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860633028
Rev A / June 2018
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SYSTIMAX® imVision® Controller X User Guide

Contents

Overview

The **SYSTIMAX®** **imVision®** system helps customers provide and maintain physical layer connections for telecommunications and data services. In a standard configuration, the system includes the imVision System Manager software and managed racks or cabinets containing iPatch® Copper Panels or Fiber Shelves. Each set of one to three managed racks is managed by an imVision Controller X.

The imVision Controller X is equipped with an intuitive touchscreen interface. Designed for optimum user-friendliness, this interface simplifies access to the powerful capabilities of the imVision system.

Important Safety Instructions

Failing to follow basic safety precautions, including the following, may result in risk of fire, electric shock and injury to persons:

- Follow all warnings and instructions marked on this product.

- This product should be operated using only the power supply provided by CommScope® with the product. Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

    - For proper mounting instructions, see imVision Controller X Installation Instructions 860632997 included with this equipment.

- Never install this product in wet locations or during lightning storms. There is a remote risk of electric shock.

- Do not place this product on an unstable cart, stand or table. The product may fall, causing serious damage to the product.

- When installing imVision or iPatch equipment not described in this guide, follow the instructions provided with that equipment. Take care not to compromise the stability of the rack by installation of equipment.

- The touchscreen display is designed to be used without the need for a stylus. Never use sharp objects or tools that may scratch or otherwise damage the touchscreen or apply excessive pressure with fingernails.
- Never push objects of any kind into this product through slots as they may touch dangerous voltage points or short-circuit parts that could result in a risk of fire or electrical shock.

- Never spill liquids of any kind on the product.

- To reduce the risk of electrical shock, do not disassemble this product. Only trained personnel should service this product. Opening or removing covers and/or circuit boards may expose you to dangerous voltages or other risks. Incorrect reassembly can cause electrical shock during subsequent use.

- If this product is installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than the room ambient temperature. Therefore, consideration should be given to installing the equipment in an environment compatible with the product's maximum ambient temperature (104°F or 50°C).

- Installation of the equipment in a rack should be such that the amount of airflow required for safe operation of the equipment is not compromised.

Note: All wiring that connects to the equipment must meet applicable local and national building codes and network wiring standards for communication cable.

The imVision® System

The imVision system is comprised of three main components:
- iPatch Panels, either iPatch copper panels or iPatch fiber shelves
- imVision Controller X (with touchscreen display)
- imVision System Manager software

Multiple imVision Controller X's are typically connected in a chain to form a patching zone. The first imVision Controller X in the patching zone must be configured as a Network Manager for the zone and connected to the customer network. A patching zone may also include imVision Controllers, but such zones have limited functionality. The imVision Controller X does not support patching zones that contain an iPatch Panel Manager or iPatch Rack Manager Plus.

iPatch® Panels

An iPatch Panel monitors connections by sensing the insertion of the patch cord plugs. When a patch cord is added to the network, the system records the connection in a database. This record lets you trace the connection by pressing the button near one of the ports containing the patch cord. The LEDs above the connected ports turn on to show where both ends of the patch cord are located.

imVision® Controller X

The imVision Controller X maintains a database of the patch connections at the rack. It responds to button presses and sensor changes at the iPatch panels. By monitoring button presses and sensor changes at the panels, the imVision Controller X logically infers when patch connections are added, moved or deleted and updates the database accordingly.

In most configurations, multiple imVision Controller X units are grouped and connected into patching zones. Each patching zone requires a LAN connection in order to communicate with the System Manager server.

Each imVision Controller X has a touchscreen display that lets you interact with the imVision system in an intuitive way. With this interface, making and managing connections in the data center has never been simpler.

This powerful display:
- relays guided patch jobs to the technician from the imVision System Manager software
- alerts technicians about equipment issues
- shows detailed port and device information
- prompts technicians on connections that require confirmation
- displays information about the ends of a connection as well as the entire connectivity trace between those end-points

imVision® System Manager Software

Using the imVision System Manager Software, the physical infrastructure team can view and manage the patch connections for the entire network from a workstation. The software documents the physical layer network between faceplates, consolidation points, panels and network equipment. Through the software, the administrator can schedule work orders for network changes. Work order steps involving patching are relayed to imVision Controller X's as patching jobs.

imVision Controller X's and imVision System Manager work together to track the fulfillment of jobs, display end-to-end circuit traces, document patching connections and changes, and inform users about system errors or alarms.

The imVision System Manager software also alerts administrators to conditions such as unauthorized changes to the physical infrastructure, or work that was not performed as scheduled.

Please note that the imVision Controller X requires imVision System Manager software version 8.0 or higher.
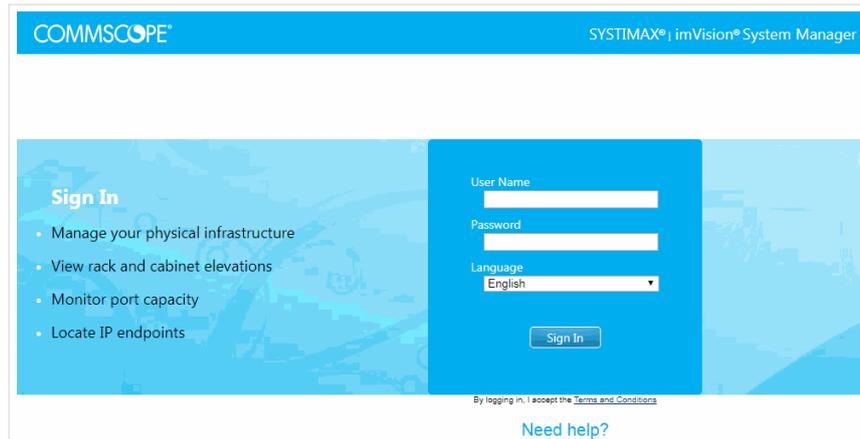
Using the imVision Controller X Display

The imVision Controller X includes a capacitive touch-screen display for configuring and interacting with the imVision system. Use a finger or capacitive touch tool to press or tap on the screen.

After a period of inactivity, the display screen will turn off to conserve energy. Tap the screen to awaken it from this idle state. Other system activities, such as pressing an iPatch port status button or starting a patching operation, will also awaken the screen.

The LED bar to the right of the screen on the imVision Controller X display will light up when attention is required. Examples of cases when attention is required include pending jobs, error and status alarms, or unknown port connections that need confirmation.

Ready Screen

When the imVision Controller X display first boots or is awakened after a sleep timeout, a Ready screen is shown.

Pressing the Home button toggles between the Ready and Home screens.

On the Ready screen, "Network Manager" is shown if the networking is enabled for the imVision Controller X. "Network Manager" is shown in green when connected to System Manager, and it is shown in white otherwise.

One or more rack number and rack names will be shown on the Ready screen. A rack name, such as "Rack 001" in the Ready Screen example below, will appear after synchronization with imVision System Manager, and will reflect the user-settable name from System Manager. Pressing the rack number or rack name will bring up detailed rack information.

Confirm, Jobs and Alarms buttons may be shown on the Ready screen, and are described later in the document.

Ready Screen

Home Screen

To get to the Home screen, use the Home button to toggle between the Ready and Home screens.

Home Screen

The Home screen provides access to the Tools and Settings menus.

Settings Menu

The Settings menu contains options for configuring the imVision Controller X. Options on the Settings menu include Network Settings, Patching Mode, Screen Lock Settings and Language Settings. Information about Network Settings, Patching Mode and Screen Lock Settings can be found in other sections of this User Guide.

Tools Menu

The Tools menu contains options for obtaining information and for performing diagnostic and recovery tasks pertaining to the imVision Controller X and its attached iPatch panels. The following table briefly describes each option in *Tools*.

Tools Menu Option	Description
Run Diagnostics	This tool runs a number of system integrity checks, verifies communications to all other imVision managers in the patching zone, and verifies communications to all panels managed by this imVision Controller X.
Controller Information	This tool displays hardware and firmware version information for the imVision Controller X base and display. Also shows the network MAC address.
Rack Information	This tool shows the serial number for each managed rack as it will appear in System Manager. If System Manager is connected, this option will also show the full location information for the rack as obtained from System Manager.
Panel Information	This tool shows the size, serial ID, hardware version and firmware version for every iPatch panel or shelf kit that was found on each iPatch panel bus. If the imVision Controller X is managing a single-rack, _Panel Information_ indicates the percentage of its power budget allocated to the current panels. In multi-rack configurations, _Panel Information_ indicates how many rack units of iPatch connectivity are available on each rack.
Test Panels	This tool is used to obtain detailed debugging information for a panel and panel port. This option can also be used to reconfigure module orientation for fiber modules.
Test Network	This tool is used to test network connective by sending an ICMP echo / ping message to a computer on the network.
Reset Panels	This tool clears all panel order and module configuration information for attached panels and shelves. It can be used to initiate reordering and reconfiguration of all panels in racks managed by the imVision Controller X.
Reset Racks	This tool resets patching zone communications and restarts rack discovery and ordering information for the zone.
Configure Rack Order	This tool is used in multi-rack management cases to change the left-to-right numeric order of racks that are managed by the imVision Controller X.
Clear Memory	This tool can be used to erase all information in the imVision Controller X and reset all configuration, network and security settings to factory defaults.

System Manager Connection Indicators

A connection to System Manager is needed to take full advantage of the benefits of the imVision system. The [icon] icon in the upper-right corner of all imVision Controller X screens indicates that imVision System Manager is connected to the zone containing the imVision Controller X. The icon will turn to [icon] if a System Manager connection is not active.

In addition, the "Network Manager" text on the Ready screen of the Network Manager changes from white to green if a System Manager connection is active.

Confirm, Jobs and Alarms Buttons

Confirm, *Jobs* and *Alarms* buttons may be shown along the bottom of the *Ready* and *Home* screens, as well as most other imVision Controller X screens. Each of these buttons can be pressed to bring up the corresponding list of items requiring attention. These buttons are hidden if the condition associated with each button is not active.

The *Confirm* button appears when one or more ports have an unknown or incomplete connection that requires user confirmation. The number within the yellow circle indicates the total number of ports that require confirmation for all ports managed by the imVision Controller X.

The *Jobs* button appears when one or more jobs to be completed have been sent to the patching zone by imVision System Manager. A job is a work order step involving the addition or removal or a connection to an iPatch port. The number within the green circle indicates the total number of jobs for the zone.

The *Alarms* button appears when one or more alarms are present in the imVision Controller X. Alarms may indicate configuration actions that are required to use the system, or they may indicate hardware or firmware error conditions. Some alarms are replicated across all imVision managers in the zone, but some alarms (especially panel-related alarms) appear only on the imVision Controller X that detects the error or condition. The number within the red circle indicates the total number of alarms reported by the imVision Controller X.

The *LED* bar to the right of the screen on the imVision Controller X display will light up in red when any of the *Confirm, Jobs* or *Alarms* buttons are active.

Audible and Visible Feedback

To help technicians work efficiently and accurately, the imVision system provides feedback to the user in a number of ways – through the imVision Controller X display, through LEDs above the ports on each panel and through a number of audible tones. (See table.)

Audible Tones

| Tone Type	Tone	Action or Event
Key beep or sensor beep	1 short beep	Pressed Controller X key. Inserted or removed a patch cord at an iPatch Panel.
Completion tone	3 short tones (low, medium, high)	Added or removed a patch connection at an iPatch Panel. Indicated the position of a row of iPatch Panel ports. Saved a network setting.
Confirmation tone	2 short tones	Programmed the order of the panels and modules in the rack.

Attention tone	1 long, low tone	Technician is requested to confirm an action.
		Error occurred.
		Diagnostic tests detected a problem.

Following Prompts in the imVision System
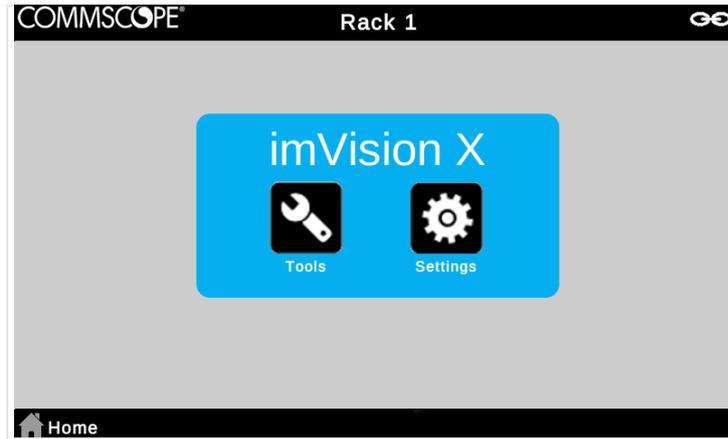
imVision Controller X Touchscreen Display

The imVision system provides helpful feedback on its imVision Controller X display. While performing work on panels or responding to alarms, be sure to follow any prompts that appear on the display.
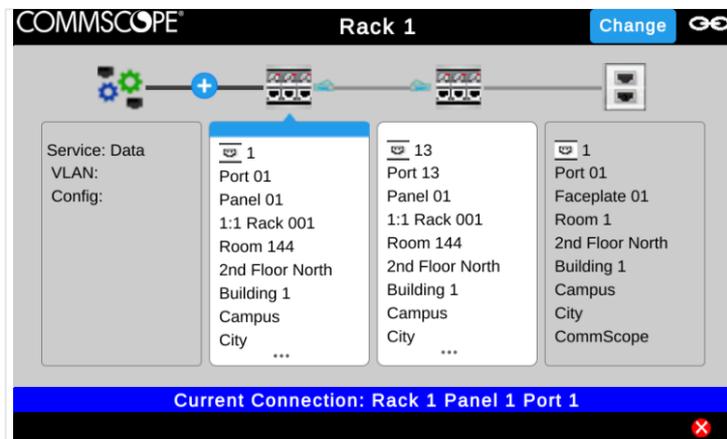
Tracing Example on imVision Touchscreen Display

Connecting imVision Controller X's in a Zone

A *zone* or *patching zone* is a group of managed racks and cabinets (including mainframes) among which iPatch patch connections can be made. A managed rack is a rack that is managed by an imVision Controller or imVision Controller X.

Although imVision Controllers and imVision Controller X's are supported in the same zone, some functions (such as multi-rack management from a single imVision Controller X) may be limited or disabled in such mixed zones. Additionally, an imVision Controller X must be installed in the first position in such a mixed zone.

imVision Controller X's do NOT support zones that also contain an iPatch Panel Manager or iPatch Rack Manager Plus.

An imVision Controller X has two zone communications ports:

> 1 – A/IN
>
> 2 – B/OUT

The imVision Controller X's and imVision Controllers in a zone must be connected to each other in a chain using patch cords between the controllers. In a zone, the "B" or "OUT" port of one controller must connect to the "A" or "IN" port of the next controller.

If imVision Controllers are present in the zone, ensure each imVision Controller's pushbutton switches are configured according the installation instructions for the imVision Controller.
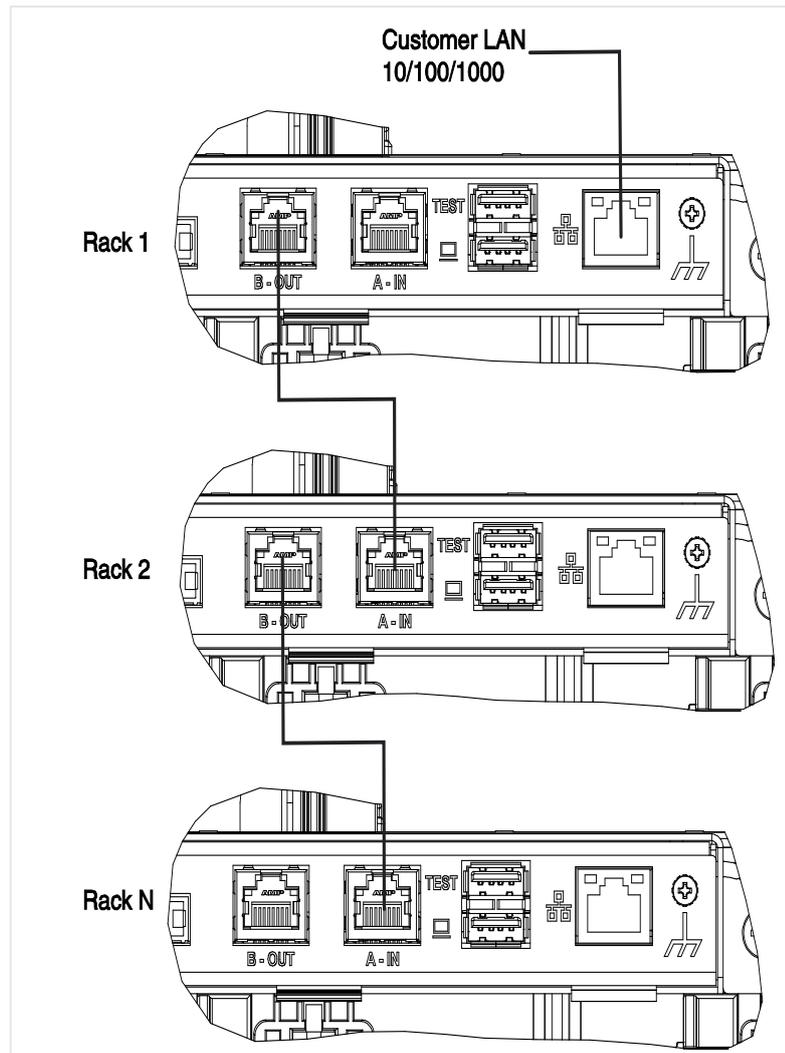
Configure a Zone Containing Three imVision Controller X's

Ordering Panels in the imVision System

Panels in the imVision system must be ordered during initial start-up, or after a new panel is added.

The ImVision Controller X remembers each panel and each rack that it has communicated with in the past, and will raise an alarm if communication with any of these items fails. If a rack or panel is legitimately removed, the user must view the associated alarm and tap Delete to inform the imVision Controller X that the item in question has been permanently removed.

Order the panels or shelf rows sequentially from top to bottom in a rack. If a single row in a panel or shelf contains multiple modules, order the modules from left to right within the row before proceeding to the next lower panel or shelf row.

To enter each panel's or module's order, simply press any button on the iPatch panel, shelf or module. A tone confirms each modules inclusion in the panel order for the rack.

Continue ordering until all the panels and modules in the rack are ordered. Upon completion, the tone will change and the imVision system will enter the Ready state with the Home screen appearing on the interface.

Note: To re-order the panels at any time after the initial startup, select *Reset Panels* from the *Tools* menu, which will re-initialize the rack. Once this initialization is complete, you will be prompted to order the panels. Proceed with panel ordering as instructed above. Also, if you add or remove panels from an ordered rack, the system may prompt you to re-order the panels. Proceed with panel ordering as instructed above.

Deleting Panels and Racks

The ImVision Controller X remembers each panel and each rack that it has communicated with in the past, and will raise an alarm if communication with any of these items fails. If a rack or panel is legitimately removed, the user must view the associated alarm and tap Delete to inform the imVision Controller X that the item in question has been permanently removed.

Network Configuration

The imVision system uses the term Network Manager to describe an imVision manager that that acts as a communications bridge between the customer LAN and private communications networks inside a patching zone.

In the case of a zone containing an imVision Controller X, the Network Manager for the zone must be an imVision Controller X and must be located in the first position in the zone.

If a zone contains a mix of imVision Controllers and imVision Controller X's, the Network Manager must be an imVision Controller X and must be located in the first position in the zone.

Use the following steps to configure the network:

1. Identify the imVision Controller X in the first position in the zone. Unless the rack number has been remapped using System Manager, this is the imVision Controller X that shows "Rack 1" on its Ready screen.

2. Identify a static IPv4 or IPv6 address for the zone, and appropriate network settings.

3. For IPv6 networks with IP Security, identify System Manager's IPv6 network address (called the "Server IPv6 Address" in *Network Settings*) and a pre-shared key.

4. On the imVision Controller X in the first position in the zone, open *Network Settings* from the Settings menu on the display.

5. In *Network Settings*, change *Network* to *Ethernet*, then enter the network settings appropriate for the network. Press *Save* to enact the changes in *Network Settings*.

6. Use a patch cord to connect the network to the Customer LAN port on the back of the imVision Controller X base as shown below:
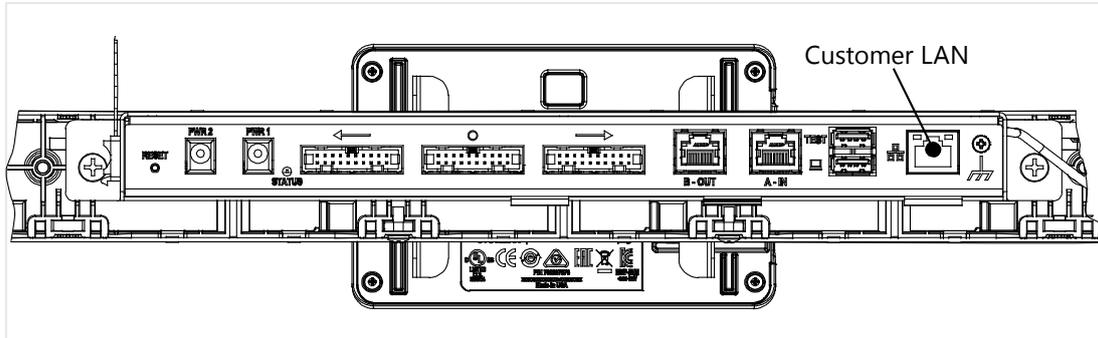
7. Verify that the link up LED on the Customer LAN port is solid amber for 1000BASE-T, or solid green for 100BASE-TX or 10BASE-T.

8. Test basic network connection by using *Test Network* from the *Tools* menu on the display to send and receive an ICMP echo / ping packet to another computer.

9. Verify web connectivity by directing a web browser to the web user interface.

10. Verify System Manager connectivity by performing a Synchronize with the zone from System Manager.

11. Verify System Manager trace details connectivity by pressing a port button and ensuring that the information shown in the circuit trace includes Room and Site information from System Manager.

Network Port Usage

When connecting to the imVision Controller X through a hardware firewall or from a computer that has a software firewall, it is important to ensure that appropriate communications ports are opened for access. The following ports are used by imVision Controller X:

Protocol	Destination Port	Source (Client) Entity	Destination (Server) Entity	Purpose
TCP	80	User's Web Browser and System Manager-Server	imVision Controller X	User Interface from a User's web browser. Application Interface from System Manager. Used for updating firmware and collecting debug logs.
TCP	8510 (Configurable as "Socket" value in Network Settings from Tools menu)	System Manager - Application Server	imVision Controller X	This socket is used for low-bandwidth hardware status and change communications between System Manager and imVision Controller X's.

Protocol	Destination Port	Source (Client) Entity	Destination (Server) Entity	Purpose
TCP	8513 (Configurable as a fixed offset of +3 from the "Socket" value in Network Settings from Tools menu)	System Manager – Application Server	imVision Controller X	System Manager uses this port in some error cases to cause an imVision Controller X to drop open connections to port 8510.
UDP	5558	imVision Controller X	System Manager – Application Server	Trace detail requests sent from imVision Controller X's to System Manager
UDP	8515	System Manager – Application Server	imVision Controller X	Trace detail responses sent from System Manager to imVision Controller X's

Web User Interface

The imVision Controller X includes a web user interface that is accessible by connecting a web browser to the imVision Controller X that is configured as a Network Manager. Refer to the version-specific release notes for a list of supported web browsers.

The web user interface provides ways to collect firmware information, update firmware, get debug logs, modify screen lock settings, and change the password.

The web user interface is accessed by using the Network Manager's IP address as the URL. For instance, if the Network Manager's IP address is 1.2.3.4, open a web browser to http://1.2.3.4
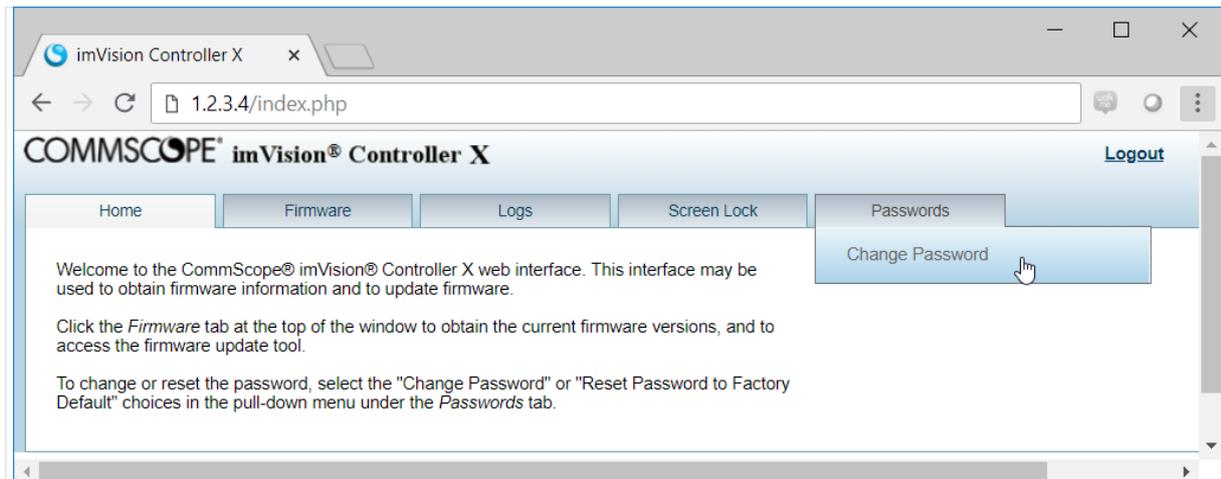

Web User Interface Login to the imVision Controller X

Username and Password for the Web User Interface

The default username and password are *admin* and *admin*, respectively.

This username and password are used for the web user interface and for the application interface that allows System Manager to update imVision Controller and imVision Controller X firmware for the zone.

The default password should be changed using the web user interface. Choose *Change Password* from the *Passwords* tab to get to a page that allows the password to be changed.

Web User Interface Home Screen and Location of Change Password Option

Screen Lock PIN Feature

When enabled, the Screen Lock PIN feature locks an **imVision** Controller X display until a PIN is entered on the display number keypad. Touch the lock icon on the bottom right corner of display to show a keypad, then enter PIN to unlock the display screen.
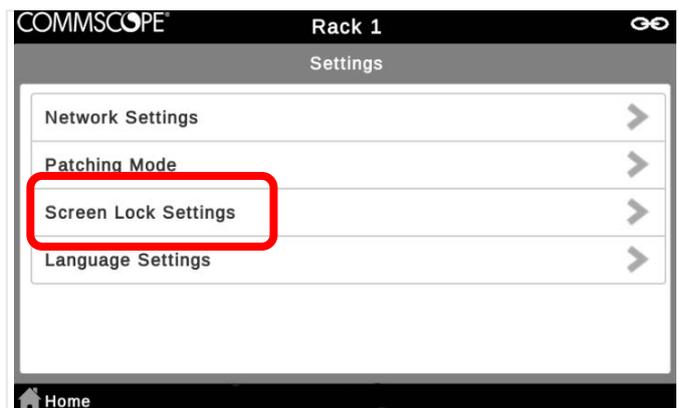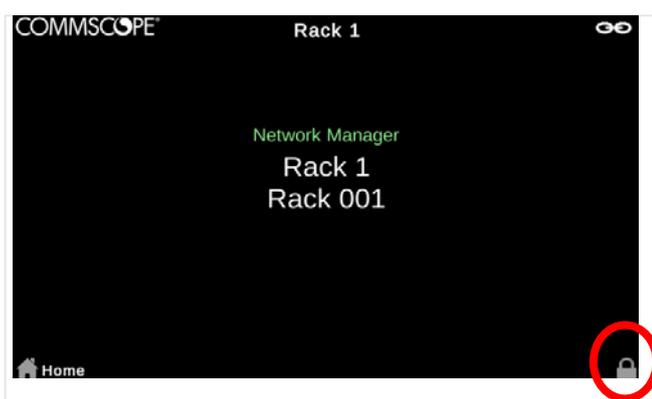
Enable the screen lock PIN feature by entering the *Settings* menu on the Home screen.

Choose *Screen Lock Settings*, check the *Screen Lock Enable* box, and enter a time setting for screen lock activation.

Select *Change Screen Lock PIN* to customize PIN settings.
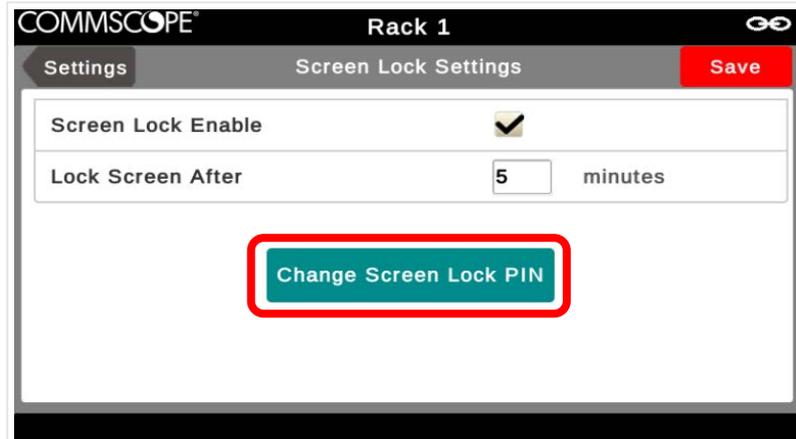
imVision Controller X users can also change screen lock PIN settings on the imVision Controller X web UI, as shown below.

Patching Mode

The imVision system has three settings for Patching Mode: Normal, Local and Equipment. The patching mode at the rack is set to Normal by default. The patching mode can be changed temporarily at the imVision Controller X, but the mode set in System Manager software will override a locally set mode during synchronization. When the patching mode is set to something other than Normal, the imVision Controller X shows the patching mode on the Ready screen below the Rack Name.

Normal

All imVision Controller X's in Normal mode monitor connections simultaneously within a patching zone.

Local

Each imVision Controller X in Local mode monitors only the activity in its own rack, creating a "local" patching zone. If the Jobs button is pressed, the imVision Controller X temporarily exits Local mode until the Jobs menu is exited.

Equipment

The imVision system refers to any connection between an iPatch panel and non-iPatch equipment as an "equipment" connection.

Each imVision Controller X in *Equipment* mode will automatically treat each new connection as an equipment connection, eliminating the need to press the on-screen Equipment button or press and hold the port button for 2 seconds to record the equipment connection. If the Jobs button is pressed, the imVision Controller X temporarily exits *Equipment* mode until the Jobs menu is exited.

NOTE: Changing the Patching Mode from *Normal* to *Equipment* has a side-effect of converting all ports requiring confirmation to Equipment patches.

Patching and Tracing

Be sure to follow onscreen instructions while performing any activity on iPatch panels. The display will provide critical information and feedback throughout your work.

Performing Guided Patching Jobs

With the imVision system, the network administrator sends patching jobs directly to the rack via the imVision System Manager software. On the imVision Controller X, technicians can simply view the list of jobs to be performed and follow the onscreen instructions for adding or removing connections between iPatch panels.
In addition to the display information, LEDs above the relevant ports will indicate where to add or remove connections for the given job. Completing each patching job automatically queues the next job on the list to be performed.

If a job requires adding or removing an equipment connection (a connection between an iPatch panel and non-iPatch equipment), the display and the correct LED on the panel will indicate where to add/remove the patch on the iPatch Panel. The display will also identify the non-iPatch equipment. When working with equipment connections, be sure to press and hold the button above the corresponding iPatch port on the iPatch Panel for 2 seconds. This will confirm that the job has been completed. Completing this activity automatically queues the next job on the list to be performed.

Performing Unguided Patching Jobs

To add or remove connections not in the Jobs list, simply connect each end of the patch cord to the appropriate ports on the iPatch Panel. If you are making a Simplex connection in duplex ports, connect both ends of the patch cord. Then tap *Simplex* on the touchscreen display.
To add a connection between an iPatch Panel and non-iPatch equipment, first plug in the non-iPatch equipment, then plug the other end of the patch cord into the iPatch panel. Either press the on-screen *Equipment button, or p*ress and hold the button above the newly occupied port on the iPatch Panel for 2 seconds. This will confirm that the unguided equipment patch has been completed.

To disconnect non-iPatch equipment from the iPatch Panel, unplug the patch cord from the equipment. Then, disconnect the patch cord from the panel. Press and hold the button above the newly vacated port on the iPatch Panel for 2 seconds. This will confirm that the unguided equipment patch removal has been completed.

Tracing a Patch Connection

When you connect a patch cord to an iPatch Panel, the imVision system records the connection in a database. To trace the connection, simply press the button above one of the ports used for the connection. The panel indicates each end of the connection by lighting a LED above each of the ports. Also, the display of the imVision Controller X lists the ports used in the

connection. To learn more, tap the port information on the display and you can see details on any devices in this connection. To end the trace, either press the on-screen X button or press the button above one of the ports.

If only one of the ports in a patch connection is on an iPatch Panel, you still can trace the connection. The LED turns on above the iPatch Panel port. The imVision Controller X display shows as much information as is known about the connection. If the connection was made as a guided job, both the iPatch Panel port and the equipment port are identified

Correcting Patching Errors

If you discover that a patch cord is connected to the wrong port or that the database has recorded a connection that does not exist between two ports, you can correct the database using the Change feature.

To correct a connection, please use the following steps.

Step 1 – Show a circuit trace

The first step in correcting a patching error is to show a circuit trace for a targeted port. To show a circuit trace, press the panel button corresponding to an iPatch Panel port. The LEDs associated with connected iPatch Panel ports will turn on. On the display, a graphical circuit trace will be shown, along with a Change button.
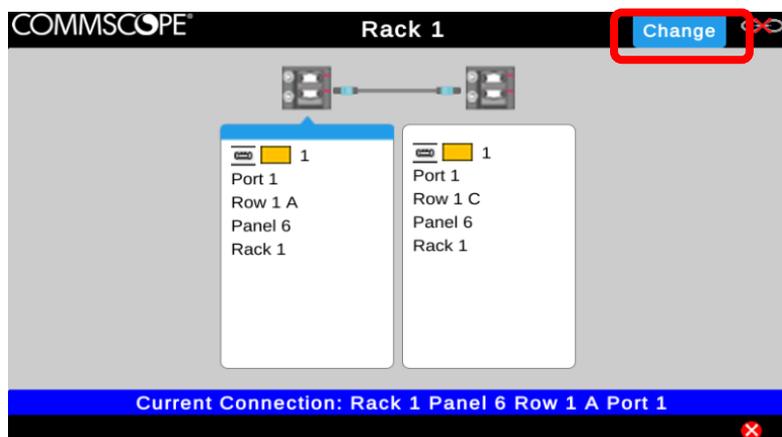

Step 2 – Use the Change button to break existing connection relationships

To break existing connection relationships for a traced port, press the *Change* button on the imVision Controller X's display. After pressing the *Change* button, select *Yes* to continue past a warning about the connection being broken. Afterwards, the connection relationship will be deleted for any iPatch Panel ports that were connected to the traced port.
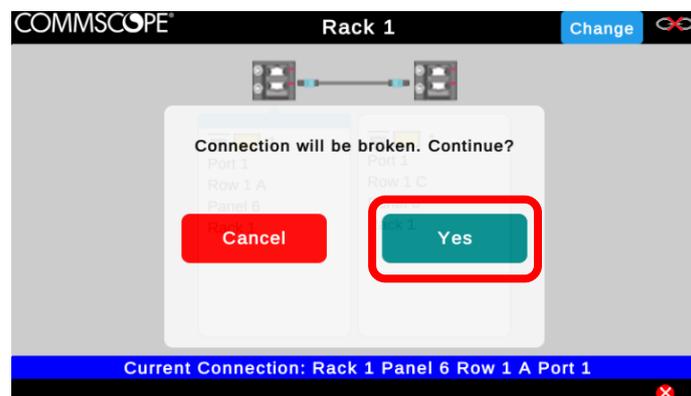
### Step 3 – Confirm the correct connection for each port

After using the *Change* button, the imVision Controller X will automatically step through each port that was involved in the changed connection. For each port, a "Confirm" screen will appear to provide guidance for confirming the connection information. Follow the on-screen instructions to create a new connection relationship between iPatch ports or with non-iPatch equipment.
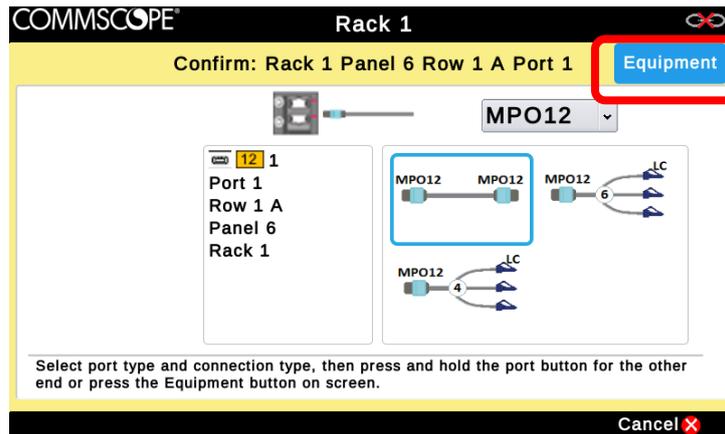
If the confirmation process is interrupted for any reason, the changed ports will remain on the Confirm list for later processing. The following **Confirming a Patch Connection** section shows details about viewing the Confirm list and confirming patch connections.

Confirming a Patch Connection

If the imVision system does not know both ends of a connection, a Confirm tab will appear on the display.
To confirm a connection, tap the Confirm tab on the display. You will see a list of any patch connections that need to be confirmed. On the display, select the patch connection you want to confirm.
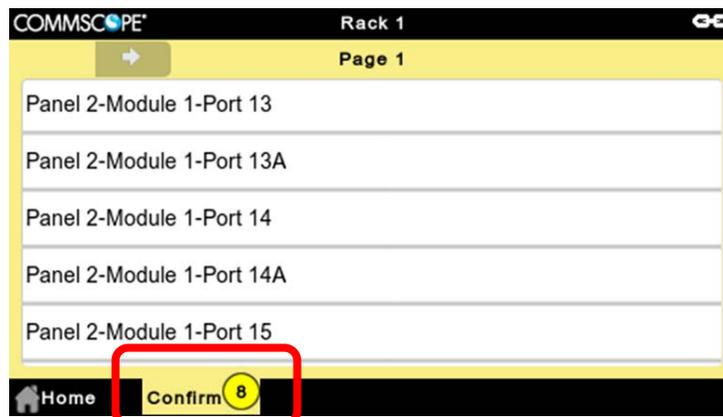
Then either:

- Press and hold the port button on the iPatch panel that corresponds to the port where the other end of the cord is inserted, and confirm on the display that the connection is complete,
  or
- If the other end of the patch cord is disconnected from the intended port of an iPatch panel, insert the plug end and answer *Yes* to the question.
  or
- If the far end is connected to non-iPatch equipment, either press the on-screen *Equipment* button or press and hold the button over the port that needs confirmation.

| If you need to...	You should...
Confirm the other end of a connection between two iPatch panel ports.	Locate the unknown end of the patch cord. Then press and hold the unknown port's button for 2 seconds.
Complete the connection to an iPatch panel port.	Insert the other end of the patch cord. If the connection information on the display is correct, press Yes.
Confirm the other end of a simplex fiber connection between 2 iPatch panel ports for a known port (and both positions for the port to be confirmed are in use.)	1. Select a port to be confirmed from the confirms list. 2. If confirming a fiber port, and the two strands of that port are patched to different endpoints, press the "simplex" button, and then use the A/B toggle button to choose whether the B or A strand is to be confirmed. 3. Locate the far end of the patch cord being confirmed, and then press and hold the trace button above that port. 4. If the port where the cord terminates is a fiber port, both strands of the port are populated and the patch being confirmed is a simplex connection, the system will ask which of the two strands is the strand being selected. Use the A/B toggle button to choose whether the B or A strand is the far end of the patch being confirmed. When the correct connection is displayed, press Yes.
Complete the connection to equipment.	Press and hold the iPatch panel port's button for 2 seconds, or press the *Equipment* button on the imVision Controller X display.
Remove the connection.	Remove both ends of the patch cord.

Multi-Rack Mode

A single imVision Controller X can manage up to 3 racks at one time.

The 2 dependent racks an imVision Controller X can manage must be to the immediate left and right of the rack containing the imVision Controller X. Use the extended-length cables and panel buses in the Rack Extender Kit (760237879) to connect to dependent racks.

In multi-rack mode, the quantity of iPatch panels that the rack can manage is limited to 10 rack units per rack.

imVision Controllers are not compatible in a zone using Multi-Rack Mode.

Connecting Dependent racks

No cables are shown, detail provided to show port layout
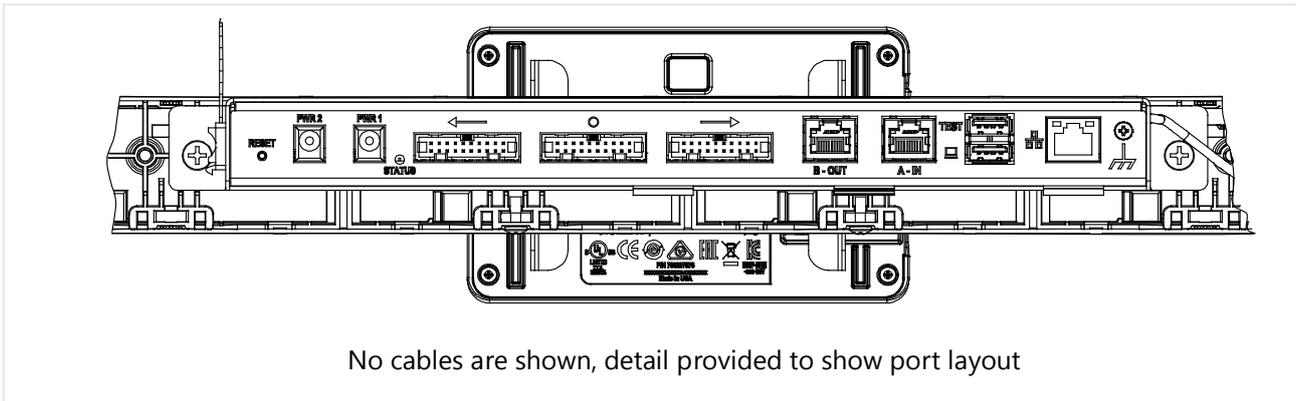
The panel bus installed in the adjacent rack to the right of the imVision Controller X must be connected to the connector marked → and the panel bus installed on the adjacent rack to the left must be connected to the connector marked ←. The O connector will have a panel bus jumper already connected to it and it will connect to the panel bus installed in the rack the imVision Controller X is installed in.

When correctly connected, the arrow symbols above the panel bus connectors on the back of the imVision Controller X should point toward the dependent racks to which each connector is connected.

Ordering Dependent Racks
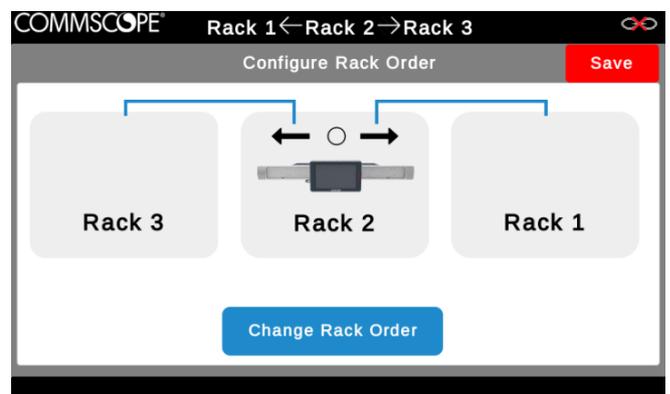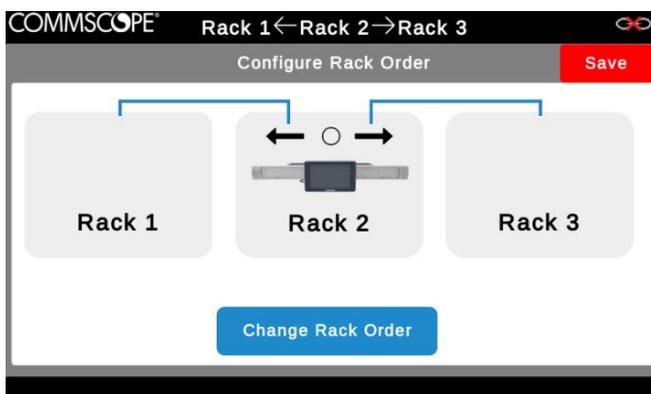
When the system first detects an extender panel bus cable plugged into a ← or → connector on the rear of the imVision Controller X base, a screen will appear to identify the numeric order of the racks managed by the imVision Controller X.

Press *Change Rack Order* to toggle whether the highest rack number is on the left or right. After initial configuration, or if the screen times out, this screen can be shown again using the *Configure Rack Order* option from the *Tools* menu.

After selecting the correct rack numbering, press *Save* to set the rack numbering.

Note: The ← or → will always point to the physical rack/cabinet on the left or right as viewed from the display.

Ordering Panels / Shelves
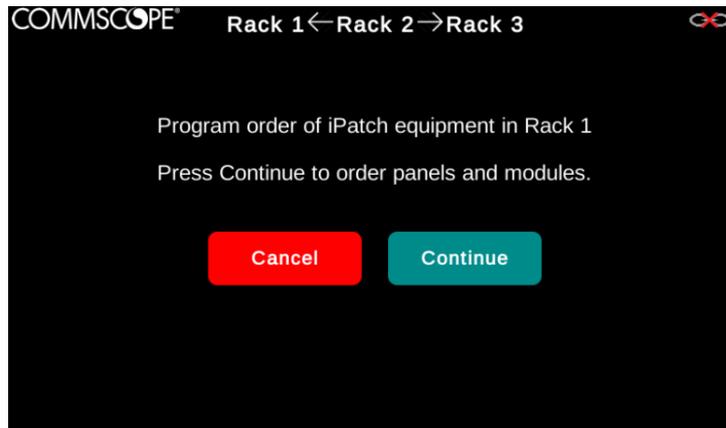
After the racks are ordered, the panel ordering screen will be shown. The screen will show which rack is being ordered at that time. The panels on the racks not being ordered will appear to be non-functional (pressing buttons has no effect). After the panels in each rack are ordered, ordering will advance to the next rack. If a user exits out of the ordering steps, there will be alarms generated to allow re-ordering later. The ordering process for panels in each rack is the same as in single rack mode.

## Checking Rack Unit (RU) Availability for Each Rack in Multi-Rack Mode

In multi-rack mode, the *Panel Information* option from the *Tools* menu shows a tabbed screen. Each tab shows information about the panels / shelves for a rack that is managed by the imVision Controller X.

The top line in the tabbed area shows the number of iPatch Rack Units that can be added in that rack, in rack units (RU).

A rack with no panels / shelves starts with an available limit of 10 RU. The available RU decreases as panels / shelves are added to the rack. If the available RU is exceeded, all panels in the rack will be disabled and an alarm will be shown.

The Size column in *Panel Information* indicates the physical space, in rack units (RU), occupied by each iPatch panel or shelf in the rack. Size is calculated for the entire panel or shelf, whether or not it is fully populated. Some panels and shelves may include multiple iPatch module or rows.

Multi-Rack Information on the Ready Screen
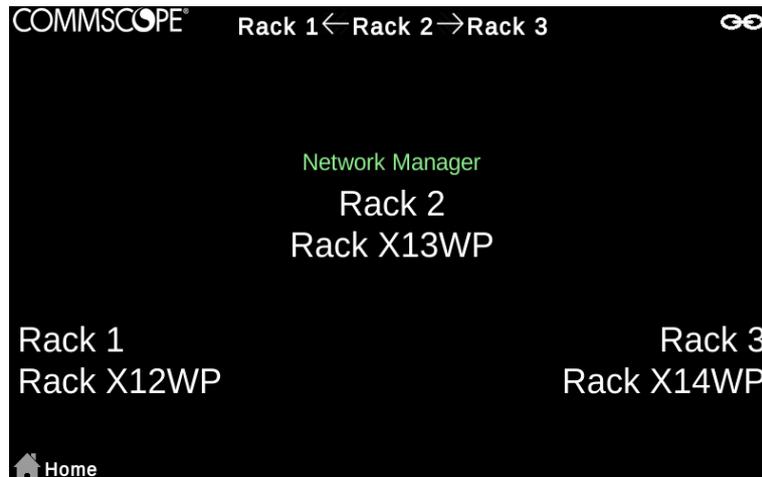
The ready screen shows the rack numbers and rack names in locations that correlate to where the dependent racks are located. The center rack number and name correspond to the imVision Controller X's rack. The rack numbers and names on the left and right sides of the ready screen correspond to the dependent racks to the left and to the right of the imVision Controller X's rack.

The top bar, which shows most of the time in other screens as well, shows on which side of the Controller X's rack each dependent rack is located.

If a rack number or rack name is pressed, the imVision Controller X will display rack information for that rack.

Tabbed Screens
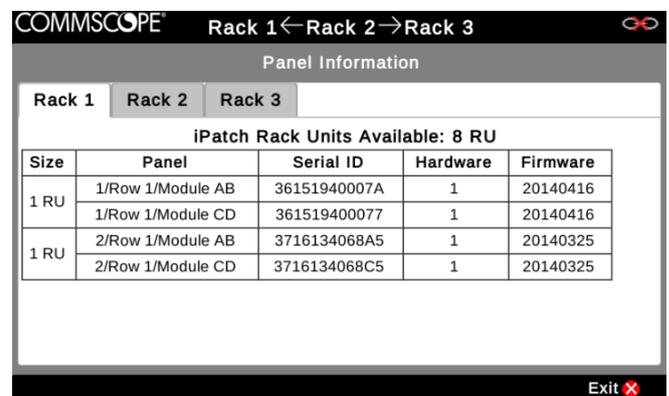
Some screens will have a tabbed interface to indicate separation of information according to each rack managed by the imVision Controller X. Select the tab of the rack you would like to see and that rack's information will be displayed.

Firmware Management

Determining Current Firmware Versions

Firmware versions for **imVision** Controller X's in a zone can be determined in any of the following ways:

- Each **imVision** Controller X's firmware version may be shown on its display by pressing the Home button, then *Tools*, then *Controller Information*.

- Use a web browser to connect to the web user interface on an **imVision** Controller X that is acting as the network manager for a zone. The *Firmware->Controller Firmware Update* page lists the versions of all **imVision** Controllers and **imVision** Controller X's in the zone. A network manager's web user interface may be accessed using its network name or IP address. If a network manager's IP address is 1.2.3.4, then the web user interface's URL is: http://1.2.3.4.
- From **imVision** System Manager, firmware versions are shown in the *imVision Firmware Manager* tool, located in the *imVision Hardware* group of the *Administration* tab.
- From **imVision** System Manager's Site Manager, firmware versions are shown in the properties pane associated with each imVision manager.

Firmware Update

imVision Controller X firmware may be updated by using a web browser connection to the network manager, or by using **imVision** System Manager. Method-specific instructions follow.

DOWNGRADE WARNING: Some patching system **data could be lost** after *downgrading* to an older version if the older version does not support capabilities in use on the newer, running firmware version. Please synchronize with **imVision** System Manager and back up the **imVision** System Manager database before *downgrading* firmware.

How to Update Firmware Using a Web Browser

Use the Web Browser to update all **imVision** Controllers or **imVision** Controller X's in a zone at once.

The steps to update **imVision** Controller or imVision Controller X firmware using the Web Browser are as follows:

1. Obtain an **imVision** Controller X or **imVision** Controller firmware update image file with a ".fw" filename extension.

2. Use a web browser to connect to the **imVision** manager that is configured as the network manager for the zone.

   - Use the network manager's IP address as the URL. For instance, if the network manager's IP address is 192.168.1.10, use a web browser to connect to the following URL: http://192.168.1.10.

3. In the web browser, log in to the network manager with an appropriate user name and password. The only supported user name is currently "admin". If the web user interface password has not yet been modified, the default password is "admin".

4. Follow the instructions on the *Firmware->Controller Firmware Update* page to list the current versions of all **imVision** managers in the zone, and start the update.

How to Update Firmware Using imVision System Manager

Use **imVision** System Manager to update **imVision** Controller and **imVision** Controller X firmware in multiple zones in one operation.

In **imVision** System Manager, use the *imVision Firmware Manager* tool to update firmware. The *imVision Firmware Manager* tool is accessible from the *imVision Hardware* group of the *Administration* tab. Refer to **imVision** System Manager's online Help system for detailed instructions.

# Rebooting the Unit and Resetting to Factory Defaults

Clear Memory
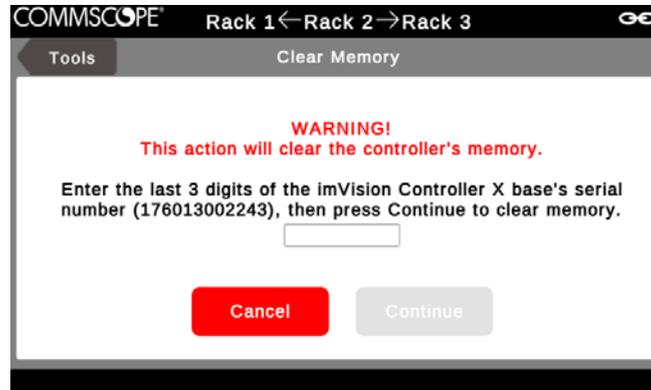
The *Clear Memory* tool can be used to erase all information in the imVision Controller X and reset all configuration, network and security settings to factory defaults. The installed firmware version is not affected by this operation.

To clear memory and reset the imVision Controller X to factory default settings, use the imVision Controller X's display to navigate to the *Clear Memory* item on the Tools menu.

In the *Clear Memory* window, enter the last three digits of the serial number into the box and press Continue.

After pressing Continue, the imVision Controller X will restart to enact the changes.

RESET Button

No cables are shown, detail provided to show port layout
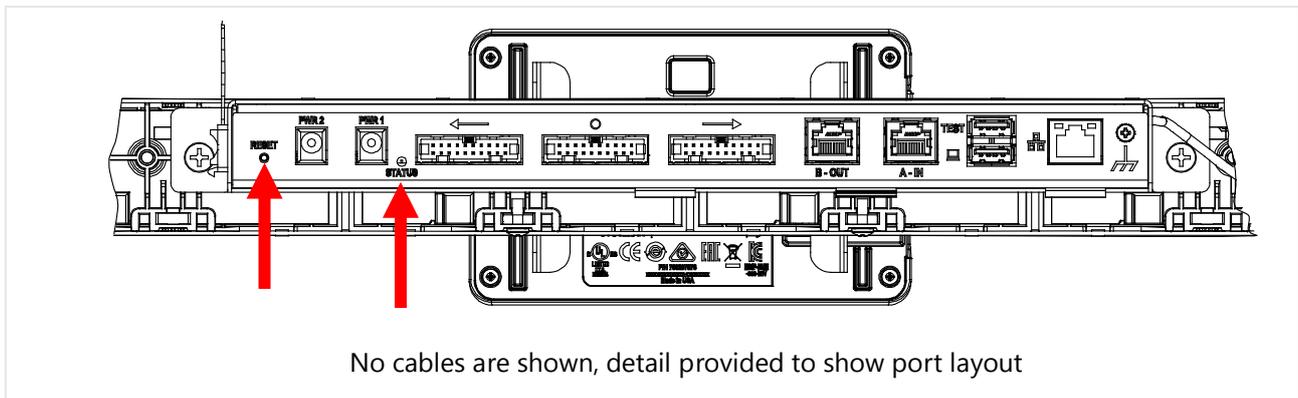
A RESET button is accessible through a pin-hole in the back of the imVision Controller X base. The RESET button can be used to reboot the imVision Controller X and to reset the imVision Controller X to factory defaults.

Use a dull, pointed object (for example, a straightened paper clip) to push the RESET button through the pin hole indicated by "RESET".

Rebooting Using the RESET Button

After the imVision Controller X has been running for at least several minutes, pushing the RESET button will cause the imVision Controller X to reboot. To cause a reboot in this case, push and hold the RESET button for 5 seconds before releasing it. To indicate the reboot, the STATUS LED will turn red after a slight delay.

Resetting to Factory Defaults Using the RESET Button

The RESET button can be used to erase all information in the imVision Controller X and reset all configuration, network and security settings to factory defaults. The installed firmware version is not affected by this operation.

Please use the following procedure:

1. After the imVision Controller X has been running for at least several minutes, reboot the imVision Controller X by pressing the RESET button for 5 seconds before releasing it

2. Wait at the STATUS LED cycles through red, green, then blue to indicate the boot sequence.

3. Within 2 minutes after the STATUS LED turns blue, push and hold the RESET button

4. Wait until the STATUS LED turn red before releasing the RESET button

Troubleshooting

You notice…	Possible causes include…	You should…
You attempt to trace a patch connection and the rack/panel/ port information does not appear on the imVision Controller display.	a. Panel bus jumper connecting the panel or shelf to the panel bus is loose or upside down. b. Panel bus jumper connecting the panel or module to the panel bus has failed. c. Panel or module is not communicating. d. Port's button has failed. e. HD Fiber module is not inserted	a. Check the panel bus jumper. If it is loose, secure both ends of the panel bus jumper. Make sure the polarized tab on the connector is inserted into the opening in the header on the panel bus. Also check that panel bus jumper chain is connected all the way back to the main panel bus. See instruction manual for details. b. Disconnect the panel bus jumper and connect a known working panel bus jumper. If the problem is fixed, permanently replace the failed panel bus jumper. c. Press a button on the imVision Controller. If the imVision Controller responds, see the troubleshooting information for the "Panel X (Row X) Not Communicating" alarm. d. Press the port's button. If the imVision Controller display does not change, the port's button has failed. You can use System Manager to mark the port broken". See the imVision System Manager help topic "Marking Ports and Outlets as Broken" or contact CommScope support. e. Verify HD Fiber module is properly seated in the shelf backplane.
You trace a patch connection and a port in the connection is identified on the display with the wrong panel or shelf number.	The order of iPatch equipment in the rack was not programmed correctly.	Use the Reset Panels feature to reprogram the order of iPatch equipment in the rack.
You attempt to trace a patch connection and the LEDs do not turn on where you expect.	a. Patch cord is not connected where it is supposed to be. b. Wrong connection has been recorded in the database.	a. Manually trace the patch connection to determine the other end of the connection. Remove the patch cord and reconnect the patch cord to the proper ports. b. Use the Trace and Change feature to update the connection.
When tracing a port or adding / removing a patch, trace information shown on the display does not include full location and end-to-end trace information from System Manager.	a. Network is disconnected. b. System Manager is not Synchronized with the zone. c. A firewall is blocking access to the ports used for sending trace detail information.	a. Use *Test Network* from the *Tools* menu from the imVision Controller X in the first position in the zone, in order to verify network connectivity to System Manager's server. Verify that the link up LED on the Customer LAN port is amber (for 1000BASE-T) or green (for 100BASE-TX or 10BASE-T). Resolve any network connectivity issues. b. Resolve any Alarms shown on the displays for all racks in the zone. Then, use System Manager to "Synchronize" with the zone. c. Modify any hardware firewall or computer firewall settings to enable access for the packet types and ports listed in the *Network Port Usage* section of this User Guide.
Your administrator just used the System Manager Software to schedule a job, but the job does not appear on the imVision Controller display.	a. The imVision Controller is not communicating with the System Manager Software. b. The job was not scheduled as an "immediate" job. c. iPatch equipment in the equipment room is in use. d. System Manager was synchronizing its database with an equipment room when the job was scheduled. e. The job is not displayed because it cannot be performed until another job in the job queue is performed. f. System Manager has placed the job on hold because a port to be used in the job is unavailable or there is a problem at the equipment.	a. Check whether there is a red X ∞ appears on the Ready screen. If not see the troubleshooting table entry for this problem. b. Contact your System Manager administrator to check the scheduling for the job. Only jobs that are scheduled as "immediate" will be sent to the rack right away. c. Return to the Ready screen at the imVision Controller display. Do not perform any activities until you see "Communicating, Please Wait" and then the Ready screen. d. Wait for System Manager to complete the synchronization. Upon completion, it will automatically send the job. e. Perform any other jobs in the job queue. The job you are waiting for should appear. f. Contact your System Manager administrator to check why the job is on hold. Then respond to the problem causing the job to be kept on hold. See the imVision System Manager help topic "Managing the Work Order Queue"

You notice...	Possible causes include...	You should...
You are viewing a job and touch the Details button, and the Details information does not appear.	a. imVision Controller X is communicating with the System Manager Software.	a. If "Communicating" appears on the display, the imVision Controller X is in the process of communicating with System Manager. The information should appear after a few seconds.
	b. System Manager is unable to communicate with the imVision Controller X .	b. If "Information not available at this time" appears on the display, check link indicator on upper right side of display; if link is down, refer to troubleshooting section for link down.
	c. There is a zone communication degraded alarm.	c. See troubleshooting section for zone communication degraded See troubleshooting information for this problem.
	d. Touchscreen on the imVision Controller X has failed.	d. Exit the job screen. From the job list screen, touch Home. If the home screen does not appear, the touchscreen on the imVision Controller X display has failed. Contact CommScope Support via the Support Portal.
You attempt to add or remove a patch connection and the imVision Controller X display does not change.	a. Alarm conditions exist, such as Controller # Not Communicating, Panel # Not Communicating, or imVision Controller X's Are Connected Incorrectly.	a. Refer to troubleshooting section for the type of alarm(s) in question.
	b. Panel's or module's sensor is bad.	b. Contact CommScope Support via the Support Portal.
You attempt to add a patch connection across two racks and both imVision Controller X's fail to acknowledge the completed connection.	a. The port configuration switches on one or more imVision Controller X's is not set properly for the current patching	a. At each imVision Controller X , press Home to view the Controller X configuration screen. This screen will display the current configuration of that unit's IN and OUT ports. Make sure all ports connecting imVision Controller X units together are configured as Controller X and that the IN port of rack 1 and the OUT port of the last rack are configured as Ethernet/Unused.
	b. imVision Controller X is not connected to the adjacent imVision Controller X .	b. At the imVision Controller X display, press Home, Tools, then highlight Reset Racks and press Continue. Check the imVision Controller X units to see whether all of the displays show "Initializing, Please Wait". If an imVision Controller X display does not show the message, the imVision Controller X is not connected to the LAN. Connect the imVision Controller X to the Rack Manager LAN.
	c. imVision Controller X has failed	c. Attempt to add a patch connection to a different panel in the rack. If the imVision Controller X does not respond, the imVision Controller X has failed. Contact CommScope Support via the Support Portal.
	d. imVision Controller X is not responding.	d. See the troubleshooting table entry for the "Controller # Not Communicating" alarm.
	e. Panel or module is not communicating with the imVision Controller X .	e. See the troubleshooting table entry for the "Panel X (Row X) Not Communicating" alarm.
	f. Patch cord connecting an imVision Controller X to an adjacent Controller X failed.	f. At the imVision Controller X display, press Home, Tools, Press Reset Racks and select continue. Check the imVision Controller X units to see whether all of the displays show "Initializing, Please Wait". If an imVision Controller X display does not show the message, one of the patch cords connecting the imVision Controller X to the imVision Controller X LAN may have failed. Disconnect one of the patch cords and connect a working patch cord. If the problem is fixed, replace the failed patch cord. Otherwise, repeat for the other patch cord.

You notice...	Possible causes include...	You should...
You attempt to program the order of the panels and modules on a rack and the imVision Controller does not sound a confirmation tone after a button is pressed on the last panel in the rack.	You missed a row or module of iPatch ports on the rack.	Press Start Over. Make sure that you press a button on every row and every module of iPatch ports on the rack.
You power up any rack or run Reset Racks within a patching zone, but after initialization, the racks are not numbered in the expected order.	a. The IN and OUT port switch settings are configured incorrectly somewhere in the zone. b. The imVision LAN is connected incorrectly.	a. View the controller configuration screen on each rack to verify that the port switches are in the appropriate position. See the instruction manual for details. b. Verify that the OUT port of each controller is connected to the IN port of the subsequent controller in the chain. See instruction manual for details.
Display reboots.	USB cable between base and display was replaced by a cable that is too long or of poor quality.	a. Make sure USB cable is USB-IF certified. b. Make sure the USB cable is not more than 3 meters in
Supplemental trace information from System Manager is not displayed during unguided patching or trace.	The link with system manager is down. (Link icon has a red X.)	See troubleshooting guide for Link with System Manager is Down. Verify that any firewalls between the imVision controller and the System Manager server allow port 5558.
"Controller X Not Communicating" alarm is present on one or more racks in the patching zone.	a. The Controller in question has lost power. b. The Controller in question is improperly connected to the other controllers in the patching zone. c. The Controller in question does not have its IN and OUT port switches configured correctly. (Only imVision Controllers) d. The Controller has been removed from the patching zone in question. e. The Controller in question has failed f. The rack extender panel bus cable has come unplugged	a. Make sure the Controller is properly connected to its power supply unit, and that the power supply unit is plugged into a wall outlet. b. The Controller's IN port should be connected to the OUT port of the Controller in the rack to its immediate left, and its OUT port should be connected to the IN port of the Controller in the rack to its immediate right. c. If the Controller's IN port and/or OUT ports are connected to other controllers, the button should be placed in the "controller" position. If either port is connected to the customer's Ethernet network, or is empty, that port's switch should be placed in the "Network or Unused" position. See diagram on page 12. d. On any rack in the patching zone that is displaying the Controller X not communicating alarm, select the alarm, and press the "delete" button. This will tell all of the remaining racks in the patching zone that the controller in question has been removed. e. Contact CommScope Support via the Support Portal. f. Make sure the panel bus cable plugged into the ← and → are plugged in securely.
A "Panel # Not Communicating Alarm" is displayed on a controller, and/or there is no response if any of the trace buttons are pressed on that panel.	a. The panel in question has become disconnected from the panel bus. b. The panel has failed. c. The panel is not supported by the current version of firmware loaded on the rack controller.	a. Ensure that the jumper that connects the panel to the panel bus is inserted securely at both ends. Also make sure the panel bus daisy chain is intact. b. Contact CommScope Support via the portal. c. Contact CommScope Support via the portal.

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