer
  - Settings
    - Connections
    - Server
    - Stations
    - Stations admin

Editing settings for JR-STANDALONE only

### Input configuration

<table>
<thead>
<tr>
<th>IP Address</th>
<th>Port</th>
</tr>
</thead>
<tbody>
<tr>
<td>127.0.0.1</td>
<td>51500</td>
</tr>
</tbody>
</table>

**AGS Inputs**

- All covered areas
  - Sim1
    - Disabled
  - (This machine)

### Output configuration

- Output type: **IHE ACM**
  - 172.29.63.214
  - 52011

[Image of the settings window with input/output configuration options]
Configure stand alone AGS Input / Output connections

1. Refer to the Input configuration area first. Confirm that the configuration settings are as follows.

<table>
<thead>
<tr>
<th>Input Type (CHECKED)</th>
<th>CCS Inputs</th>
</tr>
</thead>
<tbody>
<tr>
<td>IP Address</td>
<td>127.0.0.1</td>
</tr>
<tr>
<td>Port</td>
<td>51500</td>
</tr>
</tbody>
</table>

DO NOT USE (UNCHECKED) AGS Inputs (Covered areas grayed out)

2. Review Output configuration settings next. Confirm that the configuration settings are as follows.

<table>
<thead>
<tr>
<th>Output Type</th>
<th>IHE ACM</th>
</tr>
</thead>
<tbody>
<tr>
<td>IP Address</td>
<td>&lt;customer defined&gt;</td>
</tr>
<tr>
<td></td>
<td>Refer to Appendix B1 of Connex CS Customer Project Req. Form</td>
</tr>
<tr>
<td>Port</td>
<td>&lt;customer defined&gt;</td>
</tr>
<tr>
<td></td>
<td>Refer to Appendix B1 of Connex CS Customer Project Req. Form</td>
</tr>
</tbody>
</table>

3. If any changes are made to settings, select Save when complete.
Configure AGS priority filter

1. Navigate to the menu **Alarm Gateway > Priority Filter**. The minimum alarm priority filter configuration window appears.

2. Confirm settings for **All covered areas** match those desired by the facility. Refer to the **Connex CS Customer Project Req. Form** as needed.

3. For **All covered areas**, use the **drop-down arrow** to view available settings and change values if needed. This sets the global default for all covered area central stations.
Figure C-4: Alarm gateway priority filter drop-down menu window example

Log
Tray
Info
Very Low
Low
Medium
High
Lethal

4. Confirm settings for individual covered areas, if needed.
   a. By default, each covered area will inherit the global setting applied to all covered areas.
   b. In some situations, an individual covered area may require different settings from the default value. Refer to the *Connex CS Customer Project Req. Form* as needed for additional input data.

5. Click **Save** if changes were made to the configuration.

**After all changes are complete**

1. Confirm that all information listed in the Alarm Gateway service window is complete, and matches the information contained in the *Connex CS Customer Project Req Form, Appendix B1*.

2. If changes were made to the IP addresses and Port settings, reboot the Central Station for changes to take effect.
Connex CS Shell versus Windows Shell

The Connex Central Station is intended and designed to support automatic startup of the Connex CS application when the CPU starts. To support this, the system is configured to operate in the Connex CS Shell mode. This shell mode blocks general users access to Windows functions, such as the Windows key, Ctrl+Alt+Delete, and Alt+Tab.

Windows functions are accessible from a command line tool built into the Settings tools, and described within this chapter.

**Note** It is recommended to make network changes, such as IP address settings, with the system configured for Windows shell.

**To change the shell mode:**

1. On the navigation area, click on **Settings**. The login screen appears.

2. Login using the **service** account User ID and Password information. Upon success the Settings window appears.

3. Click on the **Service Tools** tab.

4. Click on **Shell**. The shell mode window appears. Select **Edit** to make changes. An example is shown below in “Figure D-1: Shell Mode configuration screen example”.

5. Select the **desired shell** by clicking on the corresponding **radio button**.

6. It is also desirable to **deselect** the check box next to **Disable Windows and Ctrl+Alt+Delete keys** if the system will be operating in **Windows shell** for configuration or maintenance activities.

7. Click **Save** when done. A confirmation window appears.
   - Select **Yes** to save changes and reboot now.
   - Select **No** to save changes without reboot.
   - Select **Cancel** to continue without saving changes.

8. Upon restart, the system starts with a normal PC Windows desktop display after login.
Figure D-1: Shell Mode configuration screen example

Please restart the computer for these changes to take affect.
Network Changes

The change in the IP Address of one or more systems involved in Connex CS network will cause many components to break. This requires updating the specific configurations in the system used by such components.

In the interests of consolidation, procedures for changing IP addresses are included in the *Connex CS Server Install Guide*. Please refer to this document anytime changes to IP address settings are required.

Add a Customer Supplied Printer

It may be necessary to add a printer on-site, especially in the case of using a customer provided or shared network printer.

**Note**

Any additions, deletions, or changes to be made to executables on this system requires appropriate use of the Solidifier system. Please consult the Connex CS Central Station & Server Admin Guide for guidance.

**Note**

It is the facility responsibility to provide a driver for the printer.
Consult with the facility IT staff to identify the network printer and obtain a driver compatible with Windows 7 - 64 bit. Refer to the *Connex CS Customer Project Req Form, Appendix B1* for additional information.

To install a printer on the central station:

1. Ensure the printer is turned on and accessible on the network.
2. Open a command line interface window and ping the printer by the IP address to confirm that it is reachable.
3. Install the print driver provided by the facility.
   a. Use the Connex server internal CD/DVD ROM drive for optical media.
   b. Use one of the USB ports on the front panel for USB flash drive media.

Install from an executable file (.exe)

1. If the customer has provided CD/DVD media which will automatically run, follow the steps and prompts as provided.
2. If the customer has provided media with an .exe file extension type, double click on the file to start the installer. Follow the steps and prompts as provided.

Install from a setup info file (.inf)

Use the Windows functions to Add a printer:

1. Click **Start > Control Panel > View devices and printers**.
2. Click on **Add a printer**.
3. Select **Add a network, wireless, or Bluetooth printer**.
4. Windows being a search for known printers.
If the desired printer is found using search:

1. Select **Stop** when the printer appears in the search window.
2. Click on the printer, and then select **Next**.
3. Change the name of the printer as desired and select Next.
4. For printer sharing, select an option and then select Next.
5. Select **Print a test page.** and then select **Finish**.
6. Confirm that a test print was printed by the printer.
7. The printer appears in the Control Panel Printers and Faxes window.

If the printer was not found using search:

1. Click **The printer that I want isn’t listed.**
2. Select the radio button next to **Add a printer using a TCP/IP address or hostname**, and then select **Next**.
3. Leave Device type as **Autodetect**.
4. Enter the **IP address** of the printer.
5. Ignore the Port name, and select **Next**.
6. Select the printer manufacturer and model from the menus.
7. If the printer is not listed, select **Have Disk**, and browse to the location of the .INF driver file. Select **OK** when ready.
8. Click on the **printer**, and then select **Next**.
9. Change the name of the printer as desired and select **Next**.
10. For printer sharing, select an option and then select **Next**.
11. Select **Print a test page.** and then select **Finish**.
12. Confirm that a test print was printed by the printer.
13. The printer appears in the Control Panel Printers and Faxes window.
14. If more than one printer is installed, choose a printer to set as the default.

### Change Date and Time

It may become necessary to adjust the date and time to local settings. These are controlled using standard Windows controls.

1. On the desktop, click on the date and time as displayed on-screen.
2. Click on "**Change date and time**".
3. Use the **calendar and clock** functions to set the correct date and time as needed.
4. Click **OK** when finished.
5. Select “**Change time zone...**” to make changes if needed.
6. Use the **Time zone: drop-down** menu to choose an available setting.

7. Check the box for **Automatically adjust for Daylight Saving Time** to enable for the local as needed. This is on by default.

8. If the system is not installed on a domain, the Internet Time tab will be available.
   a. Click on **Internet time > Change settings**.
   b. Click on **Synchronize** with an Internet time server.
   c. Use the drop down list to select **time.nist.gov**.
   d. Click **Update now** and confirm that the time is updated within shortly.

9. Click **OK** when finished.

10. Click **OK** to apply all changes and close the Date and Time settings window.
A repeater display option, available with Connex CS v1.5 and higher, provides a method for data displayed at the Central Station to be replicated at another location. Repeater displays provide a view only, with no local control over the data or content being shown.

Connex CS supports a number of different repeater display solutions. Refer to specific information below.

Display choices

The customer can provide any display or television as long as the display supports the following minimum requirements.

1. 1080P resolution
2. Has at least one available HDMI input
3. Has speakers
4. Has a USB port to provide power for the fiber-optic HDMI cable

**Note** USB port is only required for solutions that use a fiber-optic HDMI adapter. Refer to “Type 3 - single repeater via fiber optic HDMI cable” for additional information.

Repeater display installation scenarios

A number of different scenarios or types of installations are possible with a repeater display, including the following supported methods:

<table>
<thead>
<tr>
<th>Scenario / Type</th>
<th>Installation Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>One repeater display, using copper HDMI cable (up to 50 ft. / 15.25 m)</td>
</tr>
<tr>
<td>2</td>
<td>One repeater display, using copper HDMI cable, more than 50 ft. / 15.25 m with signal boosters</td>
</tr>
<tr>
<td>3</td>
<td>One repeater display, using fiber optic HDMI cable</td>
</tr>
<tr>
<td>4</td>
<td>Multiple repeater displays (up to four), using HDMI video splitter</td>
</tr>
</tbody>
</table>
Before you begin...

The steps included here require that the central station is completely installed, configured, and ready to use.

**CAUTION** Always complete installation of the central station and confirm basic functional operation before attaching any repeater display components.

If possible, it is recommended to temporarily set up the Repeater Display near the Central Station so that configuration can be observed on both screens simultaneously.

**Install HDMI converter**

By default, the Central Station only uses the computer’s one VGA output. The DisplayPort video is used for the repeater display, but requires the installation of a DisplayPort to HDMI converter. All installations for repeater displays utilize HDMI cables.

1. Ensure that all displays and the central station are turned on.

2. At the Central Station, connect the DisplayPort to HDMI converter to the DisplayPort port. An example of the DisplayPort to HDMI converter is shown below in “Figure E-1: DisplayPort to HDMI converter example”.

**Figure E-1: DisplayPort to HDMI converter example**
Type 1 - single repeater via standard copper HDMI cable

The cooper HDMI cable, as pictured below, can carry video and audio signals over a short distance to enable a direct one-connector hookup between the central station and the repeater display.

Figure E-2: Copper HDMI cable example

Plug & Play instructions

1. Ensure that all displays and the central station are turned on.
2. Plug one end of the HDMI cable into the HDMI converter at the back of the central station PC.
3. Plug the other end of the HDMI cable to the HDMI input on the repeater display. Refer to the display manufacturer’s user guide to locate HDMI inputs if needed.
4. On the repeater display, press the source/input button to select the HDMI input corresponding to the connection with the HDMI cable previously attached.

Note Refer to the display user guide as needed to locate source/input controls as necessary. It may be required to use the accompanying remote control for the display or television to configure and select the proper HDMI input.

5. Physical installation is complete. The repeater display should now be showing a duplicate of the central station display.
6. Proceed to “Central Station configuration for repeater display” to complete the installation process.
Type 2 - single repeater via HDMI cable with signal boosters

Another solution for a single repeater display includes the use of an HDMI cable with a signal booster. The usual specification length of the maximum run for HDMI cable is about 50 feet due to the fact that when HDMI cable length gets too long the signal starts to lose strength which results in a picture distortion.

HDMI cables over 50 feet long should have a built in signal booster inside the cable as shown in the picture below. The cable may be unidirectional with labeled Input and Output ends.

**Figure E-3: HDMI cable with unidirectional signal boosters example**

---

**Plug & Play instructions**

1. Ensure that all displays and the central station are turned on.

2. For a unidirectional HDMI cable, where the cable is labeled with INPUT and OUTPUT:
   a. Plug the end of the HDMI cable labeled **INPUT** into the **HDMI converter** at the back of the central station PC.
   b. Plug the end of the HDMI cable labeled **OUTPUT** into the **HDMI input on the repeater display**.

3. For a non-directional HDMI cable, where the cable is **not labeled** with INPUT and OUTPUT:
   a. Plug one end of the HDMI cable into the **HDMI converter** at the back of the central station PC.
   b. Plug the other end of the HDMI cable into the **HDMI input on the repeater display**.

4. On the repeater display, press the source/input button to select the HDMI input corresponding to the connection with the HDMI cable previously attached.

   **Note** Refer to the display user guide as needed to locate source/input controls as necessary. It may be required to use the accompanying remote control for the display or television to configure and select the proper HDMI input.

5. Physical installation is complete. The repeater display should now be showing a duplicate of the central station display.
Type 3 - single repeater via fiber optic HDMI cable

As an alternative for long HDMI cable, a fiber-optic HDMI cable can also be used for a single repeater display. The fiber-optic HDMI cable provides insulation from environmental factors, such as electromagnetic signals which could be present at a hospital.

A fiber-optic HDMI cable may be used in situations where the distance between the Central Station and the repeater display is greater than can be reached with standard cabling methods.

To use fiber-optic HDMI without an external power supply, the repeater display or television needs an available USB connection. The cable uses the 5-volt from display's USB connector to drive its power needs.

An example is illustrated below in “Figure E-4: Fiber-optic cable overview”.

Figure E-4: Fiber-optic cable overview

Plug & Play instructions

1. Ensure that all displays and the central station are turned on.

2. Check both ends of the fiber optic cable which should be labeled as either TX (source) or RX (display).
   a. Optional - some fiber optic cables may not have HDMI connectors at both ends, but instead are terminated with a small fiber optic plug. Some cables come with tow detachable HDMI connectors marks as TX (source) and RX (display). Insert the fiber optic make plug into the female jack on the corresponding detachable fiber optic HDMI connector for both ends.

3. Place the RX plug of the fiber optic cable to HDMI input on the repeater display / TV.

Note Refer the display user guide as needed to locate source/input controls as necessary. It may be required to use the accompanying remote control for the display or television to configure and select the proper HDMI input.
4. The RX connector has hard-wired or detachable USB cable.

5. If repeater display / TV has a USB port, connect the USB plug to an available USB port on the display. This provides power to the fiber optic HDMI connector without the need for an external power supply.

6. If the repeater display / TV has no USB port, the External Power (wall wart power supply) source with USB port can be used. Plug the adapter to the USB power supply and connect the USB plug to USB port on external power supply.

**Note** Usually, the RX connector has the hard-wired USB cable which is short that requires AC power supply very near from the HDMI port on the repeater display.

7. Place the TX plug of the fiber optic cable to HDMI output of DVI to HDMI Converter.

8. On the repeater display / TV, press the source/input button to select the HDMI input corresponding to the connection with the HDMI cable previously attached.

9. Physical installation is complete. The repeater display should now be showing a duplicate of the central station display.

10. Proceed to “Central Station configuration for repeater display” to complete the installation process.

**Note** The Fiber Optic HDMI Cable doesn’t require USB power at both ends. Only the receiver (RX) end must be powered with a USB port which you can get from USB port of TV. But, the fiber optic HDMI from Celerity has USB port at both ends; Celerity provided a transmit connector (TX) which included USB power as well as they found some source equipment (usually the cable boxes) didn’t provide ample power on the HDMI output.

**Type 4 - multiple repeater display with HDMI video splitter**

To be able to connect more than one repeater display, an HDMI Video Splitter Box is needed which takes one HDMI input and split into multiple outputs. Currently, the system will only offer support up to 4 repeater displays using Video Splitter. The picture below shows the front and rear view of 4-port HDMI Video Splitter.
Plug & Play Instructions

1. Ensure that all displays and the central station are turned on.

2. Make sure that all the required HDMI cables (one HDMI cable for each display plus a short HDMI cable) are available.

3. Connect an HDMI cable from each of the additional displays to the numbered output HDMI connectors on the Video splitter. (Follow the plug and play instructions described above, based on the HDMI cable to be used for each display; using the numbered output HDMI slots on the Video splitter instead of the output of DVI to HDMI Converter.)

   Note Multiple Repeater displays must have identical specifications. Otherwise, there may be issues in adjusting the screen resolution and audio differently for all of them. Port 1 will be the primary output so EDID information will be taken from there. The capabilities of the display on Port 1 will be applied to all other ports so be careful not to exceed the capabilities of the other displays.

4. Connect the included power adapter to the video splitter and power it on.

5. Power on the additional display(s) and choose the correct HDMI Input Source for each display. For TV as display - Press the source/input button from the TV remote control and choose the HDMI input where the HDMI cable is plugged in the TV.

6. Connect a short HDMI cable from the output of DVI to HDMI Converter to the ‘SOURCE’ input HDMI connector on the Video splitter.

7. Physical installation is complete. The repeater display should now be showing a duplicate of the central station display.

8. Proceed to “Central Station configuration for repeater display” to complete the installation process.
Central Station configuration for repeater display

Configuration at the Central Station is required to complete the installation process for a repeater display.

If possible, it is recommended to set up the Repeater Display near the Central Station so that configuration can be observed on both screens simultaneously.

As these configuration changes are part of the Windows 7 operating system, changes must be made in Windows Shell Explorer.

To change the shell mode:

1. On the navigation area, click on Settings. The login screen appears.
2. Login using the service account User ID and Password information. Upon success the Settings window appears.
3. Click on the Service Tools tab.
4. Click on Shell. The shell mode window appears. Select Edit to make changes. An example is shown below in “Figure E-6: Shell Mode configuration screen example”.
5. Select the Window Shell Explorer by clicking on the corresponding radio button.
6. Click Save when done. A confirmation window appears.
   - Select Yes to save changes and reboot now.
   - Select No to save changes without reboot.
   - Select Cancel to continue without saving changes.
7. Upon restart, the system starts with a normal Windows 7 desktop display after login.
Figure E-6: Shell Mode configuration screen example

Please restart the computer for these changes to take effect.
Screen Resolution Setup

The additional display or television should be added as duplicated display by default. To ensure the same, open the "Intel HD Graphics Control Panel" then select "Display".

**Figure E-7: Intel HD Graphics control panel example**

Set the resolution to 1680x1050. Then drop down the “Display” sub menu and select “Multiple Displays”.

**Figure E-8: Setting screen resolution example**
Set the Primary (Top) Display to be the name of the main Central Station Monitor. Set the repeater display (bottom) to be the name of the repeater monitor/television. Select “Clone” for the display mode.

**Figure E-9: Screen settings example**

Select “Apply” and then “Yes” to keep the changes.

Select “Save Profile”, enter a profile name, and select “Ok”.

**Color adjustments (if needed)**

If any of the displays has inappropriate color settings resulting in unusual screen visibility, “Calibrating” the display helps to ensure that colors are represented accurately on the given monitor.

**To calibrate the display:**

1. Open Display Color Calibration by clicking the **Start** button, and then clicking **Control Panel**. In the search box, type “**calibrate**”, and then click **Calibrate display color**. If prompted, enter the administrator password as required.

2. In **Display Color Calibration**, click **Next** to continue. Follow the instructions from windows wizard and complete the calibration.

At this point, the repeater display / TV screen should display the desktop of central station without any resolution or color issues.
Audio Setup

Below are the steps to adjust the sound setting with a repeater display.

Navigate to the Sound control panel. Under the “Playback” tab, right click “Speakers” and set them to the default device.

Figure E-10: Sound control panel Playback example

Under the “Recording” tab, right click in available white space and enable “Show Disabled Devices”. Right click on the “Stereo Mix” and enable it.

Figure E-11: Sound control panel Recording example
Right click on “Stereo Mix” again and select properties. Under the Listen Tab, Select “Listen to this device” then select the repeater display in the “Playback through this device” dropdown.

**Figure E-12: Sound control panel Stereo Mix example**

Under the “Levels” tab, increase the “Stereo Mix” to 100. Select OK.

**Figure E-13: Stereo Mix Levels example**
Open the Intel HD Graphics Control Panel application and select “Profiles”.

a. Select the named Profile created earlier.
b. Select Trigger type “Application”.
c. Select Settings “Display”, “Color”, and “Audio”.
d. Select Power Usage “On Battery” and “Plugged in”
e. Enable Automatic Adjustment
f. Select Application “ConnexCS”.

Note: if ConnexCS is not in the list of Applications, use the “Browse” function and select it from C:\Program Files (x86)\Welch Allyn\Connex\CS\1.7\ConnexCS
g. Save
On the Windows desktop task bar, click on the **Sound icon**. Two sound slider controls appear. One is for the Central Station and another is for the display. Try changing these, the sound should be produced at the Central Station and/or from the repeater display.

**Figure E-15 Setting Windows volume levels**

![Sound controls](image)

**Note** It is recommended to make sure that volume is set to highest for both the Central Station and repeater display. If there are sound adjustments to be made for the repeater display, it must be through repeater display's local control or remote control.

**Note** If the two sound controls are not displayed as shown below, reboot the central station. After startup, make sure that the two sound controls are displayed and working.

At this point, configuration changes are complete.
Restore the CS shell

To change the shell mode:

1. On the navigation area, click on Settings. The login screen appears.

2. Login using the service account User ID and Password information. Upon success the Settings window appears.

3. Click on the Service Tools tab.

4. Click on Shell. The shell mode window appears. Select Edit to make changes. An example is shown below in “Figure E-18: Shell Mode configuration screen example”.

5. Select the corresponding radio button for Connex CS <version number>.

6. Additionally, select the check box to Disable Windows And Ctrl+Alt+Delete Keys option.

7. Click Save when done. A confirmation window appears.
   - Select Yes to save changes and reboot now.
   - Select No to save changes without reboot.
   - Select Cancel to continue without saving changes.

8. Upon restart, the system starts Connex CS application automatically.
Figure E-18: Shell Mode configuration screen example

Shell
- Windows Shell Explorer
- Connex CS 1.1
- Connex CS 1.5

Ctrl-Alt-Delete
- Disable Windows And Ctrl+Alt+Delete Keys

Please restart the computer for these changes to take affect.
Configure Clinician Authentication

General process

Authentication type can be selected and configured using the Connex Admin tools. Launch Admin tools and select Settings > Device Clinician Authentication. Refer to the Connex CS Customer Project Req. Form, Appendix B1 for detailed settings.

"Figure F-1: Basic workflow to configure Device Clinician Authentication" contains a basic workflow to configure an use this feature. Further details are the provided in the content below.

**Note** Once authentication provider configuration is completed, Episodic Connectivity Service (ECS) must be restarted for changes to take effect.

**CAUTION** In a client-server deployment, all configuration for Device Clinician Authentication must take place AT THE SERVER, NOT THE CENTRAL STATION. These steps are included for configuration of a stand-alone central station deployment only.
Multiple Security Providers

The Admin Tools tab supports creation of multiple security providers of type ConnexDatabase and Microsoft Active Directory service.

View Device Clinician Authentication settings

1. From the central station, navigate to the **Settings > Advanced settings** (if required) > **Admin Tools** tab > **Settings > Device Clinician Authentication**. An example is shown below.
2. The authentication providers area includes a list of providers.

3. A **Provider Name** listed with a “check” in the status column indicates it is currently in use.

**Configure for use with Connex Database**

1. Select **ConnexDatabase** to authenticate against the Connex CS Database. This is the default setting. See “Figure F-3: ConnexDatabase default settings example”.

2. Settings may be modified as described in sections below.
Configure Clinician Identifier for Connex CS Database

The list of clinician identifiers are available when authenticating against the Connex CS Database are shown below in the table below.

**Table F-1: Connex CS Database Clinician ID fields**

<table>
<thead>
<tr>
<th>Identifier</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>UserNam</td>
<td>User Account Name in the Connex Database</td>
</tr>
<tr>
<td>Id</td>
<td>Clinician Identifier</td>
</tr>
<tr>
<td>MiddleNa</td>
<td>User's middle name</td>
</tr>
</tbody>
</table>

**To configure clinician identifier settings:**

1. Check the box for each identifier that a clinician could use at the device.
Configure Clinician Authentication

2. Click on the identifier name to select, and use the Up and Down buttons to indicate the relative importance of each clinician identifier. See “Figure F-4: Check Clinician ID in use, Connex CS Database example”.

3. The security provider will verify in the sequence provided.

4. The first successful authentication or lookup will be used.

Figure F-4: Check Clinician ID in use, Connex CS Database example

Configure Group Membership for Connex CS Database

A clinician may be required to be a member of a group for successful authentication. When groups are configured, a clinician must be a member of at least one group. See “Figure F-5: Configure Group membership details, Connex CS Database example” below.

To configure group membership settings:

1. Check each group that applies.

2. Key in additional group names as needed and press the Add button.

3. Each new group must already exist in the Connex CS database

Figure F-5: Configure Group membership details, Connex CS Database example

Configure EMR Identifier for Connex CS Database

Upon successful authentication or lookup, the security provider returns the configured EMR identifier to the device (along with clinician first name and last name). The device sends the EMR Identifier with test vitals and outbound ORU messages to the EMR.

To configure EMR identifier settings:

1. Select the clinician identifier for use as the EMR Identifier.

2. The selected Id should be recognizable and valid in the hospital’s EMR.

3. If an EMR identifier is not specified, the primary clinician identifier is returned as the EMR ID: Username.
CAUTION Select an EMR ID mapping even though it may not be required by the admin tool and verify that the mapped attribute cannot contain a null value or blank value. If the specified mapping contains an empty value for an authenticated clinician, the Connex CS security provider returns the empty value to the device as the EMR ID. An empty EMR ID on the device prevents transmission of episodic test records from the device to ECS.

Example: a clinician authenticates at the device with a valid clinician number and password. EMR ID is mapped to clinician middle name. But, not all clinicians have a middle name. The Connex CS security provider returns an empty EMR ID to the device when that clinician authenticates at the device. The clinician takes many episodic tests from many patients and attempts to upload. The uploads will not be successfully transmitted to the EMR because the clinician ID is not valid.

When changes are complete

1. Click on the Save button at the bottom of the working window.
2. Restart ECS for all changes to take effect.
Configure for use with Active Directory

Add a provider for Active Directory

1. On the main window, in the “Add provider” area, select **ActiveDirectory** from the drop-down list. An example is shown highlighted below.

*Figure F-7: Select active directory screen example*
2. Configure **Security provider name**.
   a. Enter a friendly name which identifies the hospital’s active directory instance.
   b. A name is required since multiple active directory providers may be configured.

3. Configure **Domain IP address**.
   a. Enter the IP address of the active directory domain controller.
   b. Do not enter a domain name. An IP address is required.
   c. Refer to the *Connex CS Customer Project Req. Form, Appendix B1* as needed for this information.

4. Configure **Active directory user name**.
   a. Enter a user name which has privileges for accessing the active directory.
   b. This is the account name which will be used by the Connex CS system to make the connection to the facility’s active directory service. Refer to the *Connex CS Customer Project Req. Form, Appendix B1* as needed for this information.

5. Configure **Active directory user password**
   a. Enter the valid password of the active directory user.
   b. This is the account password which will be used by the Connex CS system to make the connection to the facility’s Active Directory service. Refer to the *Connex CS Customer Project Req. Form, Appendix B1* as needed for this information.

6. Press the **Add** button. This verifies that the domain IP address is valid as well as the user credential exist in the active directory.

   **Note** As the Add button forces a check with the customer’s active directory service before saving any settings, these steps will not be able to configured in manufacturing prior to shipment. All configuration steps for active directory must be completed on-site during the installation process.

7. Upon success, the added security provider will be available under “Select Authentication Providers”.

8. All other settings can now be configured.

   **Note** If messages appear during configuration that “Add” function is not being accepted, confirm settings listing in the *Connex CS Customer Project Req. Form, Appendix B1* are input properly. Consult with the facility IT staff to confirm settings if problems still persist.

**Configure Clinician identifier with Active Directory**

The default identifiers are available when authenticating against active directory are shown below in “Figure F-8: Configure Clinician identifier details, Active Directory example”. These represent active directory attributes which are common to all instances of active directory.
Configure Clinician Authentication

**Figure F-8: Configure Clinician identifier details, Active Directory example**

1. **Check** each clinician identifier that applies. Refer to the *Connex CS Customer Project Req. Form, Appendix B1* as needed for input data in these fields.

2. Click on the Identifier name to select, and use the **Up** and **Down** buttons to indicate the relative importance of each clinician identifier.

   *Note* The order matters as the first item which matches in the active directory query will be used

3. Additional active directory attributes can be specified as described in "Add a Custom active directory identifier".

Configure Group membership with Active Directory

A clinician may be required to be a member of a group for successful authentication. When groups are configured, a clinician must be a member of at least one group. See "Figure J-9: Configure Group membership details, Active Directory example".

1. **Check** each group that applies. Refer to the *Connex CS Customer Project Req. Form, Appendix B1* as needed for input data in these fields.

2. **Key in** additional group names as needed and press the **Add** button.

   *Note* Each new group must already exist in the hospital's Active Directory instance.

**Figure J-9: Configure Group membership details, Active Directory example**

Configure EMR identifier with Active Directory

Upon successful authentication or lookup, the security provider returns the configured EMR identifier to the device (along with clinician first name and last name). The device sends the EMR identifier with test vitals and outbound ORU messages to the EMR.

1. Select the clinician identifier for use as the EMR identifier. Refer to the *Connex CS Customer Project Req. Form, Appendix B1* as needed for input data in these fields.

2. The selected ID should be recognizable and valid in the hospital's EMR.

3. If an EMR identifier is not specified, the primary clinician identifier is returned as the EMR ID: AccountName as shown in the example below.
CAUTION Select an EMR ID mapping even though it may not be required by the admin tool and verify that the mapped attribute cannot contain a null value or blank value. If the specified mapping contains an empty value for an authenticated clinician, the active directory security provider returns the user account name as the EMR ID. The user account name may not be recognized by the EMR as a valid clinician identifier. This will likely cause problems in the EMR when episodic tests are uploaded.

Example: A clinician authenticates at the device with a valid user account name and password. EMR ID is mapped to display name. Display name is not required in active directory and a clinician may not have a display name. In this case, the active directory security provider returns the user account name as the EMR ID when that clinician authenticates at the device. The clinician takes many episodic tests from many patients and uploads. The uploads will not be successfully transmitted to the EMR because the clinician ID is not valid.

Add a Custom active directory identifier

There are many user attributes available in active directory (in addition to the defaults above). Further, active directory supports creation of custom user attributes. Any of these attributes could be used by the hospital for clinician authentication.

The admin tool supports capture of other attribute and custom attribute usage. See "Figure F-11: Add a Custom active directory example" below. Refer to the Connex CS Customer Project Req. Form, Appendix B1 as needed for input data in these fields.

1. Navigate to the Custom active directory identifier area.
2. Key-in the attribute's LDAP display name as defined in active directory.
3. Key-in a friendly name for the attribute (i.e. Badge Number).
4. Key-in a description for the attribute.
5. Press the Add button. Upon successful add, the attribute will be available for selection as a clinician identifier as described above. The list above will show the friendly name.

CAUTION Entries are not verified or validated against the hospital's active directory instance. You must ensure correct spelling of the AD attribute name. Key-in the attribute's LDAP display name as defined in active directory. The spelling must match the entry in active directory or authentication and lookup will not be successful.
When changes are complete

1. Click on the **Save** button at the bottom of the working window.
2. Restart **ECS** for all changes to take effect.

**Order the security providers**

The admin tool provides the capability to reorder the security providers.

1. **Check the Status box** for each identifier to be used.
2. Click on the Provider Name to select, and use the **Up** and **Down** buttons to change its order in the list.

**Note**
The order is important when multiple security providers are configured and selected. The first successful authentication or lookup is used. The remaining providers in the list are not queried.

**Delete a security provider**

If required, the **Admin tool** provides the capability to delete a security providers.

1. Identify the provider to be deleted.

**CAUTION** Do not delete the item associated with “ConnexDatabase”. This is the default setting in software and should be left in place. If the facility will not be using the ConnexDatabase, **uncheck the Status** in the “Select authentication providers” area instead.

2. Use the **Delete** button available in the “**Select authentication providers**” section.