USER MANUAL

BXAMGR-R2

BOXILLA® KVM MANAGER

24/7 TECHNICAL SUPPORT AT 1.877.877.2269 OR VISIT BLACKBOX.COM

FOR BOXILLA 4.6 AND LATER

BLACK BOX®

TABLE OF CONTENTS

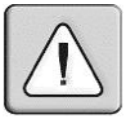
TABLE OF CONTENTS

TABLE OF CONTENTS

TABLE OF CONTENTS

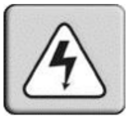
SYMBOLS USED IN THIS MANUAL

INSTRUCTIONS



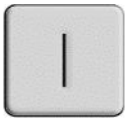
This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

DANGEROUS VOLTAGE



This symbol is intended to alert the user to the presence of uninsulated dangerous voltage within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

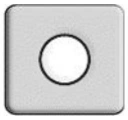
POWER ON



This symbol indicates the principal on/off switch is in the on position.

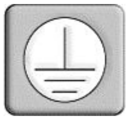
SYMBOLS USED IN THIS MANUAL

POWER OFF



This symbol indicates the principal on/off switch is in the off position.

PROTECTIVE GROUNDING TERMINAL



This symbol indicates a terminal that must be connected to earth ground prior to making any other connections to the equipment.

CHAPTER 1: SPECIFICATIONS

TABLE 1-1. SPECIFICATIONS

SPECIFICATION	DESCRIPTION
Approvals	CE, FCC
Connectors	(2) 10/100/1000 Ethernet (RJ-45) network connectors, Serial (RJ-45), (2) USB 2.0 (USB Type A), VGA
Power	AC input: 120–240 V, 50–60 Hz
Power Dissipation	<75 W (PSU rated for 250 W)
Dimensions	1.7" H x 17.25" W x 17.5" D (4.3 x 43.8 x 44.5 cm)
Weight	Unit: 12.6 lb. (5.7 kg)
Compatibility	Works with Emerald Unified KVM (EMD4000T, EMD4000R, EMD2002PE-T, EMD2002PE-R, EMD2000PE-T, EMD2000PE-R, EMD2000SE-T, EMD2000SE-R, EMD2002SE-T, EMD2002SE-R), EMD200DV-T, InvisaPC (DTX1002-R, DTX1002-T, DTX1000-R, DTX1000-T) and DKM (multiple part numbers), EMS 1G/10G/100G Network Switches, and EMD100USB
Serial Port Configuration	115,200 baud, 1 Stop bit, No Parity, No Handshake
Default IP Address	192.168.1.24
Default Username	admin
Default Password	admin

WARNING: Unit does not contain any user serviceable parts inside. Do not open product, risk of electrical shock.

CHAPTER 2: PRODUCT OVERVIEW

Boxilla® is a state-of-the-art KVM Manager designed to provide pro-active support to the System Manager and enable efficient operation of KVM and AV systems. Its core focus is to provide simple mechanisms to discovery, configure, upgrade and monitor the deployed systems. It provides insight into performance of the deployed system and alerts the System Manager to potential performance or security issues. Comprehensive features include:

- automatic search and detection of Black Box products (discovery),
- device configuration across multiple sites (if using the right network architecture and configuration)
- configuration backup,
- central upgrades,
- performance and security statistics with user-defined triggers for alerts.

Using the intuitive Boxilla web-based interface, one or more administrators can manage potentially thousands of users who are interacting with an almost unlimited number of devices. Boxilla operates as a self-contained compact server unit that can be located anywhere within your network. Boxilla is supplied pre-loaded and is straightforward to deploy, requiring only a network connection and a power input to begin operation.

The current version of Boxilla provides management of Black Box's Emerald Unified KVM and InvisaPC system, Modular and Compact DKM KVM Matrix Switches, and Black Box IP Network Switches. The Emerald or InvisaPC system provides users with a seamless desktop experience anywhere on a TCP/IP network, while allowing the actual hardware to be securely housed in a corporate data center or in the cloud.

Emerald or InvisaPC enables the same high-fidelity experience of a desktop PC even for media-rich applications, for example, watching videos, photo editing with Photoshop or 3D design with AutoCAD. The remote desktops may be hosted on a physical PC / workstation or may be a virtual desktop hosted on a private server or in the cloud. The Emerald or InvisaPC system provides its users with Receivers that communicate with target computer nodes (whether physical PC or virtual desktop) over a standard TCP/IP network. Physical PCs/Workstations/Servers have an Emerald or InvisaPC Transmitter unit physically connected to provide communication over the TCP/IP network. The performance of Emerald or InvisaPC allows them to be deployed on standard corporate networks and even across Wide-Area-Networks (WANs).

Desktop users can use remote keyboard, mouse, video, audio, USB mass storage devices, headsets and other USB devices from the Receiver unit to the remote PC/workstations or Virtual Desktop via the Emerald or InvisaPC system.

NOTE: References to the Emerald or InvisaPC system or Modular or Compact DKM KVM Switch systems in this document refer to both Receivers and Transmitters.

An Emerald or InvisaPC system can be composed of just Receivers and Transmitters. In these types of systems—called unmanaged— there is no central management. Each device needs to be configured and upgraded individually. Often to keep the system in sync, the admin exports the configuration from one Receiver and imports it to all other Receivers using a USB Flash Drive formatted as FAT32.

For larger configurations, a central manager is needed—Boxilla. Boxilla operates as a central manager for a "managed domain." A managed domain is a collection of Emerald and InvisaPC Receivers and Transmitters managed by a Boxilla. Once a Receiver or Transmitter has been added to a managed domain, it can only communicate with other Receivers or Transmitters within this managed domain. They are not able to communicate to "unmanaged" devices or devices that are part of a different managed domain (i.e., a domain managed by a different manager). Boxilla is used to configure users, connections, hotkeys and other parameters. The database created on the Boxilla is synchronized to each Receiver on a Boxilla user login. If the Boxilla for the managed domain is not reachable (e.g. powered-down), the Receiver will use the last updated database. This ensures that there is no single point of failure in the managed domain. Users can login and connections can be made even if the manager of the domain is not reachable.

When a Receiver is managed, most of the configuration options on the OSD are disabled (i.e., grayed out). These configuration options can only be updated on the manager.

CHAPTER 2: PRODUCT OVERVIEW

A Boxilla system can also include IP network switches. Black Box offers the following:

- 48-Port 1G IP Network Switch (EMS1G48)
- 12-Port 10G IP Network Switch (EMS10G12)
- 28-Port 10G IP Network Switch (EMS10G28)
- 32-Port 100G IP Network Switch (EMS100G32-R2)

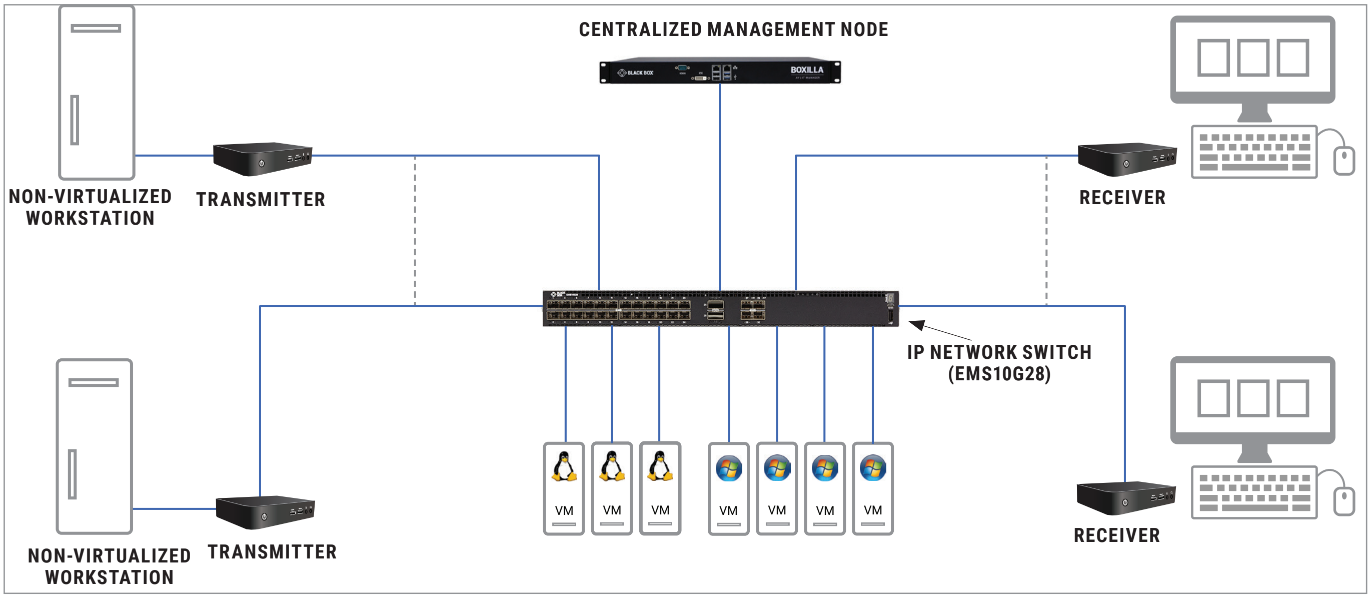

CENTRALIZED MANAGEMENT NODE
NON-VIRTUALIZED WORKSTATION
TRANSMITTER
RECEIVER
IP NETWORK SWITCH (EMS10G28)
VM
VM
VM
VM
VM
VM
VM
NON-VIRTUALIZED WORKSTATION
TRANSMITTER
RECEIVER

FIGURE 2-1. EMERALD OR INVISAPC SYSTEM EXAMPLE—INCLUDING IP NETWORK SWITCH

2.1 OVERVIEW OF BOXILLA CONCEPTS

The Emerald family is composed of Receivers, Transmitters and Switches. The Emerald or InvisaPC family is composed of Receivers, Transmitters and Managers. Boxilla is the Enterprise class Manager for Emerald or InvisaPC and Modular and Compact DKM KVM Matrix Switches and Black Box IP Network Switches. The core design of the Emerald or InvisaPC architecture is that there is no single point of failure. This means that even if Boxilla goes off-line, the Emerald or InvisaPC system will continue to function—allowing users to login, make connections and operate the system as normal. When the Boxilla manager comes back on line, the various devices will update Boxilla with their performance and security statistics from the period it was offline.

2.2 BOXILLA MANAGED DOMAIN

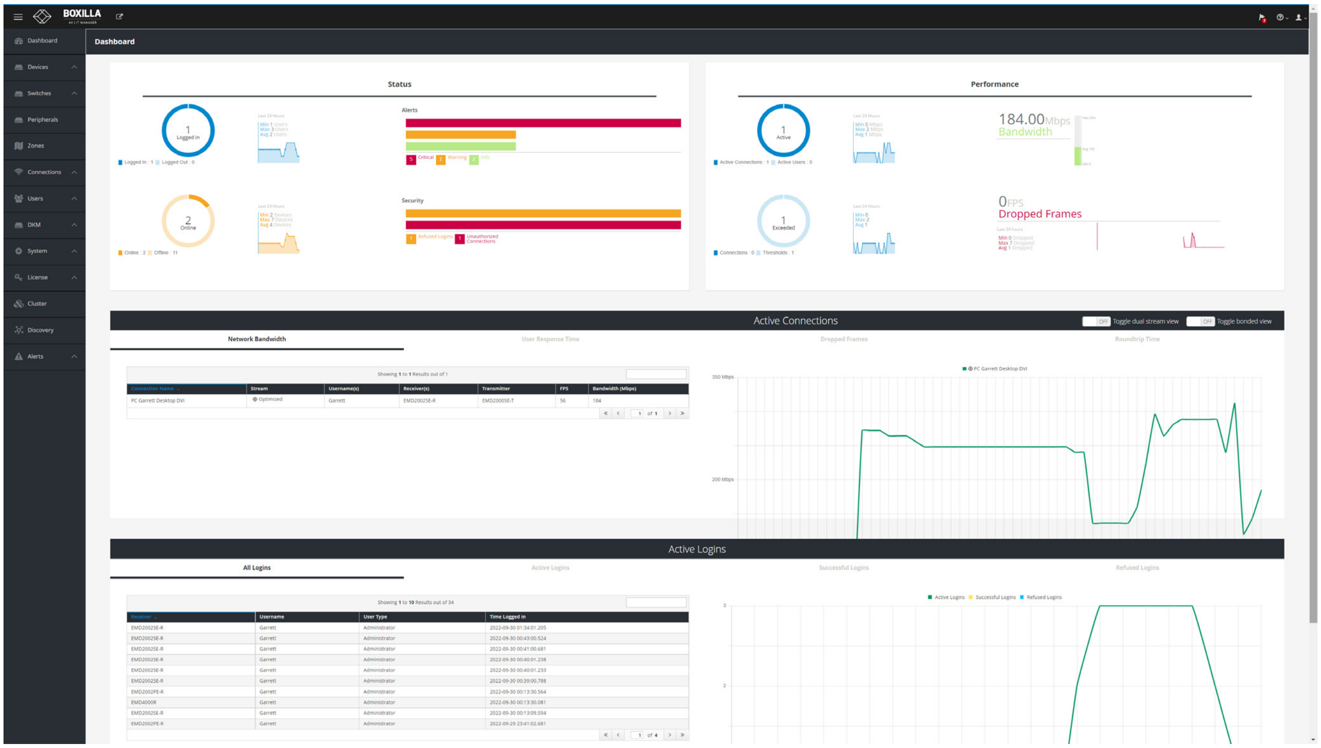
Boxilla creates a managed domain—a set of devices it manages. Devices that are members of this managed domain can only be managed by this Boxilla unit. Devices in a managed domain can only connect to other devices in the managed domain. No other manager or unmanaged device can configure or connect to devices in this managed domain.

A managed domain is composed of:

- Boxilla Manager—to centrally create, configure and monitor domain;
- Devices—KVM and AV appliances that can communicate with each other. In the current release, Emerald or InvisaPC devices, DKM KVM Matrix Switches, Black Box IP Network Switches, and EMD1000 USB 2.0 Extenders are supported;
- Users—provides various login rights for different users such as their access rights (what connections they can make, level of control they have to change configurations);
- Connections—defines how a Receiver can connect to a Transmitter or a Virtual Machine with properties such as private or share mode, USB re-direction enabled or disabled among others;
- Alerts—events detected by Boxilla in the managed domain (such as new device added, firmware upgrade, connection made) and classified as critical, warning or info based on nature of event.

As part of creating a managed domain, the administrator will add Devices to the domain, create Users, define Connections and set Alerts. The following sections will describe how to do this with Boxilla.

Once a domain has been defined (devices, users, connections, etc.) Boxilla monitors the operation of the domain, reports on its performance and indicates any security events detected. The monitoring of the system is presented to the user in advanced graphical and tabular formats. Typically the dashboard is used to get an overview of the domain's operation. An example of the Dashboard is shown in Figure 2-2. From the dashboard the administrator can drill down for more detail on activity, errors and individual devices.



Showing 1 to 1 Results out of 1

Connection Name	Stream	Username(s)	Receiver(s)	Transmitter	FPS	Bandwidth (Mbps)
PC Garrett Desktop DVI	⊙ Optimized	Garrett	EMD2002SE-R	EMD2000SE-T	56	184

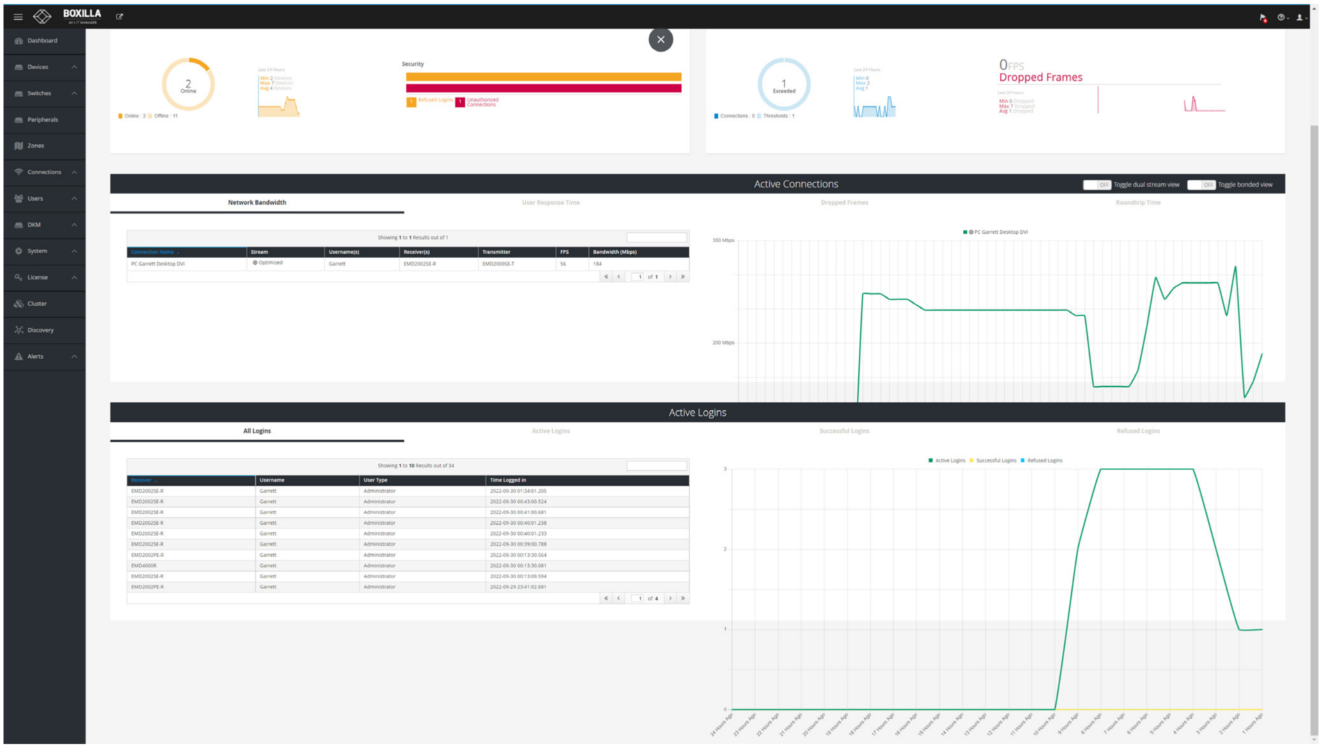
1 of 1

Showing 1 to 10 Results out of 34

Receiver	Username	User Type	Time Logged in
EMD2002SE-R	Garrett	Administrator	2022-09-30 01:34:01.205
EMD2002SE-R	Garrett	Administrator	2022-09-30 00:43:00.524
EMD2002SE-R	Garrett	Administrator	2022-09-30 00:41:00.681
EMD2002SE-R	Garrett	Administrator	2022-09-30 00:40:01.238
EMD2002SE-R	Garrett	Administrator	2022-09-30 00:40:01.233
EMD2002SE-R	Garrett	Administrator	2022-09-30 00:39:00.788
EMD2002PE-R	Garrett	Administrator	2022-09-30 00:13:30.564
EMD4000R	Garrett	Administrator	2022-09-30 00:13:30.081
EMD2002SE-R	Garrett	Administrator	2022-09-30 00:13:09.594
EMD2002PE-R	Garrett	Administrator	2022-09-29 23:41:02.681

1 of 4

FIGURE 2-2. BOXILLA TOP DASHBOARD EXAMPLE



Showing 1 to 1 Results out of 1

Connection Name	Stream	Username(s)	Receiver(s)	Transmitter	FPS	Bandwidth (Mbps)
PC Garrett Desktop DVI	⊙ Optimized	Garrett	EMD2002SE-R	EMD2000SE-T	56	184

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EMD2002SE-R	Garrett	Administrator	2022-09-30 00:41:00.681
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EMD2002PE-R	Garrett	Administrator	2022-09-30 00:13:30.564
EMD4000R	Garrett	Administrator	2022-09-30 00:13:30.081
EMD2002SE-R	Garrett	Administrator	2022-09-30 00:13:09.594
EMD2002PE-R	Garrett	Administrator	2022-09-29 23:41:02.681

1 of 4

FIGURE 2-3. BOXILLA BOTTOM DASHBOARD EXAMPLE

A Manager's User Profile is protected by a username and password to permit different users to access the same unit securely. It maintains the central database that is distributed to all Receivers in the "domain" of the Manager (i.e. discovered and added to manager)— called the "managed domain." This distribution ensures that there is no single point of failure in the Emerald or InvisaPC system— each Receiver has a copy of the database. This enables each Receiver to continue operation—log users in, make connections as required—even if the Manager goes off-line.

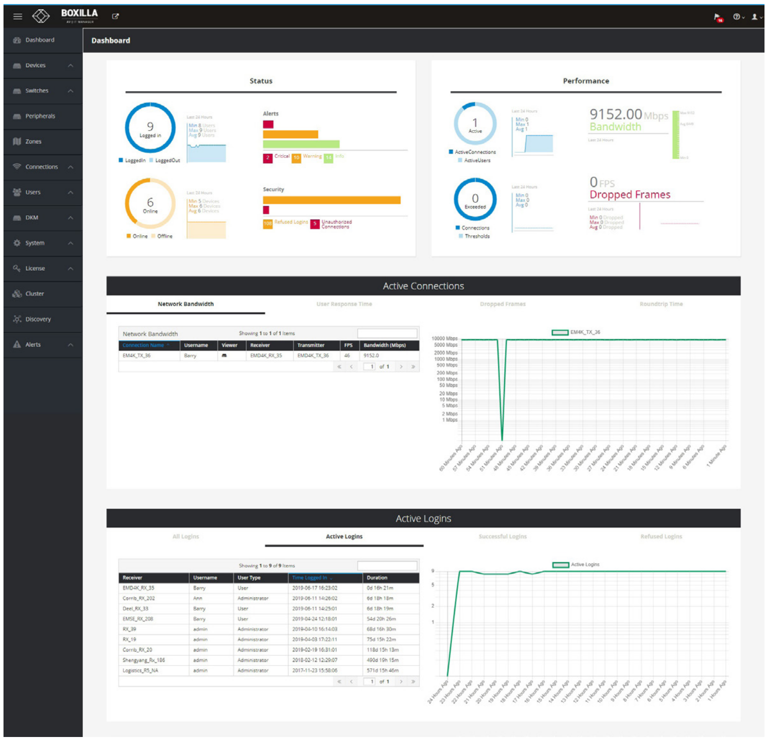
NOTE: At this time the Boxilla Administrator can only be configured/edited within Boxilla and cannot use an Active Directory user account.

2.3 BOXILLA SCREEN LAYOUT

Boxilla is designed to provide quick access to key operational functions. This is achieved by the use of the Main Menu and Quick Access Toolbar as shown in Figure 2-3. The Main Menu provides access to:

- Dashboard
- Devices
- Switches
- Peripherals
- Zones
- Connections
- Users
- DKM
- System
- License
- Cluster
- Discovery
- Alerts

The Quick Access toolbar provides access to active Alerts, access to Help and access to Logout.



Network Bandwidth — Showing 1 to 1 of 1 Items

Connection Name	Username	Viewer	Receiver	Transmitter	FPS	Bandwidth (Mbps)
EM4K_TX_36	Barry		EMD4K_RX_35	EMD4K_TX_36	46	9152.0

Showing 1 to 9 of 9 Items

Receiver	Username	User Type	Time Logged In	Duration
EMD4K_RX_35	Barry	User	2019-06-17 16:23:02	0d 16h 21m
Corrib_RX_202	Ann	Administrator	2019-06-11 14:26:02	6d 18h 18m
Deel_RX_33	Barry	User	2019-06-11 14:25:01	6d 18h 19m
EMSE_RX_208	Barry	User	2019-04-24 12:18:01	54d 20h 26m
RX_39	admin	Administrator	2019-04-10 16:14:03	68d 16h 30m
RX_19	admin	Administrator	2019-04-03 17:22:11	75d 15h 22m
Corrib_RX_20	admin	Administrator	2019-02-19 16:31:01	118d 15h 13m
Shengyang_Rx_186	admin	Administrator	2018-02-12 12:29:07	490d 19h 15m
Logistics_R5_NA	admin	Administrator	2017-11-23 15:58:06	571d 15h 46m

Main Menu

Quick Access Toolbar

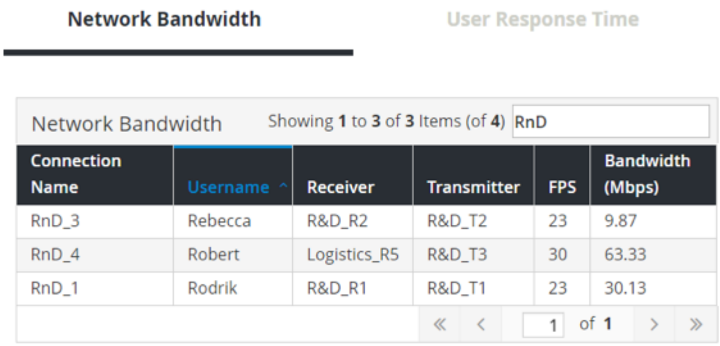
Status & Performance Indicators

Active Connections

Active Logins

FIGURE 2-4. SCREEN LAYOUT

A common feature of tables in Boxilla is that they can be sorted by each column (alphabetically either ascending or descending). Click on the column's label (e.g. Connection Name) and the table will be sorted by that column in ascending order. Click on the same column label again and the order will be reversed. Also, a filter can be applied to the values in the column to pick out a subset of rows in the table. For example, typing in RnD into the filter box in the Network Bandwidth table in Active Connection section of the Dashboard in Figure 2-4 would result in three instead of four rows being displayed as shown in Figure 2-5.



Network Bandwidth Showing **1** to **3** of **3** Items (of **4**) RnD

Connection Name	Username ^	Receiver	Transmitter	FPS	Bandwidth (Mbps)
RnD_3	Rebecca	R&D_R2	R&D_T2	23	9.87
RnD_4	Robert	Logistics_R5	R&D_T3	30	63.33
RnD_1	Rodrik	R&D_R1	R&D_T1	23	30.13

FIGURE 2-5. FILTERING TABLE

2.4 MODES OF OPERATION

The Emerald or InvisaPC system has various modes of operation, such as Auto-Login, Auto-Connect, Private Connection and Shared Connection Modes. The Emerald or InvisaPC devices can obtain their IP address data from a DHCP server in any of these modes or use static addresses. For stable operation with Boxilla, we strongly recommend that Static IP addresses are assigned to Emerald or InvisaPC devices or that you use DHCP addresses with "infinite time-outs."

2.4.1 AUTO LOGIN

In Auto-Login Mode, turning on the Emerald or InvisaPC Receiver automatically causes a login as a pre-defined user. The user is presented with the permitted connections that have been predefined.

2.4.2 AUTO CONNECT

In Auto-Connect Mode, when a user logs-in to the Emerald or InvisaPC Receiver, it causes an automatic connection to their pre-allocated workstation or virtual desktop. Auto-Login and Auto-Connect are defined independently of each other.

2.4.3 PRIVATE CONNECTION

In Private Connection Mode, when a user makes a connection to a target workstation/virtual desktop, this connection is only accessible by this user. All other users will receive a "busy" message if they attempt to connect to the same workstation/virtual machine. This is the default mode for connections.

2.4.4 SHARED CONNECTION

In Shared Connection Mode, multiple users can connect to the audio and video of the same target computer over the network. They arbitrate for control of the keyboard and mouse of that computer. Non-keyboard and mice devices are not supported on shared connections.

CHAPTER 3: APPLICATIONS

The Emerald or InvisaPC system is architected to be flexible so that it can be deployed in many different types of applications such as basic extension, switching applications (sometimes called matrix), cloud-based desktops, control rooms, digital signage and kiosk applications among others in banking, financial services, broadcast, network operations, industrial, government and enterprise computing sectors. Emerald or InvisaPC provides the state-of-the art performance by:

- using digital sources for video and audio, hence removing analog noise issues or other potential environmental issues;
- using advanced optimized compression to enable visually lossless video over standard low-bandwidth networks rather than a proprietary connection or dedicated gigabit networks of many systems.

3.1 VIDEO, AUDIO, AND USB SWITCHING

Numerous applications require being able to switch between different target PCs or Virtual Desktops. The user wants to be able to change the source of Video, Audio or USB extension (or all three together).

Connections can be made to a target using Emerald or InvisaPC's intuitive On-Screen-Display (OSD) and/or the Emerald RemoteApp. Figure 2-1 in the previous section shows an example of a switching or matrix type of deployment. In this deployment, there are several Receivers and Transmitters and a Boxilla manager as well as virtual desktops.

See www.blackbox.com for the full catalog of available Emerald or InvisaPC products.

4.1 HARDWARE DESCRIPTION

A Boxilla manager is supplied with the items shown in Table 4-1. (1) Boxilla Manager, 1RU

TABLE 4-1. WHAT'S INCLUDED

ITEM
Boxilla Unit
(1) US power cord
(1) DB9-F to RJ4 Console Cable
(4) rubber feet
(2) Brackets with pull loops
(16) Screws
(2) Rackmount Rails

Once the contents of the Boxilla package have been verified, the first task is to configure the IP address of the unit. This can be set in two ways: (1) using the serial port and (2) using the network port via a browser.

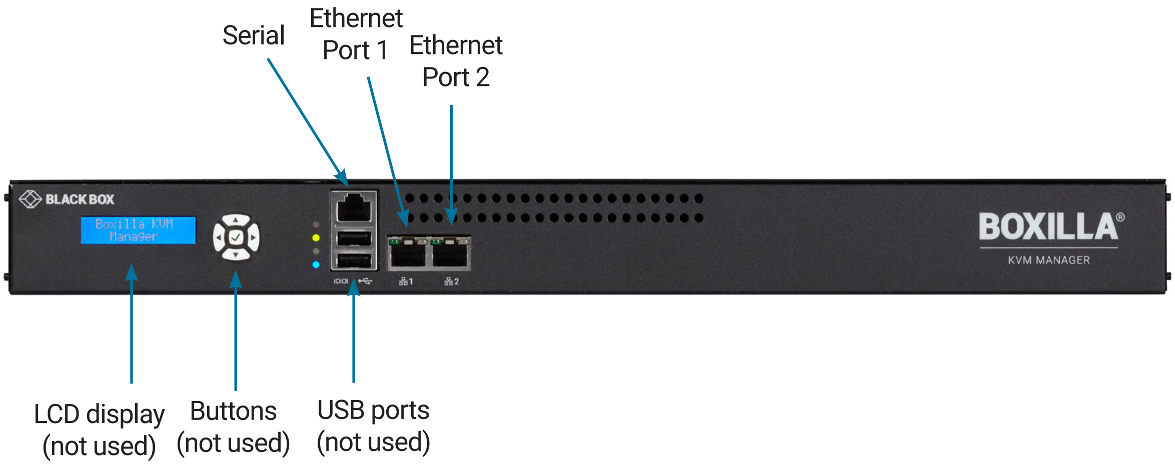


FIGURE 4-1. BOXILLA FRONT PANEL

CONNECTORS NEEDED FOR INSTALLATION

- Serial Port (RS-232 access port to display Boxilla menus using the included adapter; can be used to find the IP or factory reset the controller)
- Ethernet Network Ports (1 = Primary/default network port; 2 = Secondary network port)
- Power connector (on back of unit)

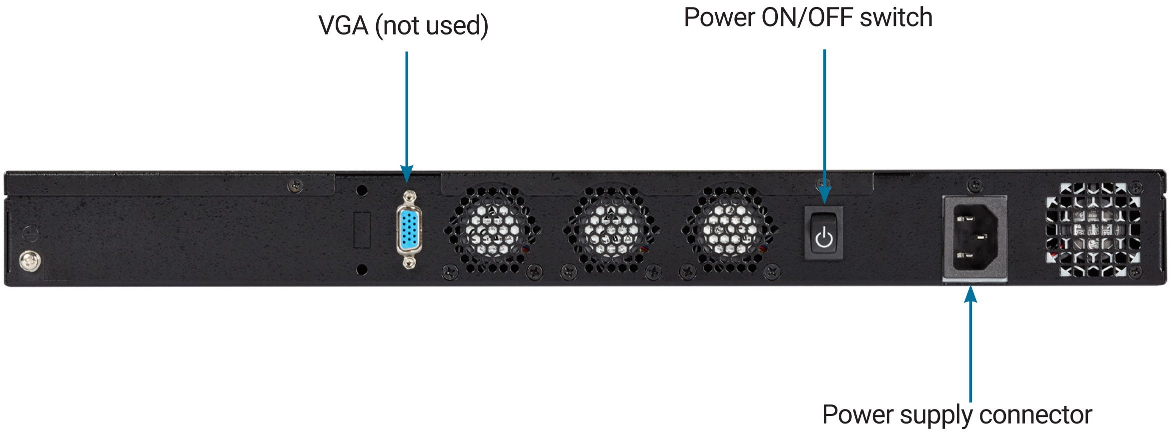


FIGURE 4-2 BOXILLA REAR PANEL

TABLE 4-2. PANEL COMPONENTS

COMPONENT	DESCRIPTION
HD15 female port	Not used
(2) Network ports	1G Ethernet RJ-45 connectors
Power switch	ON/OFF switch
3-prong outlet	100–240 VAC, 50-60 Hz

CONNECT THE POWER

1. Locate the AC line cord.
2. Attach the AC line cord to the power supply connector on the rear of the unit.
3. Power up the unit by turning on the power switch on the back of the unit.

4.2 LED IDENTIFICATION

Two LEDs are built into the RJ-45 connectors on the Boxilla Manager. The definition of the operation of these LEDs is shown in Table 4-3.

TABLE 4-3. RJ-45 CONNECTOR LEDS

LED	INDICATION	MEANING
Speed	Green ON	1 Gbps link
	Amber ON	100 Mbps link
	OFF	10 Mbps link
Activity	Amber blinking	Valid link
	OFF	No link

4.3 INSTALLATION SAFETY

To avoid a potentially fatal shock hazard and possible damage to equipment, please observe the following precautions:

- Test AC outlets at the workstation and monitor for proper polarity and grounding.

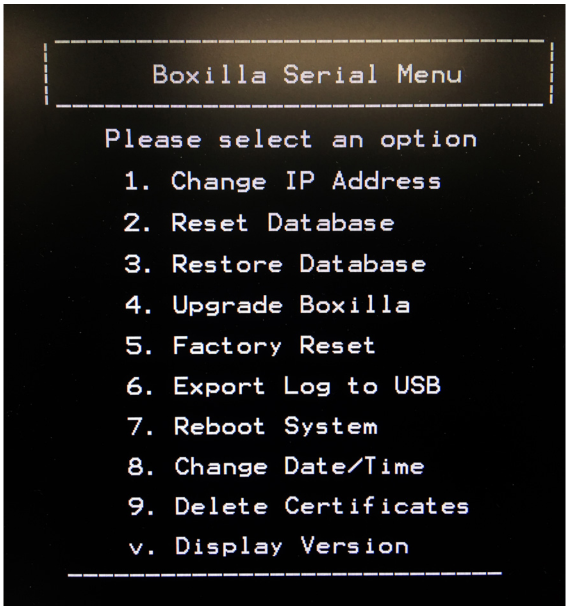
NOTE: The AC inlet is the main disconnect.

4.4 SERIAL CONFIGURATION OF IP ADDRESS

The default IP address for Boxilla on leaving the factory is 192.168.1.24 and needs to be configured to an appropriate address for where it will be deployed. Open your web browser and navigate to 192.168.1.24 to change the IP address. To access the serial menu, connect to the DB9 connector on the front of the unit. The serial port has a fixed configuration of:

- Baud-Rate: 115,200 Baud
- Data: 8 bits
- Stop-Bits: 1
- Parity: None
- XON/XOFF: None

Once the connecting PC has the correct configuration, the following menu should appear when connected to Boxilla's serial port. Make sure you turn echo on for the terminal to see the output.



```
|-----------------------------------|
|        Boxilla Serial Menu        |
|___________________________________|
       Please select an option
        1. Change IP Address
        2. Reset Database
        3. Restore Database
        4. Upgrade Boxilla
        5. Factory Reset
        6. Export Log to USB
        7. Reboot System
        8. Change Date/Time
        9. Delete Certificates
        v. Display Version
   -------------------------------
```

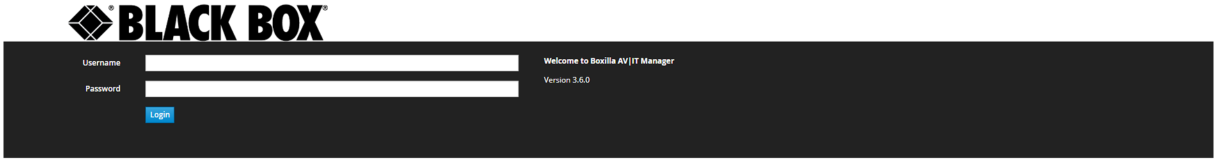
FIGURE 4-3. BOXILLA SERIAL MENU

Select "Change IP address" by entering 1. Then follow the prompts to set the new IP address, Net Mask and Gateway IP address.

NOTE: To find the currently configured IP address, select the option "Change IP Address" to view the current IP. You can cancel this menu once you find it.

4.5 BROWSER CONFIGURATION OF IP ADDRESS

The default IP address for Boxilla on leaving the factory is 192.168.1.24 and needs to be configured to an appropriate address for where it will be deployed. Use a computer located within the local network that can address the default IP address and ensure that Boxilla is connected to this network via its Ethernet Port 1 (RJ-45) as shown in Figure 4-1, open a web-browser and enter the default IP address for the Boxilla AV/IT Manager: 192.168.1.24. This should bring up the Boxilla login screen shown below in Figure 4-4.



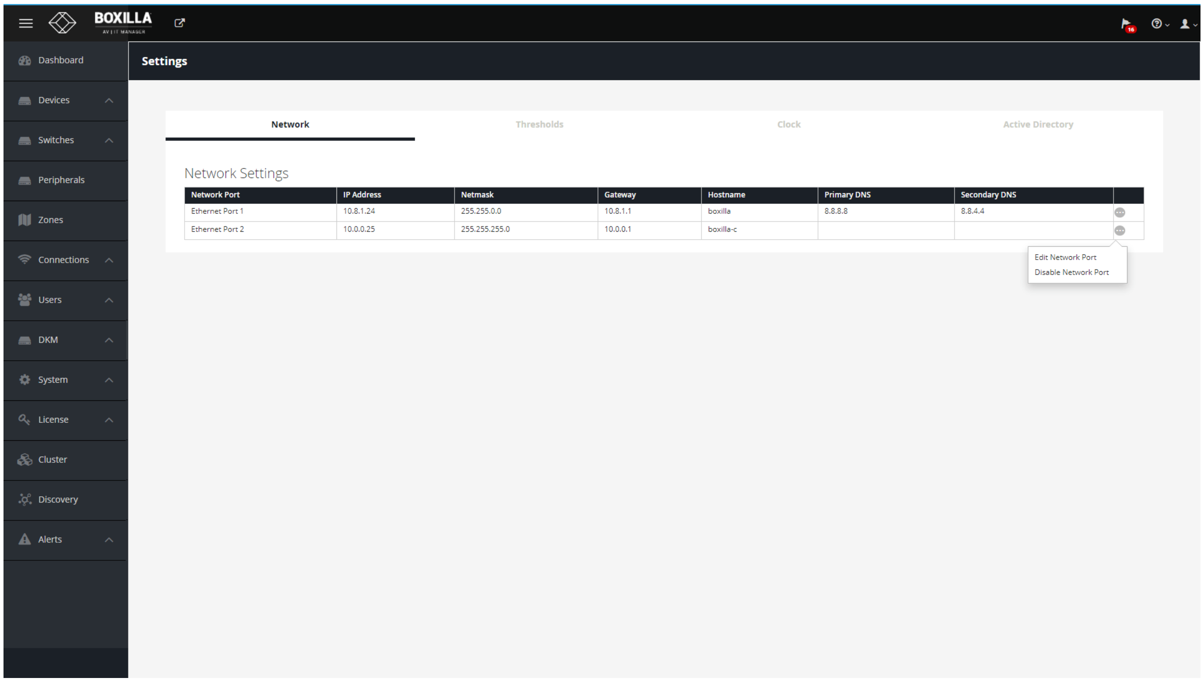
Welcome to Boxilla AV|IT Manager

Version 3.6.0

FIGURE 4-4. BOXILLA LOGIN SCREEN

When the login screen appears, enter the default username “admin” and the default password “admin.” This will bring you to the Boxilla dashboard screen. On the Boxilla menu (see the menu on the left in Figure 4-5), select the menu item “System” on the left of the screens.

On the tabs that appear on the main section of the screen, click System —> Settings —> Network. Now you will be presented with the current IP settings for the system. Enter the new IP settings into the supplied fields and click “submit.” Boxilla will be updated with the new network settings. From now on, you need to point your Browser to the new IP address.



Network Settings

Network Port	IP Address	Netmask	Gateway	Hostname	Primary DNS	Secondary DNS
Ethernet Port 1	10.8.1.24	255.255.0.0	10.8.1.1	boxilla	8.8.8.8	8.8.4.4
Ethernet Port 2	10.0.0.25	255.255.255.0	10.0.0.1	boxilla-c		

FIGURE 4-5. SYSTEM —> SETTINGS —> NETWORK SCREEN

4.6 MOUNTING BOXILLA IN A RACK

The Boxilla unit is designed to be easy to mount within a standard 19” rack. The unit requires just a 1U space within the rack.

To mount the Boxilla unit within a rack:

1. Mount the rails into rack.
2. Add the locking ears to the Boxilla.
3. Slide out the rails toward the front of the rack, and mount the Boxilla to the rails.
4. Disengage the lock mechanism on each rail and slide the Boxilla into the rack.

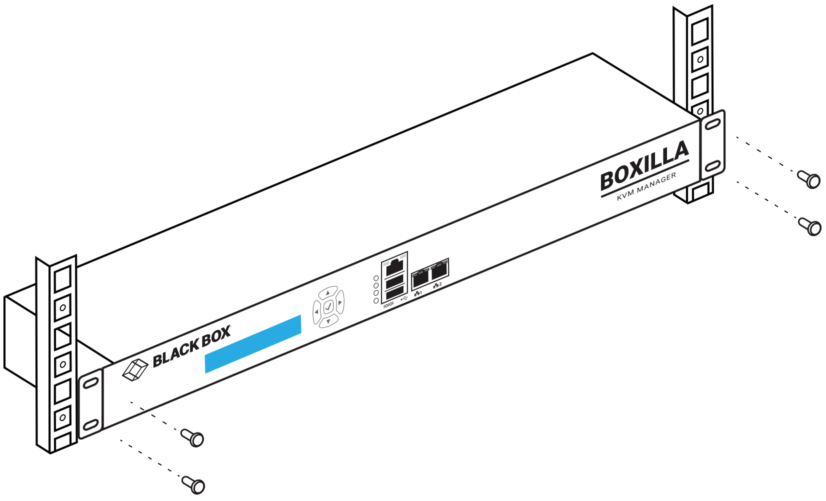


FIGURE 4-6. MOUNTING BOXILLA IN A RACK

To protect the unit, please use the ground point on the Boxilla unit on the rear of the Boxilla unit shown in Figure 4-7 (using the provided screw) for connecting to the ground point of the rack or cabinet.

4.6.1 RACKMOUNT SAFETY CONSIDERATIONS

- Elevated Ambient Temperature: If installed in a closed rack assembly, the operating temperature of the rack environment may be greater than room ambient. Use care not to exceed the rated maximum ambient temperature of the Boxilla unit.
- Reduced Air Flow: 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.
- Mechanical Loading: Mounting of the equipment in the rack should be such that a hazardous condition does not exist due to uneven mechanical loading.
- Circuit Overloading: Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of circuits might have on overcurrent protection and supply wiring. Consider equipment ratings for maximum current.
- Reliable Earthing: Reliable earthing of rack mounted equipment should be maintained. Pay particular attention to supply connections other than direct connections to the branch circuit (for example, use of power strips).

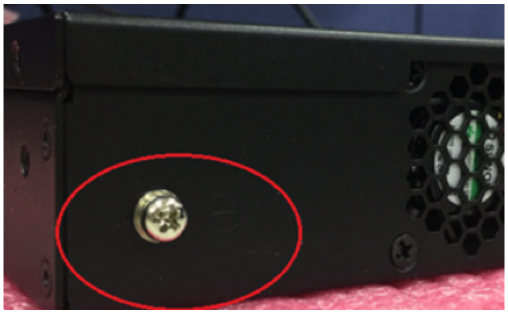


FIGURE 4-7. ESD CONNECTION

CHAPTER 5: BOXILLA CONFIGURATION

This section covers the configuration of Boxilla for administrators.

5.1 SUPPORTED BROWSERS

Boxilla will operate with most modern client browsers. It requires the browser to have JavaScript enabled. The list of supported browsers is as follows:

- Google Chrome
- Internet Explorer
- Firefox
- Safari

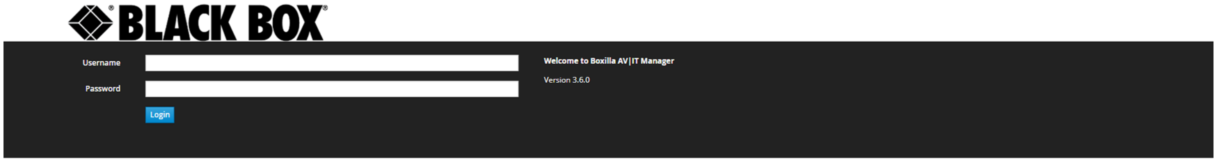
NOTE: For the best experience, always use the latest versions of supported browsers.

5.2 LOGIN

Ensure the Boxilla unit is powered up. Wait two minutes after applying power before attempting to access to allow the system to boot up.

Using a computer located anywhere within the network, open a web browser (see supported browsers list above) and enter the default IP address for the Boxilla server: 192.168.1.24 .

The Login screen will be displayed as shown in Figure 5-1.



Welcome to Boxilla AV|IT Manager

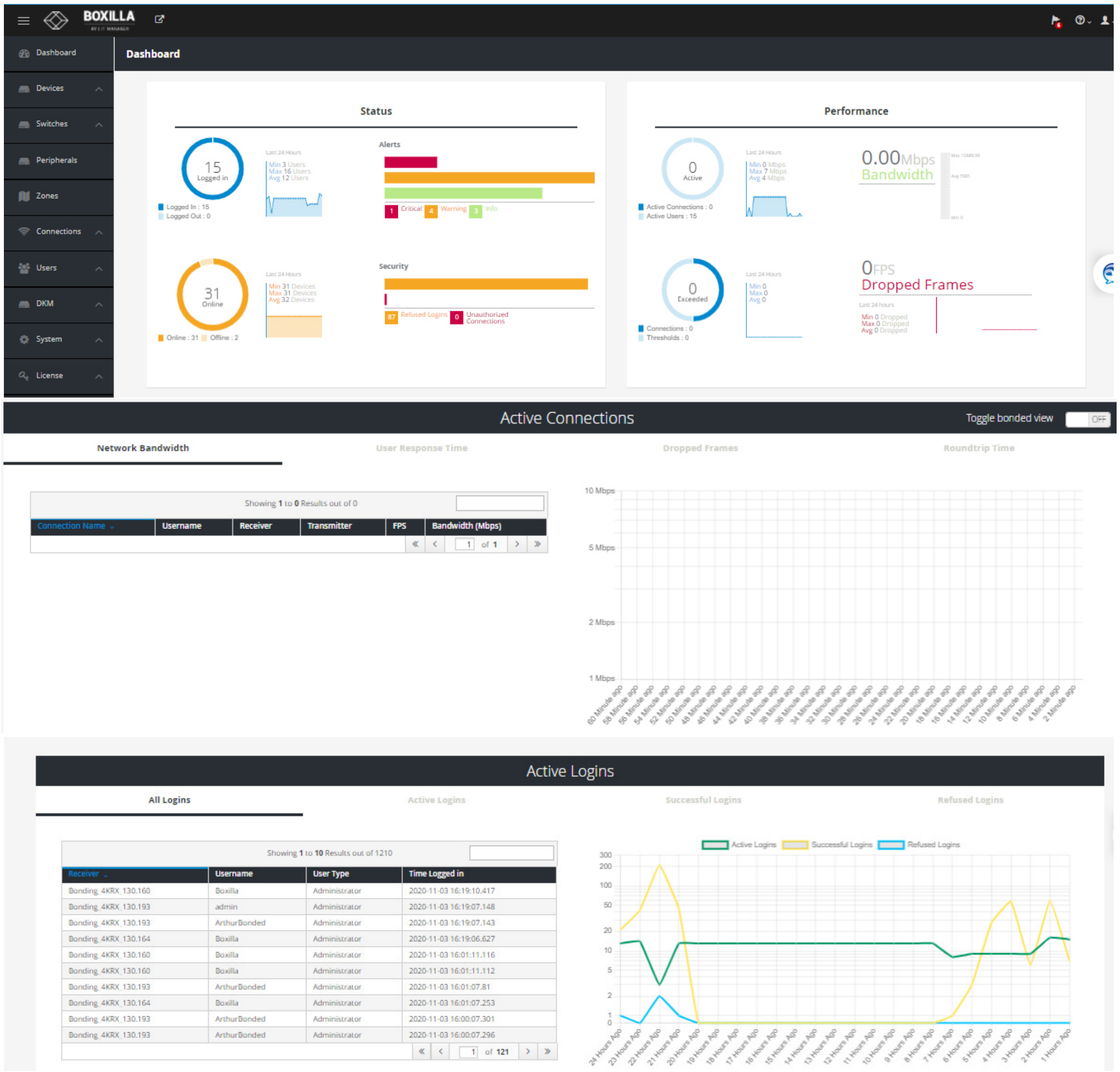
Version 3.6.0

FIGURE 5-1. BOXILLA LOGIN SCREEN

Enter your Username and Password and click the Login button.

Default username: admin

Default password: admin



Showing 1 to 0 Results out of 0

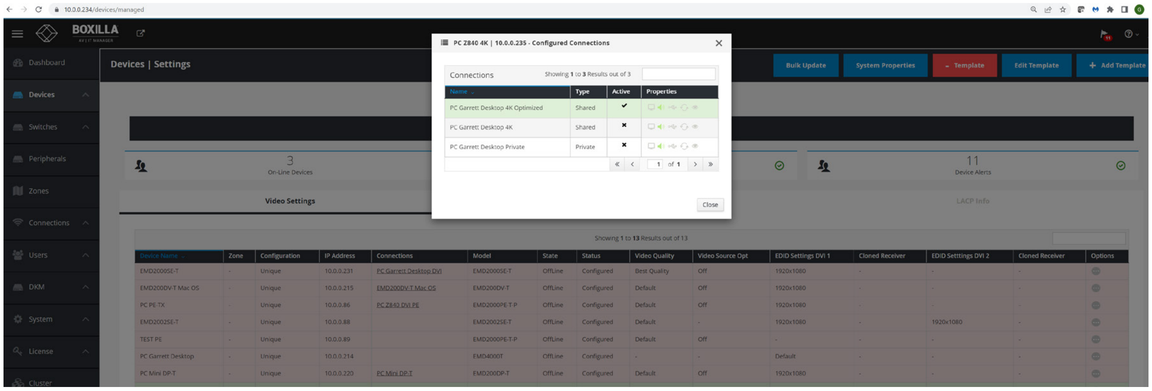
Connection Name	Username	Receiver	Transmitter	FPS	Bandwidth (Mbps)

Showing 1 to 10 Results out of 1210

Receiver	Username	User Type	Time Logged in
Bonding_4KRX_130.160	Boxilla	Administrator	2020-11-03 16:19:10.417
Bonding_4KRX_130.193	admin	Administrator	2020-11-03 16:19:07.148
Bonding_4KRX_130.193	ArthurBonded	Administrator	2020-11-03 16:19:07.143
Bonding_4KRX_130.164	Boxilla	Administrator	2020-11-03 16:19:06.627
Bonding_4KRX_130.160	Boxilla	Administrator	2020-11-03 16:01:11.116
Bonding_4KRX_130.160	Boxilla	Administrator	2020-11-03 16:01:11.112
Bonding_4KRX_130.193	ArthurBonded	Administrator	2020-11-03 16:01:07.81
Bonding_4KRX_130.164	Boxilla	Administrator	2020-11-03 16:01:07.253
Bonding_4KRX_130.193	ArthurBonded	Administrator	2020-11-03 16:00:07.301
Bonding_4KRX_130.193	ArthurBonded	Administrator	2020-11-03 16:00:07.296

1 of 121

FIGURE 5-2. BOXILLA INITIAL SCREEN ON LOGIN



PC Z840 4K | 10.0.0.235 - Configured Connections

Connections Showing 1 to 3 Results out of 3

Name	Type	Active	Properties
PC Garrett Desktop 4K Optimized	Shared	✓	
PC Garrett Desktop 4K	Shared	✗	
PC Garrett Desktop Private	Private	✗	

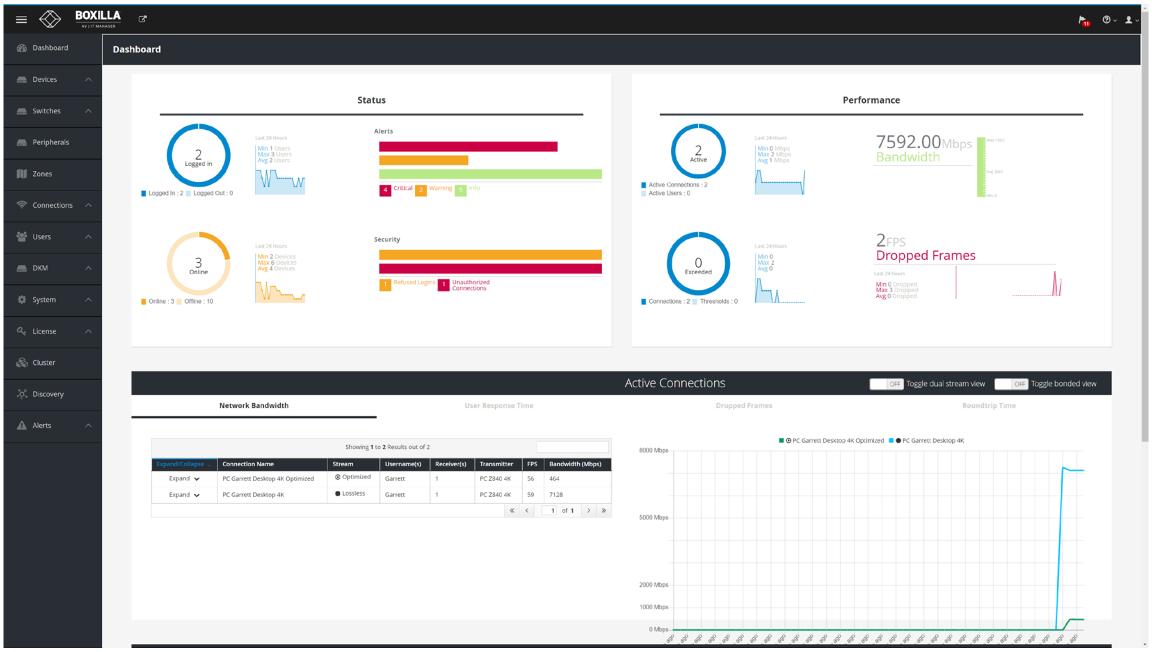
1 of 1

Close

Showing 1 to 13 Results out of 13

Device Name	Zone	Configuration	IP Address	Connections	Model	State	Status	Video Quality	Video Source Opt	EDID Settings DVI 1	Cloned Receiver	EDID Setttings DVI 2	Cloned Receiver	Options
EMD2000SE-T	-	Unique	10.0.0.231	PC Garrett Desktop DVI	EMD2000SE-T	OffLine	Configured	Best Quality	Off	1920x1080	-	-	-	
EMD200DV-T Mac OS	-	Unique	10.0.0.215	EMD200DV-T Mac OS	EMD200DV-T	OffLine	Configured	Default	Off	1920x1080	-	-	-	
PC PE-TX	-	Unique	10.0.0.86	PC Z840 DVI PE	EMD2000PE-T-P	OffLine	Configured	Default	Off	1920x1080	-	-	-	
EMD2002SE-T	-	Unique	10.0.0.88		EMD2002SE-T	OffLine	Configured	Default	-	1920x1080	-	1920x1080	-	
TEST PE	-	Unique	10.0.0.89		EMD2000PE-T-P	OffLine	Configured	Default	Off	-	-	-	-	
PC Garrett Desktop	-	Unique	10.0.0.214		EMD4000T	OffLine	Configured	-	-	Default	-	-	-	
PC Mini DP-T	-	Unique	10.0.0.220	PC Mini DP-T	EMD200DP-T	OffLine	Configured	Default	Off	1920x1080	-	-	-	

FIGURE 5-3. CONFIGURED CONNECTIONS

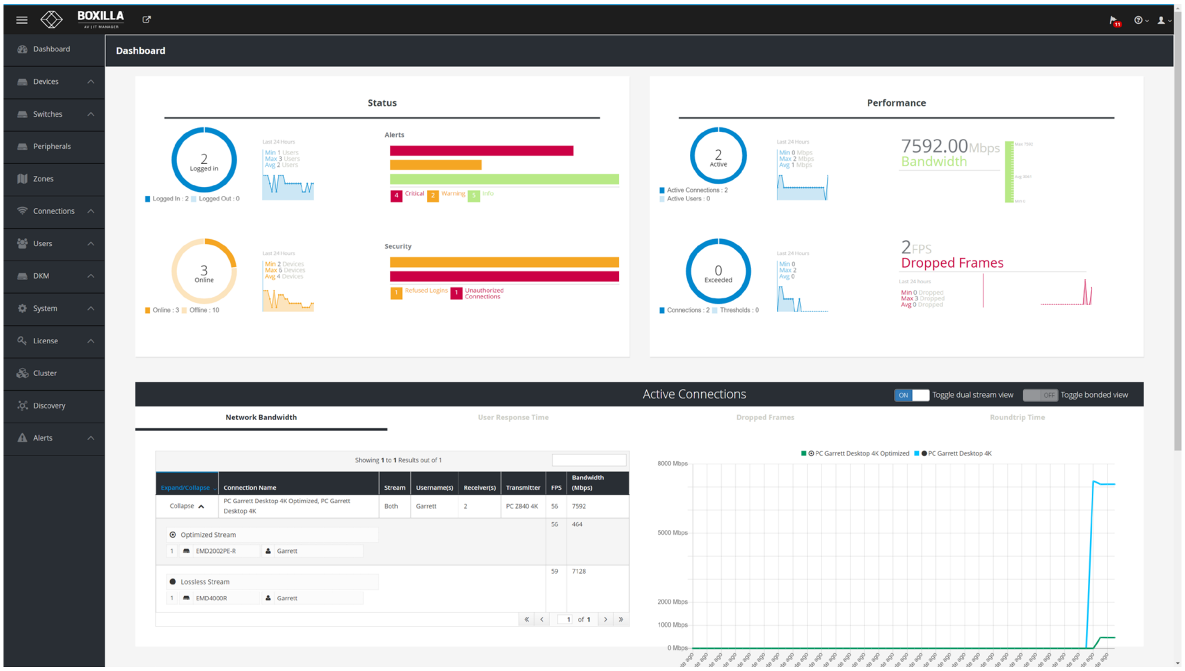


Showing **1** to **2** Results out of 2

Expand/Collapse	Connection Name	Stream	Username(s)	Receiver(s)	Transmitter	FPS	Bandwidth (Mbps)
Expand	PC Garrett Desktop 4K Optimized	⊙ Optimized	Garrett	1	PC Z840 4K	56	464
Expand	PC Garrett Desktop 4K	● Lossless	Garrett	1	PC Z840 4K	59	7128

« ‹ 1 of **1** › »

FIGURE 5-4. DASHBOARD



Showing **1** to **1** Results out of 1

Expand/Collapse	Connection Name	Stream	Username(s)	Receiver(s)	Transmitter	FPS	Bandwidth (Mbps)
Collapse	PC Garrett Desktop 4K Optimized, PC Garrett Desktop 4K	Both	Garrett	2	PC Z840 4K	56	7592
⊙ Optimized Stream 1 EMD2002PE-R Garrett						56	464
● Lossless Stream 1 EMD4000R Garrett						59	7128

« ‹ 1 of **1** › »

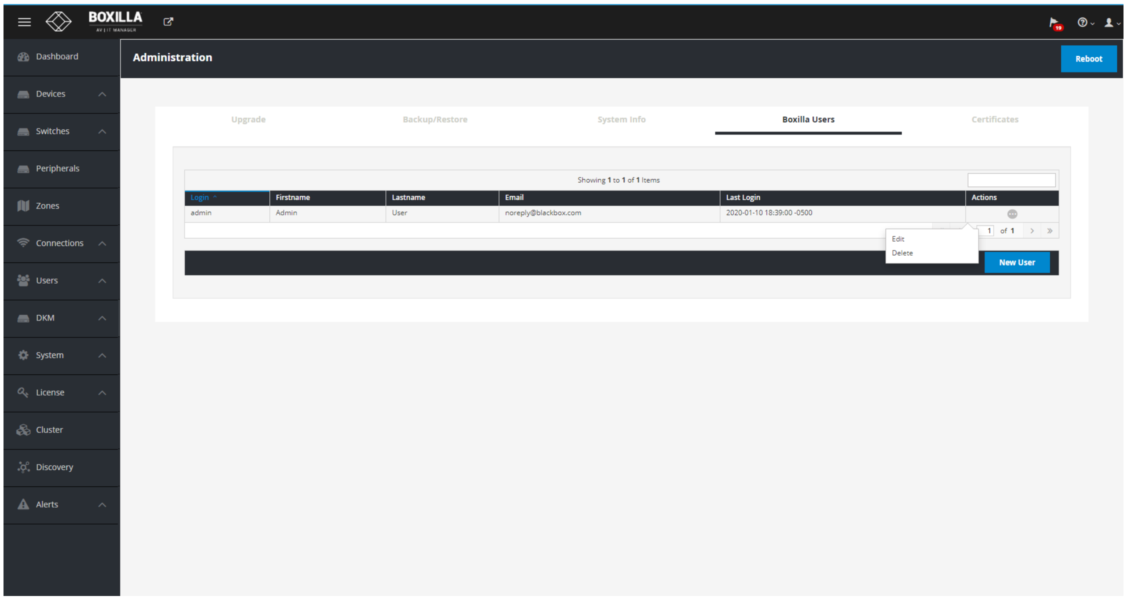
FIGURE 5-5. DASHBOARD SHOWING ADDITIONAL NETWORK BANDWIDTH INFORMAITON

TABLE 5-1. BOXILLA INITIAL SCREEN MENU COMPONENTS

MENU OPTION	DESCRIPTION
Dashboard	The dashboard is divided into three main areas: Status & Performance Indicators, Active Connections and Active Logins.
Devices	Under the Devices drop-down menu on the left of the Dashboard screen, you will see four options: Settings, Upgrades, Global and Statistics.
Switches	The “Switches” menu has two subheadings: Status and Upgrades. These all link to individual pages. The status page initially shows a list of all the switches in the KVM Network. Clicking on a particular switch then brings you to a page displaying all the ports of that particular switch. This page also allows you to perform certain actions on the switch. The Upgrades page is similar to the InvisaPC/Emerald Upgrade page. This shows a list of all the switches in the KVM network plus their current firmware version. If there is a mismatch to the activated firmware release, this will be flagged. You can also upload a release from this page.
Peripherals	Boxilla uses USB Hub bonding to support external USB switching at speeds up to 480 Mbps or to support more complicated USB devices, such as Devlin keyboards..
Zones	Zones enable the administrator to setup unique zones (or groups) of Connections, Physical Receivers, and Users so that a large system can be more easily managed.
Connections	Connections define the properties for the flow of keyboard, mouse, video, audio and USB traffic between an Emerald or InvisaPC Receiver and an Emerald or InvisaPC Transmitter or Virtual Machine. Connections are created and then allocated to Users to provide them access to Transmitters or Virtual Machines. A connection is a definition and can be allocated to multiple users. When a user logs into an Emerald or InvisaPC Receiver, they are presented with their allocated connections on the Connections Tab of the OSD on that Receiver.
Users	Users are defined in the Emerald or InvisaPC system to provide rights to manage the system, rights to connect to different target devices and rights to set parameters for connections.
DKM	This option enables you to integrate your DKM system with Boxilla. It includes the configuration elements for Boxilla and DKM.
System	The System button in the main menu brings up the System —> Administration —> Upgrade screen. This screen allows the Boxilla unit itself to be managed.
License	The License tab enables you to add/manage licenses for Boxilla and remote applications.
Cluster	Boxilla offers a redundancy feature for fail-safe operation. Your system can contain two Boxilla units, one as the primary Boxilla and one as a backup. If the first Boxilla cannot be found, the system will use a backup Boxilla to get the information. The primary and backup Boxilla are known as a cluster.
Discovery	The process of adding devices to Boxilla to manage is known as discovery. The discovery process can be automatic or can be manual.
Alerts	Alert history is a time-stamped log of events across the system. Active Alerts are alerts that are currently active, e.g. devices that are offline, thresholds that are exceeded, and devices with mis-matched software versions.

You are strongly recommended to change the default admin password as one of your first actions:

- Click on System button on the main menu and then select the Users tab as shown in Figure 5-6.
- Click the "..." icon on the Admin row and click on the edit option.



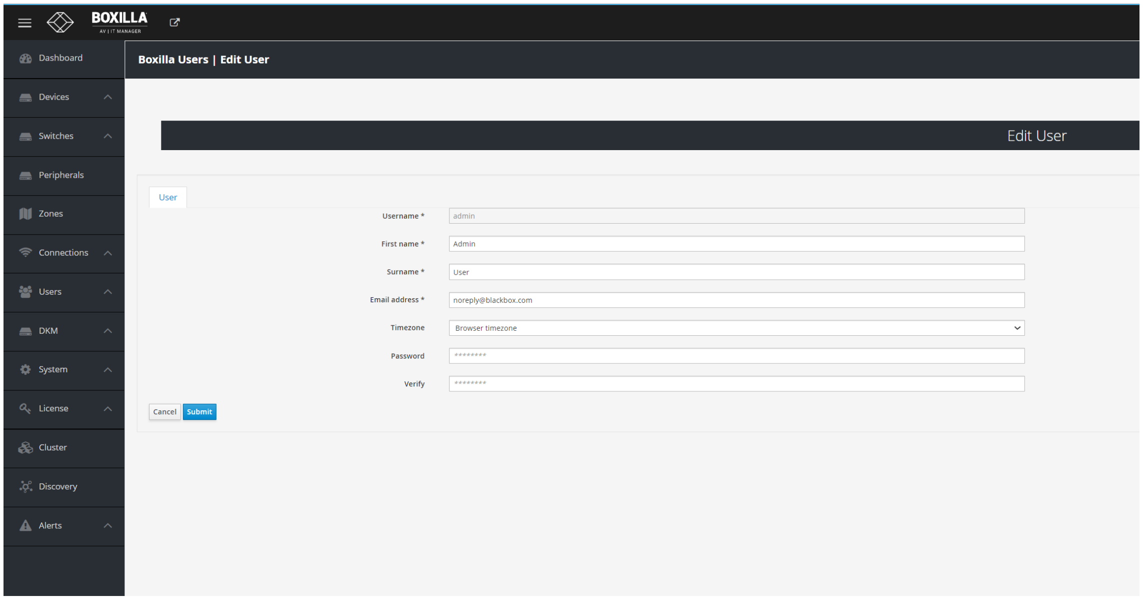
Showing 1 to 1 of 1 Items

Login ^	Firstname	Lastname	Email	Last Login	Actions
admin	Admin	User	noreply@blackbox.com	2020-01-10 18:39:00 -0500	⋯

1 of 1

FIGURE 5-6. CHANGING ADMIN USER PASSWORD

This allows the Admin user to be edited. The default password would be changed for security. The other properties can be used as required.



Username * admin
First name * Admin
Surname * User
Email address * noreply@blackbox.com
Timezone Browser timezone
Password ********
Verify ********

FIGURE 5-7. EDIT ADMIN USER

5.3 IMPORTANT FIRST CONFIGURATION STEPS

There are several important configuration steps that must be carried out when starting a new Boxilla server for the first time.

1. Set the IP address for the Boxilla Server.
2. Change the default password for the default user "admin" (for security).
3. Setting the SSL Certificates under System -> Administration -> Certificates

NOTE: Make sure that your computer can view the new IP address; otherwise, the Boxilla server will appear to be offline. Depending on your network configuration and that of the computer, you may need to change the computer's configuration to be able to see Boxilla server's new network address.

IMPORTANT NOTE: If an existing Boxilla server must be replaced, follow the important advice given within Appendix A: Replacing your Boxilla.

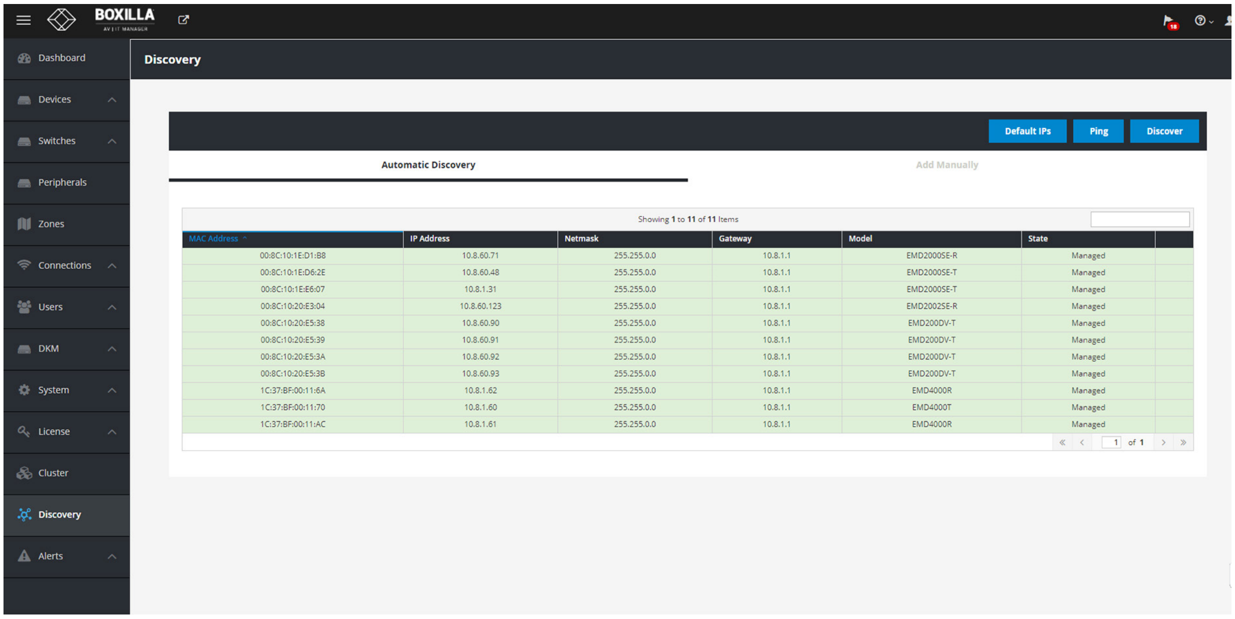
CHAPTER 6: DISCOVERY—ADDING DEVICES

The process of adding devices to Boxilla to manage is known as discovery. The discovery process can be automatic or can be manual.

6.1 DISCOVERY—AUTOMATICALLY FINDING DEVICES

Boxilla uses a discovery protocol to automatically find devices to be managed on the network to support up to 4,000 devices. This discovery protocol can span across subnets. To allow Black Box's Emerald or InvisaPC automatic discovery protocol to operate across subnets, multicast routing should be enabled in the routers in the network, and the IP address of 192.168.1.1 should be available and open. Black Box's discovery protocol is not required for Emerald or InvisaPC systems to operate but it is recommended to enable Boxilla to search for devices across multiple subnets. If the Emerald or InvisaPC discovery protocol is not enabled, i.e. routers do not have multicast routing enabled, the administrator will have to manually add in devices not on its subnet, i.e. add in each device individually by its IP address.

To start adding devices to Boxilla, click on the Discovery button on the main menu. The Discovery page is displayed as shown in Figure 6-1. The example page already has some devices "discovered." The devices are listed in a table as shown in Figure 6-1.



Showing 1 to 11 of 11 Items

MAC Address	IP Address	Netmask	Gateway	Model	State
00:8C:10:1E:D1:B8	10.8.60.71	255.255.0.0	10.8.1.1	EMD2000SE-R	Managed
00:8C:10:1E:D6:2E	10.8.60.48	255.255.0.0	10.8.1.1	EMD2000SE-T	Managed
00:8C:10:1E:E6:07	10.8.1.31	255.255.0.0	10.8.1.1	EMD2000SE-T	Managed
00:8C:10:20:E3:04	10.8.60.123	255.255.0.0	10.8.1.1	EMD2002SE-R	Managed
00:8C:10:20:E5:38	10.8.60.90	255.255.0.0	10.8.1.1	EMD200DV-T	Managed
00:8C:10:20:E5:39	10.8.60.91	255.255.0.0	10.8.1.1	EMD200DV-T	Managed
00:8C:10:20:E5:3A	10.8.60.92	255.255.0.0	10.8.1.1	EMD200DV-T	Managed
00:8C:10:20:E5:3B	10.8.60.93	255.255.0.0	10.8.1.1	EMD200DV-T	Managed
1C:37:BF:00:11:6A	10.8.1.62	255.255.0.0	10.8.1.1	EMD4000R	Managed
1C:37:BF:00:11:70	10.8.1.60	255.255.0.0	10.8.1.1	EMD4000T	Managed
1C:37:BF:00:11:AC	10.8.1.61	255.255.0.0	10.8.1.1	EMD4000R	Managed

1 of 1

FIGURE 6-1. DISCOVERY PAGE

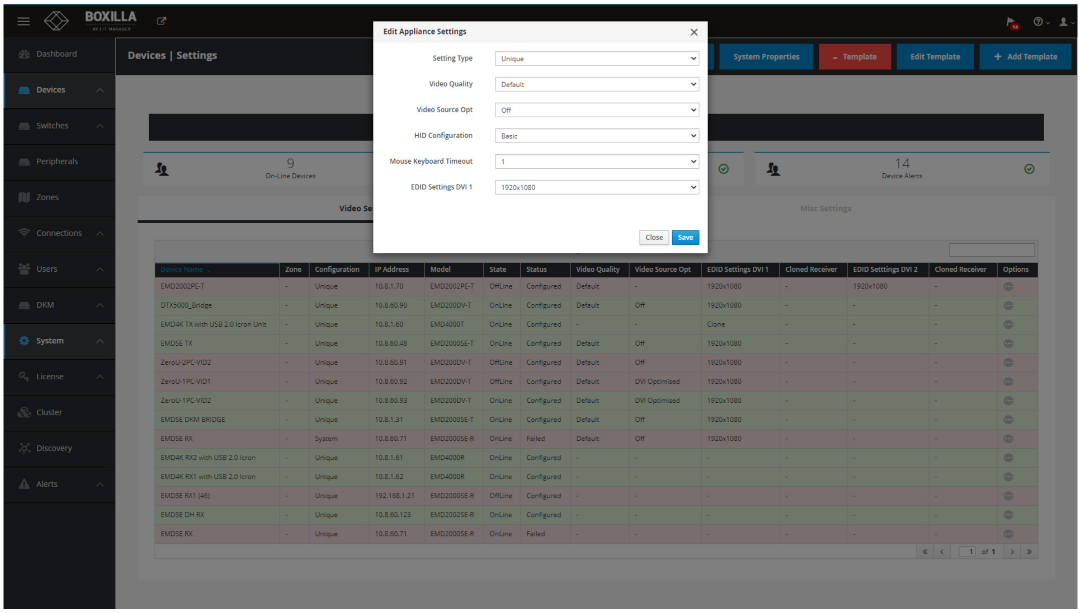
This table shows all devices "discovered" automatically or manually added. To discover devices automatically, click on the "discover" button on the page. This causes the Black Box Discovery protocol to be run where a "discovery" packet is broadcasted to network and devices respond to Boxilla by sending a UDP unicast back to Boxilla. See Appendix B: Overview of Boxilla and Emerald or InvisaPC Network Protocols for more details on the actual protocol sequence.

The state of a device shown in the table can be one of the following:

- UnManaged—this device is currently not part of any managed domain
- Managed—this device is part of the domain managed by this Boxilla manager
- ManagedOther—this device is part of a domain managed by another Manager—and cannot be managed by this Boxilla manager
- Orphaned—there is a conflict between the reported state on the Manager and that of the device. This may occur where the device was removed from the Manager's database when the device was off-line, or if the Manager was restored to factory default settings. A device in the orphaned state can be set back to "Managed" by selecting the Manage button and following the same process as for unmanaged devices

To edit a discovered device, click on the "•••" icon on the row for the device and select the Edit option. This allows the Network configuration of a device to be changed as shown in Figure 6-2. Typically, this is used to change a device from its default IP address to a unique address.

The administrator should be aware that the IP address should be changed to one reachable by Boxilla (i.e. if moved to a subnet different to Boxilla manager, a router is required to enable communication).



Edit Appliance Settings

Setting Type: Unique
Video Quality: Default
Video Source Opt: Off
HID Configuration: Basic
Mouse Keyboard Timeout: 1
EDID Settings DVI 1: 1920x1080

Device Name	Zone	Configuration	IP Address	Model	State	Status	Video Quality	Video Source Opt	EDID Settings DVI 1	Cloned Receiver	EDID Setttings DVI 2	Cloned Receiver	Options
EMD2002PE-T	-	Unique	10.8.1.70	EMD2002PE-T	OffLine	Configured	Default	-	1920x1080	-	1920x1080	-	•••
DTX5000_Bridge	-	Unique	10.8.60.90	EMD200DV-T	OnLine	Configured	Default	Off	1920x1080	-	-	-	•••
EMD4K TX with USB 2.0 Icron Unit	-	Unique	10.8.1.60	EMD4000T	OnLine	Configured	-	-	Clone	-	-	-	•••
EMDSE TX	-	Unique	10.8.60.48	EMD2000SE-T	OnLine	Configured	Default	Off	1920x1080	-	-	-	•••
ZeroU-2PC-VID2	-	Unique	10.8.60.91	EMD200DV-T	OffLine	Configured	Default	Off	1920x1080	-	-	-	•••
ZeroU-1PC-VID1	-	Unique	10.8.60.92	EMD200DV-T	OffLine	Configured	Default	DVI Optimised	1920x1080	-	-	-	•••
ZeroU-1PC-VID2	-	Unique	10.8.60.93	EMD200DV-T	OnLine	Configured	Default	DVI Optimised	1920x1080	-	-	-	•••
EMDSE DKM BRIDGE	-	Unique	10.8.1.31	EMD2000SE-T	OnLine	Configured	Default	Off	1920x1080	-	-	-	•••
EMDSE RX	-	System	10.8.60.71	EMD2000SE-R	OnLine	Failed	Default	Off	1920x1080	-	-	-	•••
EMD4K RX2 with USB 2.0 Icron	-	Unique	10.8.1.61	EMD4000R	OnLine	Configured	-	-	-	-	-	-	•••
EMD4K RX1 with USB 2.0 Icron	-	Unique	10.8.1.62	EMD4000R	OnLine	Configured	-	-	-	-	-	-	•••
EMDSE RX1 (46)	-	Unique	192.168.1.21	EMD2000SE-R	OffLine	Configured	-	-	-	-	-	-	•••
EMDSE DH RX	-	Unique	10.8.60.123	EMD2002SE-R	OnLine	Configured	-	-	-	-	-	-	•••
EMDSE RX	-	Unique	10.8.60.71	EMD2000SE-R	OnLine	Failed	-	-	-	-	-	-	•••

1 of 1

FIGURE 6-2. EDIT DEVICE SCREEN

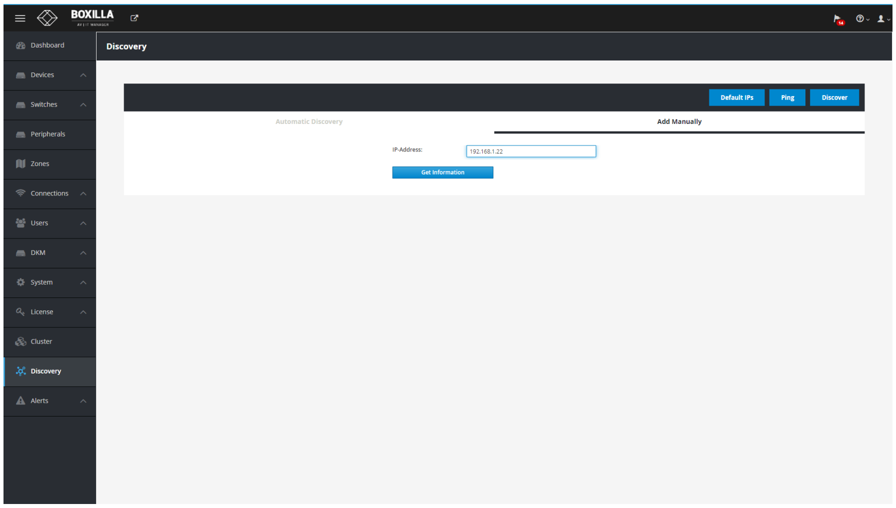
Once the IP address has been specified, an unmanaged device can now be set to be part of this Boxilla's managed domain. This is done by clicking on the Manage option. This causes the device's state to change from UnManaged to Managed. The device is given a name as part of the process of making it managed. This name is used to make it easier for administrators and users to refer to the device (e.g. ControlRoom1 to name a device in Control Room 1). Once managed by Boxilla, this device cannot be managed or configured by any other manager.

CHAPTER 6: DISCOVERY—ADDING DEVICES

6.2 DISCOVERY—MANUALLY ADDING DEVICES

Sometimes an administrator may want to add a device manually, for example, where a device is on a different subnet to the Boxilla Manager and multicast routing is not enabled to this subnet.

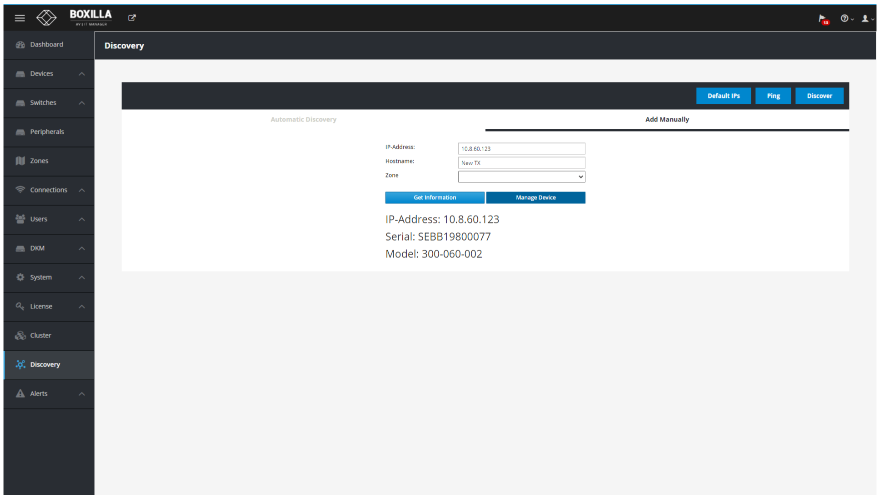
To manually add a device, click on the "Add Manually" tab on the discovery page. This brings up the page shown in Figure 6-3. Enter the IP address of the device to be added and click on "Get Information." This causes Boxilla to retrieve the device's information if reachable. If Boxilla has no valid path on the network to the device (or IP address is not for an Emerald or InvisaPC device), the system will return a message of "device not reachable."



IP-Address: 192.168.1.22

FIGURE 6-3. DISCOVERY—MANUAL ADD

The administrator can give the device a name, check that the device's details are correct if required to ensure it is the correct device (IP address, Serial Number and Model type), and assign the device to a Zone if appropriate. To manage this device, click on "Manage Device" button as shown in Figure 6-4.



IP-Address: 10.8.60.123
Hostname: New TX
Zone

IP-Address: 10.8.60.123
Serial: SEBB19800077
Model: 300-060-002

FIGURE 6-4. DISCOVERY MANUAL ADD & MANAGE DEVICE

NOTE: A Static NAT UI will be added in the next release.

6.3 DISCOVERY—WHAT HAPPENS TO A DEVICE WHEN MANAGED

Emerald or InvisaPC units can be configured locally when in UnManaged state. When a unit becomes "Managed," its local database is replaced with the database from Boxilla. The IP address of the device is preserved—but can be changed from Boxilla. The administrator can no longer change users, connections and various properties locally on the device—these can only be changed on Boxilla.

Once a device is managed by Boxilla, Boxilla's database is "synchronized" to the device when a user logs in to the device. The following sections outline how to use Boxilla to configure and monitor devices.

There are operating options that can only be configured locally for this current release. These are:

- Power-Mode— whether an Emerald or InvisaPC Receiver powers up automatically when power is applied or needs the power button to be pressed;
- Auto-Login—whether an Emerald or InvisaPC Receiver will automatically login as a specific user on power up;
- OSD Resolution—resolution that the OSD is displayed at when on screen;

See the Emerald or InvisaPC device manual for full details of these options.

6.4 DISCOVERY—IF A DEVICE IS NOT FOUND

There can be several reasons why a device has not been discovered by Boxilla:

- The device may be turned off.
- The device may not be reachable on the network— no valid path to device. This can happen if device is on a different network subnet to Boxilla and no router is between the two subnets. Use PING to verify the device can be reached.
- Automatic discovery may not find the device if it is on a different subnet to Boxilla and the router does not allow Multicast UDP packets to be forwarded to it. The router path to subnet manual addition should work.
- There is a potential cabling problem between the device and the Boxilla Manager. Check and where necessary, replace faulty cables.
- Ethernet port 1 on the Boxilla unit is not connected to the KVM network. Discovery messages are ONLY set on Ethernet port 1. Ethernet Port 2 does not support KVM traffic. All KVM traffic is routed through Ethernet Port 1.
- A device exists on the network with an IP address of 192.168.1.1 All Emerald appliances ship with a default gateway configuration of 192.168.1.1 If there is a device on the network with an IP address of 192.168.1.1, Boxilla will be unable to discover Emerald devices with default IP configurations (e.g. 192.168.1.21, 192.168.1.22). To resolve this issue, please reconfigure the device from 192.168.1.1 to an alternative IP address, e.g. 192.168.1.50
- The discovery process requires UDP Multicast, using Multicast Address 224.0.1.249, UDP port 39150. Please ensure your network supports UDP Multicast and the specified multicast address and UDP port is not blocked.

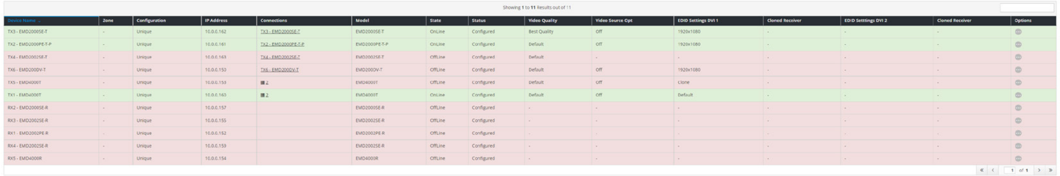
CHAPTER 7: DEVICES

Devices part of the managed domain can be reviewed, upgraded and configured. These actions are performed by clicking the devices' options from the main menu. Figure 7-1 shows the Device—Settings Page. This page shows all the devices that are part of the managed domain.

Boxilla constantly polls devices to determine their state and operational statistics. The state of a device in the table can be:

- Online—means the device is contactable from Boxilla during recent polling cycles;
- Offline—means the device did not respond during any of the last few polling cycles. This can mean the device is powered-down or is not reachable on the network;
- Demo—means the device is a simulated device for demonstration purposes;

Under the Devices drop-down menu on the left of the Dashboard screen, you will see four options: Settings, Upgrades, Global and Statistics. These options are described in the following sections. Click on Settings and the following screen appears.



Showing 1 to 11 Results out of 11

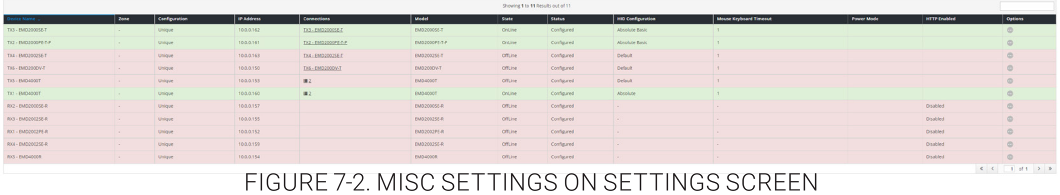
Device Name ⌄	Zone	Configuration	IP Address	Connections	Model	State	Status	Video Quality	Video Source Opt	EDID Settings DVI 1	Cloned Receiver	EDID Setttings DVI 2	Cloned Receiver	Options
TX3 - EMD2000SE-T	-	Unique	10.0.0.162	TX3 - EMD2000SE-T	EMD2000SE-T	OnLine	Configured	Best Quality	Off	1920x1080	-	-	-	⋯
TX2 - EMD2000PE-T-P	-	Unique	10.0.0.161	TX2 - EMD2000PE-T-P	EMD2000PE-T-P	OnLine	Configured	Default	Off	1920x1080	-	-	-	⋯
TX4 - EMD2002SE-T	-	Unique	10.0.0.163	TX4 - EMD2002SE-T	EMD2002SE-T	OffLine	Configured	Default	-	-	-	-	-	⋯
TX6 - EMD200DV-T	-	Unique	10.0.0.150	TX6 - EMD200DV-T	EMD200DV-T	OffLine	Configured	Default	Off	1920x1080	-	-	-	⋯
TX5 - EMD4000T	-	Unique	10.0.0.153	▦ 2	EMD4000T	OffLine	Configured	Default	Off	Clone	-	-	-	⋯
TX1 - EMD4000T	-	Unique	10.0.0.160	▦ 2	EMD4000T	OnLine	Configured	Default	Off	Default	-	-	-	⋯
RX2 - EMD2000SE-R	-	Unique	10.0.0.157		EMD2000SE-R	OffLine	Configured	-	-	-	-	-	-	⋯
RX3 - EMD2002SE-R	-	Unique	10.0.0.155		EMD2002SE-R	OffLine	Configured	-	-	-	-	-	-	⋯
RX1 - EMD2002PE-R	-	Unique	10.0.0.152		EMD2002PE-R	OffLine	Configured	-	-	-	-	-	-	⋯
RX4 - EMD2002SE-R	-	Unique	10.0.0.159		EMD2002SE-R	OffLine	Configured	-	-	-	-	-	-	⋯
RX5 - EMD4000R	-	Unique	10.0.0.154		EMD4000R	OffLine	Configured	-	-	-	-	-	-	⋯

« ‹ 1 of 1 › »

FIGURE 7-1. SETTINGS SCREEN

Click on Video Settings in the middle of this screen to see the Device Name, Configuration, IP Address, Model, State, Status, Video Quality, Video Source Opt, EDID Settings DVI 1, Cloned Receiver, EDID Settings DVI 2, Cloned Receiver and Options for each TX or RX unit.

Click on Misc Settings in the middle of this screen to see the Device Name, Configuration, IP Address, Model, State, Status, HID Configuration, Shared Mouse Timer, Power Mode, HTTP Enabled and Options settings for each TX or RX unit.



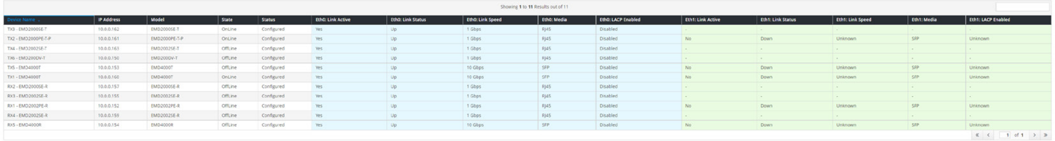
Showing 1 to 11 Results out of 11

Device Name ⌄	Zone	Configuration	IP Address	Connections	Model	State	Status	HID Configuration	Mouse Keyboard Timeout	Power Mode	HTTP Enabled	Options
TX3 - EMD2000SE-T	-	Unique	10.0.0.162	TX3 - EMD2000SE-T	EMD2000SE-T	OnLine	Configured	Absolute Basic	1			⋯
TX2 - EMD2000PE-T-P	-	Unique	10.0.0.161	TX2 - EMD2000PE-T-P	EMD2000PE-T-P	OnLine	Configured	Absolute Basic	1			⋯
TX4 - EMD2002SE-T	-	Unique	10.0.0.163	TX4 - EMD2002SE-T	EMD2002SE-T	OffLine	Configured	Default	1			⋯
TX6 - EMD200DV-T	-	Unique	10.0.0.150	TX6 - EMD200DV-T	EMD200DV-T	OffLine	Configured	Default	1			⋯
TX5 - EMD4000T	-	Unique	10.0.0.153	▦ 2	EMD4000T	OffLine	Configured	Default	1			⋯
TX1 - EMD4000T	-	Unique	10.0.0.160	▦ 2	EMD4000T	OnLine	Configured	Absolute	1			⋯
RX2 - EMD2000SE-R	-	Unique	10.0.0.157		EMD2000SE-R	OffLine	Configured	-	-		Disabled	⋯
RX3 - EMD2002SE-R	-	Unique	10.0.0.155		EMD2002SE-R	OffLine	Configured	-	-		Disabled	⋯
RX1 - EMD2002PE-R	-	Unique	10.0.0.152		EMD2002PE-R	OffLine	Configured	-	-		Disabled	⋯
RX4 - EMD2002SE-R	-	Unique	10.0.0.159		EMD2002SE-R	OffLine	Configured	-	-		Disabled	⋯
RX5 - EMD4000R	-	Unique	10.0.0.154		EMD4000R	OffLine	Configured	-	-		Disabled	⋯

« ‹ 1 of 1 › »

FIGURE 7-2. MISC SETTINGS ON SETTINGS SCREEN

Click on LACP in the middle of this screen to provide additional details about each device's Link Status, including state, speed, media, and if LACP info is detected.



Showing 1 to 11 Results out of 11

Device Name ⌄	IP Address	Model	State	Status	Eth0: Link Active	Eth0: Link Status	Eth0: Link Speed	Eth0: Media	Eth0: LACP Enabled	Eth1: Link Active	Eth1: Link Status	Eth1: Link Speed	Eth1: Media	Eth1: LACP Enabled
TX3 - EMD2000SE-T	10.0.0.162	EMD2000SE-T	OnLine	Configured	Yes	Up	1 Gbps	RJ45	Disabled	-	-	-	-	-
TX2 - EMD2000PE-T-P	10.0.0.161	EMD2000PE-T-P	OnLine	Configured	Yes	Up	1 Gbps	RJ45	Disabled	No	Down	Unknown	SFP	Unknown
TX4 - EMD2002SE-T	10.0.0.163	EMD2002SE-T	OffLine	Configured	Yes	Up	1 Gbps	RJ45	Disabled	-	-	-	-	-
TX6 - EMD200DV-T	10.0.0.150	EMD200DV-T	OffLine	Configured	Yes	Up	1 Gbps	RJ45	Disabled	-	-	-	-	-
TX5 - EMD4000T	10.0.0.153	EMD4000T	OffLine	Configured	Yes	Up	10 Gbps	SFP	Disabled	No	Down	Unknown	SFP	Unknown
TX1 - EMD4000T	10.0.0.160	EMD4000T	OnLine	Configured	Yes	Up	10 Gbps	SFP	Disabled	No	Down	Unknown	SFP	Unknown
RX2 - EMD2000SE-R	10.0.0.157	EMD2000SE-R	OffLine	Configured	Yes	Up	1 Gbps	RJ45	Disabled	-	-	-	-	-
RX3 - EMD2002SE-R	10.0.0.155	EMD2002SE-R	OffLine	Configured	Yes	Up	1 Gbps	RJ45	Disabled	-	-	-	-	-
RX1 - EMD2002PE-R	10.0.0.152	EMD2002PE-R	OffLine	Configured	Yes	Up	1 Gbps	RJ45	Disabled	No	Down	Unknown	SFP	Unknown
RX4 - EMD2002SE-R	10.0.0.159	EMD2002SE-R	OffLine	Configured	Yes	Up	1 Gbps	RJ45	Disabled	-	-	-	-	-
RX5 - EMD4000R	10.0.0.154	EMD4000R	OffLine	Configured	Yes	Up	10 Gbps	SFP	Disabled	No	Down	Unknown	SFP	Unknown

« ‹ 1 of 1 › »

FIGURE 7-3. LACP ON SETTINGS SCREEN

NOTE: A user can configure the HTTP_Enable attribute for Emerald RX devices, but it is not possible to configure the Power Mode setting for Emerald RX devices.

7.1 DEVICES—SETTINGS

You now have the option to configure unique, template or system-wide settings. Here you can:

- Create/edit/delete device templates
- Edit system properties
- Edit individual device settings
- Apply bulk updates to appliances

The configuration of RX and TX settings is managed via an internal workflow reflected in the Status field in the Device Settings screen. Valid values include: Waiting, Configuring, Configured, Failed, Retrieving, Failed_Retrieve and Idle.

Idle – State is pretty much unnoticeable. The appliance gets this state right after it is being managed. Then, after an XML file is pushed to the appliance (as part of the managing process), it changes the state to Retrieving.

Once retrieve is successful, state changes to Configured. Otherwise, it changes to Failed_Retrieve.

When a device is managed, the workflow for the Status field is Retrieving, Configured.

The Configuration field is set to Unique.

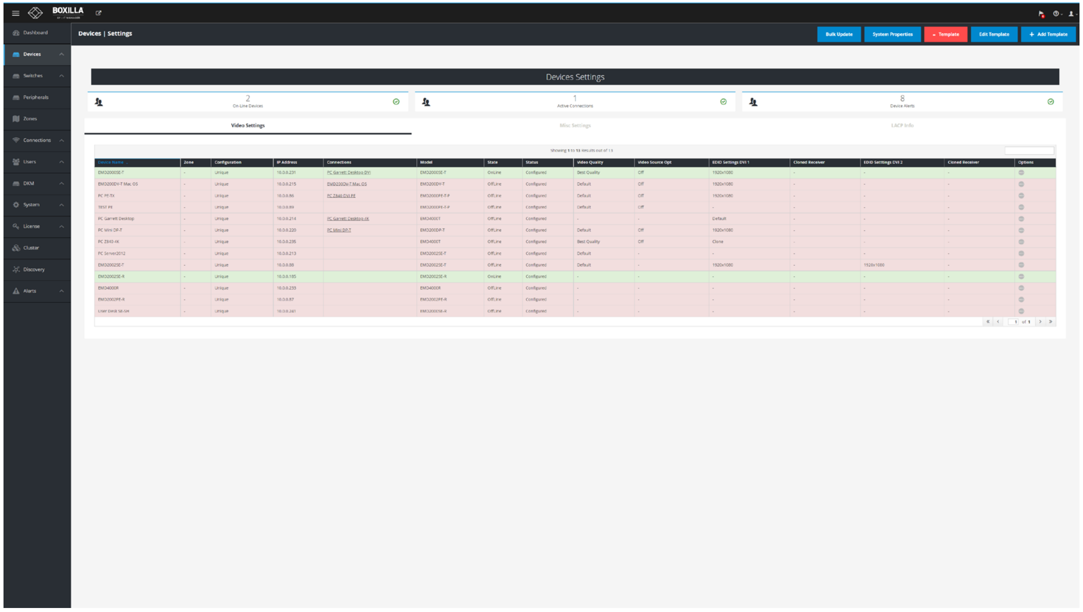
You can change the settings of an individual device (to Unique, Template or System) via the Edit Settings option. The workflow for the Status field here is: Waiting, Configuring, Configured | Failed.

If you Edit a Template, the updated template is applied to all devices that use that Template. The workflow for the Status field here is: Waiting, Configuration, Configuring | Failed.

If you Edit the System Properties, the update System Property is applied to all devices that use the System Property. The workflow for the Status field here is: Waiting, Configuring, Configured | Failed.

You can also apply Bulk updates to devices, e.g., you can apply a Template or System Properties to one or more devices at the same time.

NOTE: Updates to Transmitter devices result in the device rebooting.



Devices Settings

2 On-Line Devices

1 Active Connections

8 Device Alerts

Showing 1 to 13 Results out of 13

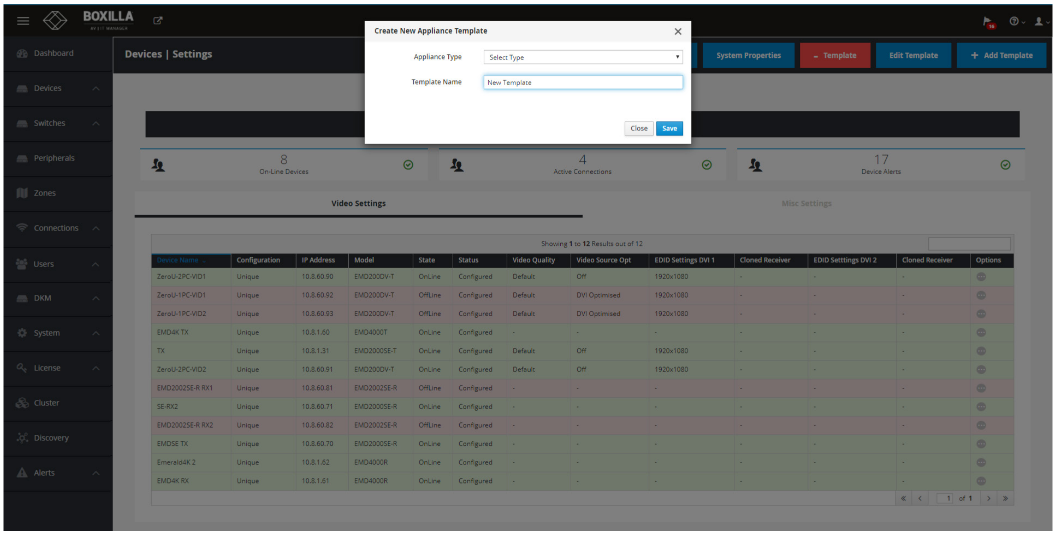
Device Name	Zone	Configuration	IP Address	Connections	Model	State	Status	Video Quality	Video Source Opt	EDID Settings DVI 1	Cloned Receiver	EDID Setttings DVI 2	Cloned Receiver	Options
EMD2000SE-T	-	Unique	10.0.0.231	PC Garrett Desktop DVI	EMD2000SE-T	OnLine	Configured	Best Quality	Off	1920x1080	-	-	-	⋯
EMD200DV-T Mac OS	-	Unique	10.0.0.215	EMD200DV-T Mac OS	EMD200DV-T	OffLine	Configured	Default	Off	1920x1080	-	-	-	⋯
PC PE-TX	-	Unique	10.0.0.86	PC Z840 DVI PE	EMD2000PE-T-P	OffLine	Configured	Default	Off	1920x1080	-	-	-	⋯
TEST PE	-	Unique	10.0.0.89		EMD2000PE-T-P	OffLine	Configured	Default	Off	-	-	-	-	⋯
PC Garrett Desktop	-	Unique	10.0.0.214	PC Garrett Desktop 4K	EMD4000T	OffLine	Configured	-	-	Default	-	-	-	⋯
PC Mini DP-T	-	Unique	10.0.0.220	PC Mini DP-T	EMD200DP-T	OffLine	Configured	Default	Off	1920x1080	-	-	-	⋯
PC Z840 4K	-	Unique	10.0.0.235		EMD4000T	OffLine	Configured	Best Quality	Off	Clone	-	-	-	⋯
PC Server2012	-	Unique	10.0.0.213		EMD2002SE-T	OffLine	Configured	Default	-	-	-	-	-	⋯
EMD2002SE-T	-	Unique	10.0.0.88		EMD2002SE-T	OffLine	Configured	Default	-	1920x1080	-	1920x1080	-	⋯
EMD2002SE-R	-	Unique	10.0.0.185		EMD2002SE-R	OnLine	Configured	-	-	-	-	-	-	⋯
EMD4000R	-	Unique	10.0.0.233		EMD4000R	OffLine	Configured	-	-	-	-	-	-	⋯
EMD2002PE-R	-	Unique	10.0.0.87		EMD2002PE-R	OffLine	Configured	-	-	-	-	-	-	⋯
User Desk SE-SH	-	Unique	10.0.0.241		EMD2000SE-R	OffLine	Configured	-	-	-	-	-	-	⋯

1 of 1

FIGURE 7-4. HIGHLIGHTED INFORMATION ON DEVICE SETTINGS SCREEN

7.1.1 CREATE/EDIT/DELETE DEVICE TEMPLATES

To create a new device template, click on the blue +Add Template button at the top right of the Devices Settings screen. The Create New Appliance Template screen pops up.



Create New Appliance Template

Appliance Type: Select Type

Template Name: New Template

8 On-Line Devices

4 Active Connections

17 Device Alerts

Showing **1** to **12** Results out of 12

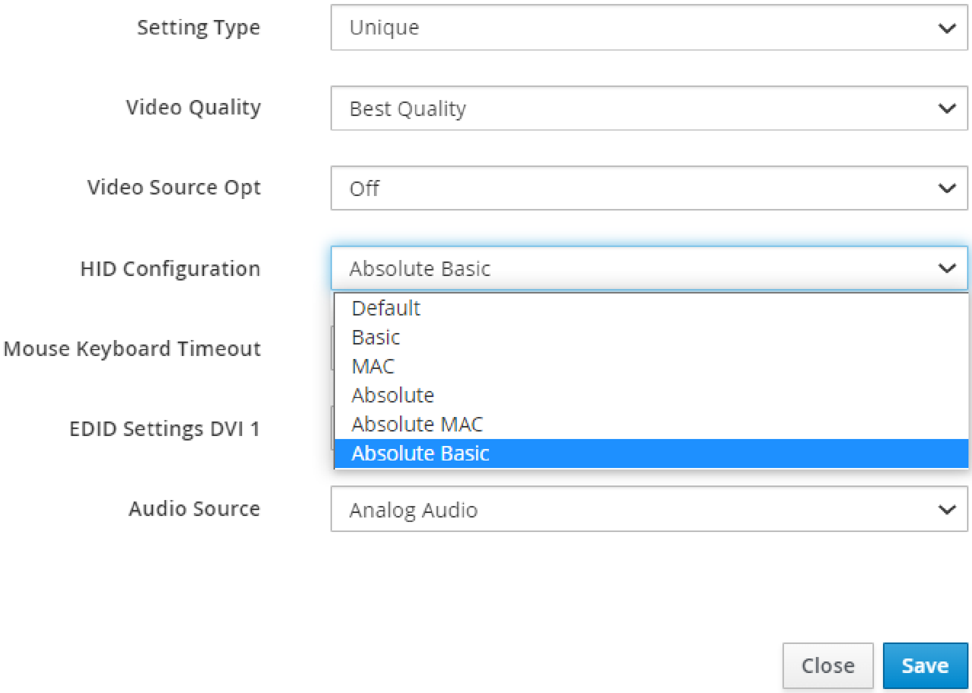
Device Name	Configuration	IP Address	Model	State	Status	Video Quality	Video Source Opt	EDID Settings DVI 1	Cloned Receiver	EDID Setttings DVI 2	Cloned Receiver	Options
ZeroU-2PC-VID1	Unique	10.8.60.90	EMD200DV-T	OnLine	Configured	Default	Off	1920x1080	-	-	-	⋯
ZeroU-1PC-VID1	Unique	10.8.60.92	EMD200DV-T	OffLine	Configured	Default	DVI Optimised	1920x1080	-	-	-	⋯
ZeroU-1PC-VID2	Unique	10.8.60.93	EMD200DV-T	OffLine	Configured	Default	DVI Optimised	1920x1080	-	-	-	⋯
EMD4K TX	Unique	10.8.1.60	EMD4000T	OnLine	Configured	-	-	-	-	-	-	⋯
TX	Unique	10.8.1.31	EMD2000SE-T	OnLine	Configured	Default	Off	1920x1080	-	-	-	⋯
ZeroU-2PC-VID2	Unique	10.8.60.91	EMD200DV-T	OnLine	Configured	Default	Off	1920x1080	-	-	-	⋯
EMD2002SE-R RX1	Unique	10.8.60.81	EMD2002SE-R	OffLine	Configured	-	-	-	-	-	-	⋯
SE-RX2	Unique	10.8.60.71	EMD2000SE-R	OnLine	Configured	-	-	-	-	-	-	⋯
EMD2002SE-R RX2	Unique	10.8.60.82	EMD2002SE-R	OffLine	Configured	-	-	-	-	-	-	⋯
EMDSE TX	Unique	10.8.60.70	EMD2000SE-R	OnLine	Configured	-	-	-	-	-	-	⋯
Emerald4K 2	Unique	10.8.1.62	EMD4000R	OnLine	Configured	-	-	-	-	-	-	⋯
EMD4K RX	Unique	10.8.1.61	EMD4000R	OnLine	Configured	-	-	-	-	-	-	⋯

« ‹ 1 of **1** › »

FIGURE 7-5. CREATE NEW DEVICE TEMPLATES SCREEN

The Create New Device Templates screen fields are described next.

- Appliance Type: Choose Transmitter or Receiver.
- Template Name: Type in a unique name for the template.
- Video Quality: Select from these options: Best Quality, 2, Default, 4, or Best Compression.
- Video Source Opt: Select from Off, DVI Optimized, VGA - High-Performance, VGA - Optimized, VGA - Low Bandwidth (only applied in case of a single-head transmitter).
- HID Configuration: Select from Default, Basic, MAC, Absolute, or Absolute MAC. The Absolute Mouse feature can be used to enable interoperability with KM switches with built-in “Glide & Switch” capability such as ServSwitchTC and Freedom. If the target systems are MAC OS, you can use the Absolute MAC setting for best user experience.



Setting Type: Unique

Video Quality: Best Quality

Video Source Opt: Off

HID Configuration: Absolute Basic

Mouse Keyboard Timeout

EDID Settings DVI 1

Audio Source: Analog Audio

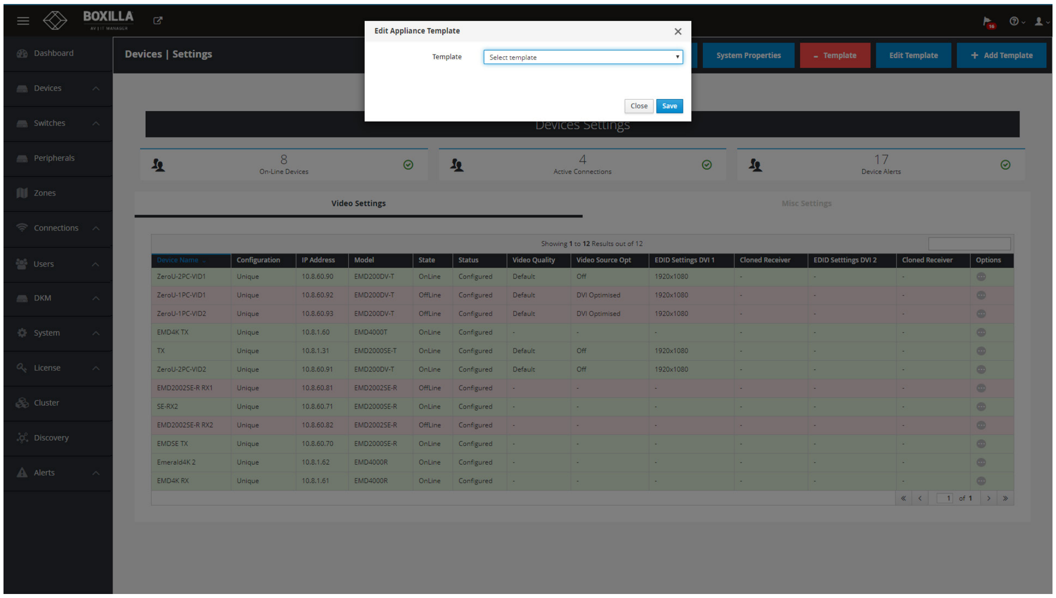
FIGURE 7-6. EDIT SETTINGS POPUP SCREEN

- Mouse Keyboard Timeout: Choose an option from 0 to 5 seconds.
- EDID Settings DVI 1: Choose from 1920 x 1080, 1920 x 1200, 1680 x 1050, 1280 x 1024, or 1024 x 768.
- EDID Settings DVI 2: Choose from 1920 x 1080, 1920 x 1200, 1680 x 1050, 1280 x 1024, or 1024 x 768.

To save the settings, click the Save button. Otherwise, click the Cancel button.

To edit a device template, click on the blue Edit Template button at the top of the Devices —> Settings screen. The Edit Appliance Template screen pops up. Select the desired template from the drop-down menu, then select the desired options for the Template Name, Video Quality, Video Source Opt, HID Configuration, Mouse Keyboard Timeout, EDID Settings DVI 1 and EDID Settings DVI 2 settings. Click the Save button to save your changes, or click the Cancel button to cancel the settings.

NOTE: The EDID of the remote display can also be copied instead of using the built-in resolutions. This can be done from the receiver menu by connecting to the transmitter and cloning the EDID.



Devices | Settings

Edit Appliance Template

Template: Select template

Close Save

8 On-Line Devices

4 Active Connections

17 Device Alerts

Showing 1 to 12 Results out of 12

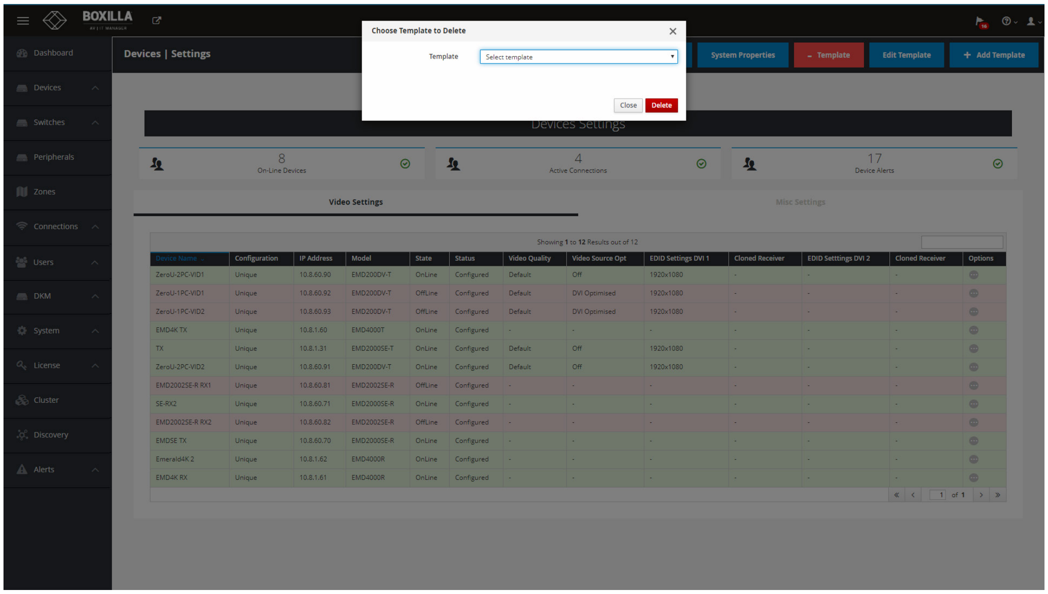
Device Name	Configuration	IP Address	Model	State	Status	Video Quality	Video Source Opt	EDID Settings DVI 1	Cloned Receiver	EDID Setttings DVI 2	Cloned Receiver	Options
ZeroU-2PC-VID1	Unique	10.8.60.90	EMD200DV-T	OnLine	Configured	Default	Off	1920x1080	-	-	-	⋯
ZeroU-1PC-VID1	Unique	10.8.60.92	EMD200DV-T	OffLine	Configured	Default	DVI Optimised	1920x1080	-	-	-	⋯
ZeroU-1PC-VID2	Unique	10.8.60.93	EMD200DV-T	OffLine	Configured	Default	DVI Optimised	1920x1080	-	-	-	⋯
EMD4K TX	Unique	10.8.1.60	EMD4000T	OnLine	Configured	-	-	-	-	-	-	⋯
TX	Unique	10.8.1.31	EMD2000SE-T	OnLine	Configured	Default	Off	1920x1080	-	-	-	⋯
ZeroU-2PC-VID2	Unique	10.8.60.91	EMD200DV-T	OnLine	Configured	Default	Off	1920x1080	-	-	-	⋯
EMD2002SE-R RX1	Unique	10.8.60.81	EMD2002SE-R	OffLine	Configured	-	-	-	-	-	-	⋯
SE-RX2	Unique	10.8.60.71	EMD2000SE-R	OnLine	Configured	-	-	-	-	-	-	⋯
EMD2002SE-R RX2	Unique	10.8.60.82	EMD2002SE-R	OffLine	Configured	-	-	-	-	-	-	⋯
EMDSE TX	Unique	10.8.60.70	EMD2000SE-R	OnLine	Configured	-	-	-	-	-	-	⋯
Emerald4K 2	Unique	10.8.1.62	EMD4000R	OnLine	Configured	-	-	-	-	-	-	⋯
EMD4K RX	Unique	10.8.1.61	EMD4000R	OnLine	Configured	-	-	-	-	-	-	⋯

« ‹ 1 of 1 › »

FIGURE 7-7. EDIT TEMPLATE SCREEN

To delete a device template, click on the red -Template button at the top of the Devices —> Settings screen. The Delete Appliance Template screen pops up. Select the template you want to delete from the drop-down menu, then click the Delete button to delete the template, or click the Cancel button to cancel the deletion.

NOTE: You can only delete a template that is currently not in use.



Devices | Settings

Choose Template to Delete

Template: Select template

Close Delete

8 On-Line Devices

4 Active Connections

17 Device Alerts

Showing 1 to 12 Results out of 12

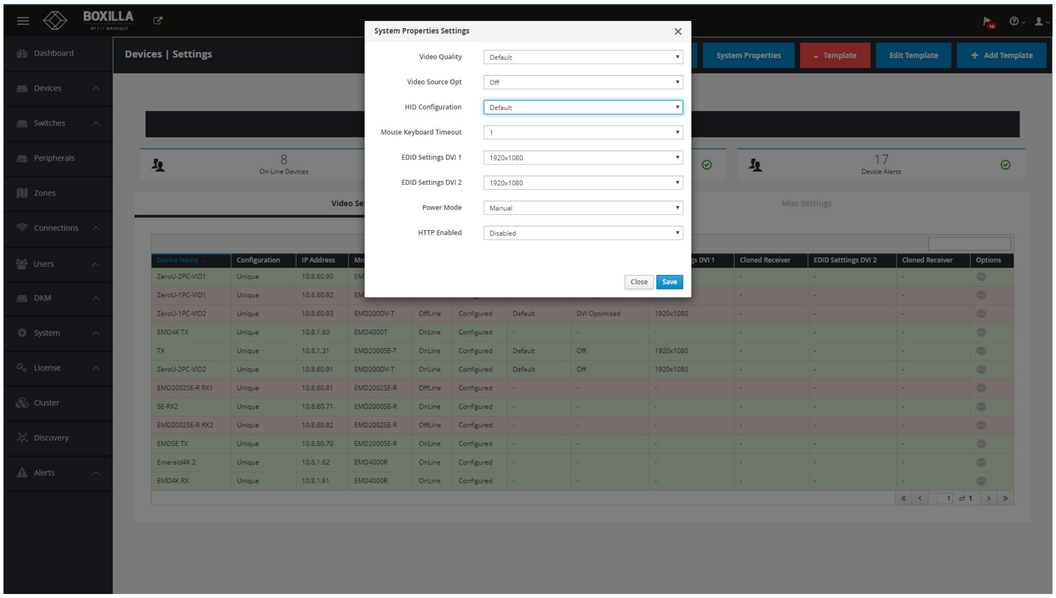
Device Name	Configuration	IP Address	Model	State	Status	Video Quality	Video Source Opt	EDID Settings DVI 1	Cloned Receiver	EDID Setttings DVI 2	Cloned Receiver	Options
ZeroU-2PC-VID1	Unique	10.8.60.90	EMD200DV-T	OnLine	Configured	Default	Off	1920x1080	-	-	-	⋯
ZeroU-1PC-VID1	Unique	10.8.60.92	EMD200DV-T	OffLine	Configured	Default	DVI Optimised	1920x1080	-	-	-	⋯
ZeroU-1PC-VID2	Unique	10.8.60.93	EMD200DV-T	OffLine	Configured	Default	DVI Optimised	1920x1080	-	-	-	⋯
EMD4K TX	Unique	10.8.1.60	EMD4000T	OnLine	Configured	-	-	-	-	-	-	⋯
TX	Unique	10.8.1.31	EMD2000SE-T	OnLine	Configured	Default	Off	1920x1080	-	-	-	⋯
ZeroU-2PC-VID2	Unique	10.8.60.91	EMD200DV-T	OnLine	Configured	Default	Off	1920x1080	-	-	-	⋯
EMD2002SE-R RX1	Unique	10.8.60.81	EMD2002SE-R	OffLine	Configured	-	-	-	-	-	-	⋯
SE-RX2	Unique	10.8.60.71	EMD2000SE-R	OnLine	Configured	-	-	-	-	-	-	⋯
EMD2002SE-R RX2	Unique	10.8.60.82	EMD2002SE-R	OffLine	Configured	-	-	-	-	-	-	⋯
EMDSE TX	Unique	10.8.60.70	EMD2000SE-R	OnLine	Configured	-	-	-	-	-	-	⋯
Emerald4K 2	Unique	10.8.1.62	EMD4000R	OnLine	Configured	-	-	-	-	-	-	⋯
EMD4K RX	Unique	10.8.1.61	EMD4000R	OnLine	Configured	-	-	-	-	-	-	⋯

« ‹ 1 of 1 › »

FIGURE 7-8. DELETE TEMPLATE SCREEN

7.1.2 EDIT SYSTEM PROPERTIES

To edit the system properties, click on the blue System Properties button at the top right of the Devices Settings screen. The System Properties Settings screen with editable options pops up. Changes can be saved or canceled.



System Properties Settings

Video Quality: Default
Video Source Opt: Off
HID Configuration: Default
Mouse Keyboard Timeout: 1
EDID Settings DVI 1: 1920x1080
EDID Settings DVI 2: 1920x1080
Power Mode: Manual
HTTP Enabled: Disabled

FIGURE 7-9. EDIT SYSTEM PROPERTIES SCREEN

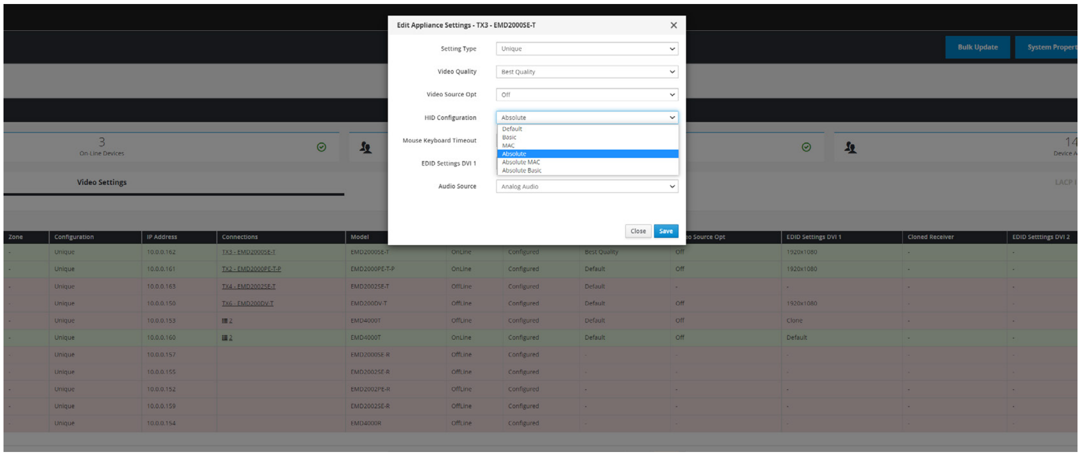
- Video Quality: Select from these options: Best Quality, 2, Default, 4, or Best Compression.
- Video Source Opt: Select from Off, DVI Optimized, VGA - High-Performance, VGA - Optimized, VGA - Low Bandwidth (only applied in the case of a single-head transmitter).
- HID Configuration: Select from Default, Basic, MAC, Absolute, Basic Absolute, or Absolute MAC.

Absolute mouse:

This feature can be used to enable interoperability with KM switches with built-in "Glide & Switch" capability such as ServSwitchTC and Freedom. For normal usage, where mouse is directly connected to Receiver, then the Default or Basic options should be used.

If the target computers are MAC OS, you can use the Absolute MAC HID configuration for the best user experience.

OSD option:



Edit Appliance Settings - TX3 - EMD2000SE-T

Setting Type: Unique

Video Quality: Best Quality

Video Source Opt: Off

HID Configuration: Absolute

Mouse Keyboard Timeout

EDID Settings DVI 1

Audio Source: Analog Audio

Zone	Configuration	IP Address	Connections	Model				o Source Opt	EDID Settings DVI 1	Cloned Receiver	EDID Setttings DVI 2
-	Unique	10.0.0.162	TX3 - EMD2000SE-T	EMD2000SE-T	OnLine	Configured	Best Quality	Off	1920x1080	-	-
-	Unique	10.0.0.161	TX2 - EMD2000PE-T-P	EMD2000PE-T-P	OnLine	Configured	Default	Off	1920x1080	-	-
-	Unique	10.0.0.163	TX4 - EMD2002SE-T	EMD2002SE-T	OffLine	Configured	Default	-	-	-	-
-	Unique	10.0.0.150	TX6 - EMD200DV-T	EMD200DV-T	OffLine	Configured	Default	Off	1920x1080	-	-
-	Unique	10.0.0.153	☰ 2	EMD4000T	OffLine	Configured	Default	Off	Clone	-	-
-	Unique	10.0.0.160	☰ 2	EMD4000T	OnLine	Configured	Default	Off	Default	-	-
-	Unique	10.0.0.157		EMD2000SE-R	OffLine	Configured	-	-	-	-	-
-	Unique	10.0.0.155		EMD2002SE-R	OffLine	Configured	-	-	-	-	-
-	Unique	10.0.0.152		EMD2002PE-R	OffLine	Configured	-	-	-	-	-
-	Unique	10.0.0.159		EMD2002SE-R	OffLine	Configured	-	-	-	-	-
-	Unique	10.0.0.154		EMD4000R	OffLine	Configured	-	-	-	-	-

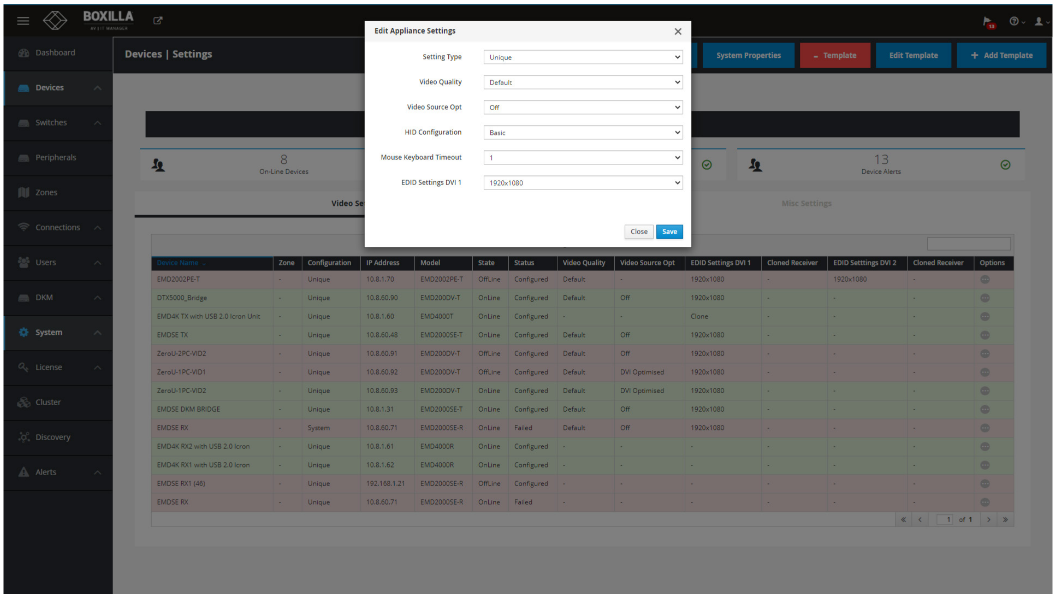
FIGURE 7-10. ABSOLUTE MOUSE SCREEN

- Mouse Keyboard Timeout: Choose an option from 0 to 5 seconds.
- EDID Settings DVI 1: Choose from 1920 x 1080, 1920 x 1200, 1680 x 1050, 1280 x 1024, or 1024 x 768.
- EDID Settings DVI 2: Choose from 1920 x 1080, 1920 x 1200, 1680 x 1050, 1280 x 1024, or 1024 x 768.
- Power Mode: Choose Manual or Auto.
- HTTP Enabled: Choose Enabled or Disabled.

To save the settings, click the Save button. Otherwise, click the Cancel button.

7.1.3 EDIT INDIVIDUAL DEVICE SETTINGS

To edit the individual device settings, click on the Video Settings or Misc Settings in the middle of the Devices page —> Network Settings screen. Then click on the Device Name that you want to edit. Select each of the settings you want to change from the drop-down boxes. Options include Setting Type, Video Quality, Video Source, HID Configuration, Mouse Keyboard Timeout, EDID Settings DVI 1 and EDID Settings DVI 2. Click Save, or click Cancel to cancel the changes without saving.



Edit Appliance Settings

Setting Type: Unique
Video Quality: Default
Video Source Opt: Off
HID Configuration: Basic
Mouse Keyboard Timeout: 1
EDID Settings DVI 1: 1920x1080

Close | Save

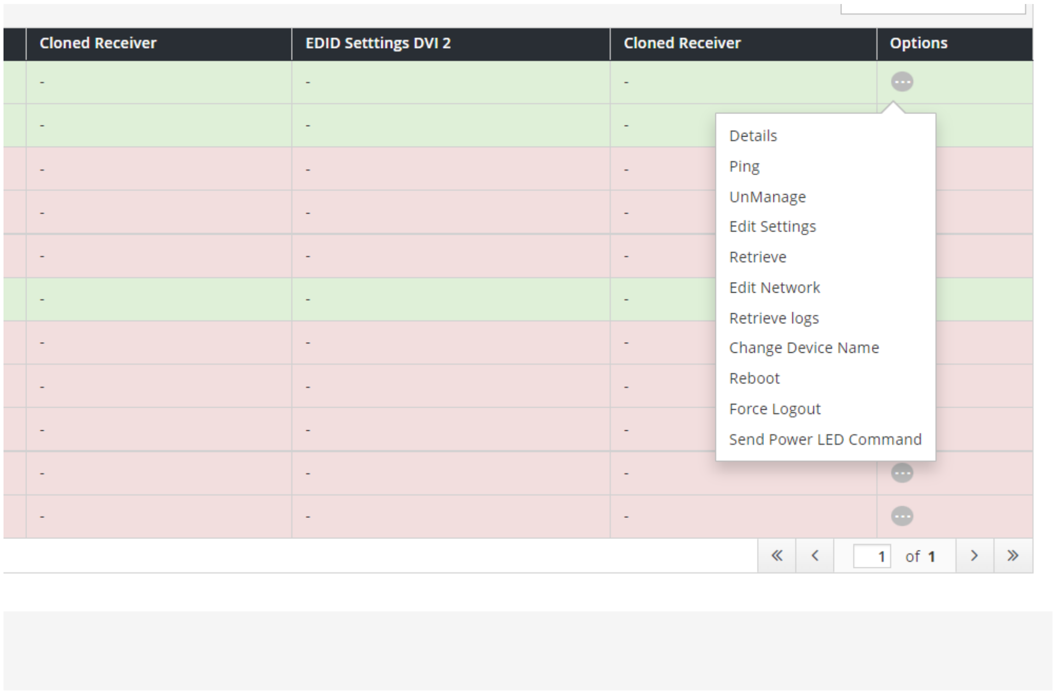
Device Name	Zone	Configuration	IP Address	Model	State	Status	Video Quality	Video Source Opt	EDID Settings DVI 1	Cloned Receiver	EDID Setttings DVI 2	Cloned Receiver	Options
EMD2002PE-T	-	Unique	10.8.1.70	EMD2002PE-T	OffLine	Configured	Default	-	1920x1080	-	1920x1080	-	•••
DTX5000_Bridge	-	Unique	10.8.60.90	EMD200DV-T	OnLine	Configured	Default	Off	1920x1080	-	-	-	•••
EMD4K TX with USB 2.0 Icron Unit	-	Unique	10.8.1.60	EMD4000T	OnLine	Configured	-	-	Clone	-	-	-	•••
EMDSE TX	-	Unique	10.8.60.48	EMD2000SE-T	OnLine	Configured	Default	Off	1920x1080	-	-	-	•••
ZeroU-2PC-VID2	-	Unique	10.8.60.91	EMD200DV-T	OffLine	Configured	Default	Off	1920x1080	-	-	-	•••
ZeroU-1PC-VID1	-	Unique	10.8.60.92	EMD200DV-T	OffLine	Configured	Default	DVI Optimised	1920x1080	-	-	-	•••
ZeroU-1PC-VID2	-	Unique	10.8.60.93	EMD200DV-T	OnLine	Configured	Default	DVI Optimised	1920x1080	-	-	-	•••
EMDSE DKM BRIDGE	-	Unique	10.8.1.31	EMD2000SE-T	OnLine	Configured	Default	Off	1920x1080	-	-	-	•••
EMDSE RX	-	System	10.8.60.71	EMD2000SE-R	OnLine	Failed	Default	Off	1920x1080	-	-	-	•••
EMD4K RX2 with USB 2.0 Icron	-	Unique	10.8.1.61	EMD4000R	OnLine	Configured	-	-	-	-	-	-	•••
EMD4K RX1 with USB 2.0 Icron	-	Unique	10.8.1.62	EMD4000R	OnLine	Configured	-	-	-	-	-	-	•••
EMDSE RX1 (46)	-	Unique	192.168.1.21	EMD2000SE-R	OffLine	Configured	-	-	-	-	-	-	•••
EMDSE RX	-	Unique	10.8.60.71	EMD2000SE-R	OnLine	Failed	-	-	-	-	-	-	•••

1 of 1

FIGURE 7-11. EDIT INDIVIDUAL DEVICE SETTINGS SCREEN

An individual device can have various operations performed on it by clicking on the "•••" icon on the row for the device as shown in Figure 7-9. These are:

- Details — get summary details on the device, including its Network configuration, Operational Status, Firmware Version and Serial Number
- Ping — tests the reachability of the device on the network
- Edit Settings — Edit device settings
- Retrieve — Retrieve device settings
- Force Logout — logs out the current user attached to this unit (if any)
- UnManage — removes the device from the managed domain and restores the device back to factory defaults
- Change Device Name — allows the network settings to be changed
- Change Device Zone — allows the Zone setting to be changed or removed from this unit.
- Reboot — power cycles the device
- Send Power LED Command — allows the flashing of the onboard LED of the TX/RX to quickly identify them physically

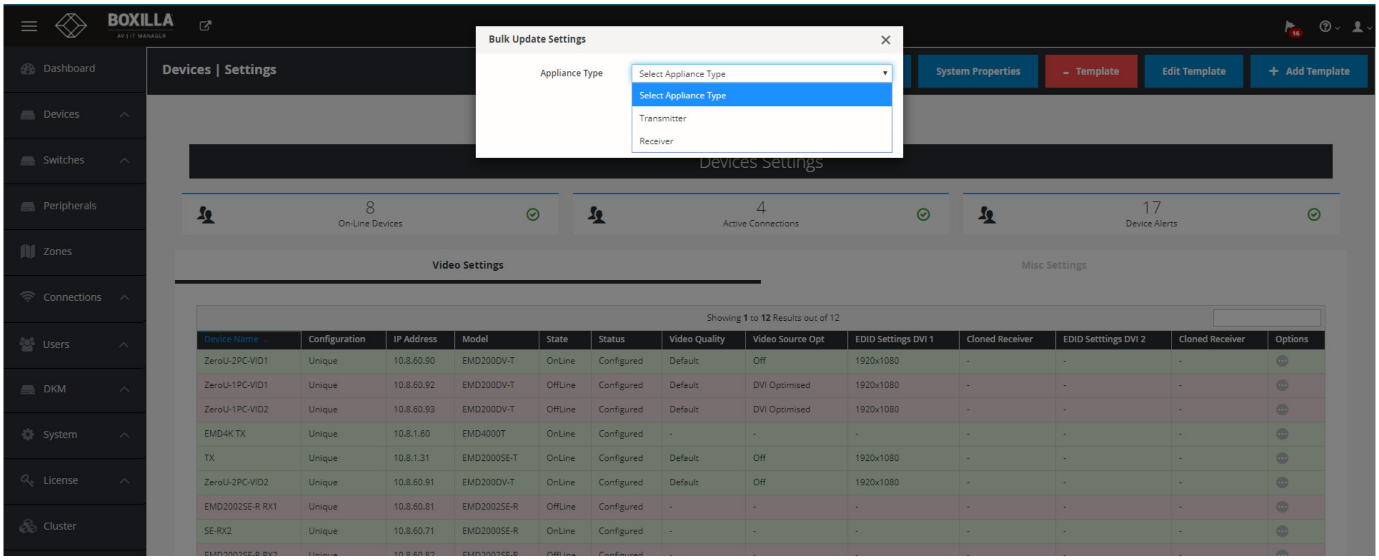


	Cloned Receiver	EDID Setttings DVI 2	Cloned Receiver	Options
	-	-	-	
	-	-	-	
	-	-	-	
	-	-	-	
	-	-	-	
	-	-	-	
	-	-	-	
	-	-	-	
	-	-	-	
	-	-	-	
	-	-	-	

FIGURE 7-12. DEVICE OPTIONS

7.1.4 APPLY BULK UPDATE SETTINGS

To update the individual device settings all at once, click on the Bulk Update button in the middle of the Devices —> Settings screen. From the drop-down menu, select the appliance type: Transmitter or Receiver. Click the Save button to apply the updates to all Transmitters or all Receivers, or click cancel to Cancel without saving.



Bulk Update Settings

Appliance Type: Select Appliance Type

- Select Appliance Type
- Transmitter
- Receiver

Showing 1 to 12 Results out of 12

Device Name	Configuration	IP Address	Model	State	Status	Video Quality	Video Source Opt	EDID Settings DVI 1	Cloned Receiver	EDID Setttings DVI 2	Cloned Receiver	Options
ZeroU-2PC-VID1	Unique	10.8.60.90	EMD200DV-T	OnLine	Configured	Default	Off	1920x1080	-	-	-	
ZeroU-1PC-VID1	Unique	10.8.60.92	EMD200DV-T	OffLine	Configured	Default	DVI Optimised	1920x1080	-	-	-	
ZeroU-1PC-VID2	Unique	10.8.60.93	EMD200DV-T	OffLine	Configured	Default	DVI Optimised	1920x1080	-	-	-	
EMD4K TX	Unique	10.8.1.60	EMD4000T	OnLine	Configured	-	-	-	-	-	-	
TX	Unique	10.8.1.31	EMD2000SE-T	OnLine	Configured	Default	Off	1920x1080	-	-	-	
ZeroU-2PC-VID2	Unique	10.8.60.91	EMD200DV-T	OnLine	Configured	Default	Off	1920x1080	-	-	-	
EMD2002SE-R RX1	Unique	10.8.60.81	EMD2002SE-R	OffLine	Configured	-	-	-	-	-	-	
SE-RX2	Unique	10.8.60.71	EMD2000SE-R	OnLine	Configured	-	-	-	-	-	-	
EMD2002SE-R RX2	Unique	10.8.60.82	EMD2002SE-R	OffLine	Configured	-	-	-	-	-	-	

FIGURE 7-13. BULK UPDATE SETTINGS SCREEN

7.2 DEVICES—GROUPS

The purpose of the bonding feature (described in Section 11.1.2) is to switch multiple receivers to multiple connections quickly and simply from one user station. A typical example is where a user has a dual head 4K system; the user will have two 4K monitors and 4K receivers on their desk but only one keyboard and mouse. The user will select the "bonded connection" from their OSD and both receivers (up to 8 receivers in a Bonded Connection) will switch to their pre-configured 4K transmitters. Typically this will be set up in extended desktop and the user can move mouse and keyboard activity between both screens. We described 2 head setup above but the same applies for up to 8 bonded connections.

With Boxilla, it is possible to create a Bonded Connection. This is a group of 2 to 8 connections that have been added to form a "bonded connection." The bonded connection is treated just like any other connection, where users must be assigned access to this connection. A bonded connection can be launched on any bonded receiver. Each connection in a group is assigned a number in order 1 to 8 and these will be matched with the receiver with the receiver bonded group.

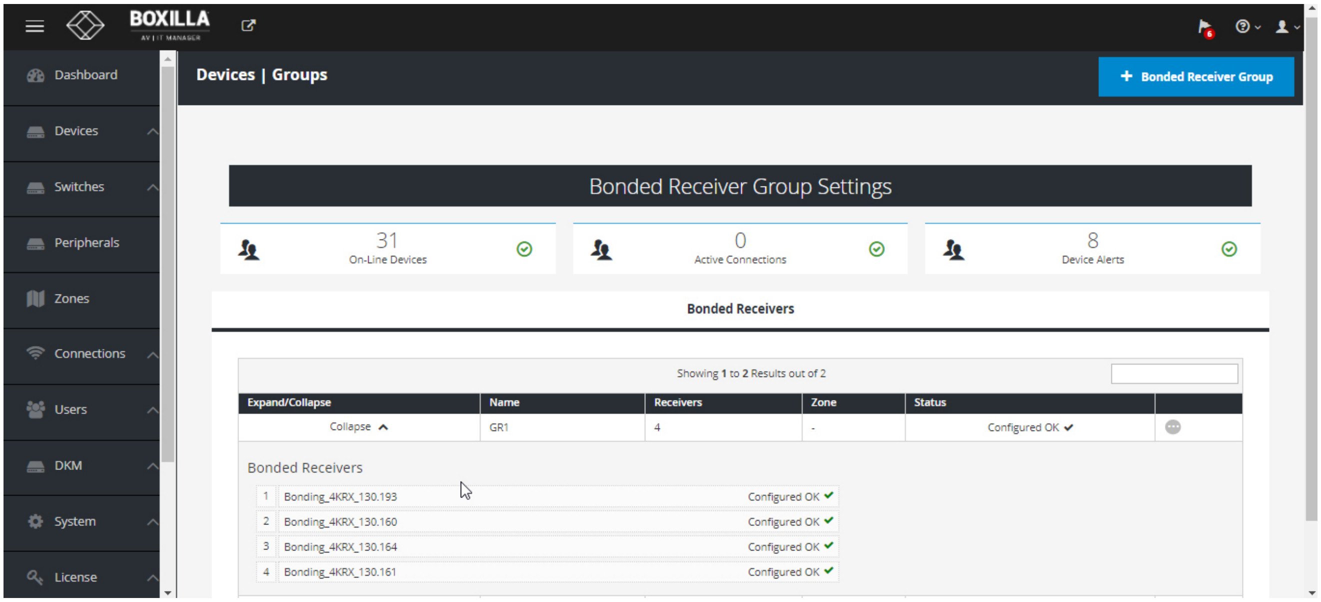
You can also create a Receiver Bonded Group. This is a group of 2 to 8 Receivers that have been added to a group to set up bonding. Their order in the group is critical as they will be matched with a connection in a connection group based on that order (1 to 8).

NOTE: A Receiver device can only be assigned to 1 Bonded Receiver Group.

All receiver types can be mixed and matched within a "receiver bonded group" and again standard interoperability rules will apply.

NOTE: We recommend using a Glide and Switch solution if you want to use one keyboard and mouse across multiple systems.

NOTE: All connections within a bonded connection group and the bonded connection group itself must be in the same zone.



Devices | Groups

Bonded Receiver Group Settings

31 On-Line Devices

0 Active Connections

8 Device Alerts

Bonded Receivers

Showing **1** to **2** Results out of 2

Expand/Collapse	Name	Receivers	Zone	Status	
Collapse ^	GR1	4	-	Configured OK ✓	⋯

Bonded Receivers

1	Bonding_4KRX_130.193	Configured OK ✓
2	Bonding_4KRX_130.160	Configured OK ✓
3	Bonding_4KRX_130.164	Configured OK ✓
4	Bonding_4KRX_130.161	Configured OK ✓

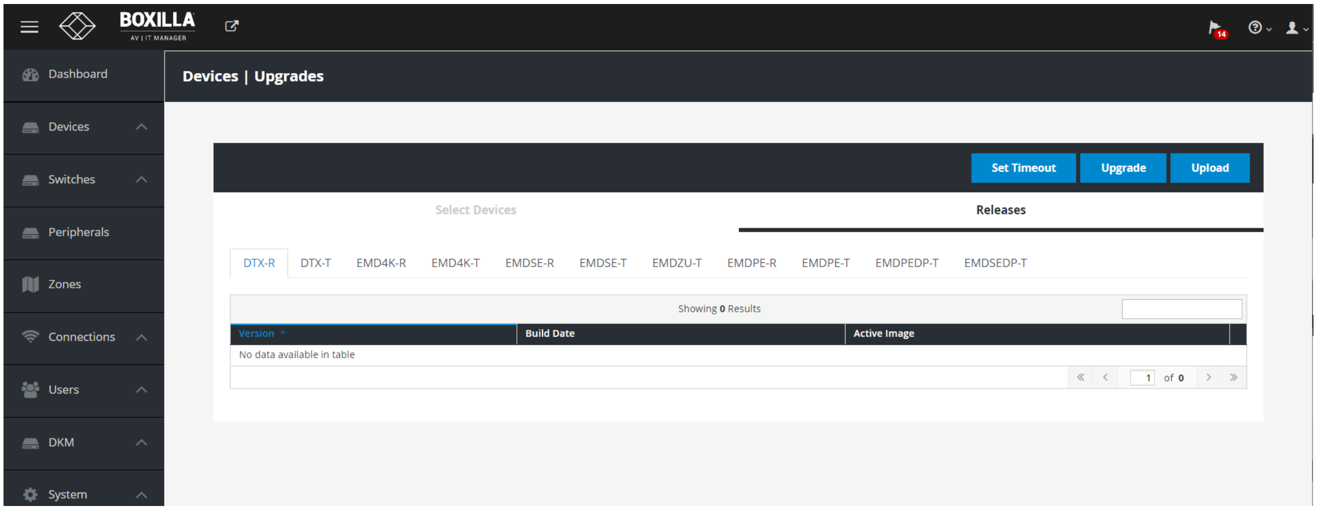
FIGURE 7-14. DEVICES —> GROUPS

7.3 DEVICES—UPGRADE

Boxilla centrally upgrades devices that are part of its managed domain. The administrator performs this via the Devices— Upgrade page shown in Figure 7-14. Firmware is extremely important since not all versions are compatible with other parts of the system if they are not on the same version. A RemoteApp release is specific to what firmware it is compatible with.

7.3.1 DEVICES— UPGRADE—RELEASES

The Releases tab shows the list of available versions of firmware that can be used to upgrade devices. The administration selects the firmware to be used for upgrades. To select a specific firmware release, click the "Activate" button for the specific version of firmware from the Release options ("•••" icon). For Emerald or InvisaPC, this needs to be done for both Receivers (DTX-R, EMD4K-R, or EMDSE-R) and Transmitters (DTX-T, EMD4K-T, EMDSE-T, or EMDDV-T).



Version	Build Date	Active Image
No data available in table		

FIGURE 7-15. DEVICE UPGRADE PAGE

The Administrator loads a new version of firmware by clicking on the "Upload" button on the page and choosing the file(s) to be uploaded. The upload file can be stored anywhere the client browser can access (on local hard-drive, USB thumb-drive, a network file, etc.). Single and Bulk uploads are supported. This new firmware version will be added to appropriate Device list (i.e. Receiver or Transmitter list).

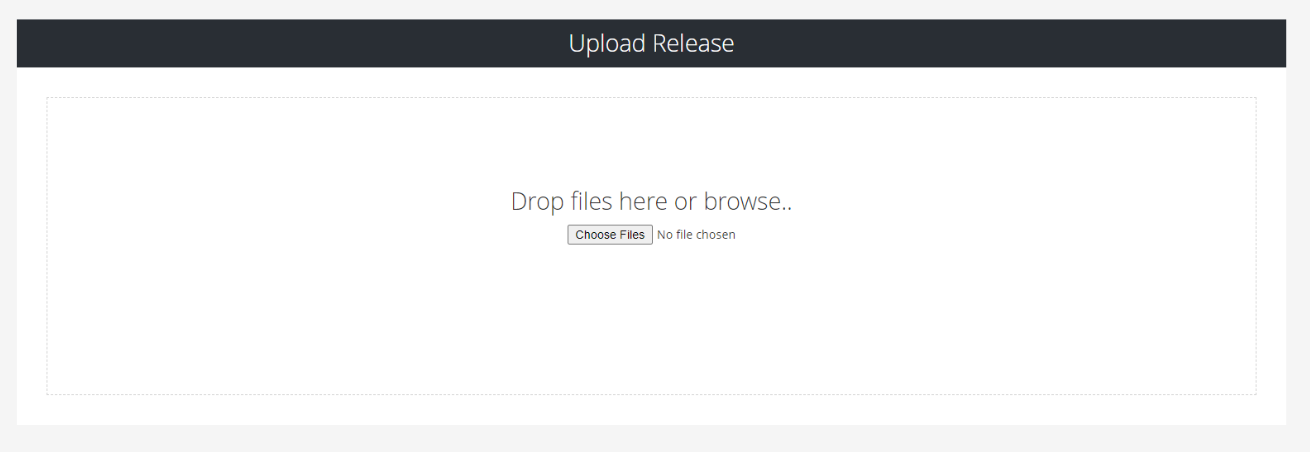


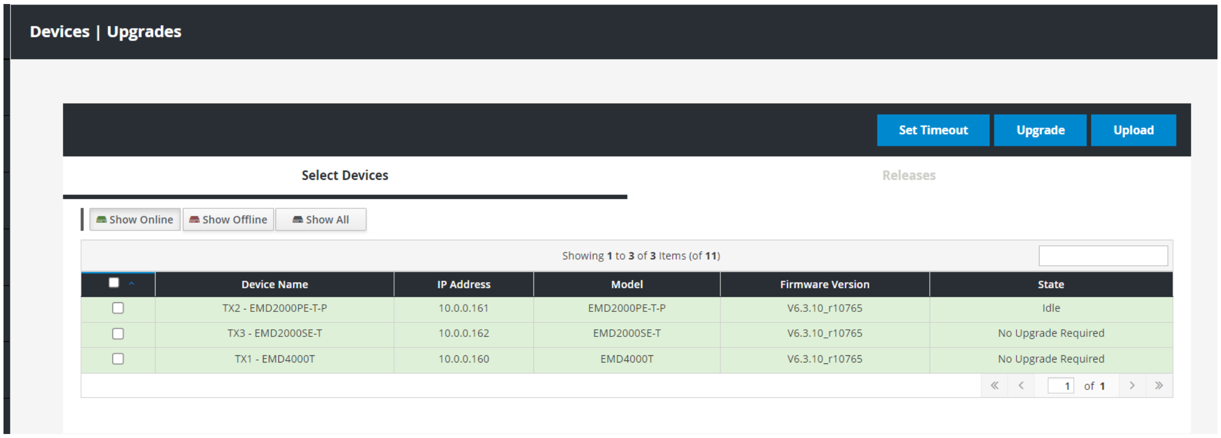
FIGURE 7-16. UPLOAD RELEASE PAGE

To delete a firmware version, the administrator just needs to click on the "delete" option for that release.

7.3.2 DEVICES— UPGRADE—SELECT DEVICES

The administrator needs to select devices to be upgraded to the active firmware versions. The "Select Devices" tab provides a table of all managed devices and allows the administrator to define devices to be upgraded.

The State column shows which devices do not match the active firmware version selected—by showing "Mis-match to Active Firmware Version." Devices with firmware that match the active firmware version selection will show a "No Upgrade Required" state. The "Idle" state refers to devices that have recently been managed, where no version information has been retrieved from the devices for upgrade purposes.



Showing **1** to **3** of **3** Items (of **11**)

□	Device Name	IP Address	Model	Firmware Version	State
□	TX2 - EMD2000PE-T-P	10.0.0.161	EMD2000PE-T-P	V6.3.10_r10765	Idle
□	TX3 - EMD2000SE-T	10.0.0.162	EMD2000SE-T	V6.3.10_r10765	No Upgrade Required
□	TX1 - EMD4000T	10.0.0.160	EMD4000T	V6.3.10_r10765	No Upgrade Required

FIGURE 7-17. DEVICE UPGRADE SELECTION

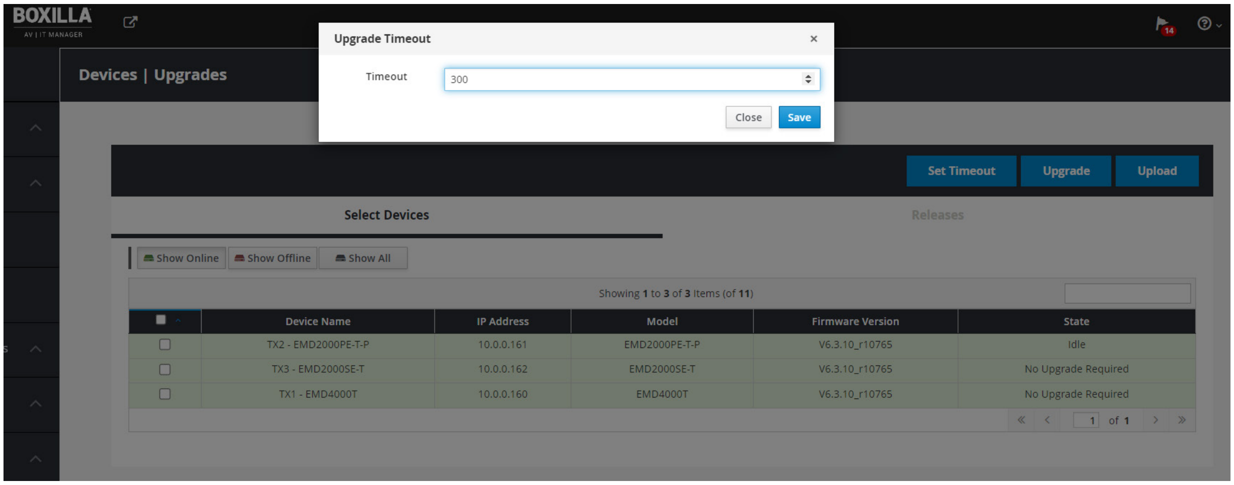
Once the administrator has selected devices to be upgraded (typically all devices that mis-match the active firmware version), the administrator clicks the Upgrade button on the page to initiate the upgrade. All devices can be selected by clicking the tick-box on the top of the column.

The Upgrade button is clicked to initiate the upgrade of all selected devices. Devices that match the "active" firmware version will return "No Upgrade Required" and no upgrade will take place. The rest of the selected devices will be upgraded with various "states" of upgrade being communicated to the administrator during the upgrade process.

NOTE: We recommend that the administrator not move to a different page once starting an upgrade to allow the upgrade process to be monitored. It the administrator does change to a different page, the upgrade will continue in the background. What is mandatory is that Boxilla and devices being upgraded stay powered up.

7.3.3 DEVICES— UPGRADE—TIMEOUT

Set Timeout button provides the option to configure the Upgrade Timeout period for appliances. This option is useful when upgrading appliances over slow network links where the Upgrade Timeout value may need to be extended. The default Upgrade Timeout Value is set to 300 seconds while the maximum configurable value is 1800 seconds.



Upgrade Timeout

Timeout: 300

Showing 1 to 3 of 3 Items (of 11)

□	Device Name	IP Address	Model	Firmware Version	State
□	TX2 - EMD2000PE-T-P	10.0.0.161	EMD2000PE-T-P	V6.3.10_r10765	Idle
□	TX3 - EMD2000SE-T	10.0.0.162	EMD2000SE-T	V6.3.10_r10765	No Upgrade Required
□	TX1 - EMD4000T	10.0.0.160	EMD4000T	V6.3.10_r10765	No Upgrade Required

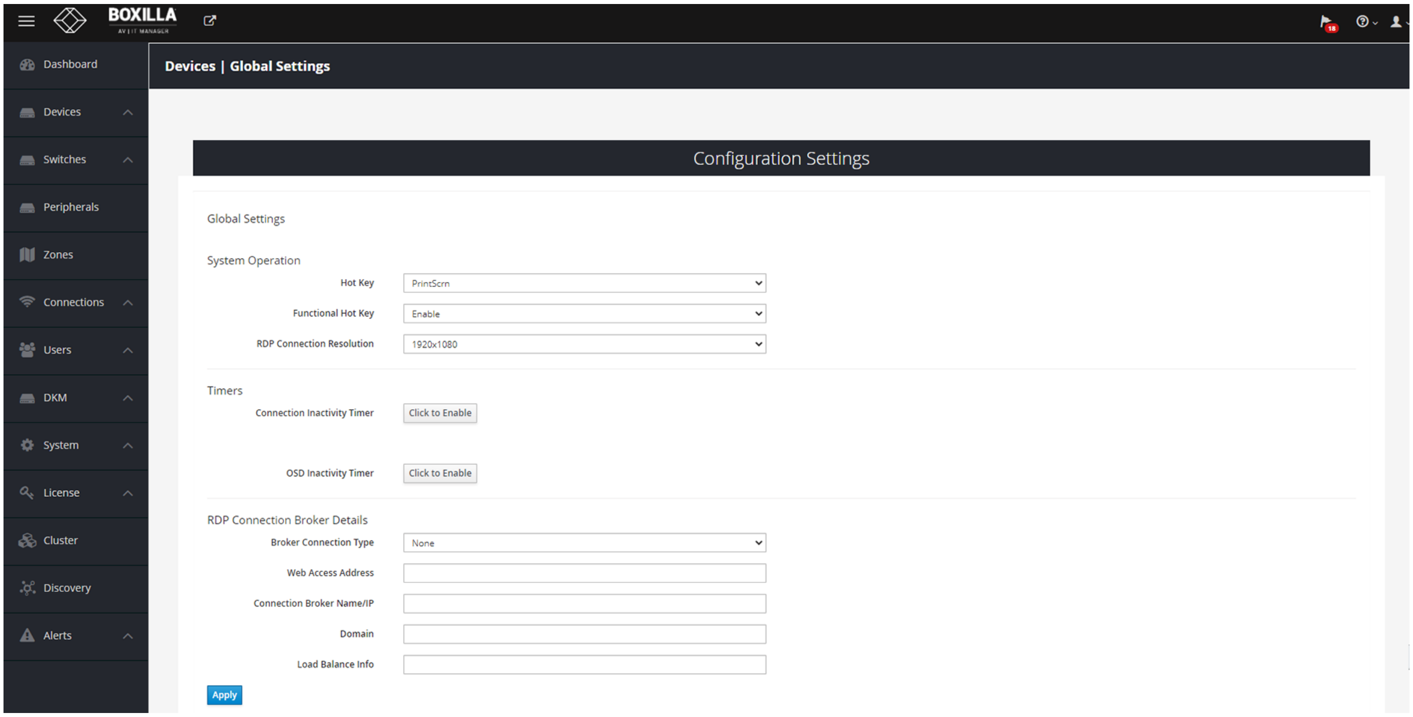
1 of 1

FIGURE 7-18. DEVICE UPGRADE TIMEOUT

7.4 DEVICES—GLOBAL

Boxilla controls global configuration settings for the managed domain. These are settings that apply across all devices in the same way. The administrator changes the parameters to the desired settings and clicks apply to have the changes take effect. This is done on the Devices—Settings page. The admin changes the settings and then clicks "Apply." Changes only take effect when "Apply" is clicked. The properties that can be changed are described in the following sections.

The Emerald or InvisaPC devices only pick up the changes to the settings when a user logs in to the device. To ensure global settings are changed on all units at the same time, the Administrator should log out all Users.



Devices | Global Settings

Configuration Settings

Global Settings

System Operation

Hot Key: PrintScrn

Functional Hot Key: Enable

RDP Connection Resolution: 1920x1080

Timers

Connection Inactivity Timer

OSD Inactivity Timer

RDP Connection Broker Details

Broker Connection Type: None

Web Access Address

Connection Broker Name/IP

Domain

Load Balance Info

FIGURE 7-19. DEVICE SETTINGS—CONFIGURATION SETTINGS

7.4.1 HOTKEY

The hotkey is used with the "o" key to terminate the current connection and bring up the OSD on an Emerald or InvisaPC Receiver. The hotkey with "p" key is used to switch to the previous connection without loading the OSD.

The default hotkey is Print-Screen (PrntScrn). The alternatives are shown in the table below.

In order to support Favorites hotkeys, the Functional Hot Key must be enabled.

TABLE 7-1. HOTKEY SEQUENCES

SEQUENCE	DESCRIPTION
Print Screen (Default)	press Prnt Scrn key
Ctrl + Ctrl	press Ctrl key twice within 1 second
Alt + Alt	press Alt key twice within 1 second
Shift + Shift	press Shift key twice within 1 second
Mouse-Left + Right	press mouse left and right buttons at the same time for 2 seconds

Open OSD: “Hotkey” O

Switch to previous target: “Hotkey” P

The “Functional Hot-Key” is used to enable or disable the use of function keys after the hot-key. When the Functional Hot-key is disabled, only the Hot-Key is required to bring up the OSD on an Emerald or InvisaPC Receiver, but Favorites will not work. This means only CTRL-CTRL needed to bring up OSD if CTRL-CTRL selected as hot-key rather than CTRL-CTRL-O when Functional Hot-Key is enabled. It also means the “Hotkey” P, switch to previous target, is no longer is enabled.

The Enable Function key is set by default.

7.4.2 RDP CONNECTION RESOLUTION

This defines the resolution to be requested from the Server when a connection is defined to be to a virtual machine. The actual resolution that the connection actually uses will depend on the Server configuration (see Microsoft documentation).

7.4.3 TIMER SETTINGS

There are two timer settings available. By default they are turned off. The Administrator clicks enable to turn them on and set the timer value required. The two timer settings are:

1. OSD Inactivity Timer—This sets a limit on how long a user can be logged on to the Emerald or InvisaPC OSD without any keyboard or mouse activity. Once the user reaches the inactivity timer limit, the user will be logged out of the OSD.
2. Connection Inactivity Timer—This sets a limit on how long a user can be connected to a source (Transmitter) without any keyboard or mouse activity. Once the session reaches the inactivity timer limit, the user will be logged out of the connection and return to the OSD on Emerald or InvisaPC.

NOTE: Inactivity occurs when the mouse or keyboard is not pressed or moved for a set period of time. The Connection Inactivity Timer and OSD Inactivity Timer can be used together.

7.4.4 RDP BROKER SETTINGS

There are two types of Broker types—Connection Broker Server and Web Access Server. The default is none, which means the system uses a connection broker. The Broker type is used to validate the User Credentials (username and password) and determine where the user will be connected to.

The Connection Broker type causes the User Credentials to be sent to the specified Connection Broker. If accepted, then the broker will return the IP address of a local VM from the pool, and this is the IP address used for a connection from the Emerald or InvisaPC Receiver.

NOTE: We do not support hostnames, so use the IP of the connection broker server.

When “Connection Broker Server” type is selected, the following settings should be set by the Administrator:

1. Enter in the domain name as defined on the local network.
2. Enter in your load balance address as defined in the local server configured, e.g. tsv://VMResource.1.Win7Pool.

The “Web Access Server” setting is used to allow access to a local copy of Active Domain server. If this setting is configured correctly, then if a user who is not configured in the local database attempts to login, the device will redirect the username and password to the local active directory installation and validate the user credentials.

If the user is validated, the Active Directory Server will return a valid VM pool-name to the device. The device sends this pool-name information to the Connection Broker which then allocates a Virtual Machine to the User provided a VM is available.

The following settings need to be set when “Web Access Server” is selected as Broker Connection Type:

1. The Web Access Address should be the login page of the local RD Web Access Server using its IP address, e.g. https://192.168.10.7/RDWeb/Pages/en-US/login.aspx.

NOTE: We currently do not cater for hostnames in the web address, so please use the IP of the Web Access server. You must place the full address in the login page of the RD Web Access server (https://*************.apsx).

2. Enter the local Connection Broker IP address.

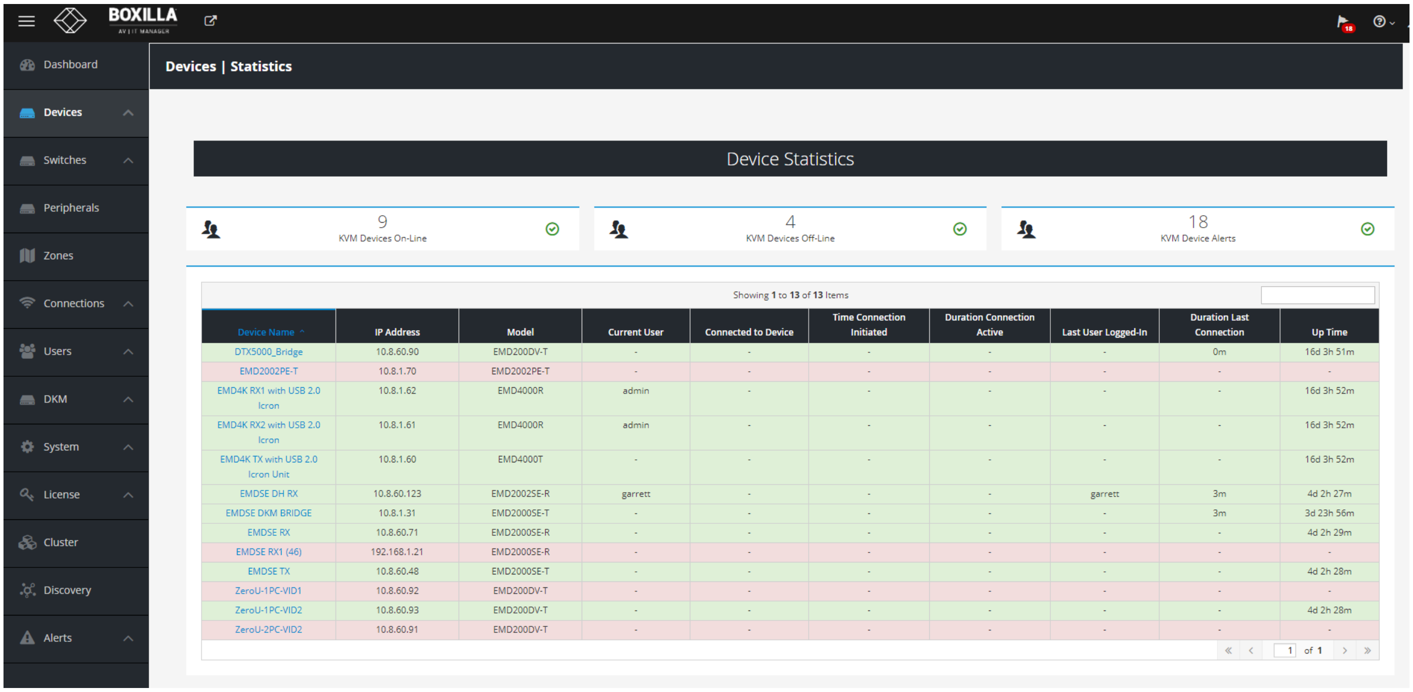
3. Enter the local domain name.

On the Emerald or InvisaPC Receiver, when the user attempts to log in, the login will now take the following steps in this order:

1. The login credentials are checked to see if the user is configured locally on the Receiver. If the user exists, they will be logged in as normal. If not, then step two will occur. If Broker Connection Type is set to “None,” the Emerald or InvisaPC Receiver at login will only attempt to authenticate the user locally. This is the default setting.
2. If the Broker Connection Type is set to “Web Access Server,” the Receiver will attempt to launch a connection to an RD Web Access server. This will allow the user to be Authenticated against the Domain Controller (Active Directory), allowing the user to access Virtual Desktop Pools and Personal Virtual desktops.

7.5 DEVICES—STATISTICS

The Device Statistics page provides an overview of the operation of the managed domain as shown in Figure 7-20. It provides an overview of the device on-line and off-line (not contactable). Then a table of devices is displayed showing what user is logged in to what device, when they logged in and how long they were logged in.



Devices | Statistics

Device Statistics

9 KVM Devices On-Line

4 KVM Devices Off-Line

18 KVM Device Alerts

Showing **1** to **13** of **13** Items

Device Name	IP Address	Model	Current User	Connected to Device	Time Connection Initiated	Duration Connection Active	Last User Logged-In	Duration Last Connection	Up Time
DTX5000_Bridge	10.8.60.90	EMD200DV-T	-	-	-	-	-	0m	16d 3h 51m
EMD2002PE-T	10.8.1.70	EMD2002PE-T	-	-	-	-	-	-	-
EMD4K RX1 with USB 2.0 Icron	10.8.1.62	EMD4000R	admin	-	-	-	-	-	16d 3h 52m
EMD4K RX2 with USB 2.0 Icron	10.8.1.61	EMD4000R	admin	-	-	-	-	-	16d 3h 52m
EMD4K TX with USB 2.0 Icron Unit	10.8.1.60	EMD4000T	-	-	-	-	-	-	16d 3h 52m
EMDSE DH RX	10.8.60.123	EMD2002SE-R	garrett	-	-	-	garrett	3m	4d 2h 27m
EMDSE DKM BRIDGE	10.8.1.31	EMD2000SE-T	-	-	-	-	-	3m	3d 23h 56m
EMDSE RX	10.8.60.71	EMD2000SE-R	-	-	-	-	-	-	4d 2h 29m
EMDSE RX1 (46)	192.168.1.21	EMD2000SE-R	-	-	-	-	-	-	-
EMDSE TX	10.8.60.48	EMD2000SE-T	-	-	-	-	-	-	4d 2h 28m
ZeroU-1PC-VID1	10.8.60.92	EMD200DV-T	-	-	-	-	-	-	-
ZeroU-1PC-VID2	10.8.60.93	EMD200DV-T	-	-	-	-	-	-	4d 2h 28m
ZeroU-2PC-VID2	10.8.60.91	EMD200DV-T	-	-	-	-	-	-	-

1 of 1

FIGURE 7-20. DEVICE STATISTICS

The “Switches” menu has three subheadings:

- Status
- Upgrades
- Connections

These all link to individual pages.

The Status page initially shows a list of all the Black Box branded switches in the KVM Network. Clicking on a particular switch brings you to a page displaying all the ports of that particular switch. This page also allows you perform certain actions on the switch as detailed below.

Black Box offers the following IP Network Switches:

- 48-Port 1G IP Network Switch (EMS1G-48)
- 12-Port 10G IP Network Switch (EMS10G-12)
- 28-Port 10G IP Network Switch (EMS10G-28)
- 32-Port 100G IP Network Switch (EMS100G-32)

The Upgrades page is similar to the InvisaPC/Emerald Upgrade page. This shows a list of all the Black Box branded switches in the KVM network plus their current firmware version. If there is a mismatch to the activated firmware release, this is flagged. You can also upload a release from this page. NOTE: Uploading a release takes about 15 minutes to reboot.

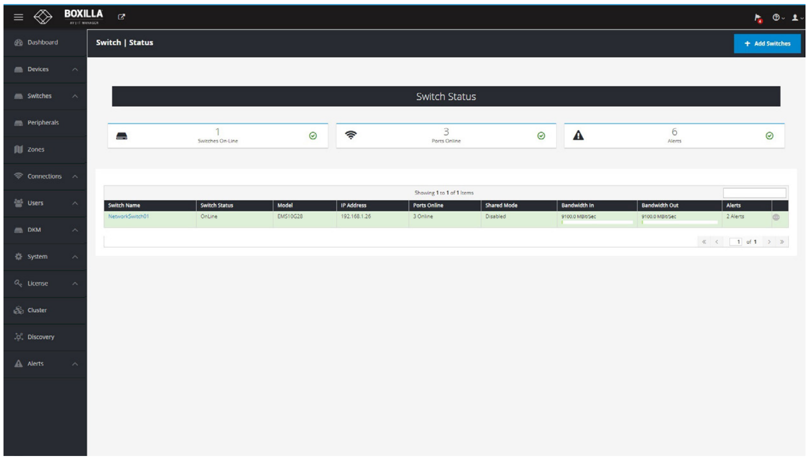
CHAPTER 8: SWITCHES

The Connections page provides a list of all active KVM connections from Transmitter devices to Receiver devices across all Black Box branded switches that are managed by Boxilla. The list correlates the KVM devices with the relevant switch ports and also provides statistics for each switch port.

8.1 SWITCHES — STATUS

8.1.1 STATUS PAGE - SWITCH VIEW

The status page when clicked shows a list of the active switches in the KVM network. This has three summary info cards on the top of the screen that detail the number of switches currently online managed by Boxilla, how many ports have a cable connected and are active, and how many alerts are across the whole Boxilla system relating to switches. In the table, we display the Switch Name, Switch Status, Model, IP Address, how many ports online per switch, whether or not Shared Mode is enabled, the bandwidth in and out figures/graph, the number of alerts on that switch and an option menu. The switch names will be hyperlinks that take you to another page where you get a drill-down of the ports on that switch.



Showing 1 to 1 of 1 Items

Switch Name	Switch Status	Model	IP Address	Ports Online	Shared Mode	Bandwidth In	Bandwidth Out	Alerts
NetworkSwitch01	OnLine	EMS10G28	192.168.1.26	3 Online	Disabled	9100.0 MBit/Sec	9100.0 MBit/Sec	2 Alerts

1 of 1

FIGURE 8-1. SWITCH STATUS SCREEN

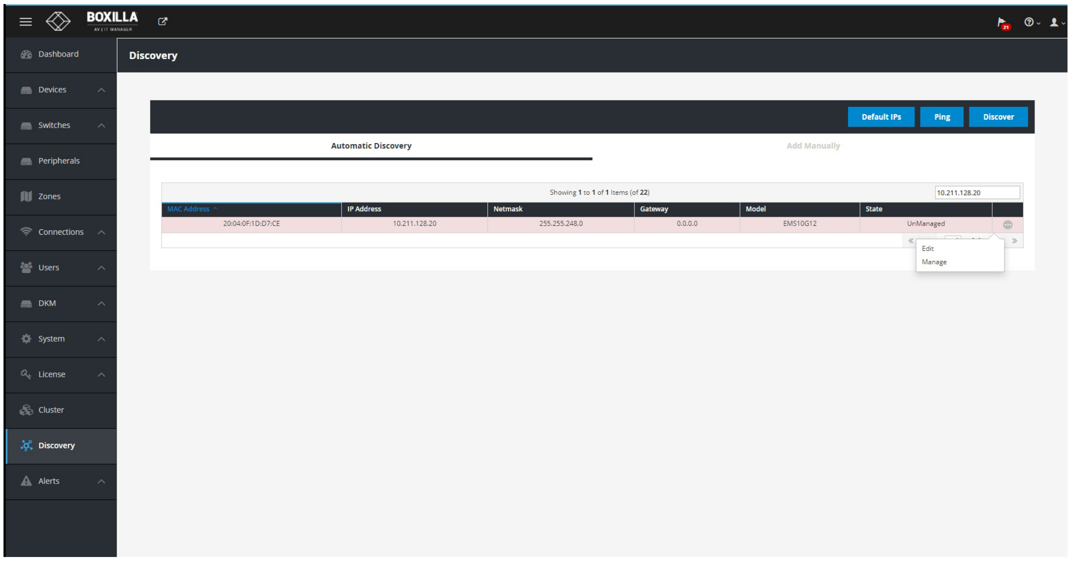
8.1.2 ADDING A SWITCH

There are two ways you can add a switch to be managed. You can automatically discover it by clicking on the Discovery tab in the main menu, or you can click on the + Switch button on the top of the switch status page to add it manually into the Boxilla system.

NOTE: This feature currently does not allow the network switch password to be entered and assumes it is using the default setting.

AUTOMATIC DISCOVERY

Click on the Discovery tab from the main menu. A screen showing the Automatic Discovery tab appears. On this screen an UnManaged switch appears shaded in pink and a managed switch appears in green.



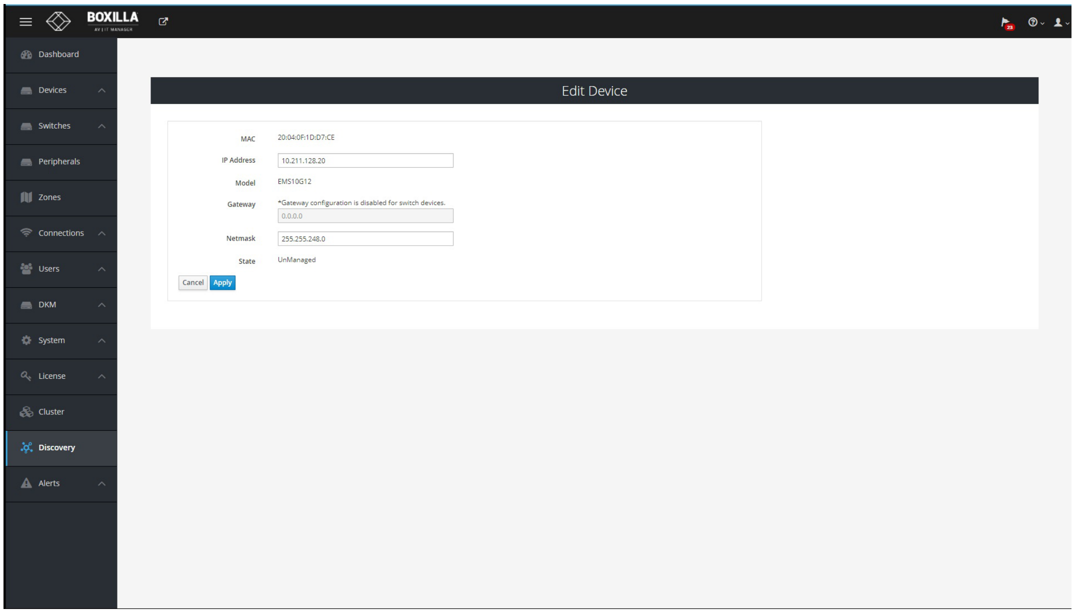
Showing 1 to 1 of 1 Items (of 22)

MAC Address	IP Address	Netmask	Gateway	Model	State
20:04:0F:1D:D7:CE	10.211.128.20	255.255.248.0	0.0.0.0	EMS10G12	UnManaged

FIGURE 8-2. AUTOMATIC DISCOVERY TAB

Click on the ellipsis “•••” icon and the drop-down menu to Edit or Manage the switch.

If you select Edit, the Edit Device screen appears.



Edit Device

MAC 20:04:0F:1D:D7:CE

IP Address 10.211.128.20

Model EMS10G12

Gateway *Gateway configuration is disabled for switch devices. 0.0.0.0

Netmask 255.255.248.0

State UnManaged

FIGURE 8-3. EDIT DEVICE SCREEN

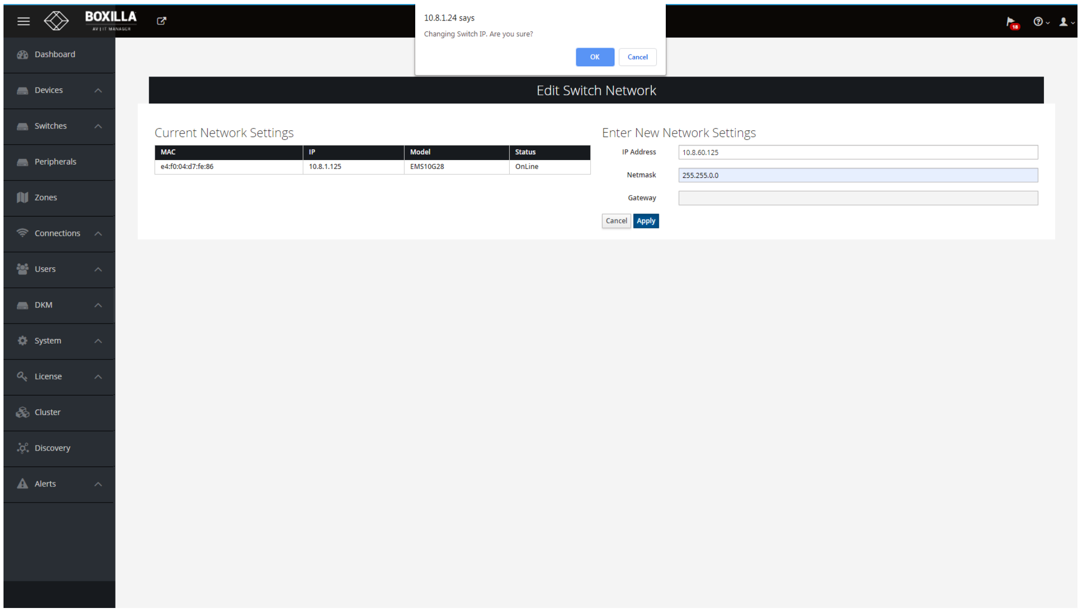
Enter the IP address and net mask.

Click on Apply to confirm the changes or Cancel to cancel the changes.

When you click on Apply, a popup box tells you that editing network settings will reboot the device.

NOTE: The switch takes about 5 minutes to reboot.

CHAPTER 8: SWITCHES



10.8.1.24 says

Changing Switch IP. Are you sure?

OK Cancel

Edit Switch Network

Current Network Settings

MAC	IP	Model	Status
e4:f0:04:d7:fe:86	10.8.1.125	EMS10G28	OnLine

Enter New Network Settings

IP Address: 10.8.60.125

Netmask: 255.255.0.0

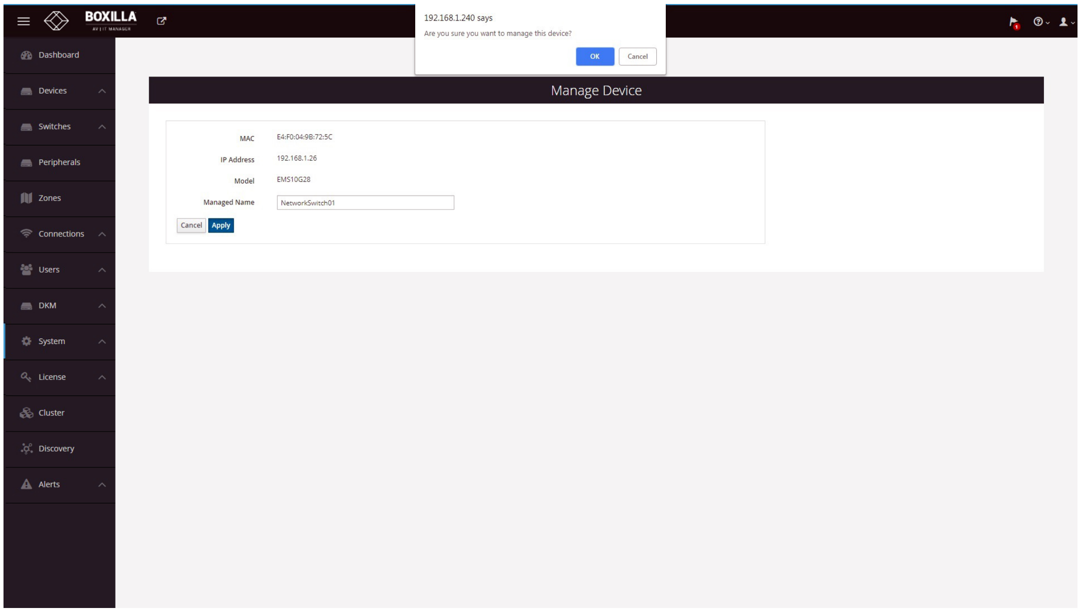
Gateway:

Cancel Apply

FIGURE 8-4. CONFIRM CHANGES ON DEVICE

Manage

If you select Manage, the Manage Device screen appears.



192.168.1.240 says

Are you sure you want to manage this device?

OK Cancel

Manage Device

MAC: E4:F0:04:9B:72:5C

IP Address: 192.168.1.26

Model: EMS10G28

Managed Name: NetworkSwitch01

Cancel Apply

FIGURE 8-5. MANAGE DEVICE SCREEN

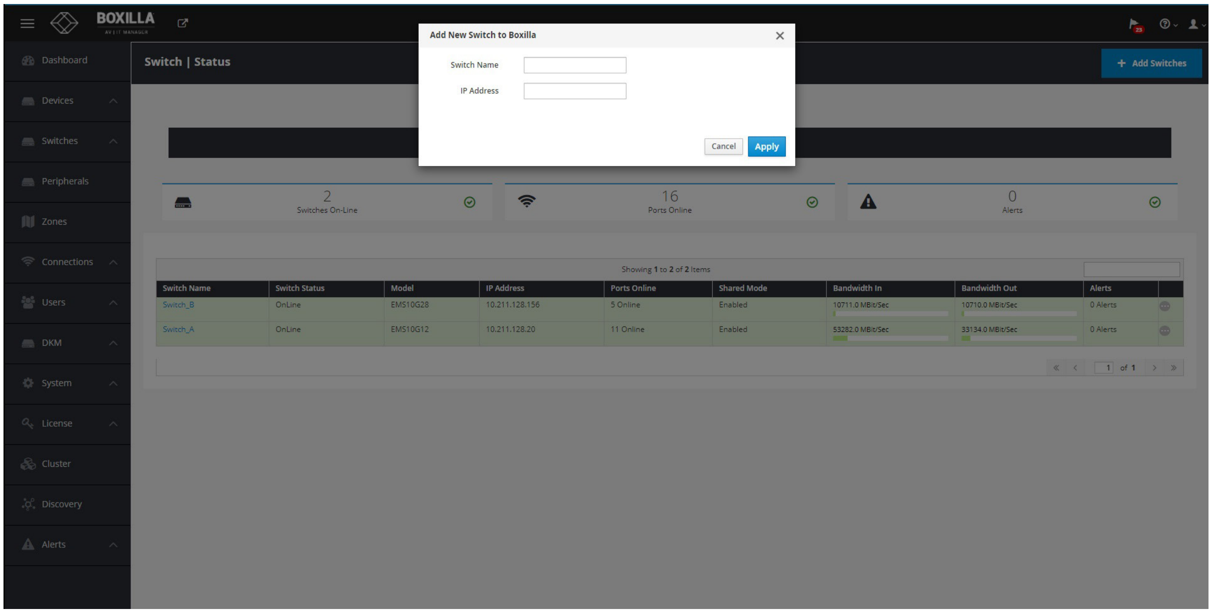
Enter the Managed Name and click on Apply.

A popup box asks: Are you sure you want to manage this device?

Click on OK.

ADDING A SWITCH VIA THE +SWITCH BUTTON

Clicking the blue “+ Switch” button on the top right corner of the Switch status page pops up a window with the following editing options for the details of the switch to be added:



Showing 1 to 2 of 2 Items

Switch Name	Switch Status	Model	IP Address	Ports Online	Shared Mode	Bandwidth In	Bandwidth Out	Alerts
Switch_B	OnLine	EMS10G28	10.211.128.156	5 Online	Enabled	10711.0 MBit/Sec	10710.0 MBit/Sec	0 Alerts
Switch_A	OnLine	EMS10G12	10.211.128.20	11 Online	Enabled	53282.0 MBit/Sec	33134.0 MBit/Sec	0 Alerts

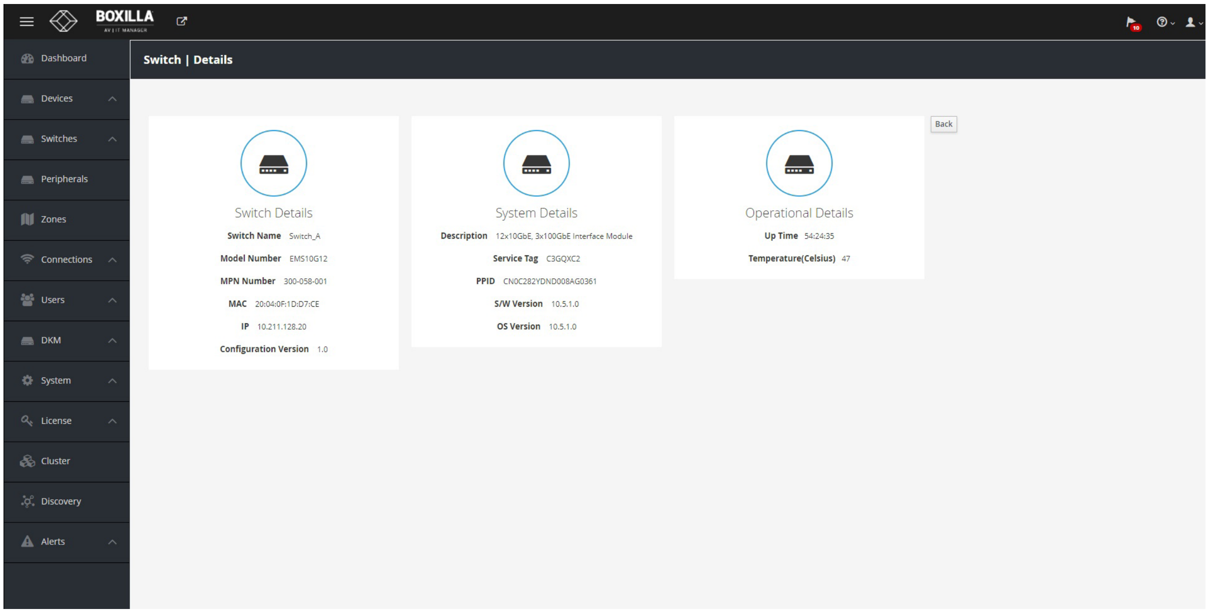
FIGURE 8-6. ADD NEW SWITCH TO THE BOXILLA SCREEN

Clicking “Apply” adds the switch into the table on the status page. As part of the manage process, we first ensure that it is a Black Box switch by studying the bbx.info file to ensure it has the correct data. You then query the switch and get the port information and switch properties and populate our database with the new information. You also copy our domain token to the switch so the switch is then managed by that Boxilla.

Switch Actions/Options menu

Clicking the “options” elliipsis button on the right-hand side of each switch row will give you a drop-down with some options. These are as below:

• Details: This retrieves details about the switch. Example display below.



Switch | Details

Switch Details

Switch Name Switch_A

Model Number EMS10G12

MPN Number 300-058-001

MAC 20:04:0F:1D:D7:CE

IP 10.211.128.20

Configuration Version 1.0

System Details

Description 12x10GbE, 3x100GbE Interface Module

Service Tag C3GQXC2

PPID CN0C282YDND008AG0361

S/W Version 10.5.1.0

OS Version 10.5.1.0

Operational Details

Up Time 54:24:35

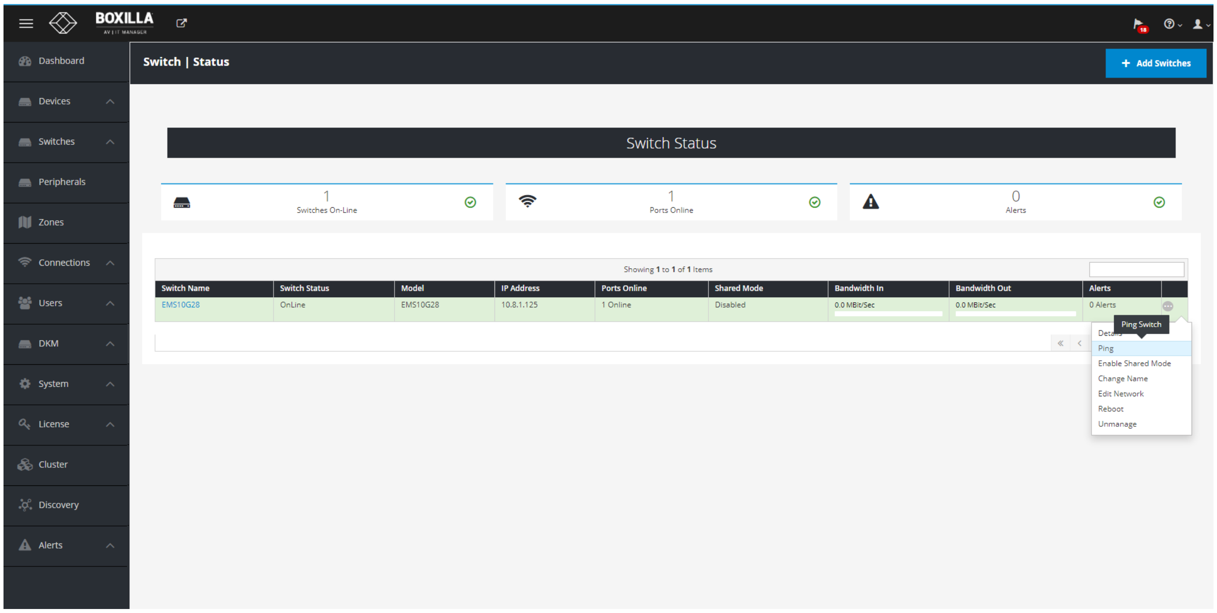
Temperature(Celsius) 47

FIGURE 8-7. SWITCH ACTIONS/OPTIONS MENU

- Ping: This pings the management port of the network switch to verify it is powered up and connected.
- Enable/Disable Shared Mode: If you enable shared mode, Boxilla creates VLAN 1003, Boxilla moves all ports into that VLAN and globally enables IGMP Snooping on the switch. Shared analog audio is enabled when shared mode is enabled. When disabling shared mode, Boxilla disables IGMP Snooping and removes VLAN 1003 which moves all ports back into VLAN 1. This functionality is automatically completed once the Enable/Disable Share Mode option is selected. By enabling Shared Mode, Boxilla performs these operations in the background automatically.
- Change Name: Change the name of the switch in the Boxilla database. This also renames all alerts to the new name.
- Edit Network: This allows the user to change the IP address of the switch.
- Reboot: Reboot the switch.
- Unmanage: This disables IGMP Snooping, MRouter details and the custom VLAN 1003 and moves all ports back to VLAN 1 and then deletes the switch from our database. It also removes the domain token from the switch. If you lose communication with the switch but still wish to unmanage it, you have the option to locally unmanage. Unmanaging also sets the switch in a factory default state. If you wish to keep the switch settings but remove it from Boxilla, you will need to disconnect the network switch first completely from the setup and then in Boxilla you can Unmanage it.

PING SWITCH

To ping this switch, click on the ellipsis "•••" icon and a drop-down menu appears.

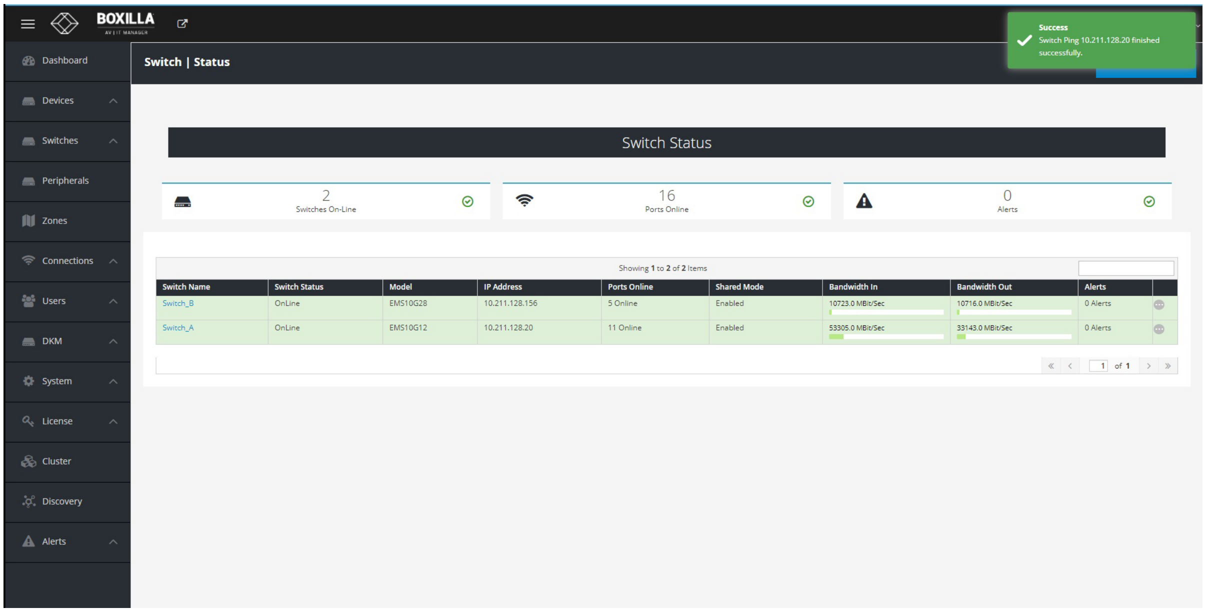


Showing **1** to **1** of **1** Items

Switch Name	Switch Status	Model	IP Address	Ports Online	Shared Mode	Bandwidth In	Bandwidth Out	Alerts
EMS10G28	OnLine	EMS10G28	10.8.1.125	1 Online	Disabled	0.0 MBit/Sec	0.0 MBit/Sec	0 Alerts

FIGURE 8-8. PING SWITCH

Select ping and the following confirmation screen appears.



Success
Switch Ping 10.211.128.20 finished successfully.

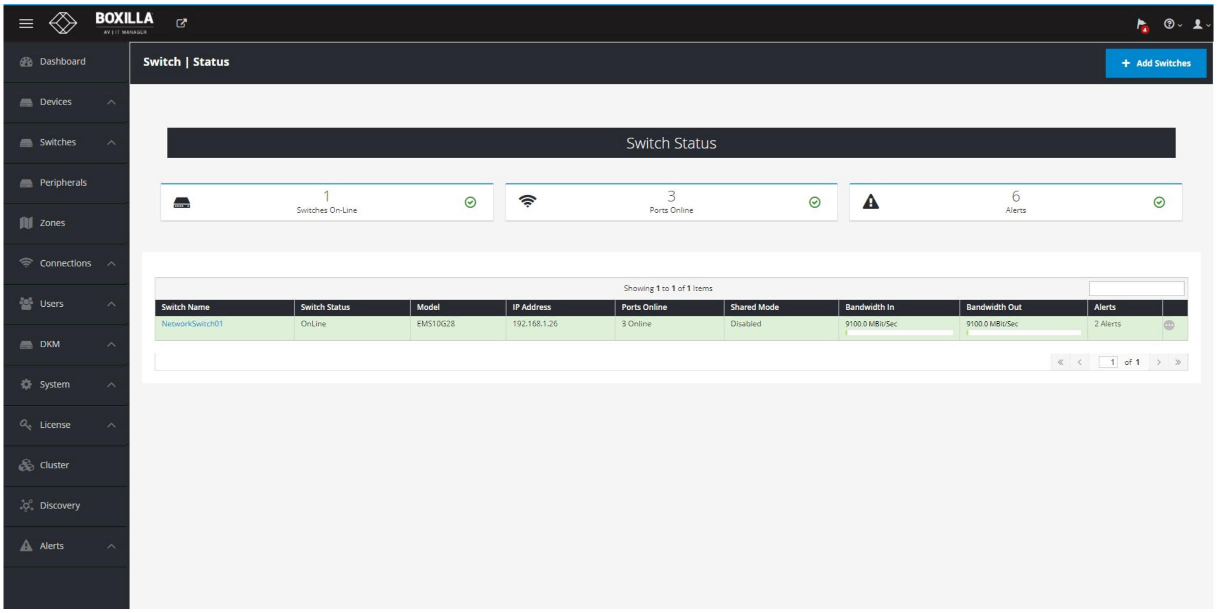
Showing **1** to **2** of **2** Items

Switch Name	Switch Status	Model	IP Address	Ports Online	Shared Mode	Bandwidth In	Bandwidth Out	Alerts
Switch_B	OnLine	EMS10G28	10.211.128.156	5 Online	Enabled	10723.0 MBit/Sec	10716.0 MBit/Sec	0 Alerts
Switch_A	OnLine	EMS10G12	10.211.128.20	11 Online	Enabled	53305.0 MBit/Sec	33143.0 MBit/Sec	0 Alerts

FIGURE 8-9. PING CONFIRMATION

EDIT NETWORK

To Edit the Switch Network switch, click on the ellipsis "•••" icon and a drop-down menu appears.



Switch | Status

Switch Status

1 Switches On-Line

3 Ports Online

6 Alerts

Showing 1 to 1 of 1 Items

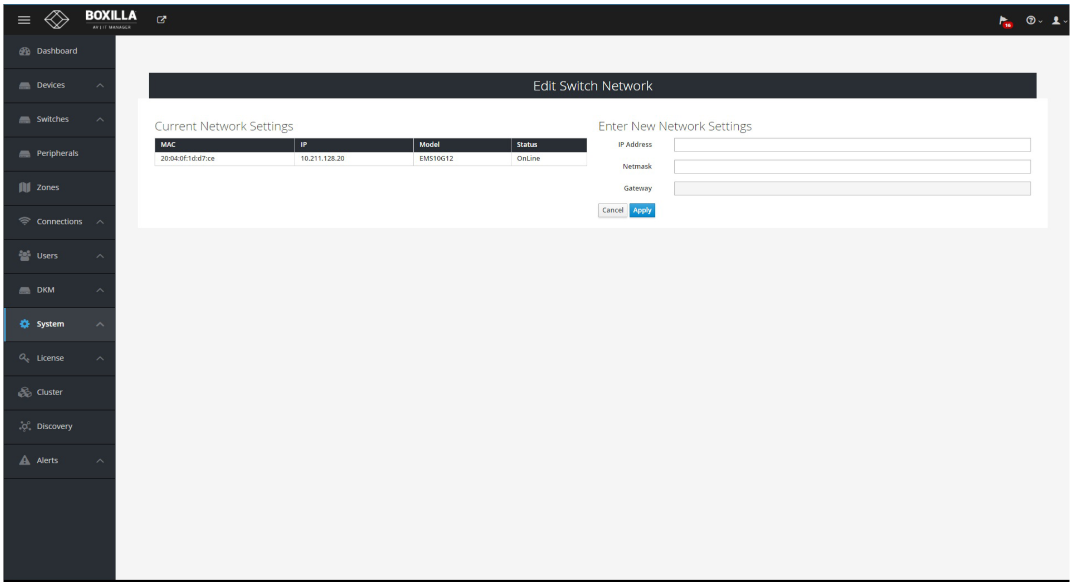
Switch Name	Switch Status	Model	IP Address	Ports Online	Shared Mode	Bandwidth In	Bandwidth Out	Alerts	
NetworkSwitch01	OnLine	EMS10G28	192.168.1.26	3 Online	Disabled	9100.0 MBit/Sec	9100.0 MBit/Sec	2 Alerts	•••

1 of 1

FIGURE 8-10. SWITCH VIEW STATUS

Click on the Edit Network option.

The Edit Switch Network screen appears.



Edit Switch Network

Current Network Settings

MAC	IP	Model	Status
20:04:0f:1d:d7:ce	10.211.128.20	EMS10G12	OnLine

Enter New Network Settings

IP Address

Netmask

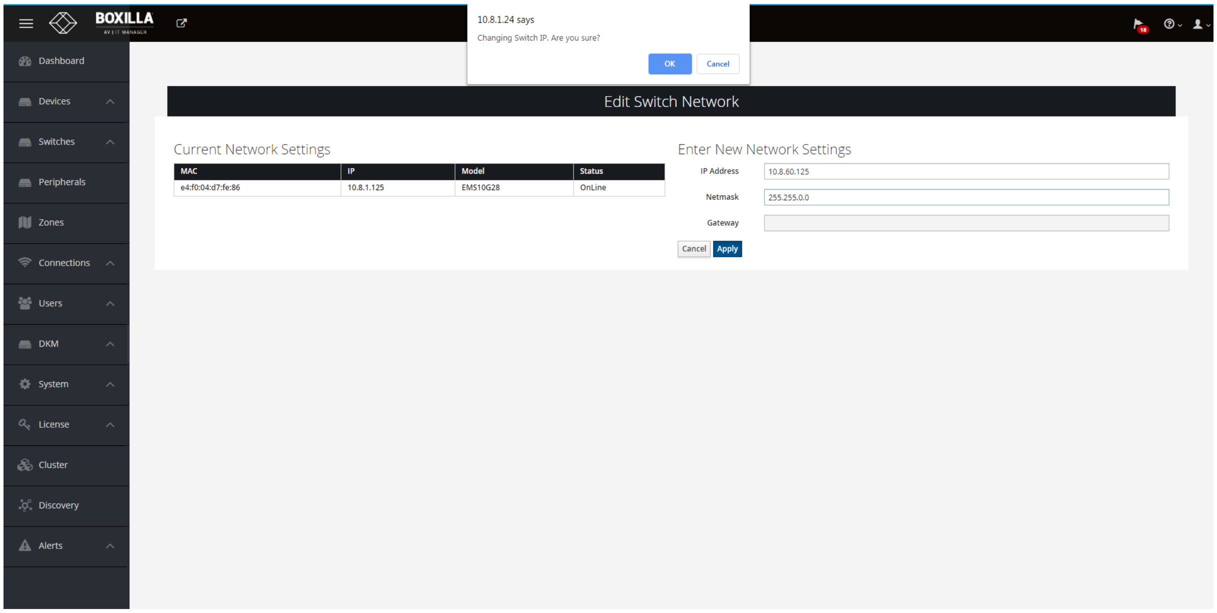
Gateway

FIGURE 8-11. EDIT SWITCH NETWORK SCREEN

The screen shows the current network settings and has fields where you can type in the new network settings. Enter the IP Address and Netmask.

Click Apply to save your changes.

The following popup box appears.



10.8.1.24 says

Changing Switch IP. Are you sure?

OK Cancel

Edit Switch Network

Current Network Settings

MAC	IP	Model	Status
e4:f0:04:d7:fe:86	10.8.1.125	EMS10G28	OnLine

Enter New Network Settings

IP Address 10.8.60.125

Netmask 255.255.0.0

Gateway

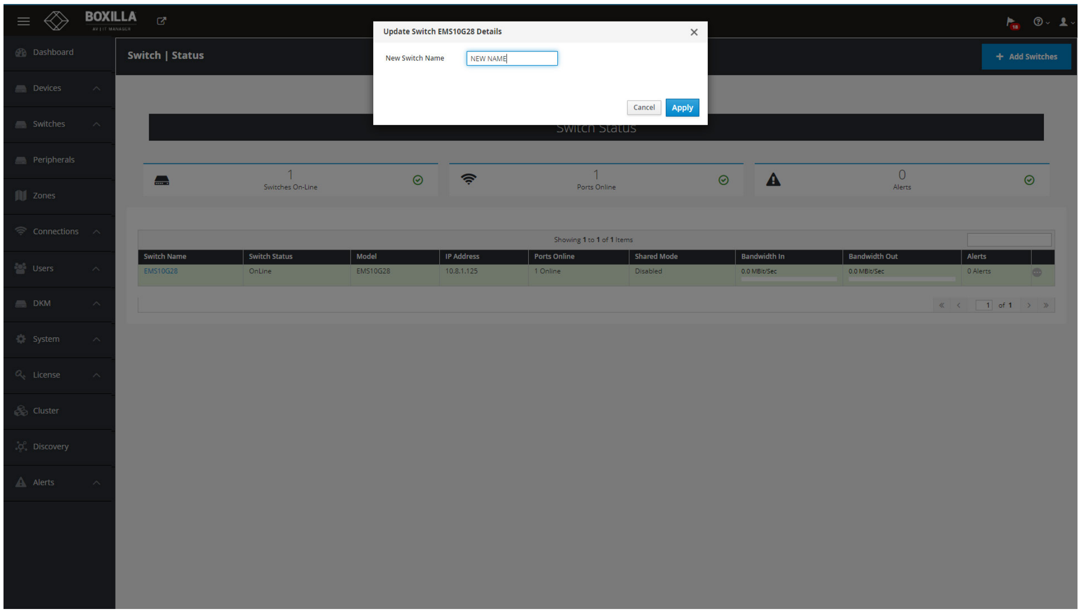
Cancel Apply

FIGURE 8-12. CONFIRM CHANGES ON DEVICE

Click OK to confirm your changes. The switch takes about 5 minutes to reboot.

UPDATE SWITCH

To update the network switch, see the screen below.



Update Switch EMS10G28 Details

New Switch Name: NEW NAME

Showing 1 to 1 of 1 Items

Switch Name	Switch Status	Model	IP Address	Ports Online	Shared Mode	Bandwidth In	Bandwidth Out	Alerts
EMS10G28	OnLine	EMS10G28	10.8.1.125	1 Online	Disabled	0.0 MBit/Sec	0.0 MBit/Sec	0 Alerts

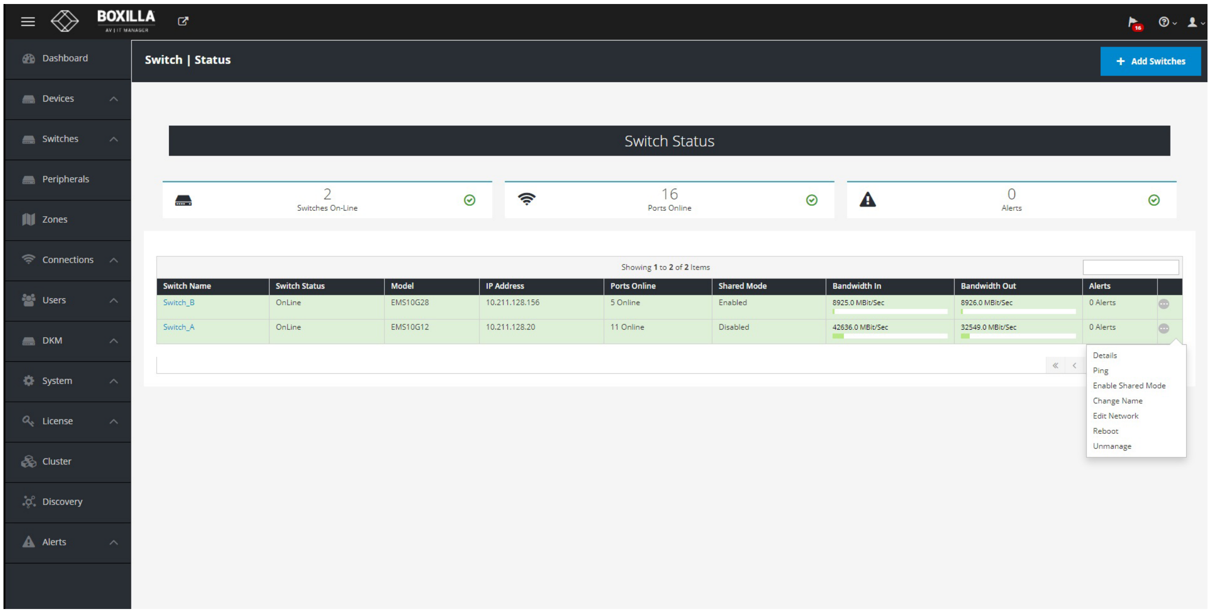
1 of 1

FIGURE 8-13. UPDATE NETWORK SWITCH

Type in the new switch name and click Apply.

SHARED MODE

To enable Shared mode on a switch from the Switch Status screen, click on Enable Shared Mode from the drop-down menu. Shared analog audio is enabled when shared mode is enabled.



Showing 1 to 2 of 2 Items

Switch Name	Switch Status	Model	IP Address	Ports Online	Shared Mode	Bandwidth In	Bandwidth Out	Alerts
Switch_B	OnLine	EMS10G28	10.211.128.156	5 Online	Enabled	8925.0 MBit/Sec	8926.0 MBit/Sec	0 Alerts
Switch_A	OnLine	EMS10G12	10.211.128.20	11 Online	Disabled	42636.0 MBit/Sec	32549.0 MBit/Sec	0 Alerts

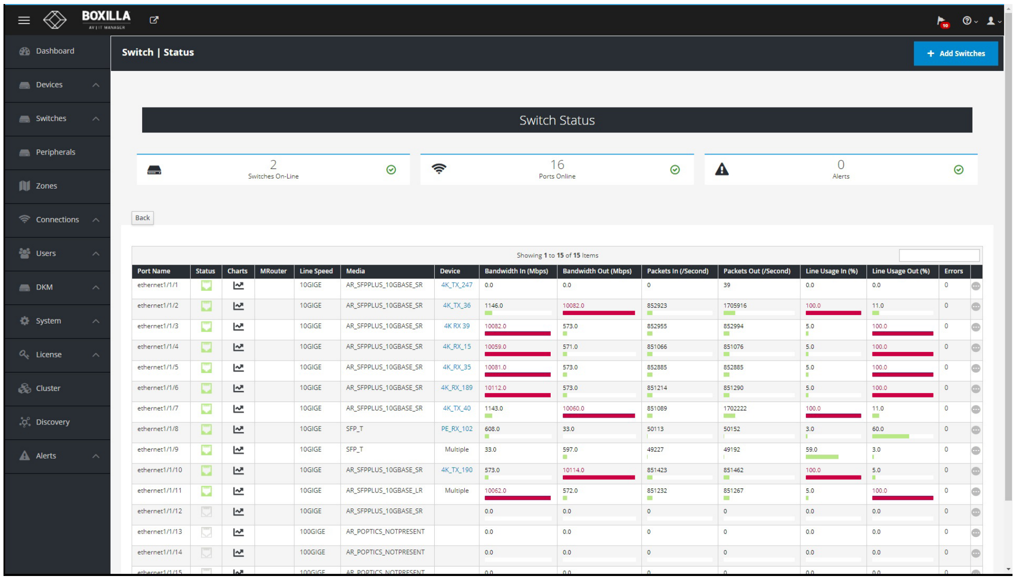
FIGURE 8-14. ENABLE SHARED MODE

The set of operations are performed automatically once the option has been selected.

8.1.3 STATUS PAGE - PORTS VIEW

Once you click a switch name, you are presented with a table view of all the ports on that particular switch. This shows some summary information of that port similar to the active connection table today. This table tells you the following:

- PortName
- The status of the switch. Green means it's online. Grey means it's offline. Red means it's disabled.
- The Media type as reported by the Black Box Switch.
- The Bandwidth In and Out (integer and bar chart)
- Packets In and Out (integer and bar chart)
- Line Usage in and Out (integer and chart)
- Port Errors
- Port Options
- Enable/Disable Port
- Enable MRouter
- *(EMS100G-R2 only) Option to Enable or Disable Breakout Module



Showing 1 to 15 of 15 Items

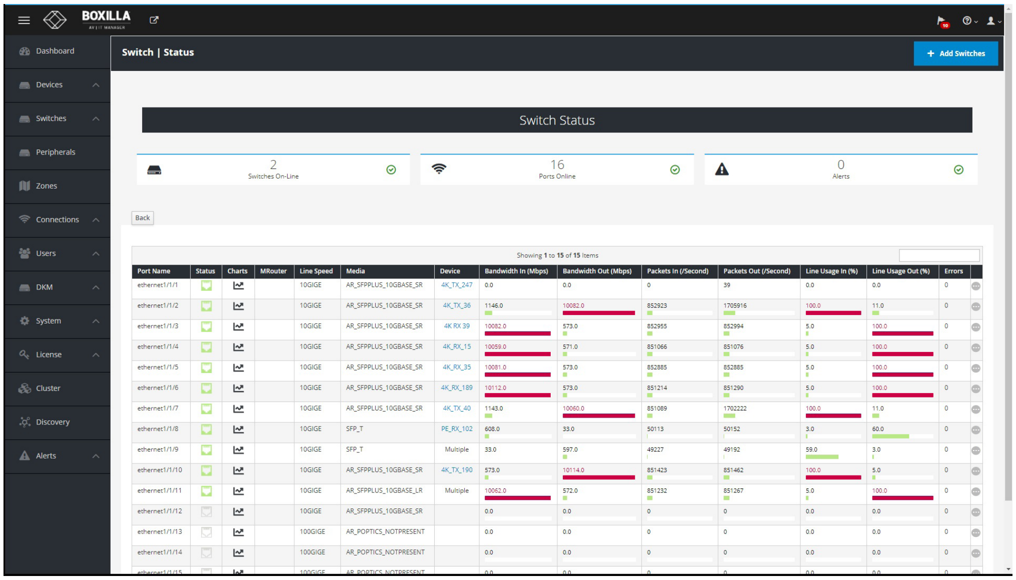
Port Name	Status	Charts	MRouter	Line Speed	Media	Device	Bandwidth In (Mbps)	Bandwidth Out (Mbps)	Packets In (/Second)	Packets Out (/Second)	Line Usage In (%)	Line Usage Out (%)	Errors	
ethernet1/1/1	🟩	📈		10GIGE	AR_SFPPLUS_10GBASE_SR	4K_TX_247	0.0	0.0	0	39	0.0	0.0	0	⋯
ethernet1/1/2	🟩	📈		10GIGE	AR_SFPPLUS_10GBASE_SR	4K_TX_36	1146.0	10082.0	852923	1705916	100.0	11.0	0	⋯
ethernet1/1/3	🟩	📈		10GIGE	AR_SFPPLUS_10GBASE_SR	4K RX 39	10082.0	573.0	852955	852994	5.0	100.0	0	⋯
ethernet1/1/4	🟩	📈		10GIGE	AR_SFPPLUS_10GBASE_SR	4K_RX_15	10059.0	571.0	851066	851076	5.0	100.0	0	⋯
ethernet1/1/5	🟩	📈		10GIGE	AR_SFPPLUS_10GBASE_SR	4K_RX_35	10081.0	573.0	852885	852885	5.0	100.0	0	⋯
ethernet1/1/6	🟩	📈		10GIGE	AR_SFPPLUS_10GBASE_SR	4K_RX_189	10112.0	573.0	851214	851290	5.0	100.0	0	⋯
ethernet1/1/7	🟩	📈		10GIGE	AR_SFPPLUS_10GBASE_SR	4K_TX_40	1143.0	10060.0	851089	1702222	100.0	11.0	0	⋯
ethernet1/1/8	🟩	📈		10GIGE	SFP_T	PE_RX_102	608.0	33.0	50113	50152	3.0	60.0	0	⋯
ethernet1/1/9	🟩	📈		10GIGE	SFP_T	Multiple	33.0	597.0	49227	49192	59.0	3.0	0	⋯
ethernet1/1/10	🟩	📈		10GIGE	AR_SFPPLUS_10GBASE_SR	4K_TX_190	573.0	10114.0	851423	851462	100.0	5.0	0	⋯
ethernet1/1/11	🟩	📈		10GIGE	AR_SFPPLUS_10GBASE_LR	Multiple	10062.0	572.0	851232	851267	5.0	100.0	0	⋯
ethernet1/1/12	⬜	📈		10GIGE	AR_SFPPLUS_10GBASE_SR		0.0	0.0	0	0	0.0	0.0	0	⋯
ethernet1/1/13	⬜	📈		100GIGE	AR_POPTICS_NOTPRESENT		0.0	0.0	0	0	0.0	0.0	0	⋯
ethernet1/1/14	⬜	📈		100GIGE	AR_POPTICS_NOTPRESENT		0.0	0.0	0	0	0.0	0.0	0	⋯
ethernet1/1/15	⬜	📈		100GIGE	AR_POPTICS_NOTPRESENT		0.0	0.0	0	0	0.0	0.0	0	⋯

FIGURE 8-15. SWITCH STATUS PORTS VIEW

This information is polled every minute and the page updates on the next page refresh.

PORT OPTIONS—ENABLE/DISABLE PORTS

To get to the Ports screen, click on a switch. A list of ports in the system appears.

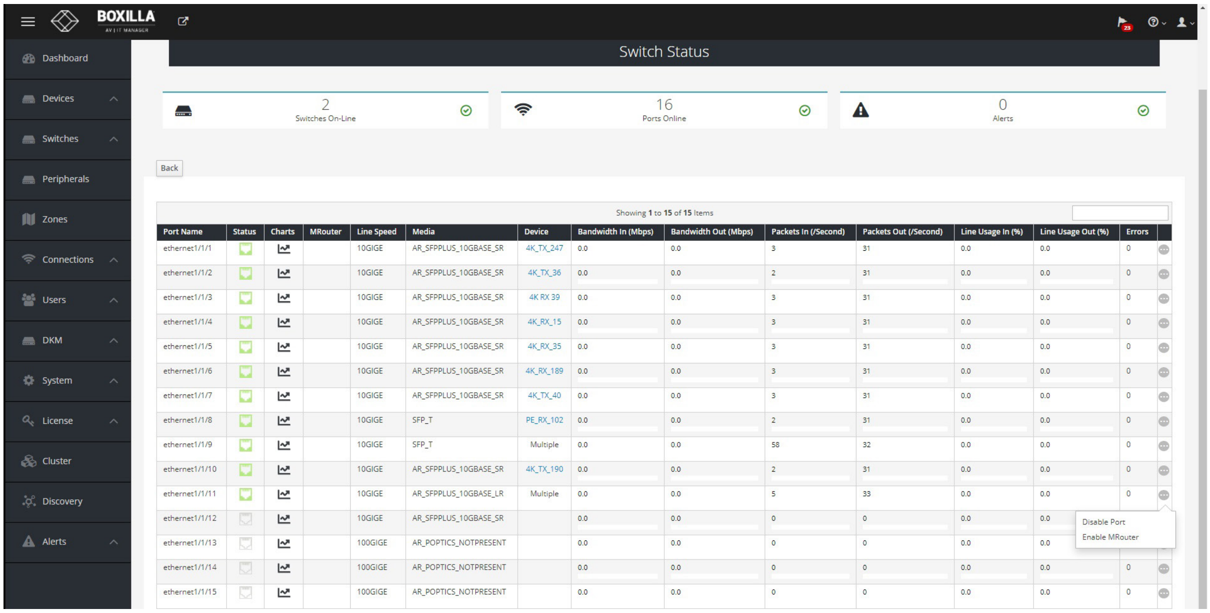


Showing 1 to 15 of 15 Items

Port Name	Status	Charts	MRouter	Line Speed	Media	Device	Bandwidth In (Mbps)	Bandwidth Out (Mbps)	Packets In (/Second)	Packets Out (/Second)	Line Usage In (%)	Line Usage Out (%)	Errors
ethernet1/1/1				10GIGE	AR_SFPPLUS_10GBASE_SR	4K_TX_247	0.0	0.0	0	39	0.0	0.0	0
ethernet1/1/2				10GIGE	AR_SFPPLUS_10GBASE_SR	4K_TX_36	1146.0	10082.0	852923	1705916	100.0	11.0	0
ethernet1/1/3				10GIGE	AR_SFPPLUS_10GBASE_SR	4K RX 39	10082.0	573.0	852955	852994	5.0	100.0	0
ethernet1/1/4				10GIGE	AR_SFPPLUS_10GBASE_SR	4K_RX_15	10059.0	571.0	851066	851076	5.0	100.0	0
ethernet1/1/5				10GIGE	AR_SFPPLUS_10GBASE_SR	4K_RX_35	10081.0	573.0	852885	852885	5.0	100.0	0
ethernet1/1/6				10GIGE	AR_SFPPLUS_10GBASE_SR	4K_RX_189	10112.0	573.0	851214	851290	5.0	100.0	0
ethernet1/1/7				10GIGE	AR_SFPPLUS_10GBASE_SR	4K_TX_40	1143.0	10060.0	851089	1702222	100.0	11.0	0
ethernet1/1/8				10GIGE	SFP_T	PE_RX_102	608.0	33.0	50113	50152	3.0	60.0	0
ethernet1/1/9				10GIGE	SFP_T	Multiple	33.0	597.0	49227	49192	59.0	3.0	0
ethernet1/1/10				10GIGE	AR_SFPPLUS_10GBASE_SR	4K_TX_190	573.0	10114.0	851423	851462	100.0	5.0	0
ethernet1/1/11				10GIGE	AR_SFPPLUS_10GBASE_LR	Multiple	10062.0	572.0	851232	851267	5.0	100.0	0
ethernet1/1/12				10GIGE	AR_SFPPLUS_10GBASE_SR		0.0	0.0	0	0	0.0	0.0	0
ethernet1/1/13				100GIGE	AR_POPTICS_NOTPRESENT		0.0	0.0	0	0	0.0	0.0	0
ethernet1/1/14				100GIGE	AR_POPTICS_NOTPRESENT		0.0	0.0	0	0	0.0	0.0	0
ethernet1/1/15				100GIGE	AR_POPTICS_NOTPRESENT		0.0	0.0	0	0	0.0	0.0	0

FIGURE 8-16. PORTS CONFIGURATION OVERVIEW

Click on the ellipsis "•••" icon and a drop-down menu appears.



Showing 1 to 15 of 15 Items

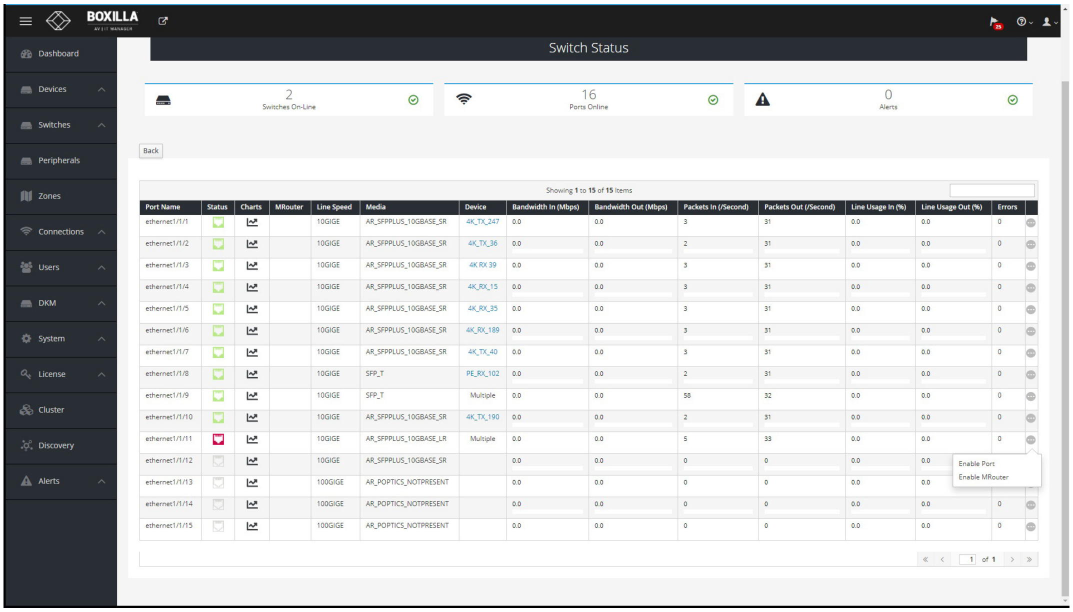
Port Name	Status	Charts	MRouter	Line Speed	Media	Device	Bandwidth In (Mbps)	Bandwidth Out (Mbps)	Packets In (/Second)	Packets Out (/Second)	Line Usage In (%)	Line Usage Out (%)	Errors
ethernet1/1/1				10GIGE	AR_SFPPLUS_10GBASE_SR	4K_TX_247	0.0	0.0	3	31	0.0	0.0	0
ethernet1/1/2				10GIGE	AR_SFPPLUS_10GBASE_SR	4K_TX_36	0.0	0.0	2	31	0.0	0.0	0
ethernet1/1/3				10GIGE	AR_SFPPLUS_10GBASE_SR	4K RX 39	0.0	0.0	3	31	0.0	0.0	0
ethernet1/1/4				10GIGE	AR_SFPPLUS_10GBASE_SR	4K_RX_15	0.0	0.0	3	31	0.0	0.0	0
ethernet1/1/5				10GIGE	AR_SFPPLUS_10GBASE_SR	4K_RX_35	0.0	0.0	3	31	0.0	0.0	0
ethernet1/1/6				10GIGE	AR_SFPPLUS_10GBASE_SR	4K_RX_189	0.0	0.0	3	31	0.0	0.0	0
ethernet1/1/7				10GIGE	AR_SFPPLUS_10GBASE_SR	4K_TX_40	0.0	0.0	3	31	0.0	0.0	0
ethernet1/1/8				10GIGE	SFP_T	PE_RX_102	0.0	0.0	2	31	0.0	0.0	0
ethernet1/1/9				10GIGE	SFP_T	Multiple	0.0	0.0	58	32	0.0	0.0	0
ethernet1/1/10				10GIGE	AR_SFPPLUS_10GBASE_SR	4K_TX_190	0.0	0.0	2	31	0.0	0.0	0
ethernet1/1/11				10GIGE	AR_SFPPLUS_10GBASE_LR	Multiple	0.0	0.0	5	33	0.0	0.0	0
ethernet1/1/12				10GIGE	AR_SFPPLUS_10GBASE_SR		0.0	0.0	0	0	0.0	0.0	
ethernet1/1/13				100GIGE	AR_POPTICS_NOTPRESENT		0.0	0.0	0	0	0.0	0.0	
ethernet1/1/14				100GIGE	AR_POPTICS_NOTPRESENT		0.0	0.0	0	0	0.0	0.0	0
ethernet1/1/15				100GIGE	AR_POPTICS_NOTPRESENT		0.0	0.0	0	0	0.0	0.0	0

FIGURE 8-17. PORT OPTIONS

The drop-down menu has two options: Disable Port and Enable MRouter.

If you click on Disable Port, the relevant port is disabled and you get a confirmation screen.

To enable a port again, click on the ellipsis "•••" icon next to a port that has status red in the following screen.



Switch Status

2 Switches On-Line | 16 Ports Online | 0 Alerts

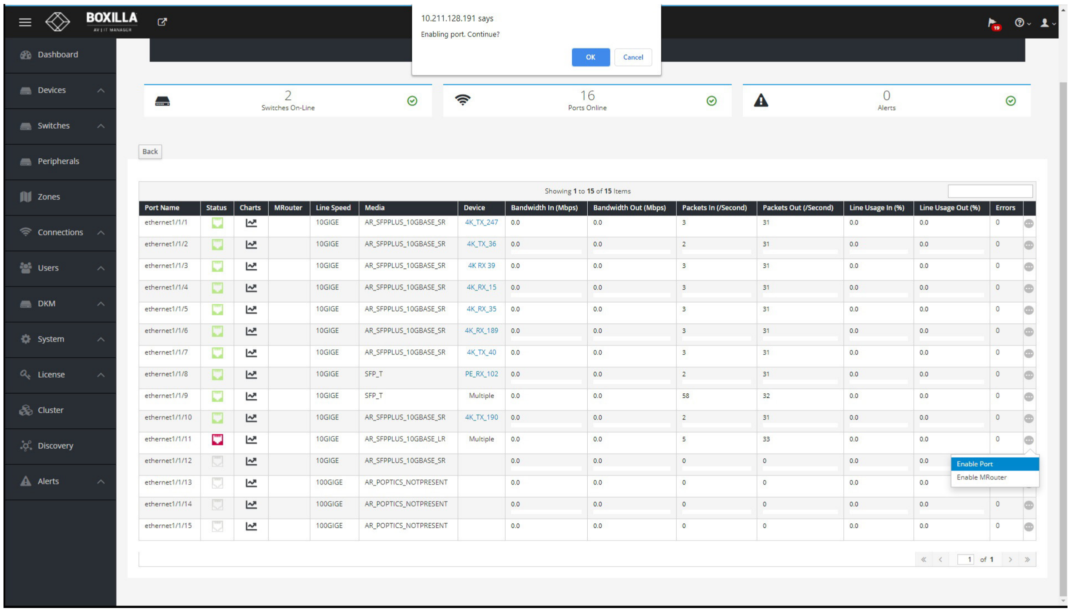
Showing 1 to 15 of 15 Items

Port Name	Status	Charts	MRouter	Line Speed	Media	Device	Bandwidth In (Mbps)	Bandwidth Out (Mbps)	Packets In (/Second)	Packets Out (/Second)	Line Usage In (%)	Line Usage Out (%)	Errors	
ethernet1/1/1	🟩	📈		10GIGE	AR_SFPPLUS_10GBASE_SR	4K_TX_247	0.0	0.0	3	31	0.0	0.0	0	•••
ethernet1/1/2	🟩	📈		10GIGE	AR_SFPPLUS_10GBASE_SR	4K_TX_36	0.0	0.0	2	31	0.0	0.0	0	•••
ethernet1/1/3	🟩	📈		10GIGE	AR_SFPPLUS_10GBASE_SR	4K RX 39	0.0	0.0	3	31	0.0	0.0	0	•••
ethernet1/1/4	🟩	📈		10GIGE	AR_SFPPLUS_10GBASE_SR	4K_RX_15	0.0	0.0	3	31	0.0	0.0	0	•••
ethernet1/1/5	🟩	📈		10GIGE	AR_SFPPLUS_10GBASE_SR	4K_RX_35	0.0	0.0	3	31	0.0	0.0	0	•••
ethernet1/1/6	🟩	📈		10GIGE	AR_SFPPLUS_10GBASE_SR	4K_RX_189	0.0	0.0	3	31	0.0	0.0	0	•••
ethernet1/1/7	🟩	📈		10GIGE	AR_SFPPLUS_10GBASE_SR	4K_TX_40	0.0	0.0	3	31	0.0	0.0	0	•••
ethernet1/1/8	🟩	📈		10GIGE	SFP_T	PE_RX_102	0.0	0.0	2	31	0.0	0.0	0	•••
ethernet1/1/9	🟩	📈		10GIGE	SFP_T	Multiple	0.0	0.0	58	32	0.0	0.0	0	•••
ethernet1/1/10	🟩	📈		10GIGE	AR_SFPPLUS_10GBASE_SR	4K_TX_190	0.0	0.0	2	31	0.0	0.0	0	•••
ethernet1/1/11	🟥	📈		10GIGE	AR_SFPPLUS_10GBASE_LR	Multiple	0.0	0.0	5	33	0.0	0.0	0	•••
ethernet1/1/12	⬜	📈		10GIGE	AR_SFPPLUS_10GBASE_SR		0.0	0.0	0	0	0.0	0.0		
ethernet1/1/13	⬜	📈		100GIGE	AR_POPTICS_NOTPRESENT		0.0	0.0	0	0	0.0	0.0		
ethernet1/1/14	⬜	📈		100GIGE	AR_POPTICS_NOTPRESENT		0.0	0.0	0	0	0.0	0.0	0	•••
ethernet1/1/15	⬜	📈		100GIGE	AR_POPTICS_NOTPRESENT		0.0	0.0	0	0	0.0	0.0	0	•••

FIGURE 8-18. ENABLE PORT AGAIN

A drop-down menu appears. This menu has two options: Enable Port and Enable MRouter.

If you click on Enable Port, the following screen appears. Click on this option to enable the port.



10.211.128.191 says

Enabling port. Continue?

2 Switches On-Line | 16 Ports Online | 0 Alerts

Showing 1 to 15 of 15 Items

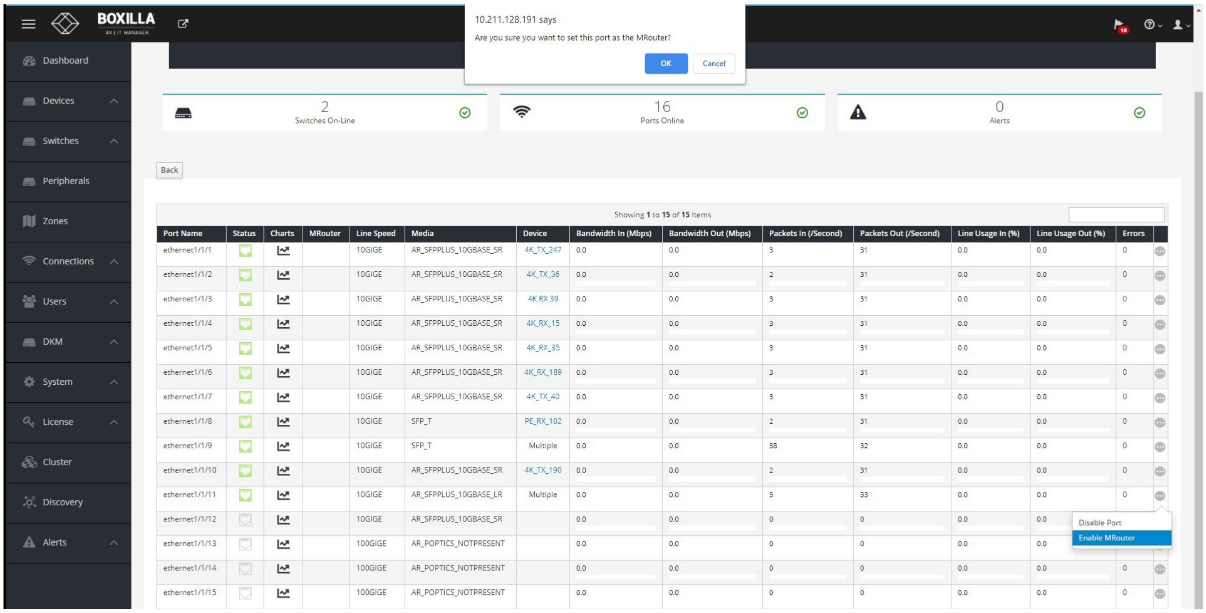
Port Name	Status	Charts	MRouter	Line Speed	Media	Device	Bandwidth In (Mbps)	Bandwidth Out (Mbps)	Packets In (/Second)	Packets Out (/Second)	Line Usage In (%)	Line Usage Out (%)	Errors	
ethernet1/1/1	🟩	📈		10GIGE	AR_SFPPLUS_10GBASE_SR	4K_TX_247	0.0	0.0	3	31	0.0	0.0	0	•••
ethernet1/1/2	🟩	📈		10GIGE	AR_SFPPLUS_10GBASE_SR	4K_TX_36	0.0	0.0	2	31	0.0	0.0	0	•••
ethernet1/1/3	🟩	📈		10GIGE	AR_SFPPLUS_10GBASE_SR	4K RX 39	0.0	0.0	3	31	0.0	0.0	0	•••
ethernet1/1/4	🟩	📈		10GIGE	AR_SFPPLUS_10GBASE_SR	4K_RX_15	0.0	0.0	3	31	0.0	0.0	0	•••
ethernet1/1/5	🟩	📈		10GIGE	AR_SFPPLUS_10GBASE_SR	4K_RX_35	0.0	0.0	3	31	0.0	0.0	0	•••
ethernet1/1/6	🟩	📈		10GIGE	AR_SFPPLUS_10GBASE_SR	4K_RX_189	0.0	0.0	3	31	0.0	0.0	0	•••
ethernet1/1/7	🟩	📈		10GIGE	AR_SFPPLUS_10GBASE_SR	4K_TX_40	0.0	0.0	3	31	0.0	0.0	0	•••
ethernet1/1/8	🟩	📈		10GIGE	SFP_T	PE_RX_102	0.0	0.0	2	31	0.0	0.0	0	•••
ethernet1/1/9	🟩	📈		10GIGE	SFP_T	Multiple	0.0	0.0	58	32	0.0	0.0	0	•••
ethernet1/1/10	🟩	📈		10GIGE	AR_SFPPLUS_10GBASE_SR	4K_TX_190	0.0	0.0	2	31	0.0	0.0	0	•••
ethernet1/1/11	🟥	📈		10GIGE	AR_SFPPLUS_10GBASE_LR	Multiple	0.0	0.0	5	33	0.0	0.0	0	•••
ethernet1/1/12	⬜	📈		10GIGE	AR_SFPPLUS_10GBASE_SR		0.0	0.0	0	0	0.0	0.0		
ethernet1/1/13	⬜	📈		100GIGE	AR_POPTICS_NOTPRESENT		0.0	0.0	0	0	0.0	0.0		
ethernet1/1/14	⬜	📈		100GIGE	AR_POPTICS_NOTPRESENT		0.0	0.0	0	0	0.0	0.0	0	•••
ethernet1/1/15	⬜	📈		100GIGE	AR_POPTICS_NOTPRESENT		0.0	0.0	0	0	0.0	0.0	0	•••

FIGURE 8-19. ENABLE PORT CONFIRM

MROUTER

When you select MRouter it goes to the switch and issues the MRouter command. You only want one port to be the MRouter at any time on the switch, so any time the user selects an MRouter, you remove the current MRouter and select the new one.

If you click on Enable MRouter, the popup shown next appears. Click on this option then OK to confirm.



10.211.128.191 says

Are you sure you want to set this port as the MRouter?

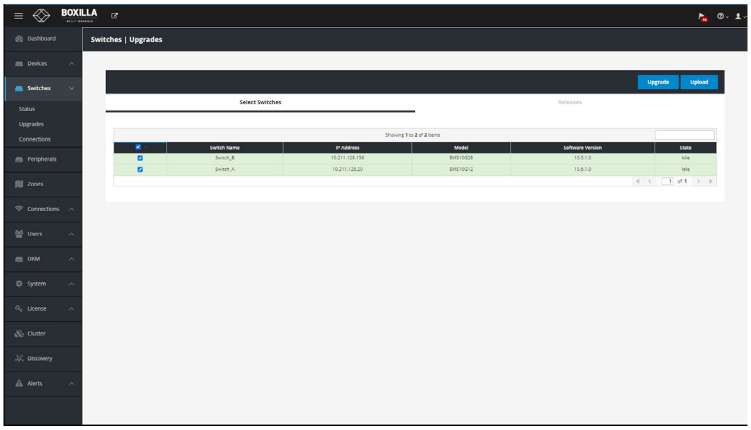
Showing 1 to 15 of 15 Items

Port Name	Status	Charts	MRouter	Line Speed	Media	Device	Bandwidth In (Mbps)	Bandwidth Out (Mbps)	Packets In (/Second)	Packets Out (/Second)	Line Usage In (%)	Line Usage Out (%)	Errors
ethernet1/1/1				10GIGE	AR_SFPPLUS_10GBASE_SR	4K_TX_247	0.0	0.0	3	31	0.0	0.0	0
ethernet1/1/2				10GIGE	AR_SFPPLUS_10GBASE_SR	4K_TX_36	0.0	0.0	2	31	0.0	0.0	0
ethernet1/1/3				10GIGE	AR_SFPPLUS_10GBASE_SR	4K RX 39	0.0	0.0	3	31	0.0	0.0	0
ethernet1/1/4				10GIGE	AR_SFPPLUS_10GBASE_SR	4K_RX_15	0.0	0.0	3	31	0.0	0.0	0
ethernet1/1/5				10GIGE	AR_SFPPLUS_10GBASE_SR	4K_RX_35	0.0	0.0	3	31	0.0	0.0	0
ethernet1/1/6				10GIGE	AR_SFPPLUS_10GBASE_SR	4K_RX_189	0.0	0.0	3	31	0.0	0.0	0
ethernet1/1/7				10GIGE	AR_SFPPLUS_10GBASE_SR	4K_TX_40	0.0	0.0	3	31	0.0	0.0	0
ethernet1/1/8				10GIGE	SFP_T	PE_RX_102	0.0	0.0	2	31	0.0	0.0	0
ethernet1/1/9				10GIGE	SFP_T	Multiple	0.0	0.0	58	32	0.0	0.0	0
ethernet1/1/10				10GIGE	AR_SFPPLUS_10GBASE_SR	4K_TX_190	0.0	0.0	2	31	0.0	0.0	0
ethernet1/1/11				10GIGE	AR_SFPPLUS_10GBASE_LR	Multiple	0.0	0.0	5	33	0.0	0.0	0
ethernet1/1/12				10GIGE	AR_SFPPLUS_10GBASE_SR		0.0	0.0	0	0	0.0	0.0	
ethernet1/1/13				100GIGE	AR_POPTICS_NOTPRESENT		0.0	0.0	0	0	0.0	0.0	
ethernet1/1/14				100GIGE	AR_POPTICS_NOTPRESENT		0.0	0.0	0	0	0.0	0.0	0
ethernet1/1/15				100GIGE	AR_POPTICS_NOTPRESENT		0.0	0.0	0	0	0.0	0.0	0

FIGURE 8-20. ENABLE MROUTER

8.2 SWITCHES - UPGRADES

The upgrades page is similar to the appliance upgrades page. It lists the switches currently in the database and also indicates "active release" in the database. Any switch that does not match this release is highlighted in red. You can then select multiple switches and upgrade them in parallel. The upgrade state changes dynamically as the switch goes through different stages of the upgrade process. It transfers the file to the switch, upgrades the switch, then reboots and verifies the upgrade. If all is successful, the switch is now be highlighted in green. If there has been an error, the switch row is highlighted in red with the error state displaying. NOTE: The switch takes about 15 minutes to upgrade and restart.



Switches | Upgrades

Showing 1 to 2 of 2 Items

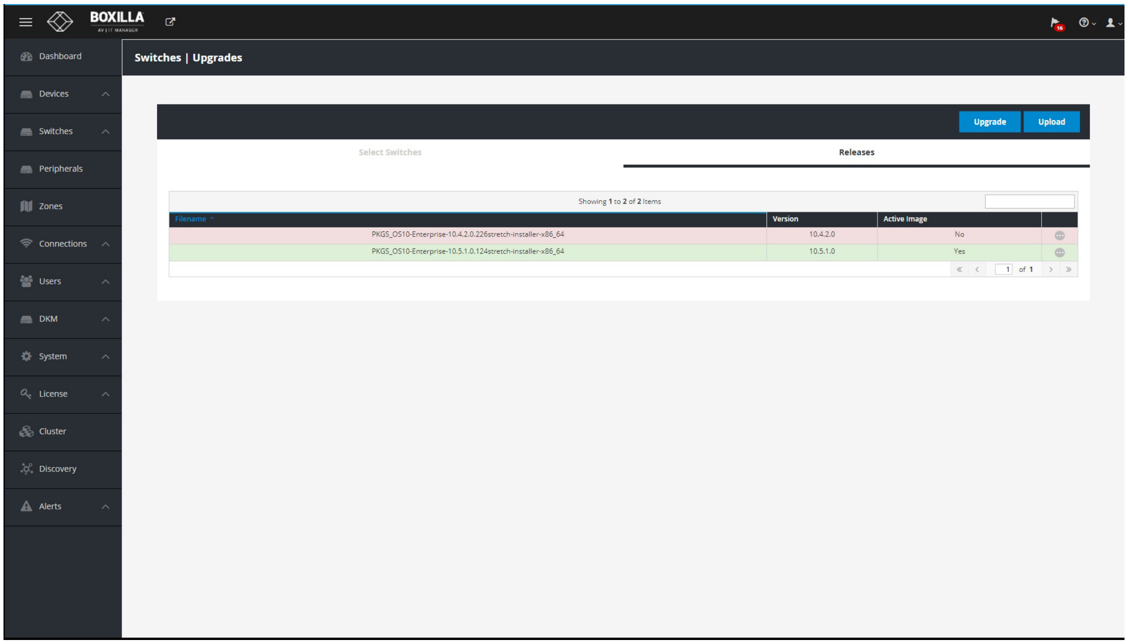
☑	Switch Name	IP Address	Model	Software Version	State
☑	Switch_B	10.211.128.156	EMS10G28	10.5.1.0	Idle
☑	Switch_A	10.211.128.20	EMS10G12	10.5.1.0	Idle

1 of 1

FIGURE 8-21. SWITCH UPGRADES PAGE

Activate Release

Click on the Releases tab, then click on the drop-down menu item and Activate the release.



Switches | Upgrades

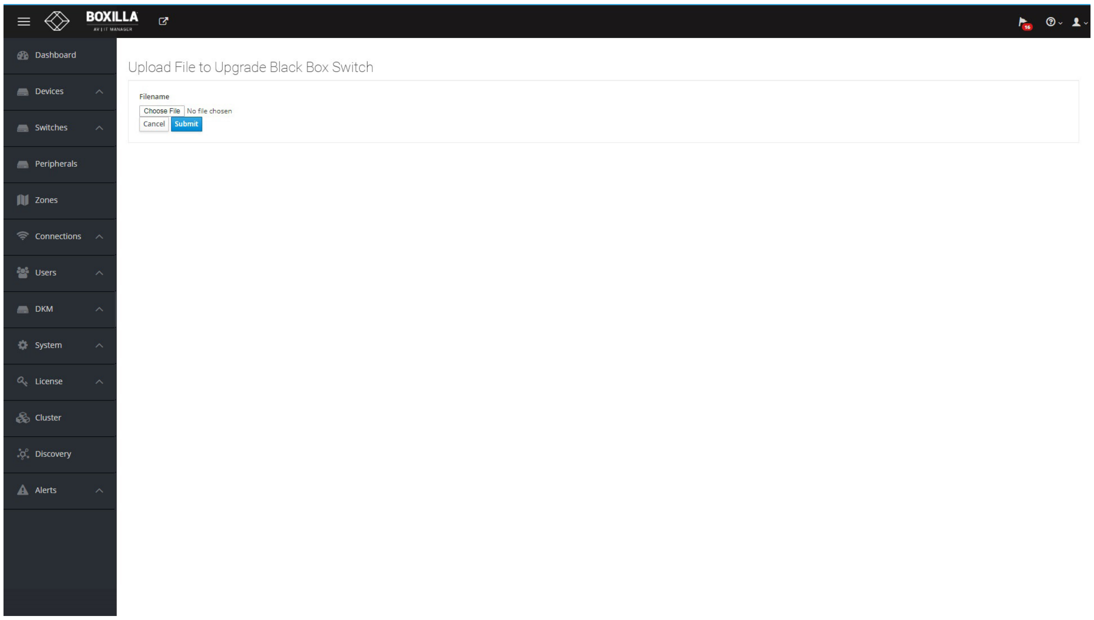
Showing 1 to 2 of 2 Items

Filename ^	Version	Active Image	
PKGS_OS10-Enterprise-10.4.2.0.226stretch-installer-x86_64	10.4.2.0	No	⋯
PKGS_OS10-Enterprise-10.5.1.0.124stretch-installer-x86_64	10.5.1.0	Yes	⋯

FIGURE 8-22. ACTIVATE RELEASE

You can also delete this release.

Upload Release



Upload File to Upgrade Black Box Switch

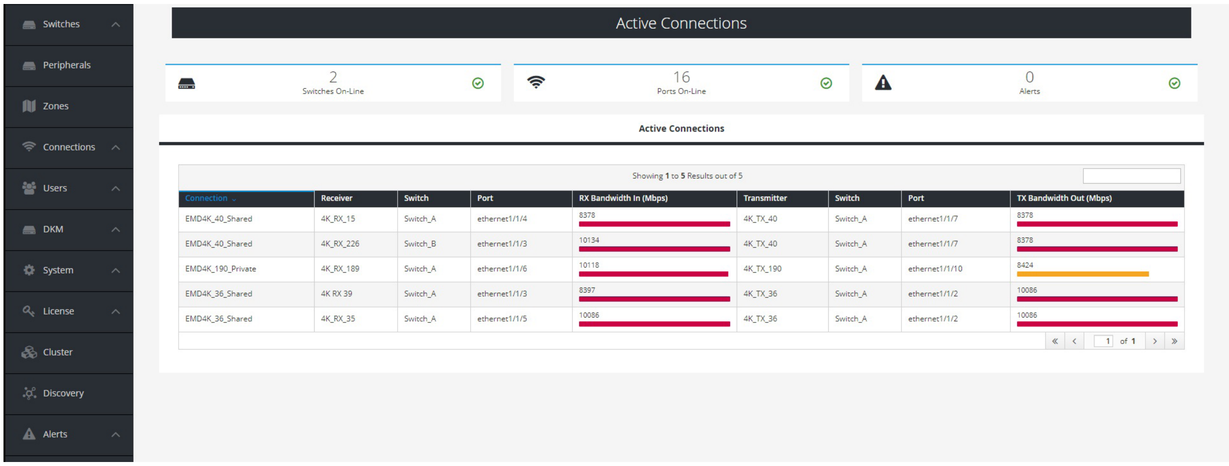
Filename

No file chosen

FIGURE 8-23. UPLOAD RELEASE

8.3 SWITCHES — CONNECTIONS

The Connections page when clicked shows a list of all the active KVM Transmitter to Receiver connections across all Black Box branded switches managed by Boxilla in the KVM network. This has three summary info cards on the top of the screen that detail the number of switches currently online managed by Boxilla, how many ports have a cable connected and are active, and how many alerts are across the whole Boxilla system relating to switches.



Active Connections

Showing 1 to 5 Results out of 5

Connection	Receiver	Switch	Port	RX Bandwidth In (Mbps)	Transmitter	Switch	Port	TX Bandwidth Out (Mbps)
EMD4K_40_Shared	4K_RX_15	Switch_A	ethernet1/1/4	8378	4K_TX_40	Switch_A	ethernet1/1/7	8378
EMD4K_40_Shared	4K_RX_226	Switch_B	ethernet1/1/3	10134	4K_TX_40	Switch_A	ethernet1/1/7	8378
EMD4K_190_Private	4K_RX_189	Switch_A	ethernet1/1/6	10118	4K_TX_190	Switch_A	ethernet1/1/10	8424
EMD4K_36_Shared	4K RX 39	Switch_A	ethernet1/1/3	8397	4K_TX_36	Switch_A	ethernet1/1/2	10086
EMD4K_36_Shared	4K_RX_35	Switch_A	ethernet1/1/5	10086	4K_TX_36	Switch_A	ethernet1/1/2	10086

1 of 1

FIGURE 8-24. ACTIVE CONNECTIONS

Each Active Connection is displayed in the table. The contents of each row in the Active Connections table includes:

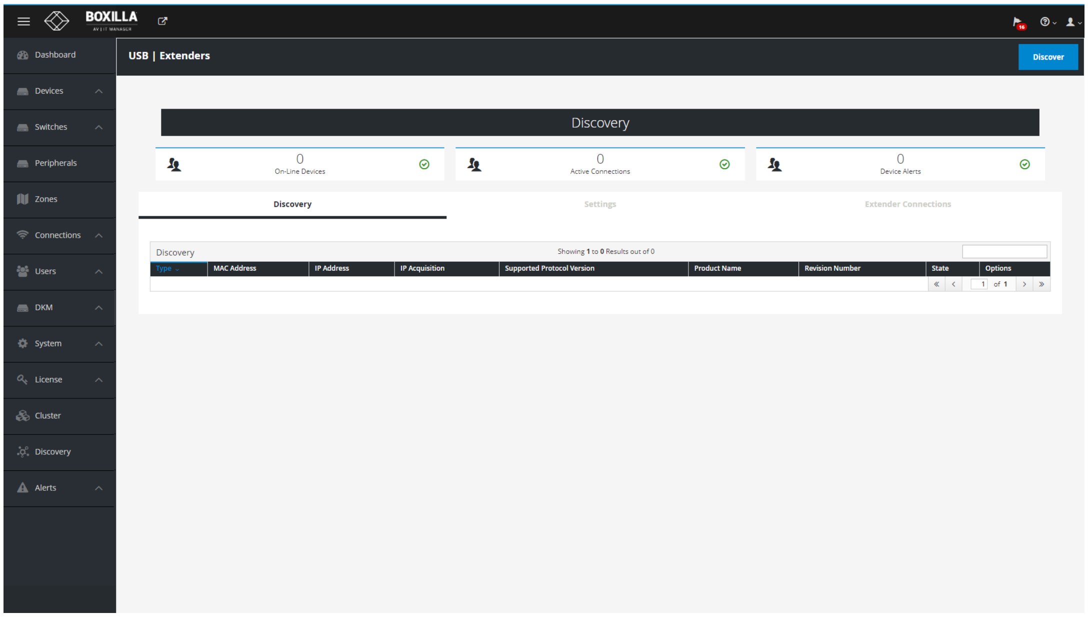
- Connection Name.
- From a Receiver device perspective:
  - The name of the KVM Receiver device.
  - The Black Box branded Switch name and Port number where the KVM Receiver device is attached to.
  - Receiver Bandwidth in Mbps (integer and bar chart) at the Switch Port.
- From a Transmitter device perspective:
  - The name of the KVM Transmitter device.
  - The Black Box branded Switch name and Port number where the KVM Transmitter device is attached to.
  - Transmitter Bandwidth in Mbps (integer and bar chart) at the Switch Port.

CHAPTER 9: PERIPHERALS

To support external USB switching that can handle speeds up to 480 Mbps (USB High Speed), additional USB hubs can be bonded with the Emerald technology. To configure the USB Hub bonding, the Boxilla will need to be part of the application.

Connect the USB 2.0 Transmitters and Receivers to the Emerald/Boxilla network. In Boxilla, the administrator can navigate to the "Peripherals" tab and discover the USB 2.0 Transmitters and Receivers. The EMD100USB extenders are the only USB 2.0 devices that are supported for Boxilla bonding.

9.1 PERIPHERALS - DISCOVERY TAB

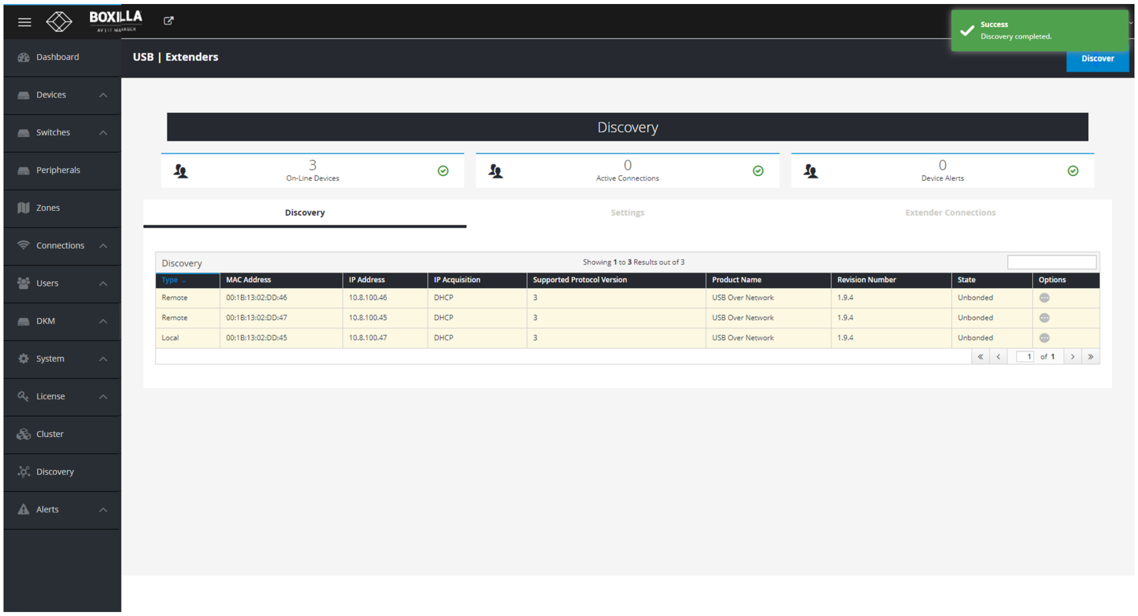


Discovery Showing 1 to 0 Results out of 0

Type	MAC Address	IP Address	IP Acquisition	Supported Protocol Version	Product Name	Revision Number	State	Options

1 of 1

FIGURE 9-1. DISCOVERY TAB



Success
Discovery completed.

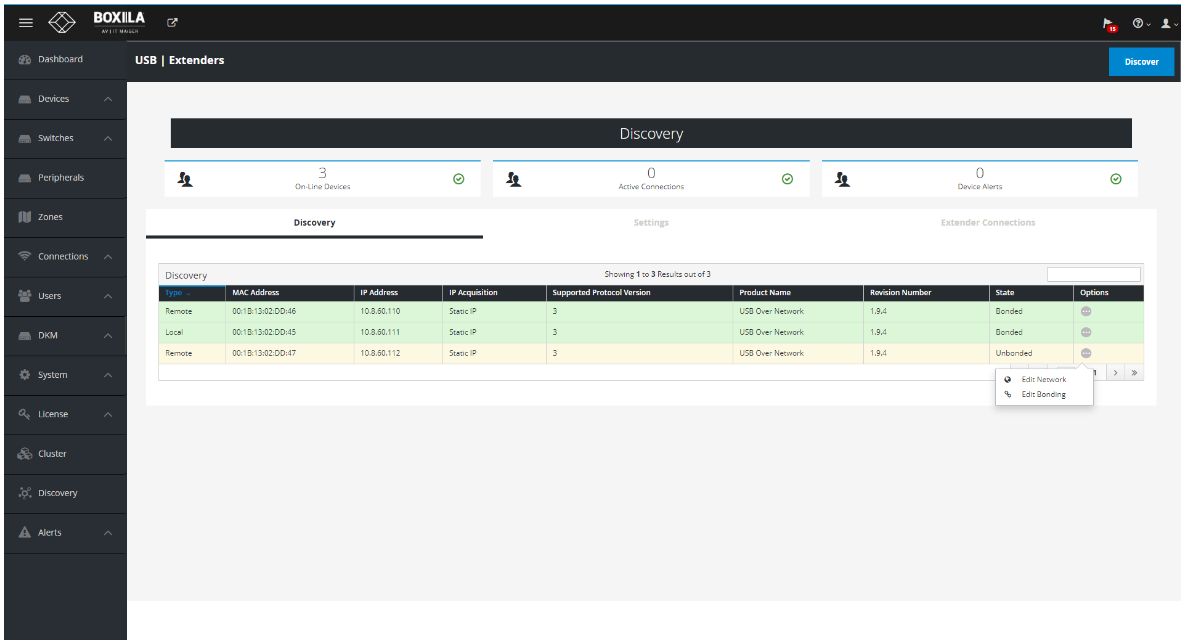
Discovery Showing 1 to 3 Results out of 3

Type	MAC Address	IP Address	IP Acquisition	Supported Protocol Version	Product Name	Revision Number	State	Options
Remote	00:1B:13:02:DD:46	10.8.100.46	DHCP	3	USB Over Network	1.9.4	Unbonded	⋯
Remote	00:1B:13:02:DD:47	10.8.100.45	DHCP	3	USB Over Network	1.9.4	Unbonded	⋯
Local	00:1B:13:02:DD:45	10.8.100.47	DHCP	3	USB Over Network	1.9.4	Unbonded	⋯

1 of 1

FIGURE 9-2. DISCOVERY SUCCESS

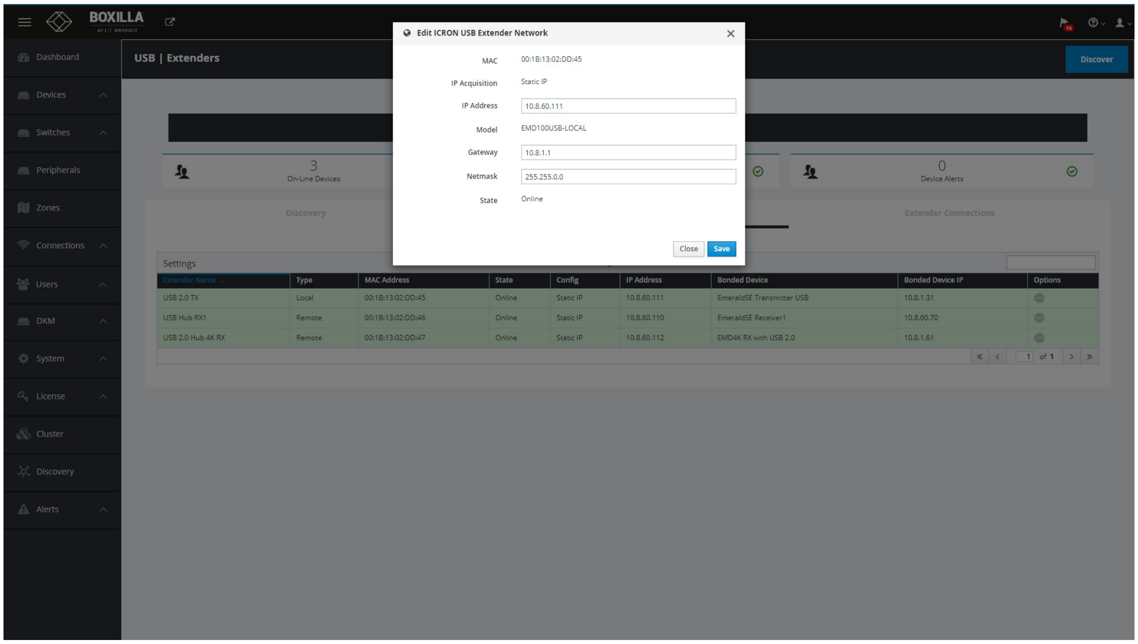
Once discovered, the DHCP IP address will need to change to Static by using the "Edit Network" option, so be sure to configure the devices with Static IP addresses that are part of the same subnet as the Emerald technology.



Discovery — Showing 1 to 3 Results out of 3

Type	MAC Address	IP Address	IP Acquisition	Supported Protocol Version	Product Name	Revision Number	State	Options
Remote	00:1B:13:02:DD:46	10.8.60.110	Static IP	3	USB Over Network	1.9.4	Bonded	
Local	00:1B:13:02:DD:45	10.8.60.111	Static IP	3	USB Over Network	1.9.4	Bonded	
Remote	00:1B:13:02:DD:47	10.8.60.112	Static IP	3	USB Over Network	1.9.4	Unbonded	

FIGURE 9-3. EDIT NETWORK OPTION



Edit ICRON USB Extender Network

MAC: 00:1B:13:02:DD:45
IP Acquisition: Static IP
IP Address: 10.8.60.111
Model: EMD100USB-LOCAL
Gateway: 10.8.1.1
Netmask: 255.255.0.0
State: Online

Settings

Extender Name	Type	MAC Address	State	Config	IP Address	Bonded Device	Bonded Device IP	Options
USB 2.0 TX	Local	00:1B:13:02:DD:45	Online	Static IP	10.8.60.111	EmeraldSE Transmitter USB	10.8.1.31	
USB Hub RX1	Remote	00:1B:13:02:DD:46	Online	Static IP	10.8.60.110	EmeraldSE Receiver1	10.8.60.70	
USB 2.0 Hub 4K RX	Remote	00:1B:13:02:DD:47	Online	Static IP	10.8.60.112	EMD4K RX with USB 2.0	10.8.1.61	

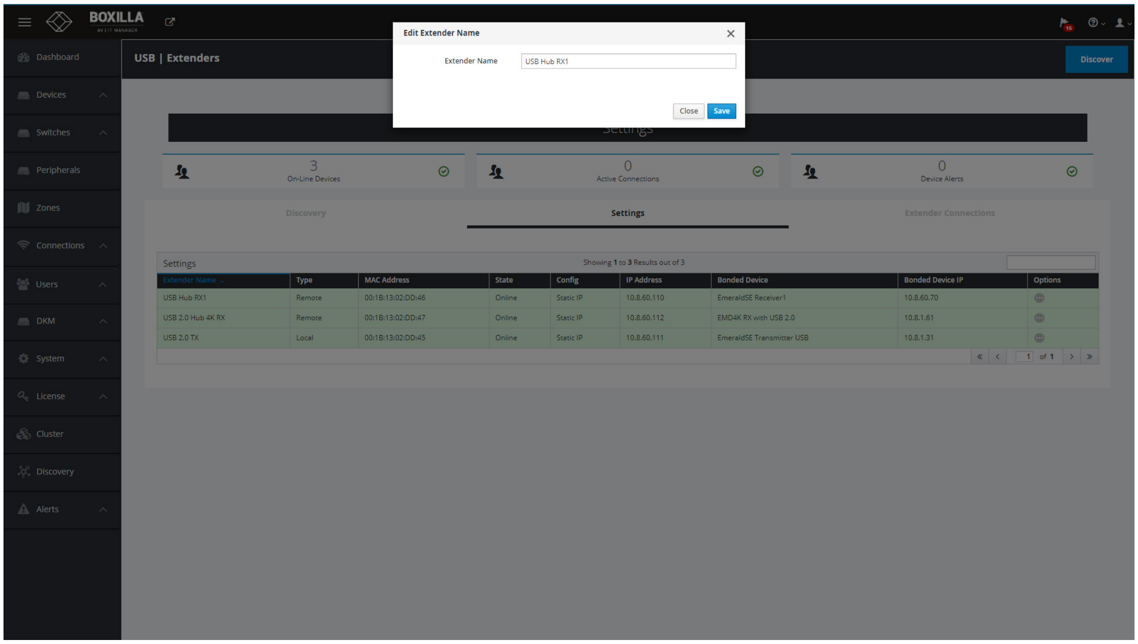
1 of 1

FIGURE 9-4. EDIT USB EXTENDER NETWORK SCREEN

CHAPTER 9: PERIPHERALS

NOTE: The automatic discovery of EMD100USB devices assumes a DHCP server is operational on the target network. If a DHCP server is not present on the target network each EMDUSB100 extender is initially configured with the 169.254 static subnet direct from the factory, with its detailed IP address under the subnet remaining hidden. If you do not have a DHCP server on the network that can assign an IP address to the device, Black Box can provide the needed steps to configure them using a command prompt.

You can now Bond the USB 2.0 Transmitters and Receivers to the Emerald Transmitters and Receivers by choosing "Edit Bonding" and giving the device a name and selecting which Emerald device it is bonded with.



Edit Extender Name

Extender Name: USB Hub RX1

Settings

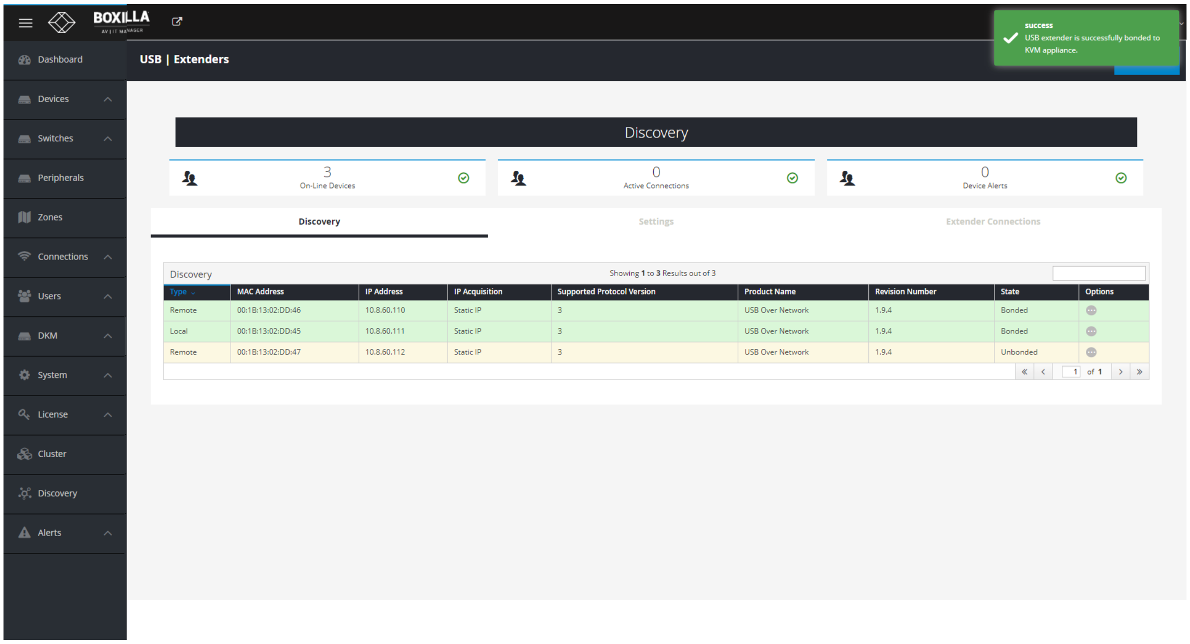
Showing 1 to 3 Results out of 3

Extender Name	Type	MAC Address	State	Config	IP Address	Bonded Device	Bonded Device IP	Options
USB Hub RX1	Remote	00:1B:13:02:DD:46	Online	Static IP	10.8.60.110	EmeraldSE Receiver1	10.8.60.70	⋯
USB 2.0 Hub 4K RX	Remote	00:1B:13:02:DD:47	Online	Static IP	10.8.60.112	EMD4K RX with USB 2.0	10.8.1.61	⋯
USB 2.0 TX	Local	00:1B:13:02:DD:45	Online	Static IP	10.8.60.111	EmeraldSE Transmitter USB	10.8.1.31	⋯

1 of 1

FIGURE 9-5. ENTER EXTENDER NAME SCREEN

Repeat the bonding for additional extenders.



success
USB extender is successfully bonded to KVM appliance.

Discovery

Showing 1 to 3 Results out of 3

Type	MAC Address	IP Address	IP Acquisition	Supported Protocol Version	Product Name	Revision Number	State	Options
Remote	00:1B:13:02:DD:46	10.8.60.110	Static IP	3	USB Over Network	1.9.4	Bonded	⋯
Local	00:1B:13:02:DD:45	10.8.60.111	Static IP	3	USB Over Network	1.9.4	Bonded	⋯
Remote	00:1B:13:02:DD:47	10.8.60.112	Static IP	3	USB Over Network	1.9.4	Unbonded	⋯

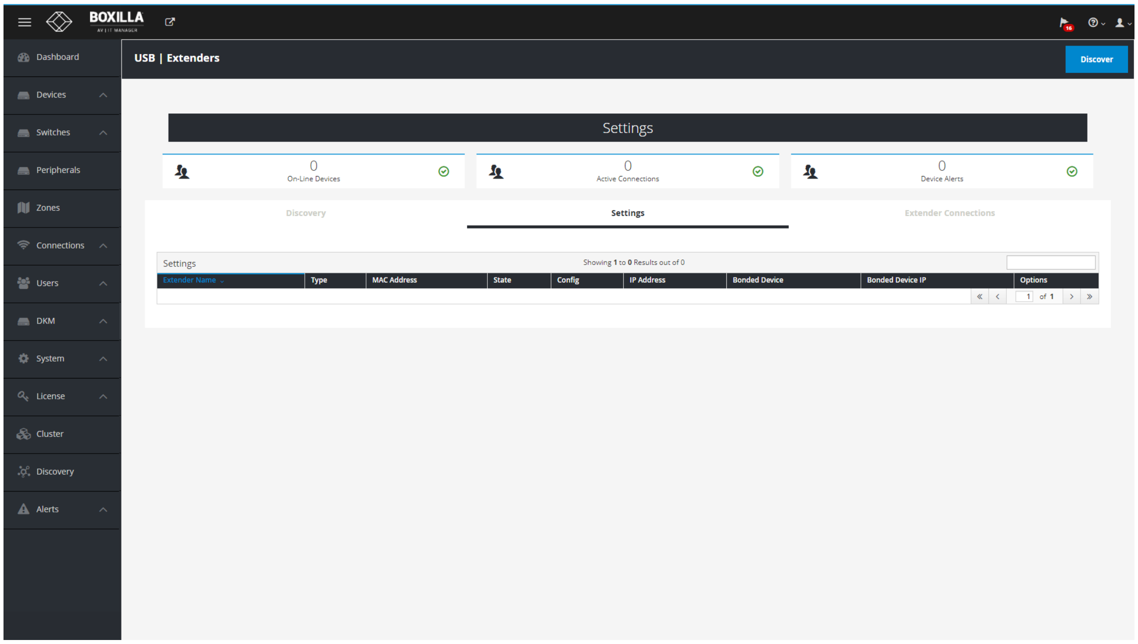
1 of 1

FIGURE 9-6. BONDING SUCCESS, DEVICE 2 SCREEN

Once the USB 2.0 Transmitters and Receivers are bonded with Emerald hardware, they can be used during the connection. When establishing a new connection or breaking a connection, the USB 2.0 Transmitters and Receivers will switch with their respective bonded Emerald connection.

9.2 PERIPHERALS - SETTINGS TAB

Additional functions can be used with the USB 2.0 Transmitter and Receivers hubs by navigating to Peripherals>>Settings.



Settings

Showing 1 to 0 Results out of 0

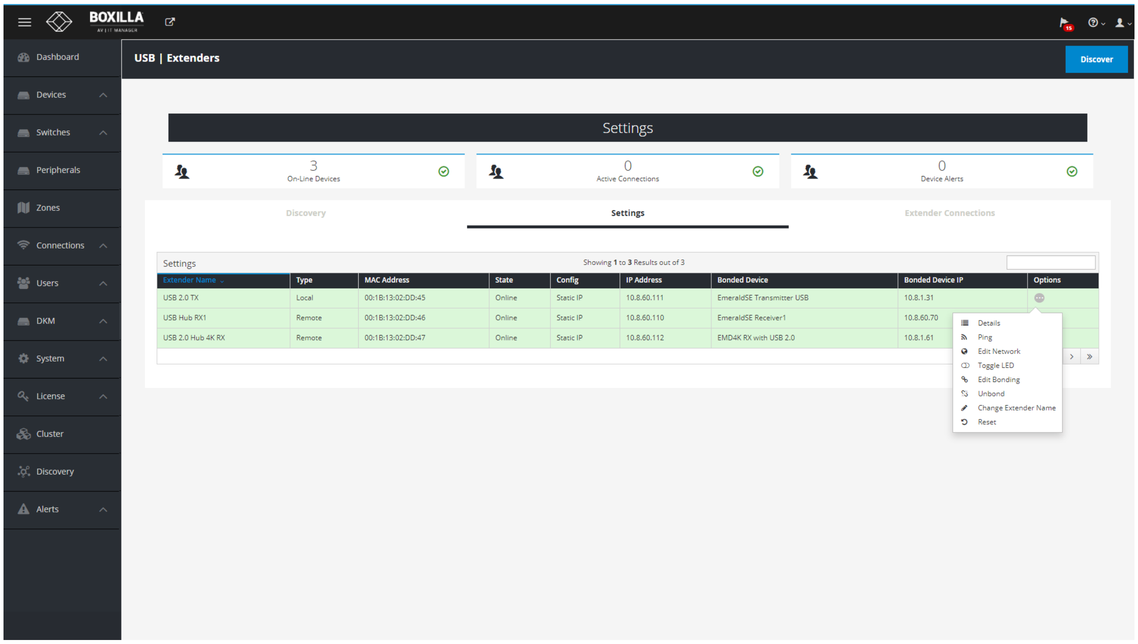
Extender Name	Type	MAC Address	State	Config	IP Address	Bonded Device	Bonded Device IP	Options

1 of 1

FIGURE 9-7. PERIPHERALS>>SETTINGS TAB

These functions include:

- Getting Details of the devices such as IP and Mac Address



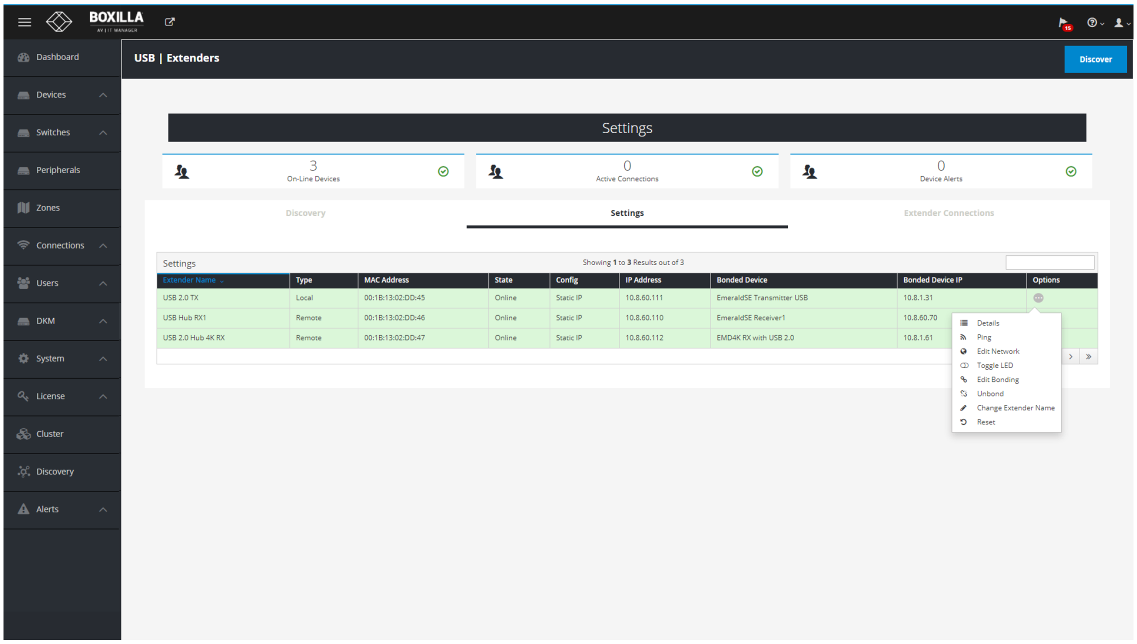
Settings

Showing 1 to 3 Results out of 3

Extender Name	Type	MAC Address	State	Config	IP Address	Bonded Device	Bonded Device IP	Options
USB 2.0 TX	Local	00:1B:13:02:DD:45	Online	Static IP	10.8.60.111	EmeraldSE Transmitter USB	10.8.1.31	⋯
USB Hub RX1	Remote	00:1B:13:02:DD:46	Online	Static IP	10.8.60.110	EmeraldSE Receiver1	10.8.60.70	
USB 2.0 Hub 4K RX	Remote	00:1B:13:02:DD:47	Online	Static IP	10.8.60.112	EMD4K RX with USB 2.0	10.8.1.61	

FIGURE 9-8. DEVICE DETAILS

- Pinging devices

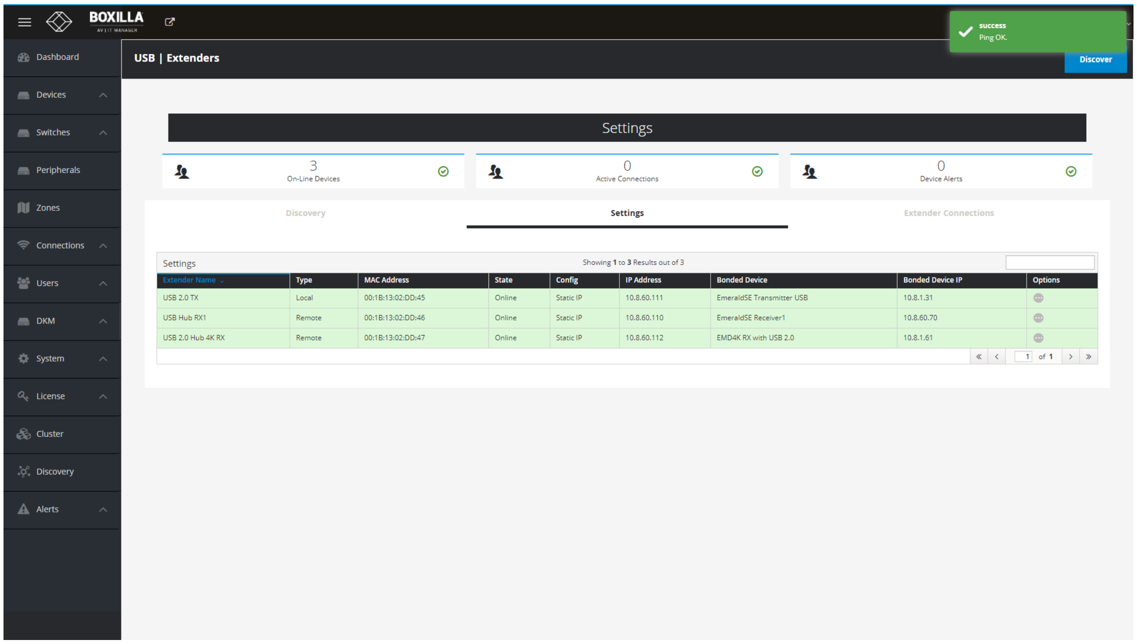


Settings

Showing **1** to **3** Results out of 3

Extender Name	Type	MAC Address	State	Config	IP Address	Bonded Device	Bonded Device IP	Options
USB 2.0 TX	Local	00:1B:13:02:DD:45	Online	Static IP	10.8.60.111	EmeraldSE Transmitter USB	10.8.1.31	⋯
USB Hub RX1	Remote	00:1B:13:02:DD:46	Online	Static IP	10.8.60.110	EmeraldSE Receiver1	10.8.60.70	
USB 2.0 Hub 4K RX	Remote	00:1B:13:02:DD:47	Online	Static IP	10.8.60.112	EMD4K RX with USB 2.0	10.8.1.61	

FIGURE 9-9. OPTIONS MENU



success
Ping OK.

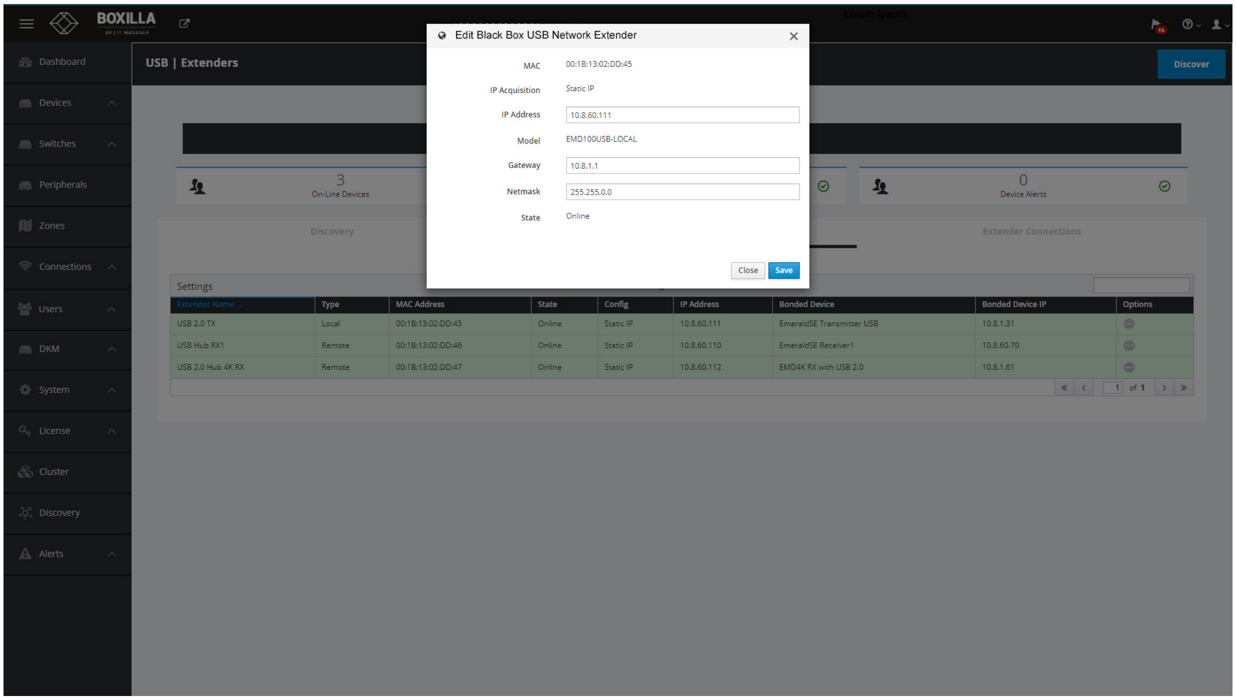
Settings

Showing **1** to **3** Results out of 3

Extender Name	Type	MAC Address	State	Config	IP Address	Bonded Device	Bonded Device IP	Options
USB 2.0 TX	Local	00:1B:13:02:DD:45	Online	Static IP	10.8.60.111	EmeraldSE Transmitter USB	10.8.1.31	⋯
USB Hub RX1	Remote	00:1B:13:02:DD:46	Online	Static IP	10.8.60.110	EmeraldSE Receiver1	10.8.60.70	⋯
USB 2.0 Hub 4K RX	Remote	00:1B:13:02:DD:47	Online	Static IP	10.8.60.112	EMD4K RX with USB 2.0	10.8.1.61	⋯

FIGURE 9-10. PING OK SCREEN

- Edit Network Settings



Edit Black Box USB Network Extender

MAC	00:1B:13:02:DD:45
IP Acquisition	Static IP
IP Address	10.8.60.111
Model	EMD100USB-LOCAL
Gateway	10.8.1.1
Netmask	255.255.0.0
State	Online

Close Save

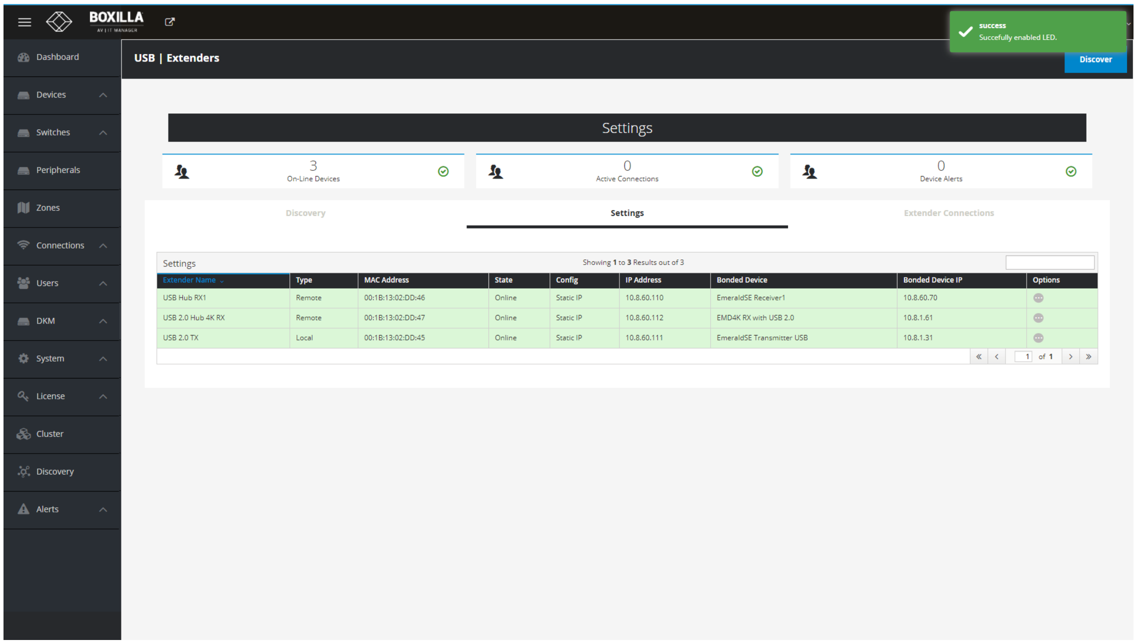
Settings

Extender Name	Type	MAC Address	State	Config	IP Address	Bonded Device	Bonded Device IP	Options
USB 2.0 TX	Local	00:1B:13:02:DD:45	Online	Static IP	10.8.60.111	EmeraldSE Transmitter USB	10.8.1.31	⋯
USB Hub RX1	Remote	00:1B:13:02:DD:46	Online	Static IP	10.8.60.110	EmeraldSE Receiver1	10.8.60.70	⋯
USB 2.0 Hub 4K RX	Remote	00:1B:13:02:DD:47	Online	Static IP	10.8.60.112	EMD4K RX with USB 2.0	10.8.1.61	⋯

1 of 1

FIGURE 9-11. EDIT NETWORK SETTINGS SCREEN

- Toggle LED for identification



success
Succefully enabled LED.

Settings

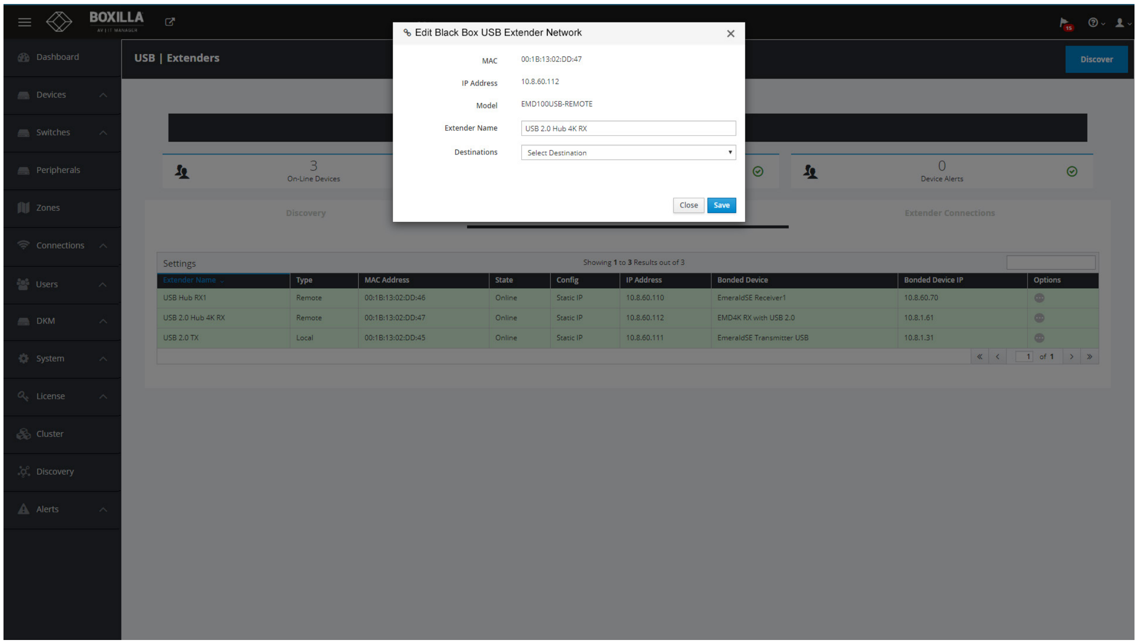
Showing **1** to **3** Results out of 3

Extender Name	Type	MAC Address	State	Config	IP Address	Bonded Device	Bonded Device IP	Options
USB Hub RX1	Remote	00:1B:13:02:DD:46	Online	Static IP	10.8.60.110	EmeraldSE Receiver1	10.8.60.70	⋯
USB 2.0 Hub 4K RX	Remote	00:1B:13:02:DD:47	Online	Static IP	10.8.60.112	EMD4K RX with USB 2.0	10.8.1.61	⋯
USB 2.0 TX	Local	00:1B:13:02:DD:45	Online	Static IP	10.8.60.111	EmeraldSE Transmitter USB	10.8.1.31	⋯

1 of 1

FIGURE 9-12. TOGGLE LED SUCCESS SCREEN

- Edit Bonding Settings



Edit Black Box USB Extender Network

MAC 00:1B:13:02:DD:47

IP Address 10.8.60.112

Model EMD100USB-REMOTE

Extender Name: USB 2.0 Hub 4K RX

Destinations: Select Destination ▾

Close Save

Settings

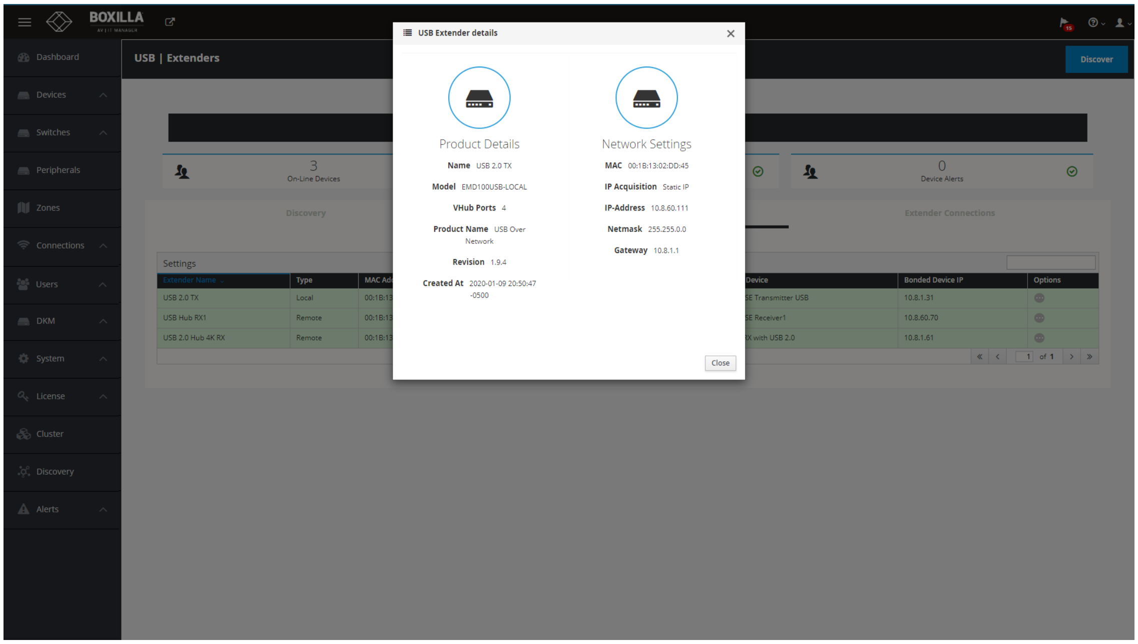
Showing **1** to **3** Results out of 3

Extender Name	Type	MAC Address	State	Config	IP Address	Bonded Device	Bonded Device IP	Options
USB Hub RX1	Remote	00:1B:13:02:DD:46	Online	Static IP	10.8.60.110	EmeraldSE Receiver1	10.8.60.70	⋯
USB 2.0 Hub 4K RX	Remote	00:1B:13:02:DD:47	Online	Static IP	10.8.60.112	EMD4K RX with USB 2.0	10.8.1.61	⋯
USB 2.0 TX	Local	00:1B:13:02:DD:45	Online	Static IP	10.8.60.111	EmeraldSE Transmitter USB	10.8.1.31	⋯

1 of 1

FIGURE 9-13. EDIT BONDING SETTINGSSCREEN

- Unbond the USB hub
- Change extender name
- Reset the unit



USB Extender details

Product Details

Name USB 2.0 TX

Model EMD100USB-LOCAL

VHub Ports 4

Product Name USB Over Network

Revision 1.9.4

Created At 2020-01-09 20:50:47 -0500

Network Settings

MAC 00:1B:13:02:DD:45

IP Acquisition Static IP

IP-Address 10.8.60.111

Netmask 255.255.0.0

Gateway 10.8.1.1

Close

Settings

Extender Name	Type	MAC Ad	Device	Bonded Device IP	Options
USB 2.0 TX	Local	00:1B:13	E Transmitter USB	10.8.1.31	⋯
USB Hub RX1	Remote	00:1B:13	E Receiver1	10.8.60.70	⋯
USB 2.0 Hub 4K RX	Remote	00:1B:13	X with USB 2.0	10.8.1.61	⋯

1 of 1

FIGURE 9-14. EXTENDER DETAILS SCREEN

9.3 PERIPHERALS - EXTENDER CONNECTIONS TAB

Additionally, you can see the active connections under Peripherals>>Extender Connections.

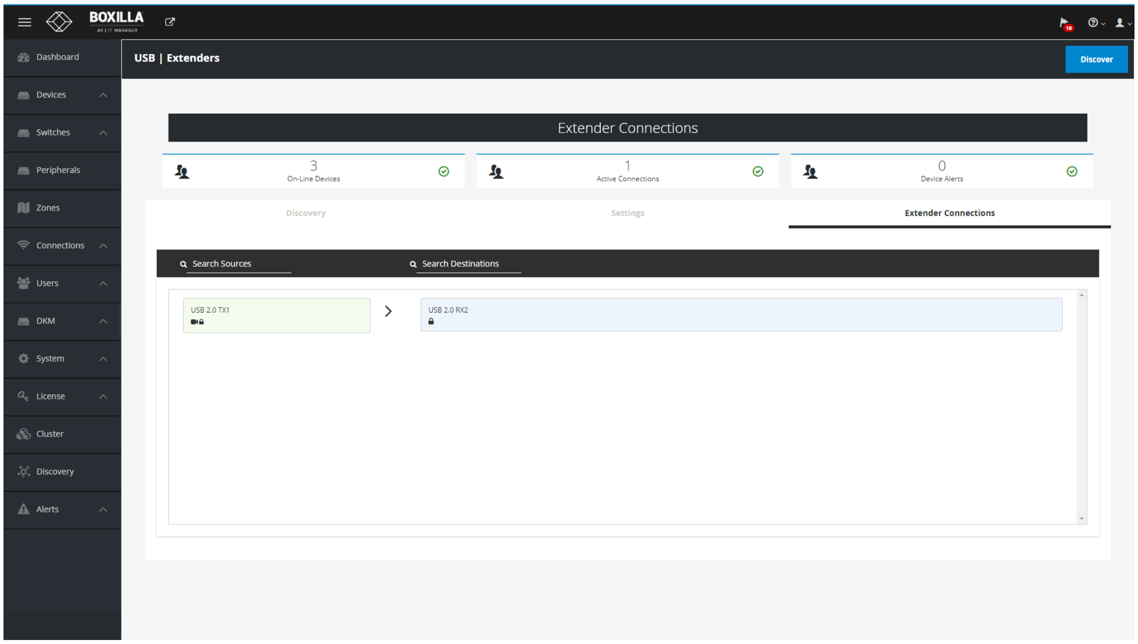


FIGURE 9-15. EXTENDER CONNECTIONS TAB

CHAPTER 10: ZONES

10.1 EMERALD ZONING FEATURE

Background:

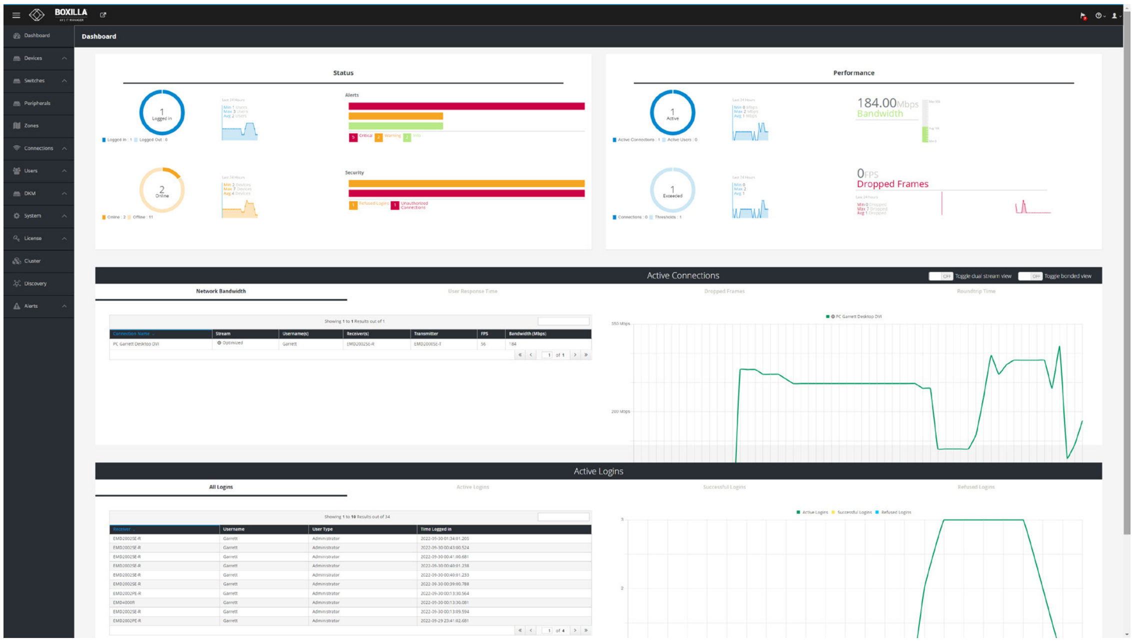
Emerald users can have access to Emerald devices from multiple locations. These locations can be on different rooms, floors, buildings, or even cities. The concept is that users in different locations are required to use their login, but may have different security access depending on locations or simply different access requirements based on location.

Zoning in Emerald is used to associate each Physical Receiver and each connection (physical or virtual) with a zone; the zone is typically a location.

Feature Description/Use Case:

The System can set up each Receiver and each connection to be in a zone. The user will receive Targets on their OSD list that are dependent on the Location/zone they currently working in. For Example in Room A, which is classed as secure, the user can access relevant secure targets. When the same user moves out to his office desk, he will not be allowed to even see the secure targets on his OSD list even though he logged in with exactly the same user name and password.

You can find Zones in the left menu bar of the Boxilla interface, between Peripherals and Connections. See the screen shown next.



Showing 1 to 1 Results out of 1

Connection Name	Stream	Username(s)	Receiver(s)	Transmitter	FPS	Bandwidth (Mbps)
PC Garrett Desktop DVI	Optimized	Garrett	EMD2002SE-R	EMD2000SE-T	56	184

1 of 1

Showing 1 to 10 Results out of 34

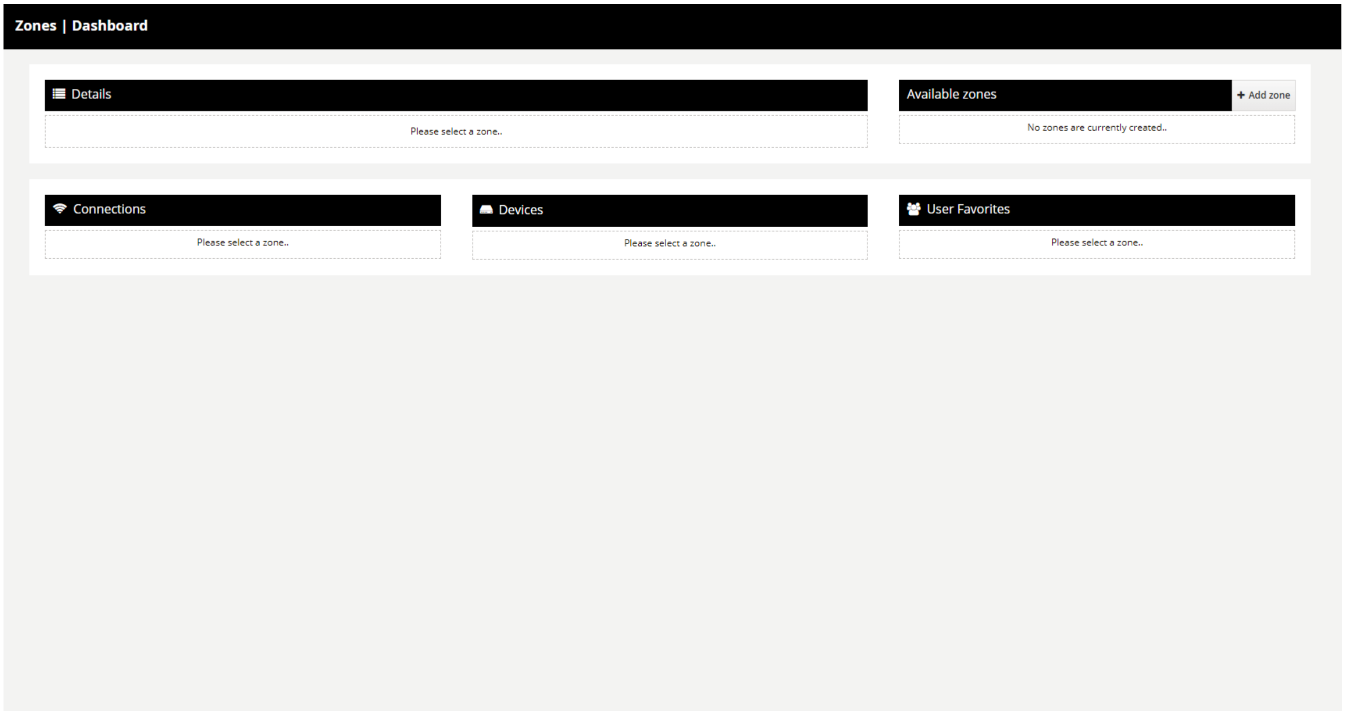
Receiver	Username	User Type	Time Logged in
EMD2002SE-R	Garrett	Administrator	2022-09-30 01:34:01.205
EMD2002SE-R	Garrett	Administrator	2022-09-30 00:43:00.524
EMD2002SE-R	Garrett	Administrator	2022-09-30 00:41:00.681
EMD2002SE-R	Garrett	Administrator	2022-09-30 00:40:01.238
EMD2002SE-R	Garrett	Administrator	2022-09-30 00:40:01.233
EMD2002SE-R	Garrett	Administrator	2022-09-30 00:39:00.788
EMD2002PE-R	Garrett	Administrator	2022-09-30 00:13:30.564
EMD4000R	Garrett	Administrator	2022-09-30 00:13:30.081
EMD2002SE-R	Garrett	Administrator	2022-09-30 00:13:09.594
EMD2002PE-R	Garrett	Administrator	2022-09-29 23:41:02.681

1 of 4

FIGURE 10-1. DASHBOARD WITH ZONES

CHAPTER 10: ZONES

When you click on Zones, the following screen appears.



Please select a zone..

No zones are currently created..

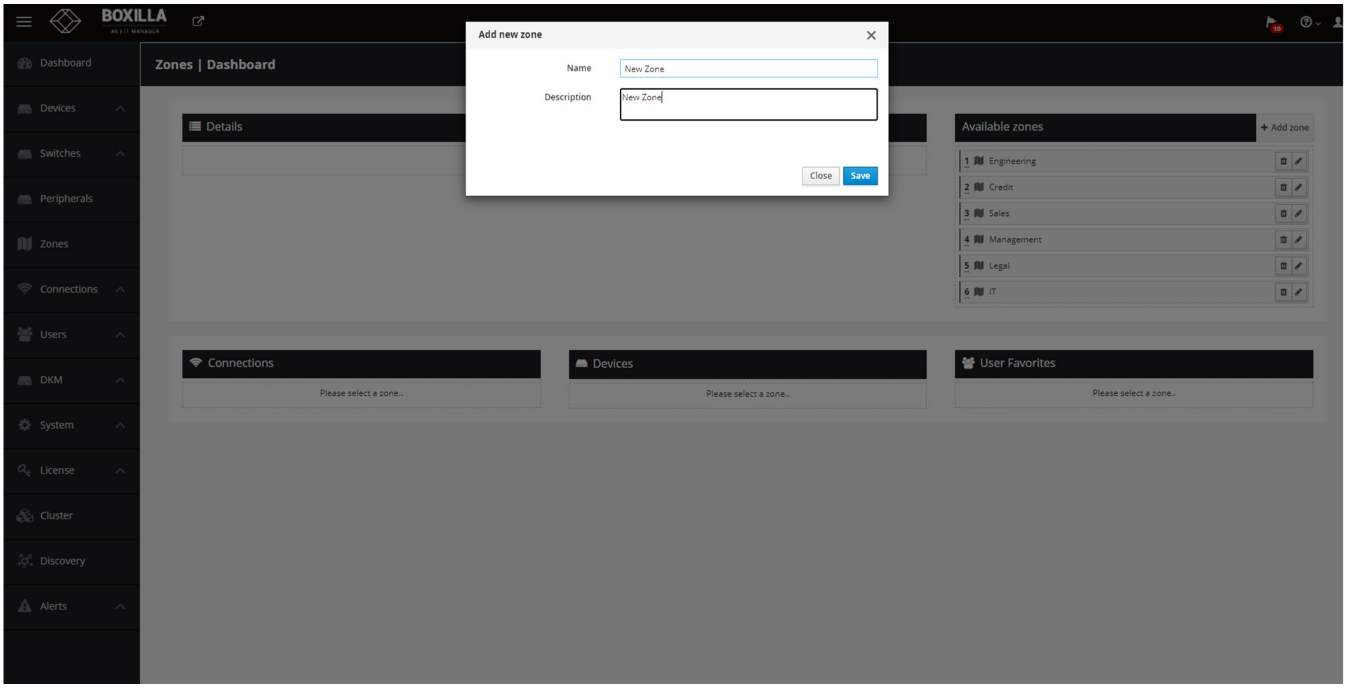
Please select a zone..

Please select a zone..

Please select a zone..

FIGURE 10-2. ZONES UNPOPULATED

To get started with setting up Zones, go to the top right hand corner of the page and click on “Add Zone.” Once you add a zone, give it a name and description.



Add new zone

Name: New Zone

Description: New Zone

1 Engineering
2 Credit
3 Sales
4 Management
5 Legal
6 IT

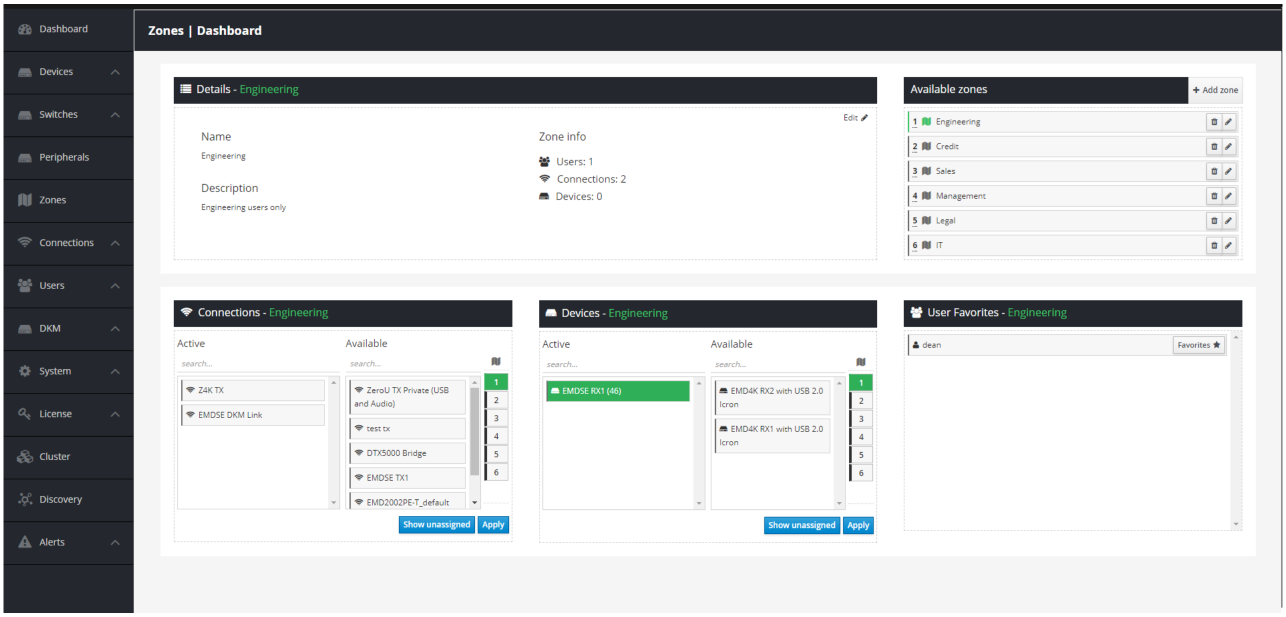
Please select a zone..

Please select a zone..

Please select a zone..

FIGURE 10-3. ADD NEW ZONE

When the zone is created, you can now click on it under “Available Zones” to begin configuring the zone details.



Name
Engineering

Description
Engineering users only

Zone info
Users: 1
Connections: 2
Devices: 0

Available zones:
1 Engineering
2 Credit
3 Sales
4 Management
5 Legal
6 IT

Connections - Engineering
Active: Z4K TX; EMDSE DKM Link
Available: ZeroU TX Private (USB and Audio); test tx; DTX5000 Bridge; EMDSE TX1; EMD2002PE-T_default

Devices - Engineering
Active: EMDSE RX1 (46)
Available: EMD4K RX2 with USB 2.0 Icron; EMD4K RX1 with USB 2.0 Icron

User Favorites - Engineering
dean

FIGURE 10-4. ZONES DASHBOARD

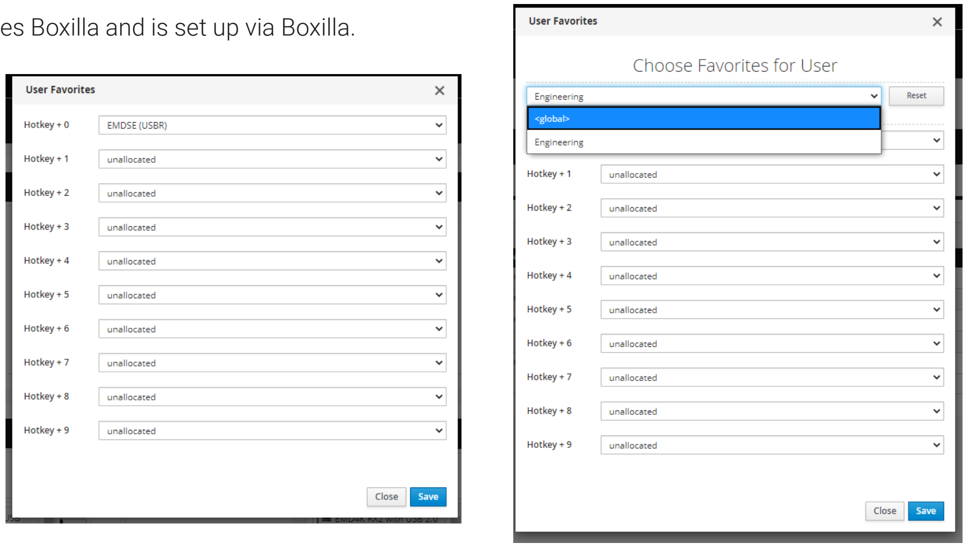
When the zone is selected, the administrator can place connections and devices within that zone. Once the device/connection is assigned to a zone, it cannot be used in any other zone. If you need to modify the connections/devices for a zone, you can easily do so by clicking on the assigned device and it will move it back to available. Once all changes are made, you can use the “Apply” button to save your changes. You can only delete a Zone if there are no Connections and Devices assigned to the Zone. When the “Show unassigned” button is selected, it shows the Connections OR Devices that are not assigned to any Zone.

When a zone is established, you can now assign new devices/connections to the zone. Boxilla supports up to 10 zones maximum.

You can also link any user’s favorites to the zone to help adding shortcut keys to specific systems for that zone.

Additional Information:

- The user can also have a different set of Favorites when they login from different zones.
- This feature requires Boxilla and is set up via Boxilla.



Hotkey + 0	EMDSE (USBR)
Hotkey + 1	unallocated
Hotkey + 2	unallocated
Hotkey + 3	unallocated
Hotkey + 4	unallocated
Hotkey + 5	unallocated
Hotkey + 6	unallocated
Hotkey + 7	unallocated
Hotkey + 8	unallocated
Hotkey + 9	unallocated

Engineering

Hotkey + 1	unallocated
Hotkey + 2	unallocated
Hotkey + 3	unallocated
Hotkey + 4	unallocated
Hotkey + 5	unallocated
Hotkey + 6	unallocated
Hotkey + 7	unallocated
Hotkey + 8	unallocated
Hotkey + 9	unallocated

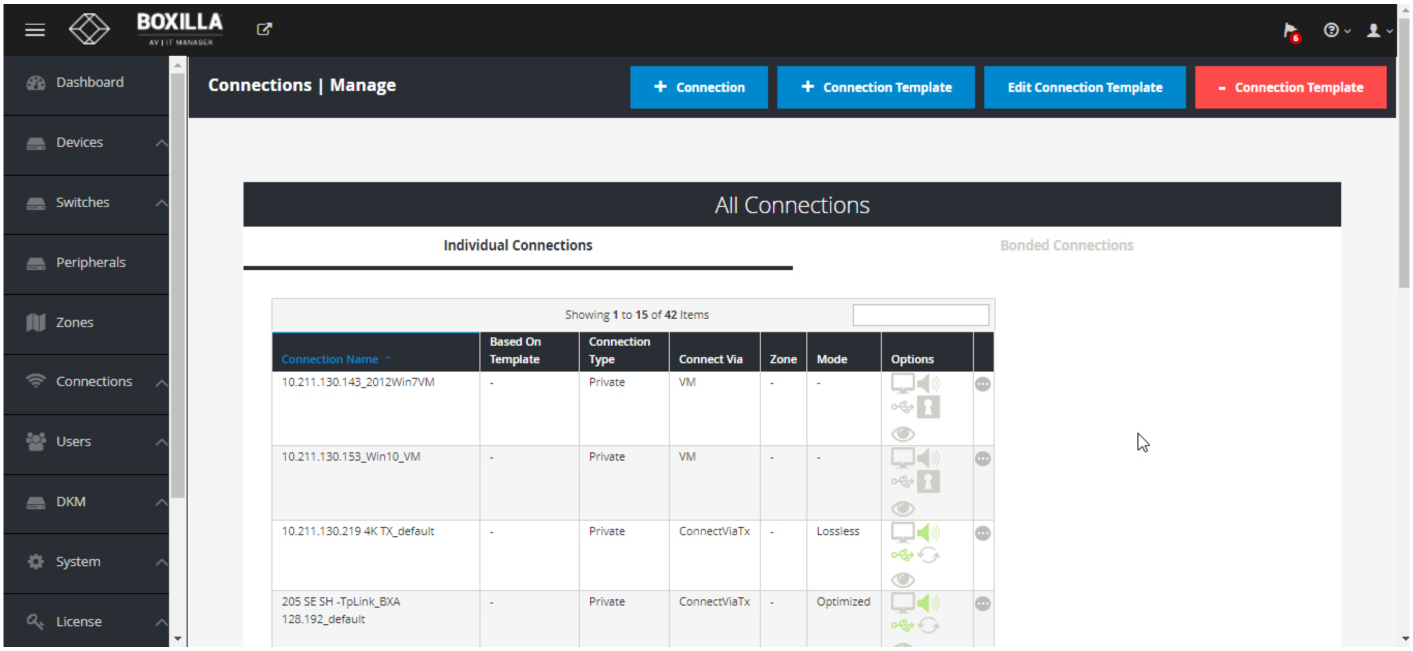
FIGURE 10-5. USER FAVORITES AND USER FAVORITES WITH ZONES

CHAPTER 11: CONNECTIONS

Connections define the properties for the flow of keyboard, mouse, video, audio and USB traffic between an Emerald or InvisaPC Receiver and an Emerald or InvisaPC Transmitter or Virtual Machine. Connections are created and then allocated to Users to provide them access to Transmitters or Virtual Machines. A connection is a definition and can be allocated to multiple users. When a user logs into an Emerald or InvisaPC Receiver, they are presented with their allocated connections on the Connections Tab of the OSD on that Receiver.

11.1 CONNECTIONS—MANAGE

The Connections — Manage page lists the currently defined connections and allows them to be edited, deleted or new connections to be added. The connections are listed shown in Figure 11-1.



All Connections

Showing 1 to 15 of 42 Items

Connection Name ^	Based On Template	Connection Type	Connect Via	Zone	Mode	Options	
10.211.130.143_2012Win7VM	-	Private	VM	-	-		
10.211.130.153_Win10_VM	-	Private	VM	-	-		
10.211.130.219 4K TX_default	-	Private	ConnectViaTx	-	Lossless		
205 SE SH -TpLink_BXA 128.192_default	-	Private	ConnectViaTx	-	Optimized		

FIGURE 11-1. CONNECTIONS MANAGE SCREEN

The table shows the connection name, whether the connection is linked to a connection template (see section 9.1.2), connection type (private or shared), what/how the connection is made (via Tx, Direct to VM, via VM Pool or via Connection Broker or TX pair, what Zone the connection is in, and the connection options. The options for connections are the parameters that can be defined for the connection. The icons represent the parameters—when enabled the icon is Green and when disabled it is Grey. Hovering over the icon provides details of the parameter status. The icon definitions are:

🖥 Extend desktop: On a dual-video head Emerald or InvisaPC, when set it enables the secondary video interface (by default it is disabled). This setting has no effect on a single-video head Emerald or InvisaPC.

🔊 Audio: When set, this enables analog audio to be supplied to the remote audio connectors.

👁 View only: When enabled, users can only view connections with no keyboard and mouse controls during the connection.

USB Redirection: When set, this enables non-keyboard and non-mice devices to be redirected for this connection.

Persistent Connection: When turned on, Persistent Connection will constantly try to connect to the Transmitter until successful. This is useful when using Emerald or InvisaPC for digital signage or applications with no keyboard/mouse that need to stay connected to a defined source.

NLA: When set, this enables Network Level Authentication, requiring that the user be authenticated to the RD Session Host server before the session is created. This setting needs to match the NLA setting on the target VM for a successful connection.

Emerald 1.0 has NLA set to "disabled" by default and user doesnt have option to change. On VM, the NLA setting has to be set to "disabled".

The administrator can edit the connections parameters or delete the connection using the ellipsis "•••" icon on the specific connection row. The parameters for a connection are defined in more detail in section 9.1.1.

When you left-click on a connection name, a popup box appears that tells you details about the connection and gives you the option to disconnect.

NLA Note: If connecting to a Windows 10VM and you encounter NLA issues, you can use the steps below to fix it.

1. Open RegEdit

2. Navigate to this Key:

HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Terminal Server\WinStations\RDP-Tcp

3. Change "SecurityLayer" to a zero

4. Reboot and done!

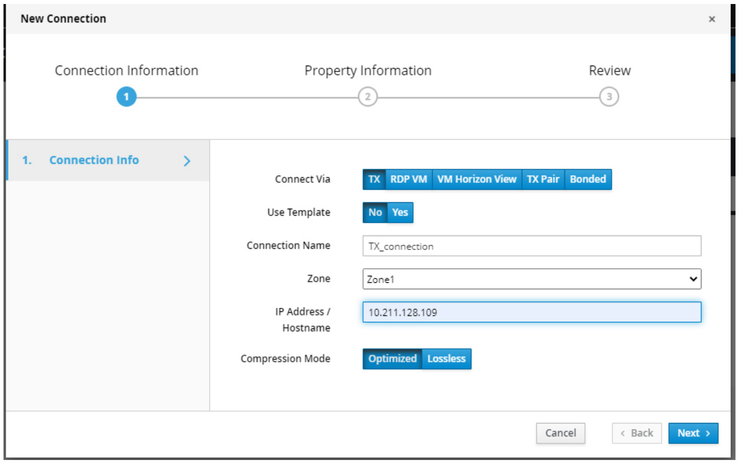
11.1.1 CONNECTIONS—ADD CONNECTION

To allow an Emerald or InvisaPC Receiver to connect to a target Emerald, ZeroU or InvisaPC Transmitter or Virtual Machine, an administrator must create a connection. This is done on the Connections — Manage page from the main menu as shown in Figure 11-1.

Clicking on the +Connection button launches a wizard that takes the Administrator step-by-step through the creation of a new connection.

On the first screen of the wizard the Administrator selects the type of connection. This can be one of four types (as set by Connect Via parameter):

- Tx—connect to an Emerald, ZeroU or InvisaPC Transmitter;
- RDP VM—connect directly to a virtual machine using its IP address or hostname;
- VM Horizon View - connect to a VM Horizon server;
- TX Pair - for paired connections (i.e. two paired single head EMD200DV-T connecting to one EMD2002SE-R). (Future use)
- Bonded — A Bonded Connection is a group of 2 to 8 connections which have been added to form a "bonded connection." The bonded connection is treated just like any other connection, where users must be assigned access to this connection. Each connection in a group is assigned a number in order 1 to 8 and these will be matched with the receiver with the bonded receiver group. See Section 7.2, Devices — Groups.



Connect Via: TX

Use Template: No

Connection Name: TX_connection

Zone: Zone1

IP Address / Hostname: 10.211.128.109

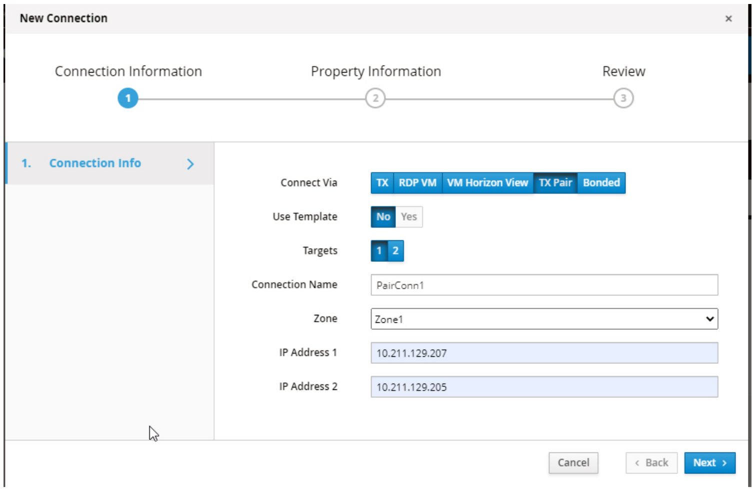
Compression Mode: Optimized

FIGURE 11-2. ADD CONNECTION—TX

The other parameters on this screen are:

- Connection Name: this is a unique name for the new connection. The name can be between 1 and 32 characters. The name can be composed of any Alphanumeric characters and special characters except for " "/ \ [ ] : ; | = , + * ? < > `'.
- Zone: allows the Zone setting to be changed. Zones enable the administrator to setup unique zones (or groups) of Connections, Physical Receivers, and Users so that a large system can be more easily managed.
- IP Address/Hostname: the IP address of the Emerald or InvisaPC Transmitter or the Virtual Desktop in IPv4 format.
- For VM Horizon View Connections, the password field now supports the * and + characters
- Compression Mode: To allow users to connect from a 4K Receiver to Emerald SE, PE and ZeroU transmitters: The connection on the 2K transmitter must be set to Optimized. To allow users to connect from a 2K Receiver to a 4K Transmitter, a dual-channel can be used meaning that one connection would be set for Lossless (for any 4K receivers) and a secondary connection set for Optimized (for any 2K receivers), and both connections can be active at the same time. If the 4K Transmitter is using a resolution above 1920x1080, the 2K receiver and RemoteApp will scale it down to fit the window, and the image may appear to be skewed. Go to Connections and create a new connection (or Edit an existing connection). Enter all of the connection details (or confirm they are correct) and a new option can be selected for Compression Mode. Use this information to set the right compression mode: 4K RX to 4K TX: Compression Mode = Lossless; 4K RX to 2K TX: Compression Mode = Optimized; 2K RX to 2K TX: Compression Mode = Optimized; 2K RX to 4K TX: Compression Mode = Optimized (Firmware 6.3.10 or later)

If the TX Pair is set, you can set how many targets will be used in the connection. See the TX Pairing section in the Emerald user manual for more details. NOTE: The TX pair is not fully implemented yet and will be added in a future release.



Connect Via: TX Pair

Use Template: No

Targets: 1 2

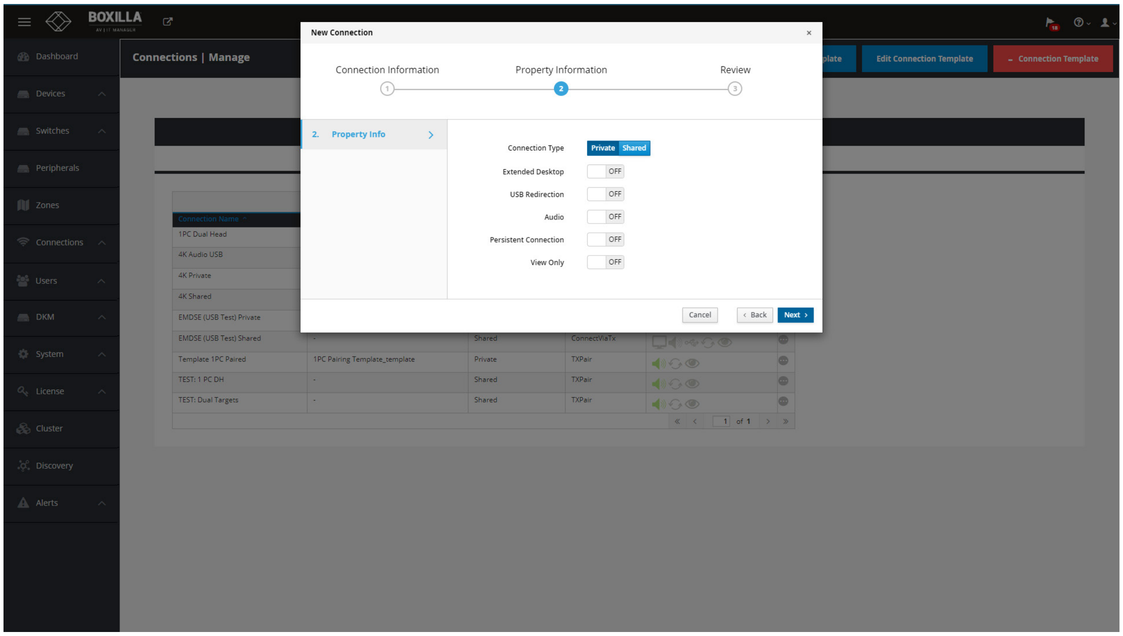
Connection Name: PairConn1

Zone: Zone1

IP Address 1: 10.211.129.207

IP Address 2: 10.211.129.205

FIGURE 11-3. ADD CONNECTION—TX PAIR



New Connection

Connection Information — Property Information — Review

2. Property Info

Connection Type: Private | Shared
Extended Desktop: OFF
USB Redirection: OFF
Audio: OFF
Persistent Connection: OFF
View Only: OFF

Cancel | Back | Next

FIGURE 11-4. ADD CONNECTIONS—PROPERTIES

The extra parameters that can be defined are:

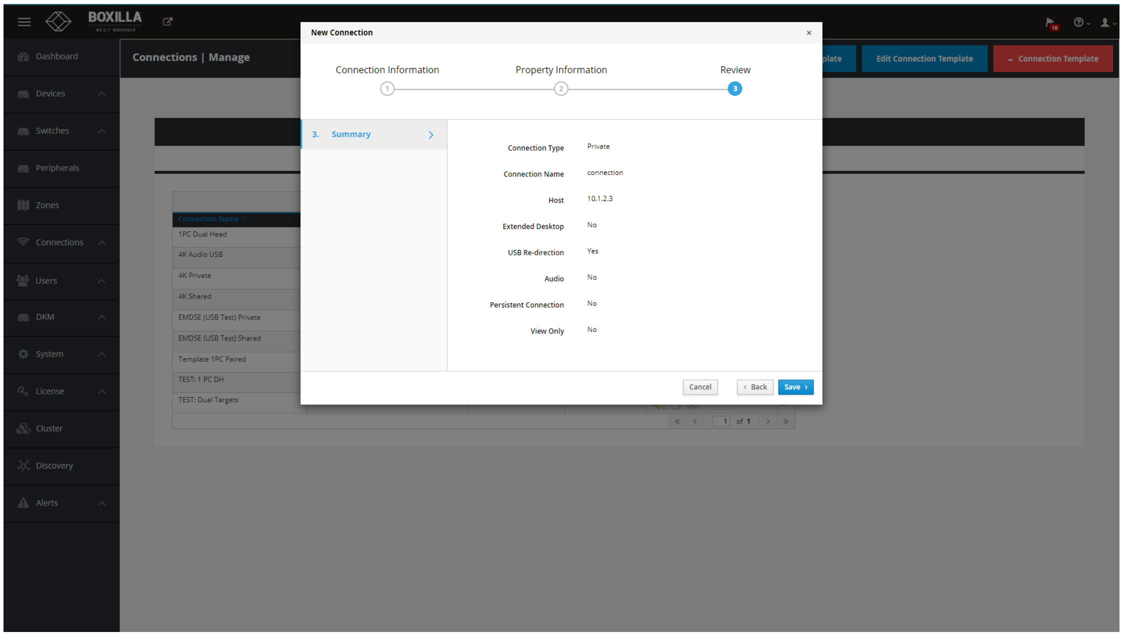
- Connection Type: This defines the connection as being private to this user when the connection is made or is open to be shared with other users. A shared connection allows the keyboard, video and mouse to be shared to all users that join the connection. Audio and USB re-direction disabled on shared connections.
- Extended Desktop: On a dual-video head Emerald or InvisaPC, this enables the second video head to operate if connected to a source that supports dual-head operation (e.g. Dual-head Emerald or InvisaPC Transmitter). This setting has no effect on a single-video head Emerald or InvisaPC.
- USB Redirection: When set, this enables non-keyboard and non-mice devices to be redirected for this connection.
- Audio: When set, this enables analog audio to be supplied to the remote audio connectors.
- Persistent Connection: When turned on, Persistent Connection will constantly try to connect to the Receiver until successful. This is useful when using Emerald or InvisaPC for digital signage or an application with no keyboard/mouse that needs to stay connected to a defined source.
- Enable View Only mode: View only setting for a connection allows user to monitor what is been transmitted from a source without being able to interact with the source. This feature allows a user or administrator to monitor the actions on the network without accidentally interacting with other users. View only connection is available in both private and shared mode connections with or without analog audio.

Orientation: When using TX Paired with two different targets you can select how the displays will be layed out. You can currently have them side by side or on top of each other.

When Connect Via is set to VM (i.e. connect directly to a VM), there is an extra parameter to define:

- NLA: When set, this enables Network Level Authentication, requiring that the user be authenticated to the RD Session Host server before the session is created. This setting needs to match the NLA setting on the target VM for a successful connection. If you are having issues connecting to a Windows 10 VM, read section 11.1 about NLA for Windows 10.

When Connection Type is Private, the following parameters are shown in the New Connection screen: Connection Type (Private), Connection Name, Host IP address, Extended Desktop, USB Redirection, Audio, and Persistent Connection. When using the shared connection, the USB Re-direction will not be available to support transparent USB devices that require USB Re-direction.



Connection Type	Private
Connection Name	connection
Host	10.1.2.3
Extended Desktop	No
USB Re-direction	Yes
Audio	No
Persistent Connection	No
View Only	No

FIGURE 11-5. CONNECTION TYPE — PRIVATE

11.1.2 CONNECTIONS—BONDED CONNECTIONS

The purpose of the bonding feature is to switch multiple receivers to multiple connections quickly and simply from one user station. A typical example is where a user has a dual head 4K system; the user will have two 4K monitors and 4K receivers on their desk but only one keyboard and mouse. The user will select the "bonded connection" from their OSD and both receivers will switch to their pre-configured 4K transmitters. Typically this will be set up in extended desktop and the user can move mouse and keyboard activity between both screens. We described 2 head setup above but the same applies for up to 8 connections.

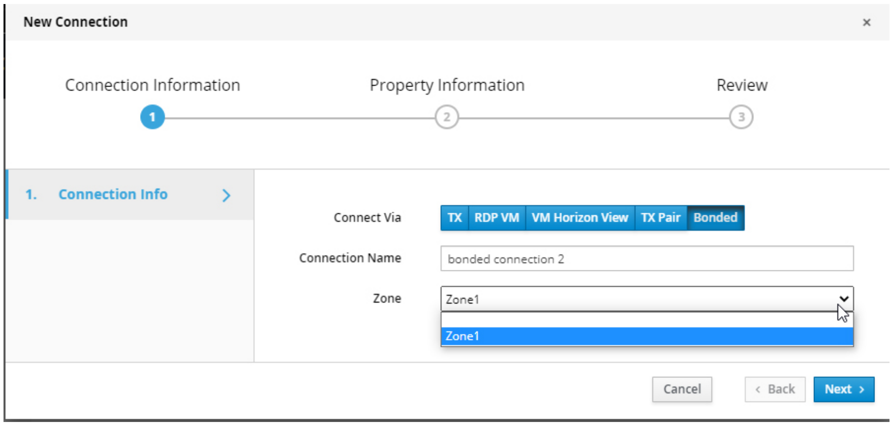
Setup will be done via Boxilla only.

Create a bonded group of Receivers (see Section 7.2)– Can be up to 8 receivers in a bonded group numbered 1 to 8.

Create a "bonded connection" – Again up to 8 connections within the bonded connection.

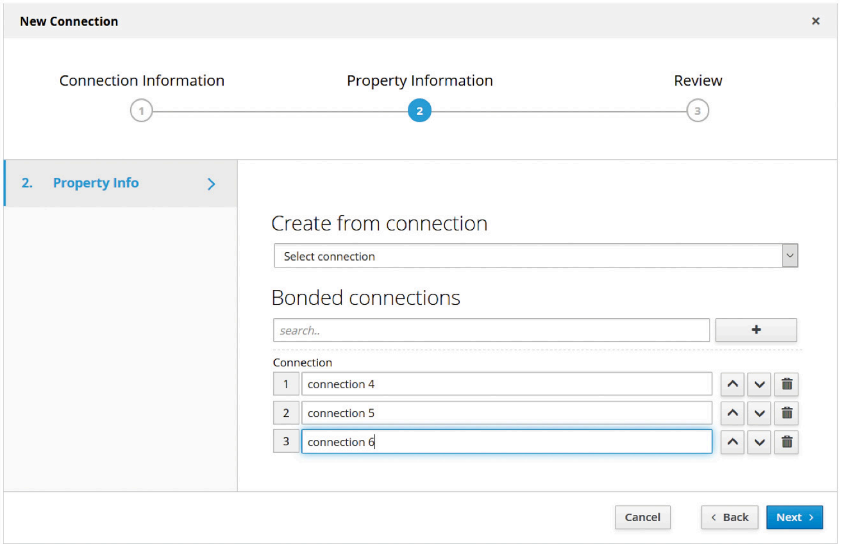
NOTE: All connections within a bonded connection group and the bonded connection group itself must be in the same zone.

If Bonded Connection is set, you will see the following Connection Information.



Connect Via	Bonded
Connection Name	bonded connection 2
Zone	Zone1

FIGURE 11-6. NEW CONNECTION—BONDED CONNECTION



New Connection

Connection Information — 1
Property Information — 2
Review — 3

2. Property Info

Create from connection

Select connection

Bonded connections

search..

Connection

1	connection 4
2	connection 5
3	connection 6

Cancel | ‹ Back | Next ›

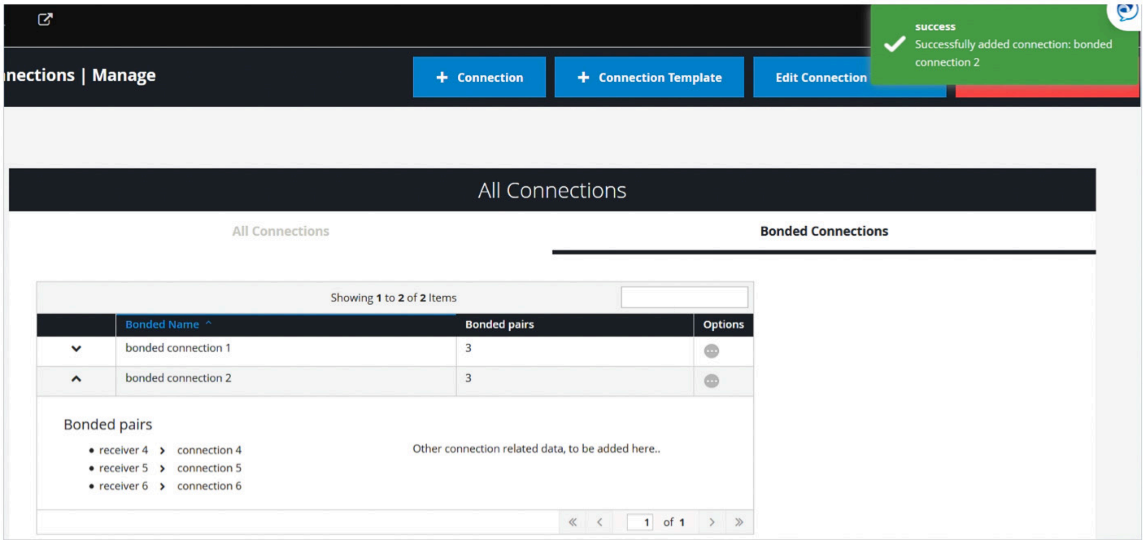
FIGURE 11-7. ADD YOUR CONNECTIONS

Connections can be added to a Bonded Connection in one of two ways:

1. Select connections from an existing Bonded Connection using the “Create from connection.”

2. Manually assign connections by selecting and assigning each connection individually.

The list of available connections is determined by the selected Zone option from Step 1. If no Zone is selected, the UI will only display connections that are not assigned to any Zone.



success
Successfully added connection: bonded connection 2

nections | Manage

+ Connection | + Connection Template | Edit Connection

All Connections

All Connections | Bonded Connections

Showing 1 to 2 of 2 Items

	Bonded Name ^	Bonded pairs	Options
⌄	bonded connection 1	3	⋯
^	bonded connection 2	3	⋯

Bonded pairs

- receiver 4 › connection 4
- receiver 5 › connection 5
- receiver 6 › connection 6

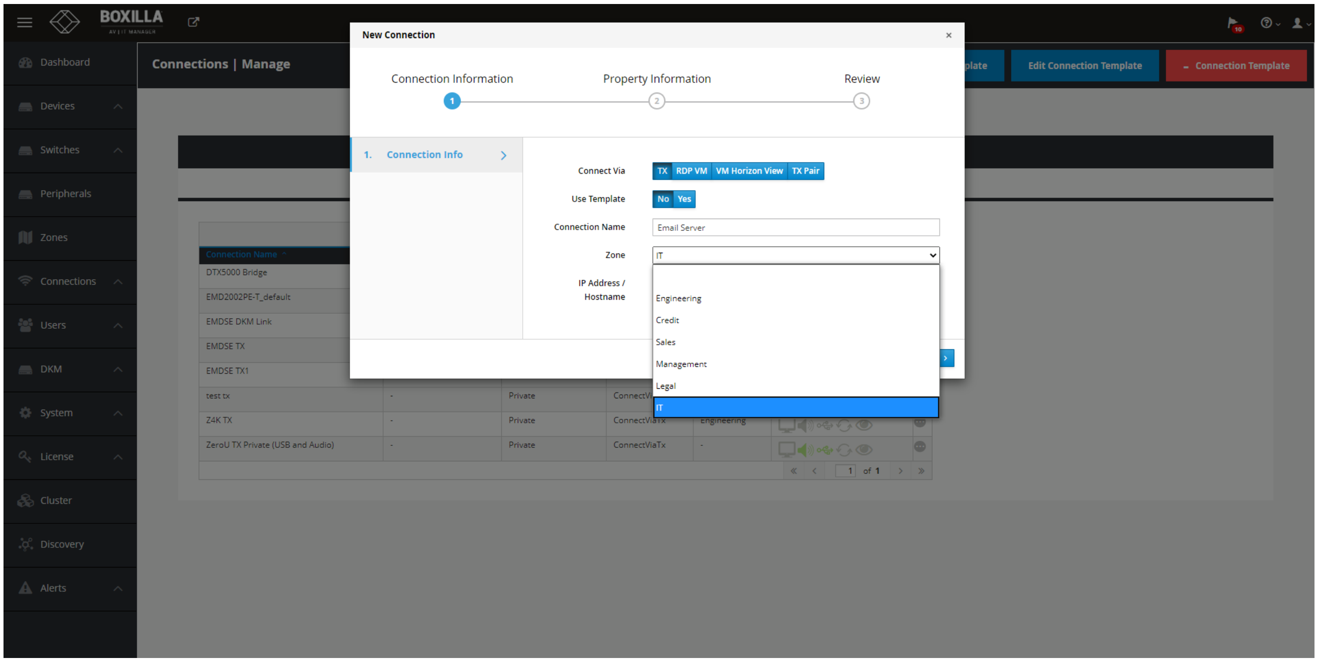
Other connection related data, to be added here..

« ‹ 1 of 1 › »

FIGURE 11-8. ADDED BONDED CONNECTION SUCCESSFUL

11.1.3 CONNECTIONS—EDIT CONNECTIONS

To edit connections, click on the Edit Connections button.


New Connection

1. Connection Info

Connect Via: TX | RDP VM | VM Horizon View | TX Pair

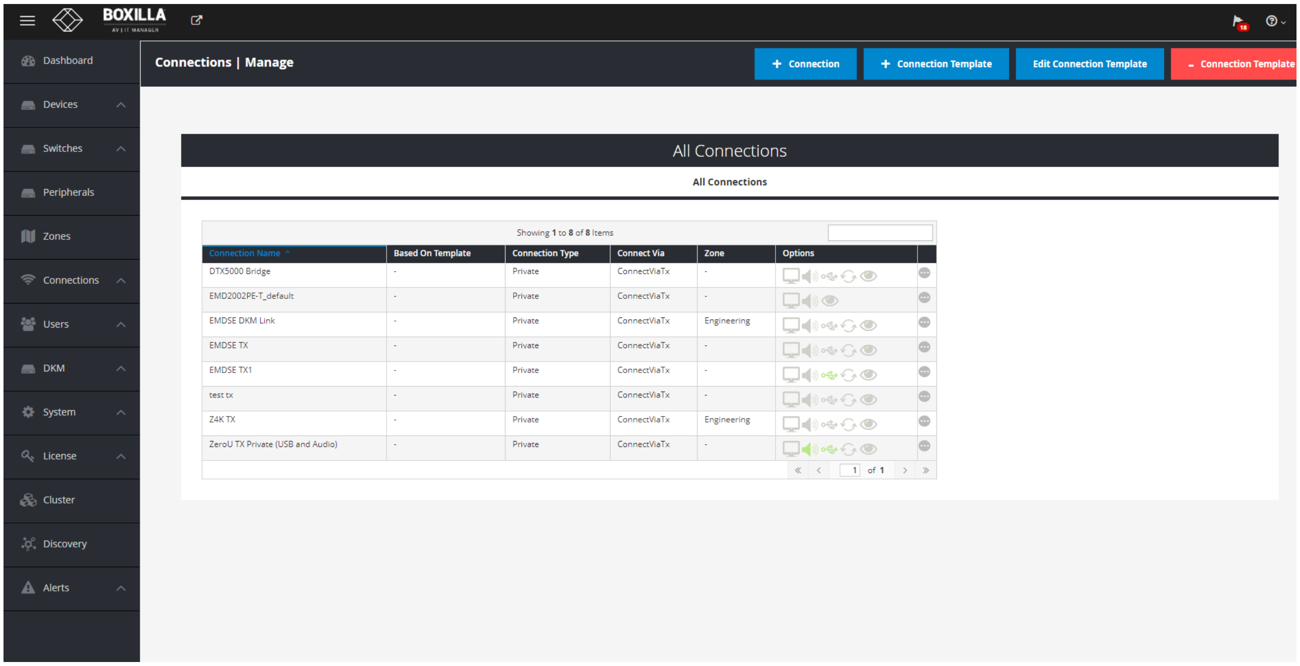
Use Template: No | Yes

Connection Name: Email Server

Zone: IT

IP Address / Hostname:

FIGURE 11-9. EDIT CONNECTIONS



All Connections

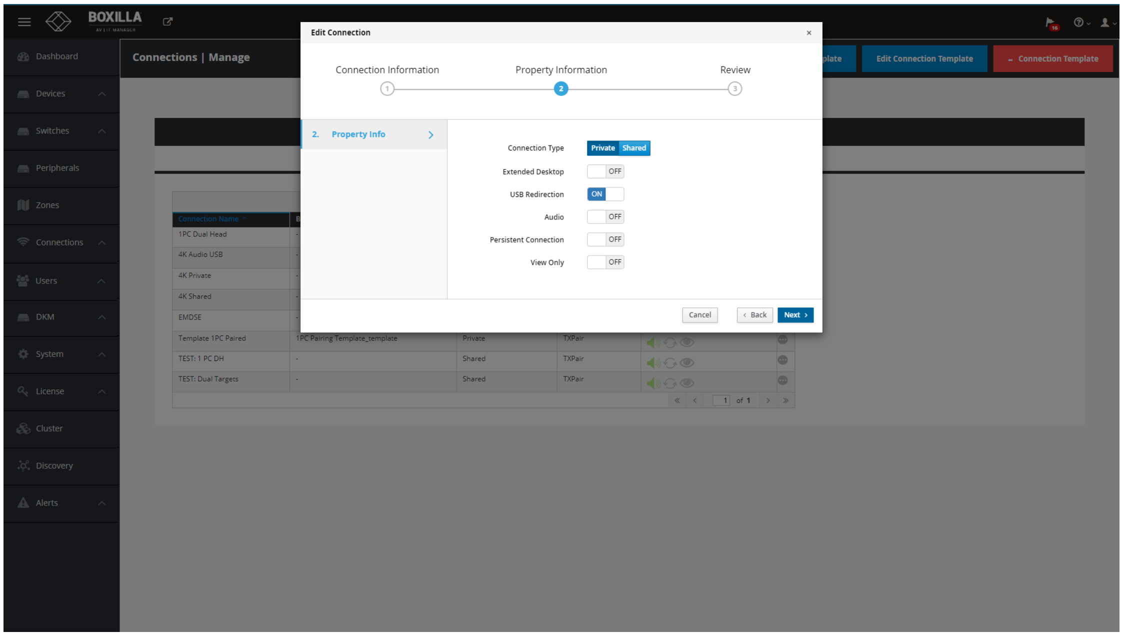
Showing 1 to 8 of 8 Items

Connection Name ^	Based On Template	Connection Type	Connect Via	Zone	Options
DTX5000 Bridge	-	Private	ConnectViaTx	-	
EMD2002PE-T_default	-	Private	ConnectViaTx	-	
EMDSE DKM Link	-	Private	ConnectViaTx	Engineering	
EMDSE TX	-	Private	ConnectViaTx	-	
EMDSE TX1	-	Private	ConnectViaTx	-	
test tx	-	Private	ConnectViaTx	-	
Z4K TX	-	Private	ConnectViaTx	Engineering	
ZeroU TX Private (USB and Audio)	-	Private	ConnectViaTx	-	

1 of 1

FIGURE 11-10. CONNECTIONS

The next step is to enter the Property Information.



Edit Connection

Connection Information — Property Information — Review

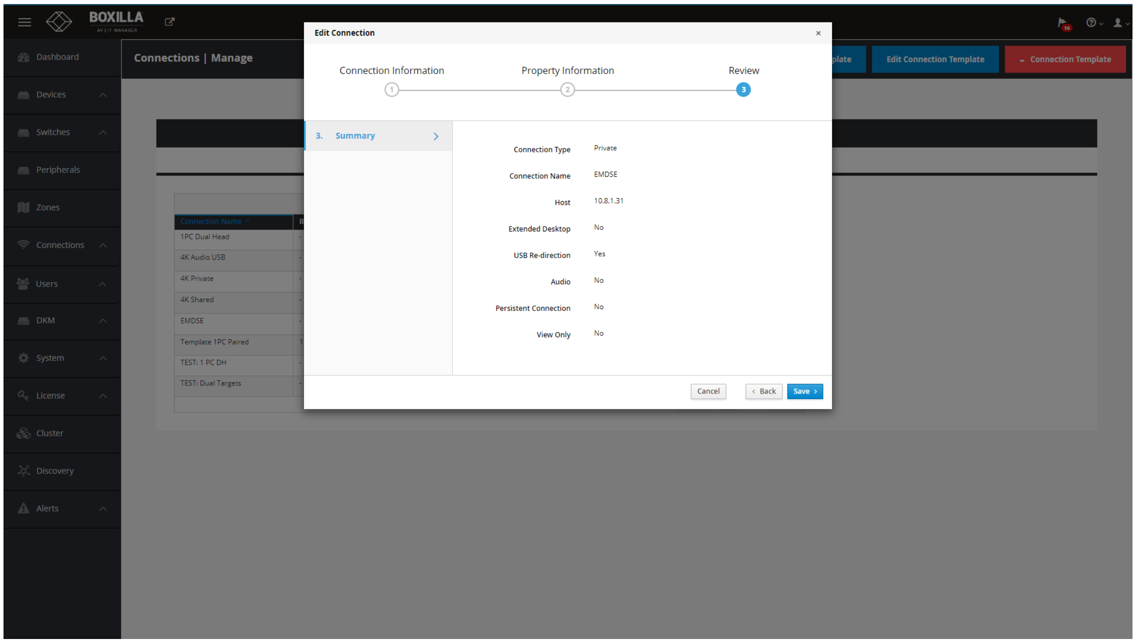
2. Property Info

Connection Type	Private [✓ Shared]
Extended Desktop	OFF
USB Redirection	ON
Audio	OFF
Persistent Connection	OFF
View Only	OFF

Cancel | ‹ Back | Next ›

FIGURE 11-11. EDIT CONNECTION

After configuring the connection, you will be able to review the final connection parameters to make sure it is properly configured.

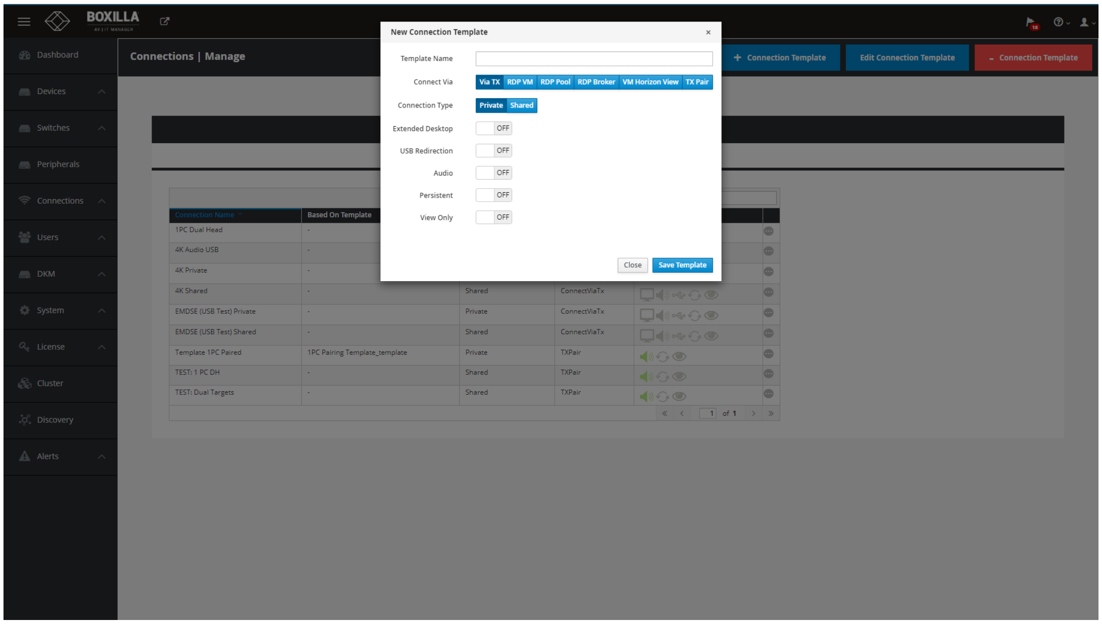


Connection Type: Private
Connection Name: EMDSE
Host: 10.8.1.31
Extended Desktop: No
USB Re-direction: Yes
Audio: No
Persistent Connection: No
View Only: No

FIGURE 11-12. EDIT CONNECTION3

11.1.4 CONNECTIONS—ADD CONNECTION TEMPLATE

Connection Templates are used to aid in the creation of connections. Templates define a set of properties as shown in Figure 11-6. The template can be used when creating a connection to ensure that the same properties are attached to a group of the connection. Clicking on +Connection Template launches the screen to set these properties.



Template Name:
Connect Via: Via TX | RDP VM | RDP Pool | RDP Broker | VM Horizon View | TX Pair
Connection Type: Private | Shared
Extended Desktop: OFF
USB Redirection: OFF
Audio: OFF
Persistent: OFF
View Only: OFF

FIGURE 11-13. ADD CONNECTION TEMPLATE

11.1.5 CONNECTIONS—DELETE CONNECTION TEMPLATE

To delete a connection template, click -Connection Template and this launches a screen that shows a list of connection templates. Select the template(s) to be deleted and click on delete.

Boxilla will only display the list of connection templates that are not currently assigned to connections. If you wish to delete a template that is associated with a connection, you will first need to remove the template from the connection.

11.2 CONNECTIONS—GROUPS

Boxilla supports the creation of a connection group to make it easier to allocate a common set of resources to user. If a connection group gets changed, it will be reflected on all users allocated to this Connection Group.

Connections option can be found on left side pane of the Boxilla user interface.

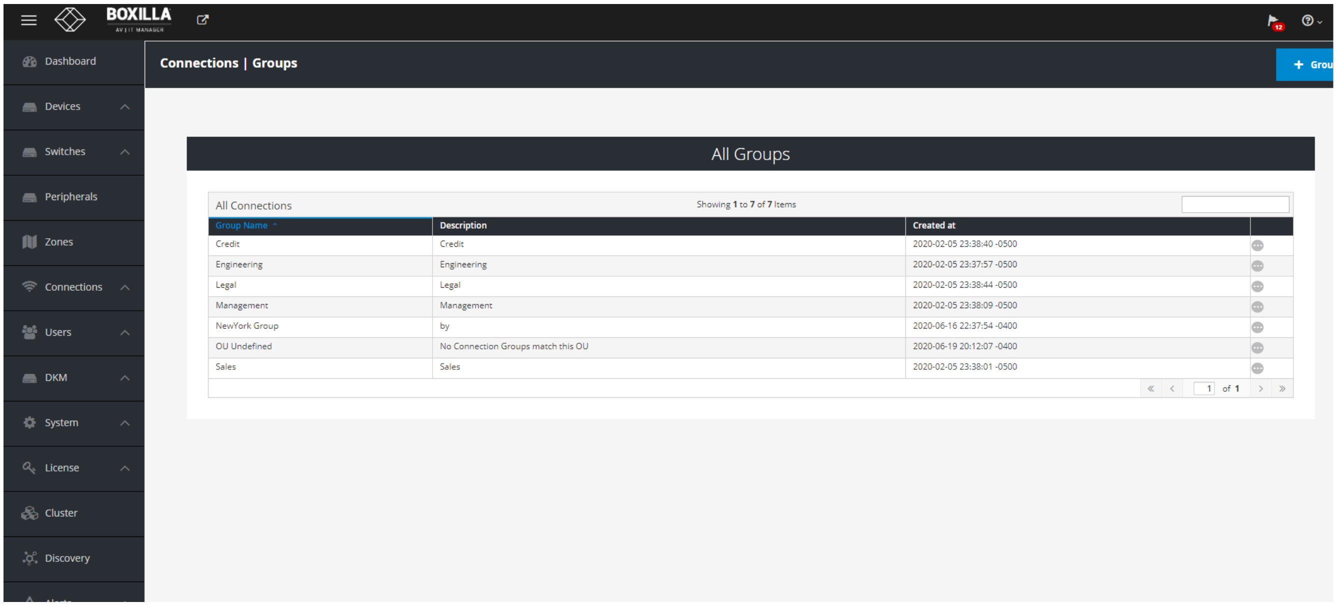
There are two new Connection Groups for the Active Directory feature updates:

1) OU Not Found.

2) OU Undefined.

These 2 Connection Groups are created by default on upgrade to Boxilla 3.6.0.

NOTE: These groups may be removed in the future as they do not add any value.



All Groups

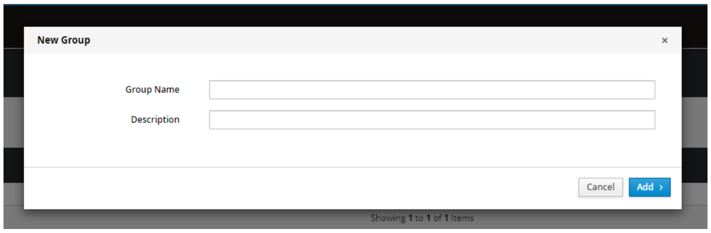
All Connections   Showing 1 to 7 of 7 Items

Group Name ^	Description	Created at
Credit	Credit	2020-02-05 23:38:40 -0500
Engineering	Engineering	2020-02-05 23:37:57 -0500
Legal	Legal	2020-02-05 23:38:44 -0500
Management	Management	2020-02-05 23:38:09 -0500
NewYork Group	by	2020-06-16 22:37:54 -0400
OU Undefined	No Connection Groups match this OU	2020-06-19 20:12:07 -0400
Sales	Sales	2020-02-05 23:38:01 -0500

1 of 1

FIGURE 11-14. CONNECTIONS OPTION

To add a connection group:



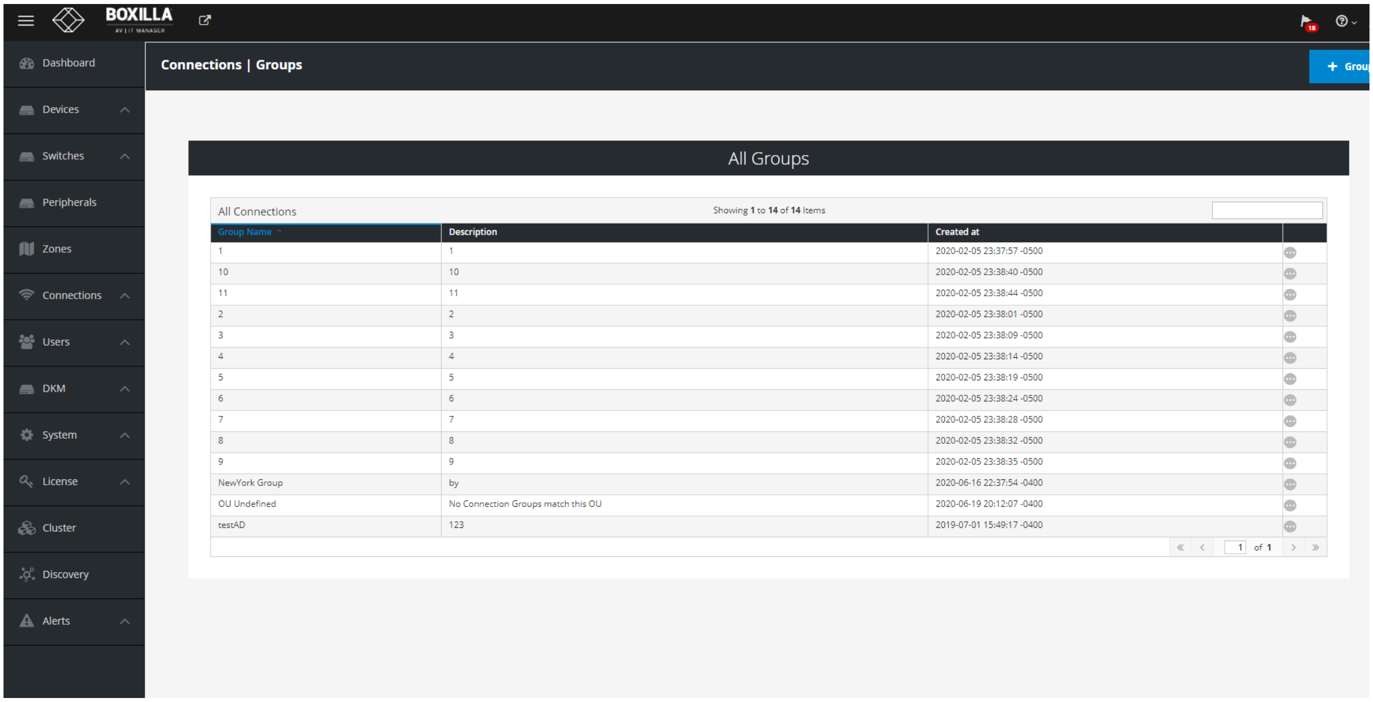
Group Name:

Description:

Showing 1 to 1 of 1 Items

FIGURE 11-15. ADD CONNECTION GROUP SCREEN

Once a connection group has been added, you will see the following screen.



Connections | Groups

All Groups

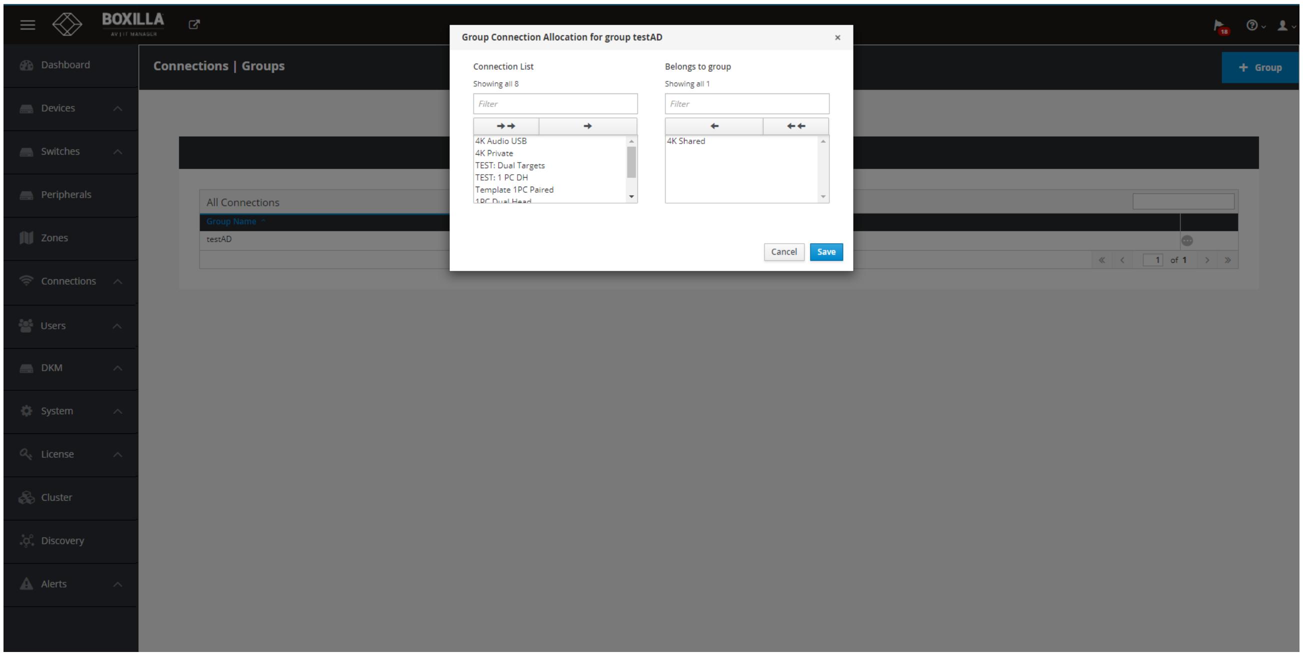
All Connections — Showing **1** to **14** of **14** Items

Group Name ^	Description	Created at
1	1	2020-02-05 23:37:57 -0500
10	10	2020-02-05 23:38:40 -0500
11	11	2020-02-05 23:38:44 -0500
2	2	2020-02-05 23:38:01 -0500
3	3	2020-02-05 23:38:09 -0500
4	4	2020-02-05 23:38:14 -0500
5	5	2020-02-05 23:38:19 -0500
6	6	2020-02-05 23:38:24 -0500
7	7	2020-02-05 23:38:28 -0500
8	8	2020-02-05 23:38:32 -0500
9	9	2020-02-05 23:38:35 -0500
NewYork Group	by	2020-06-16 22:37:54 -0400
OU Undefined	No Connection Groups match this OU	2020-06-19 20:12:07 -0400
testAD	123	2019-07-01 15:49:17 -0400

1 of 1

FIGURE 11-16. UPDATED CONNECTION GROUP SCREEN

You can manage connections by adding or removing connections to or from the connections group.



Group Connection Allocation for group testAD

Connection List
Showing all 8

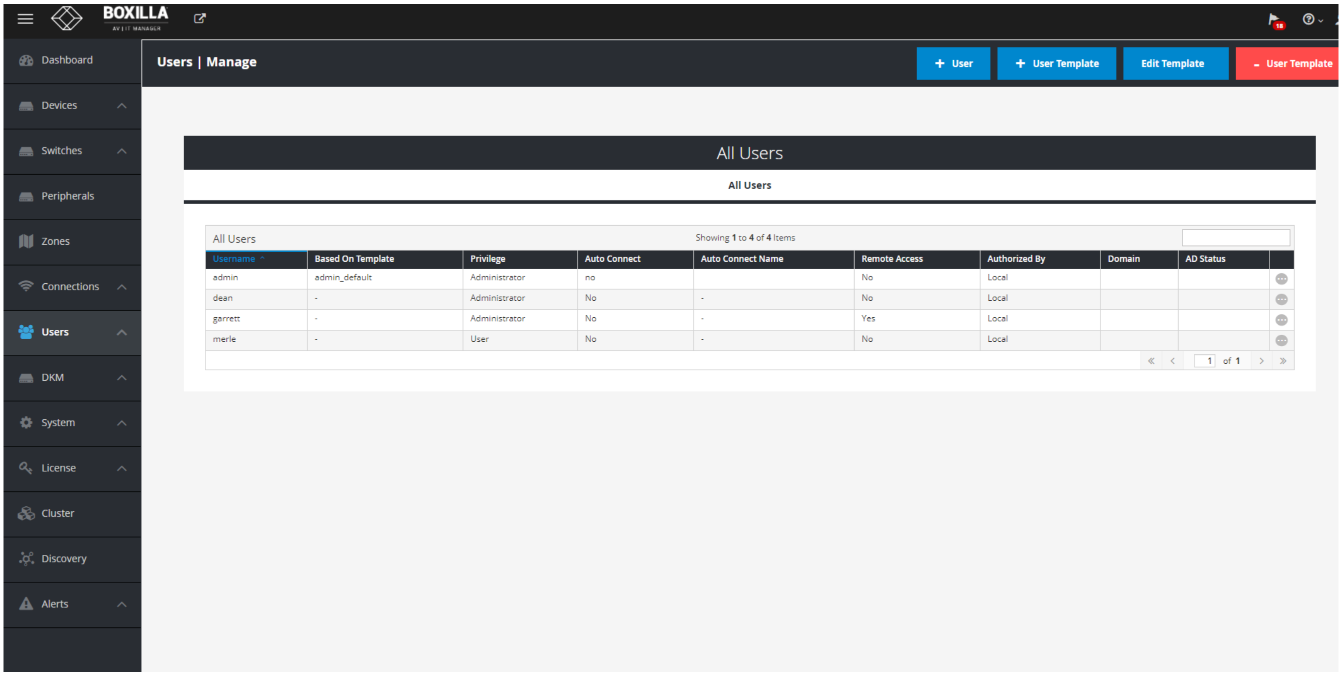
4K Audio USB
4K Private
TEST: Dual Targets
TEST: 1 PC DH
Template 1PC Paired
1PC Dual Head

Belongs to group
Showing all 1

4K Shared

FIGURE 11-17. MANAGE CONNECTIONS SCREEN

You can add / manage groups from individual Users under Users -> Manage. Once a user logs in at the appliance GUI, all the assigned connections (both individual and group connections) with be visible to the user.



All Users

All Users

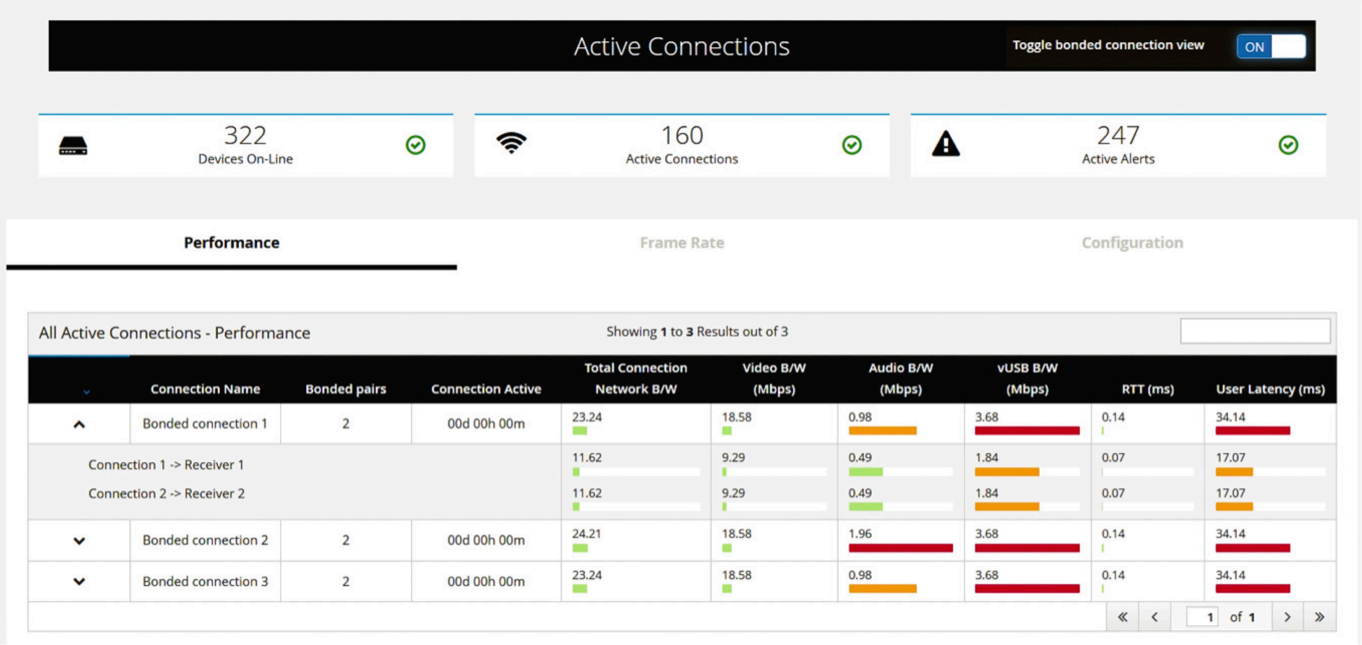
All Users   Showing 1 to 4 of 4 Items

Username	Based On Template	Privilege	Auto Connect	Auto Connect Name	Remote Access	Authorized By	Domain	AD Status
admin	admin_default	Administrator	no		No	Local		
dean	-	Administrator	No	-	No	Local		
garrett	-	Administrator	No	-	Yes	Local		
merle	-	User	No	-	No	Local		

1 of 1

FIGURE 11-18. MANAGE USERS SCREEN

Active connections will be listed under Connections -> Active. The toggle bonded connection view option can be enabled to view an individual connection within a bonded connection.



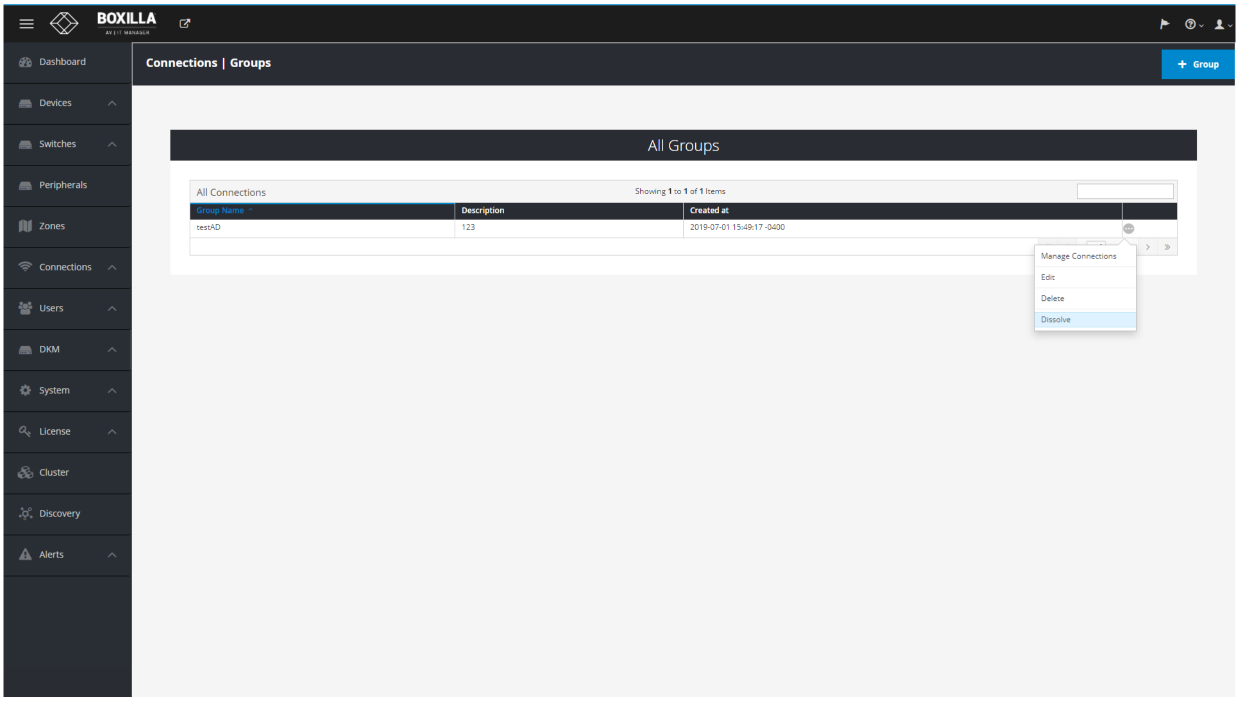
All Active Connections - Performance   Showing 1 to 3 Results out of 3

	Connection Name	Bonded pairs	Connection Active	Total Connection Network B/W	Video B/W (Mbps)	Audio B/W (Mbps)	vUSB B/W (Mbps)	RTT (ms)	User Latency (ms)
^	Bonded connection 1	2	00d 00h 00m	23.24	18.58	0.98	3.68	0.14	34.14
	Connection 1 -> Receiver 1			11.62	9.29	0.49	1.84	0.07	17.07
	Connection 2 -> Receiver 2			11.62	9.29	0.49	1.84	0.07	17.07
v	Bonded connection 2	2	00d 00h 00m	24.21	18.58	1.96	3.68	0.14	34.14
v	Bonded connection 3	2	00d 00h 00m	23.24	18.58	0.98	3.68	0.14	34.14

1 of 1

FIGURE 11-19. ACTIVE CONNECTIONS SCREEN

To dissolve a connection group (Map Connections from Connection Group to Individual Connections):



All Groups

All Connections

Showing 1 to 1 of 1 Items

Group Name ^	Description	Created at
testAD	123	2019-07-01 15:49:17 -0400

FIGURE 11-20. DISSOLVE CONNECTION GROUP SCREEN

Once you confirm with OK, a success message will be prompted.

By dissolving a group, the group no longer appear under Connections-Groups but the active connections are retained with the users logged in.

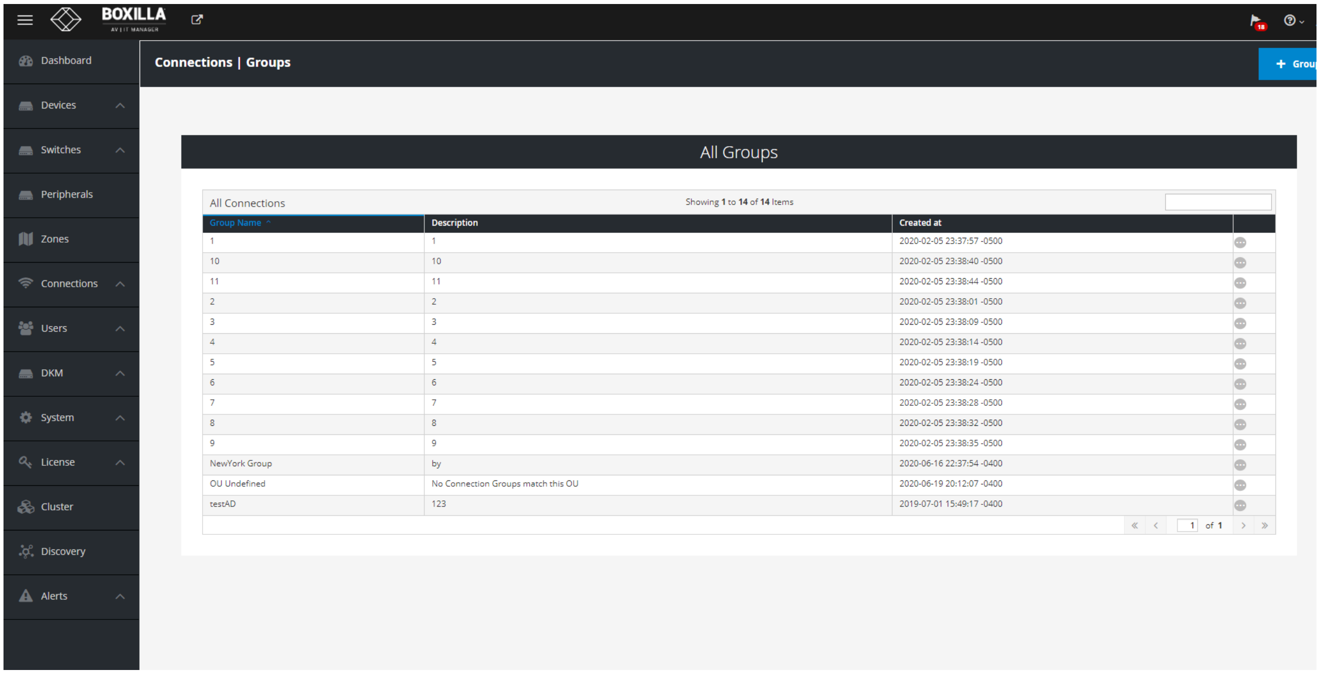
Unlike Delete groups, Dissolve Groups doesn't leave any impact on connections.

After dissolving a Connection Group, all Connections from the Connection Group are moved to the list of Managed Connections for each User that was assigned to the Connection Group.

Delete Connection Group: Delete the Connection Group and everywhere it is used.

Confirm with OK and a confirmation message about deletion is displayed.

The maximum number of connection groups is 100 and once it is reached, the add group button gets disabled.



All Groups

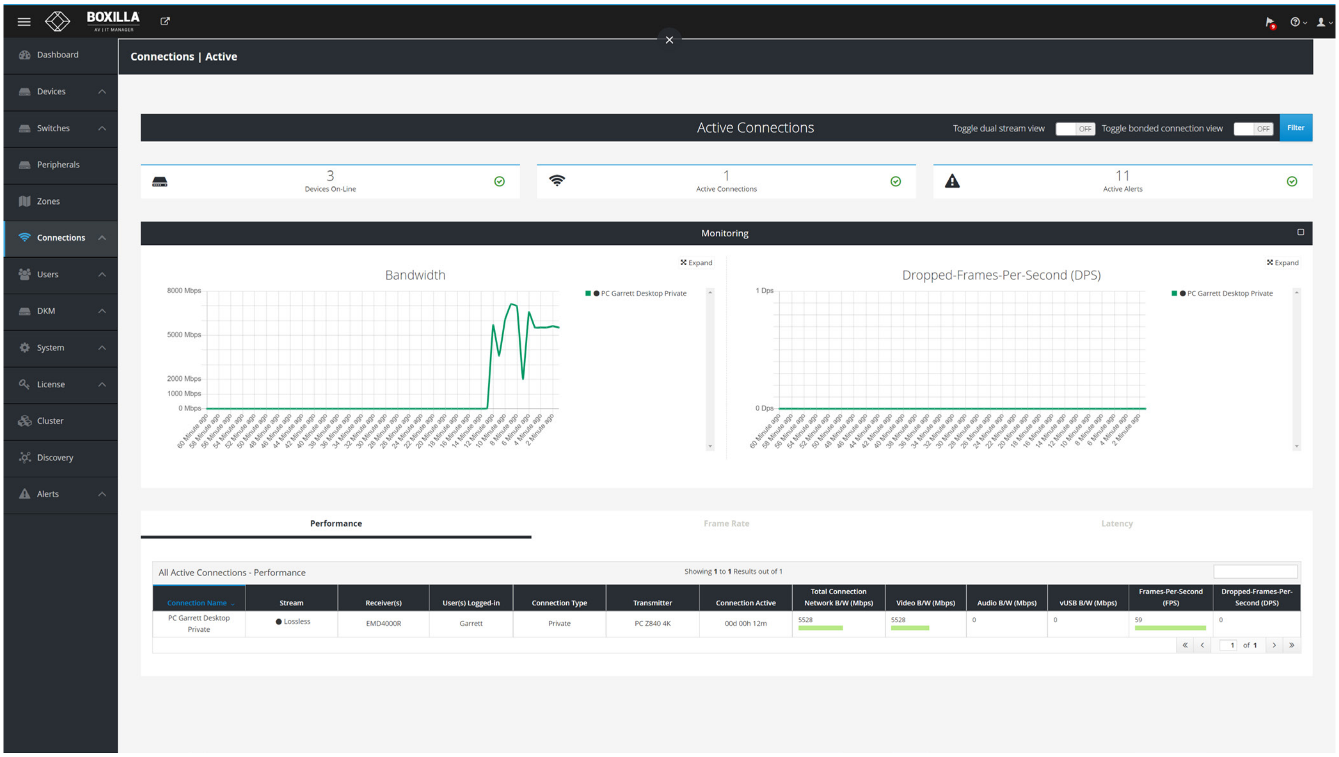
All Connections

Showing **1** to **14** of **14** Items

Group Name ^	Description	Created at
1	1	2020-02-05 23:37:57 -0500
10	10	2020-02-05 23:38:40 -0500
11	11	2020-02-05 23:38:44 -0500
2	2	2020-02-05 23:38:01 -0500
3	3	2020-02-05 23:38:09 -0500
4	4	2020-02-05 23:38:14 -0500
5	5	2020-02-05 23:38:19 -0500
6	6	2020-02-05 23:38:24 -0500
7	7	2020-02-05 23:38:28 -0500
8	8	2020-02-05 23:38:32 -0500
9	9	2020-02-05 23:38:35 -0500
NewYork Group	by	2020-06-16 22:37:54 -0400
OU Undefined	No Connection Groups match this OU	2020-06-19 20:12:07 -0400
testAD	123	2019-07-01 15:49:17 -0400

1 of **1**

FIGURE 11-21. MAXIMUM NUMBER OF CONNECTION GROUPS



Active Connections

Toggle dual stream view OFF Toggle bonded connection view OFF

3 Devices On-Line

1 Active Connections

11 Active Alerts

All Active Connections - Performance

Showing **1** to **1** Results out of 1

Connection Name	Stream	Receiver(s)	User(s) Logged-in	Connection Type	Transmitter	Connection Active	Total Connection Network B/W (Mbps)	Video B/W (Mbps)	Audio B/W (Mbps)	vUSB B/W (Mbps)	Frames-Per-Second (FPS)	Dropped-Frames-Per-Second (DPS)
PC Garrett Desktop Private	● Lossless	EMD4000R	Garrett	Private	PC Z840 4K	00d 00h 12m	5528	5528	0	0	59	0

1 of **1**

FIGURE 11-22. ACTIVE CONNECTIONS SCREEN

IMPORTANT NOTE: Boxilla restricts the total number of User Connections across the system to 22500 unique User Connections. Boxilla supports:

- 150 users, each supporting a maximum of 150 unique connections
- 150 users, each supporting a maximum of 10 Connection Groups each group supporting a maximum of 15 unique connections
- 200 users, each supporting a maximum of 112 unique connections
- 200 users, each supporting a maximum of 10 Connection Groups each group supporting a maximum of 11 unique connections
- 250 users, each supporting a maximum of 90 unique connections
- 250 users each supporting a maximum of 10 Connection Groups each group supporting a maximum of 9 unique connections

11.3 CONNECTIONS—ACTIVE

The Connections—Active page lists the currently active connections—a live connection between a Receiver and a Transmitter. There are three tabs on this page: Performance, Frame-Rate and Configuration. These pages provide information on all active connections for the past 60 minutes: the name of the connection, the Receiver in the connection, the user who is logged into the Receiver, the type of connection (e.g. private or shared), the Transmitter in the connection and then statistics on the connection. The statistics include:

- On the Performance tab:

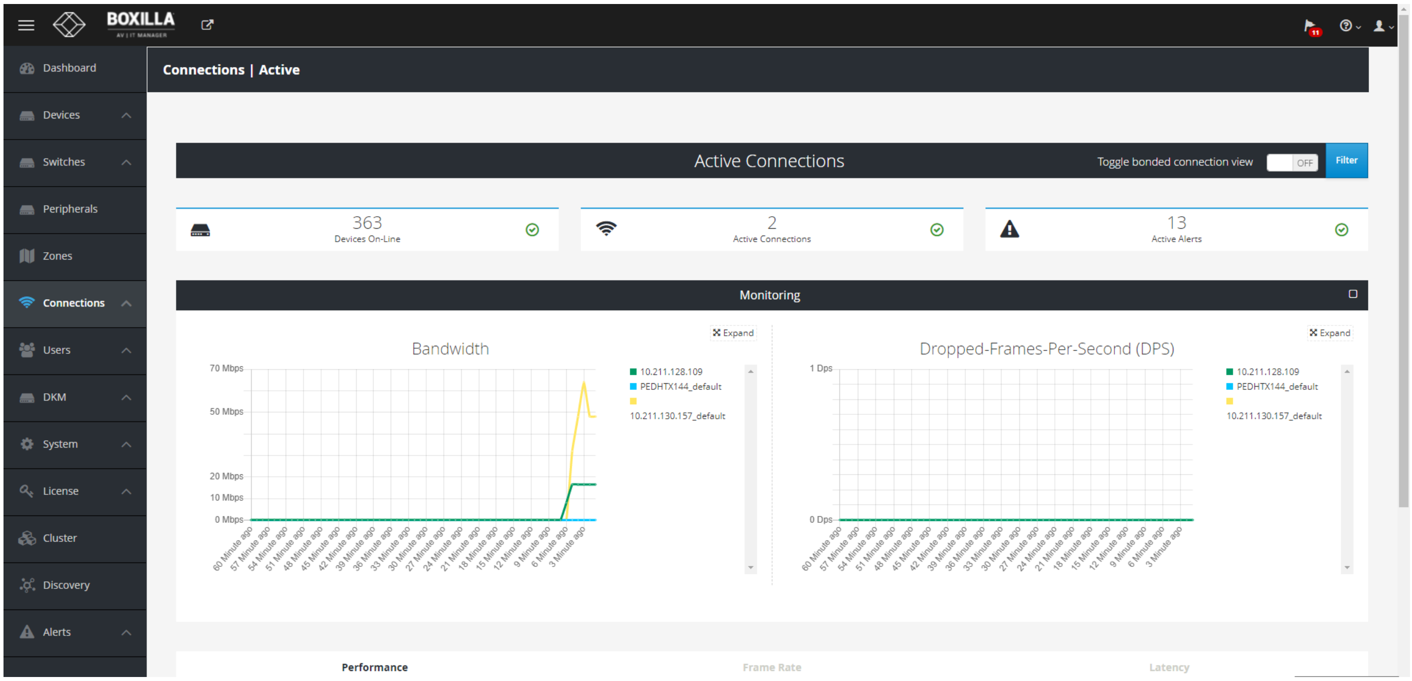
- Connection Active: the total time the connection has been established
- Connection Bandwidth: network traffic generated on the connection during the last polling interval
- Video/Audio/vUSB Bandwidth: a breakdown of connection bandwidth into its individual components of video, audio and vUSB
- Round-trip time: the round-trip latency between Receiver and Transmitter on the network during last polling interval
- User Latency: the latency a user experiences on video/mouse during the last polling interval

- On the Frame-Rate tab:

- Frame-per-Second: active frames sent from Transmitter to Receiver (typically will be 60 fps)
- Dropped-Frames-per-Second : number of frames dropped on the Transmitter. Normally this should be 0.
  Frames can be dropped for reasons such as network congestion.

- On the Connection tab:

- Shows the properties active on the connection: USB and Audio (i.e., is USB and Audio enabled or disabled on the connection)
- If a statistic exceeds a threshold, the color changes from green to amber to red.



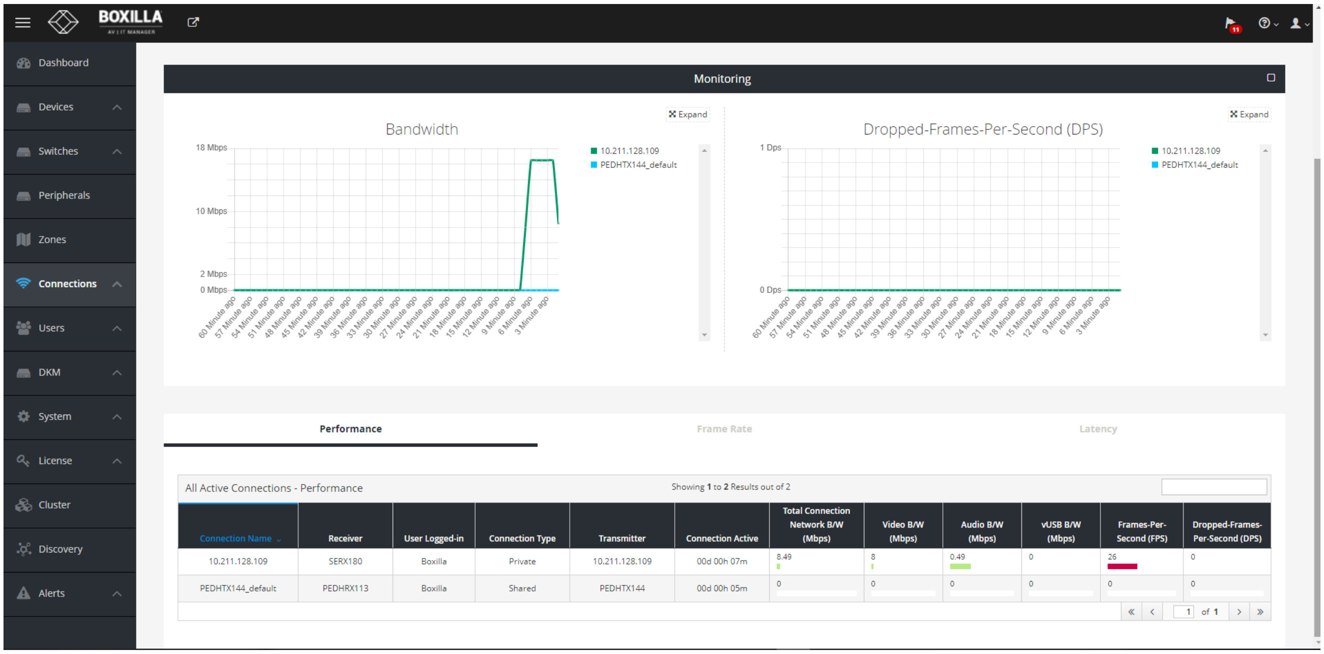
363 Devices On-Line

2 Active Connections

13 Active Alerts

FIGURE 11-23. ACTIVE CONNECTIONS

Under Connections>>Active, administrators can now view real time information about all active connections. The connection information will be visualized in a bandwidth and lost frames chart to show previous history of the active connections. The Filter button supports the filtering of Active Connections on this page.



All Active Connections - Performance

Showing 1 to 2 Results out of 2

Connection Name	Receiver	User Logged-in	Connection Type	Transmitter	Connection Active	Total Connection Network B/W (Mbps)	Video B/W (Mbps)	Audio B/W (Mbps)	vUSB B/W (Mbps)	Frames-Per-Second (FPS)	Dropped-Frames-Per-Second (DPS)
10.211.128.109	SERX180	Boxilla	Private	10.211.128.109	00d 00h 07m	8.49	8	0.49	0	26	0
PEDHTX144_default	PEDHRX113	Boxilla	Shared	PEDHTX144	00d 00h 05m	0	0	0	0	0	0

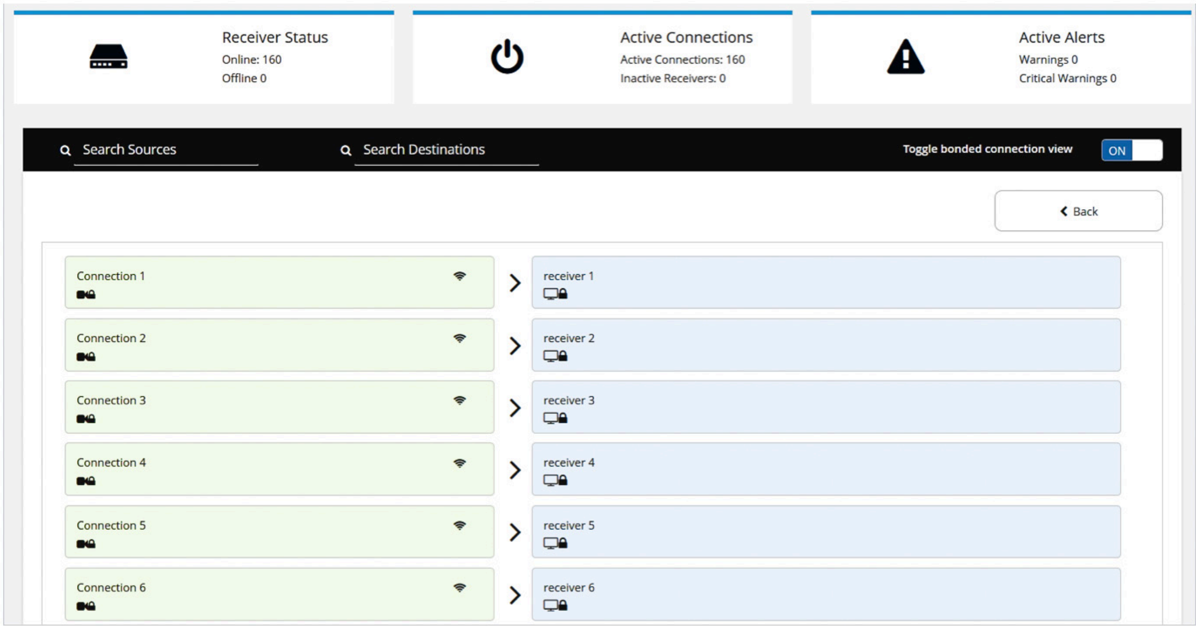
1 of 1

FIGURE 11-24. REAL-TIME INFORMATION FOR ACTIVE CONNECTIONS

11.4 CONNECTIONS—VIEWER

On the Connections drop-down menu, click on Viewer. The Emerald or InvisaPC Connection Matrix screen appears.

NOTE: The toggle bonded connection view option can be enabled to view an individual connection within a bonded connection.



Receiver Status
Online: 160
Offline 0

Active Connections
Active Connections: 160
Inactive Receivers: 0

Active Alerts
Warnings 0
Critical Warnings 0

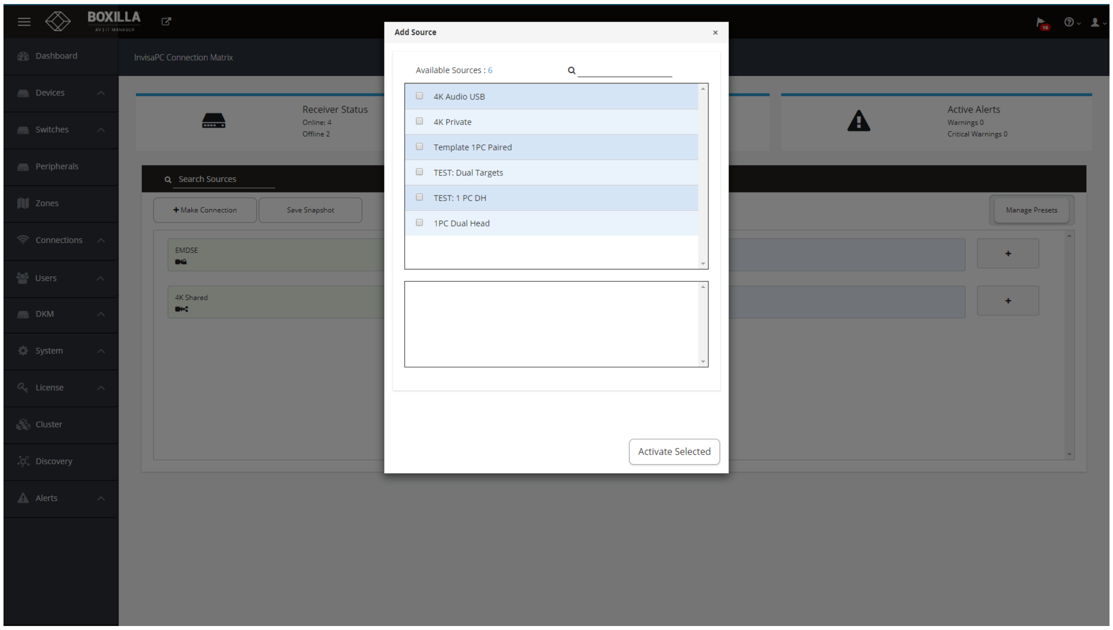
Connection 1	>	receiver 1
Connection 2	>	receiver 2
Connection 3	>	receiver 3
Connection 4	>	receiver 4
Connection 5	>	receiver 5
Connection 6	>	receiver 6

FIGURE 11-25. CONNECTIONS—VIEWER SCREEN

11.4.1 MAKE CONNECTIONS

Click on the Make Connections button, and the Add Source screen pops up.

NOTE: It is only possible to connect InvisaPC Receivers to InvisaPC Transmitters and Emerald Receivers to Emerald Transmitters. Boxilla does not support connection interoperablity between Emerald and InvisaPC devices unless using EmeraldSE Firmware 5.2.9 or 5.2.10. For instructions on how to bond two Emerald ZeroU Transmitters to one Dual-Head Emerald SE Receiver, refer to the Emerald SE manual.



Add Source ×

Available Sources : 6

□ 4K Audio USB
□ 4K Private
□ Template 1PC Paired
□ TEST: Dual Targets
□ TEST: 1 PC DH
□ 1PC Dual Head

Activate Selected

FIGURE 11-26. ADD SOURCE BUTTON

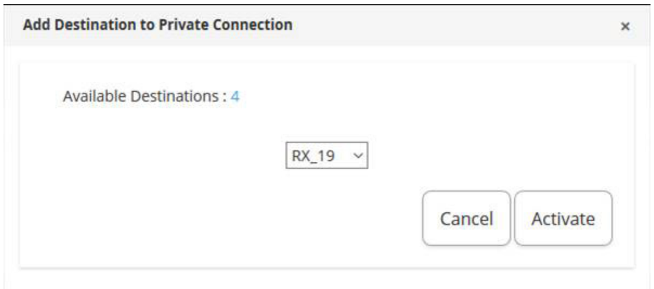
Select a source from the list and press Activate Selected. Once the source connection is added successfully, add a destination (RX) from the available destinations to the selected source and activate by clicking the “Add Destination” button. To detach a destination, click on “X.”

Once you have a connection established, you will see the Connection Viewer page reflect this by displaying the connection name alongside all the attached receivers. To detach one of the receivers, move your mouse over that receiver tile and you will see an ‘X’ appear on the button. Clicking this X detaches only that receiver from the connection and leaves the rest of them intact.

By moving your mouse over the connection name tile you will also see an X appear. Clicking this will break all connections from any receiver connected with this connection name.

To revert, select Delete from the dropdown list to delete the source entry. This should show the “X” button, which is the Delete button.

If you click to ‘add destination’ to a private connection, you will only have the option to select one receiver. This is the receiver that is then used in the connection. If you wish to establish to the same connection from another receiver you will have to break this connection and establish the new one.


Add Destination to Private Connection ×

Available Destinations : 4

RX_19

FIGURE 11-27. CONNECTIONS—ADD DESTINATION TO A PRIVATE CONNECTION

11.4.2 MANAGE PRESETS

Click on the Manage Presets button, and the Manage Presets screen pops up. Under this page all the existing presets will be listed. In Emerald or InvisaPC Viewer — Preset Manage, you can rearrange the preset priority to change what presets display on th main Viewer screen. Essentially, you can pick your top three presets.

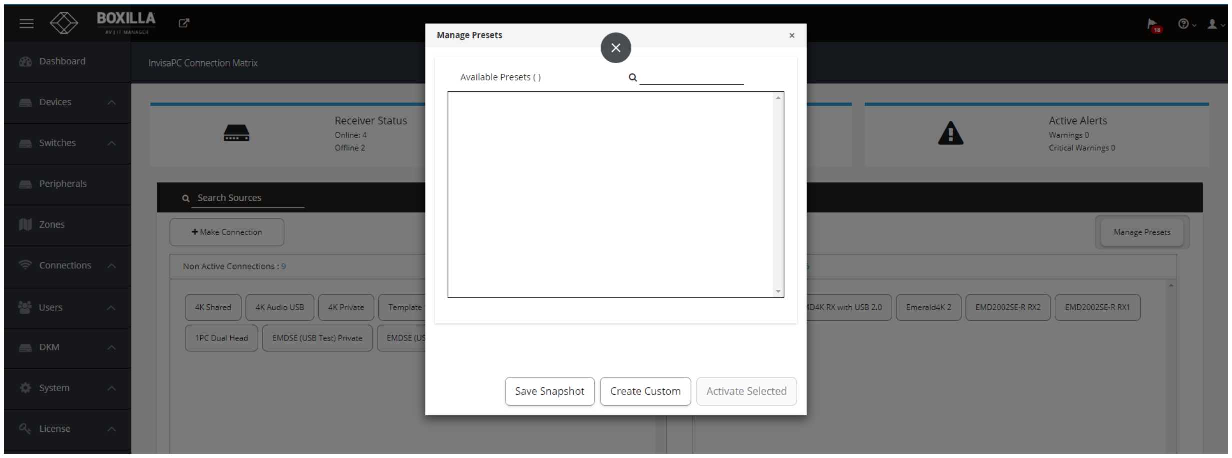


FIGURE 11-28. MANAGE PRESETS SCREEN

To create a new / custom template , click on “ Create Custom” and select the required sources from the available list.

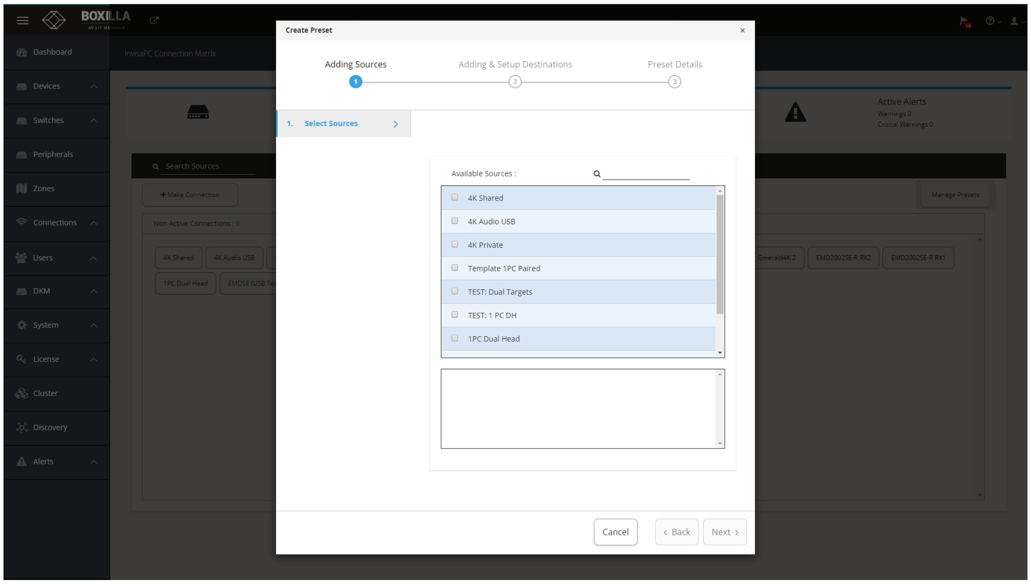
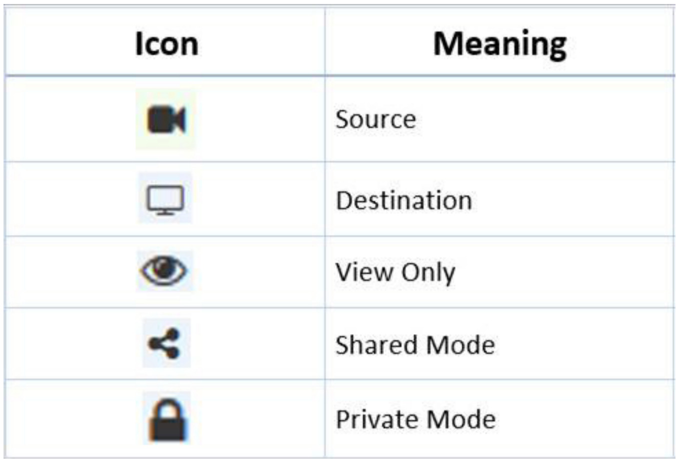


FIGURE 11-29. SELECT SOURCES SCREEN

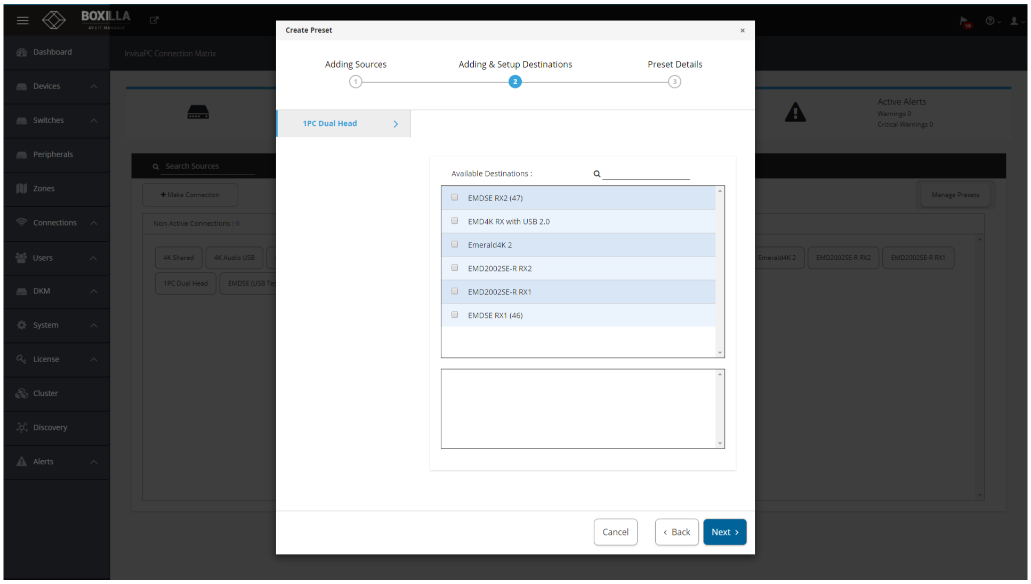
Click next and select the destinations per source. Save the preset with a name and type (Partial or Full).

The icons on the sources screen are:



Icon	Meaning
📹	Source
🖥	Destination
👁	View Only
≺	Shared Mode
🔒	Private Mode

FIGURE 11-30. ICONS ON THE SOURCES SCREEN



Create Preset ×

Adding Sources (1) — Adding & Setup Destinations (2) — Preset Details (3)

1PC Dual Head >

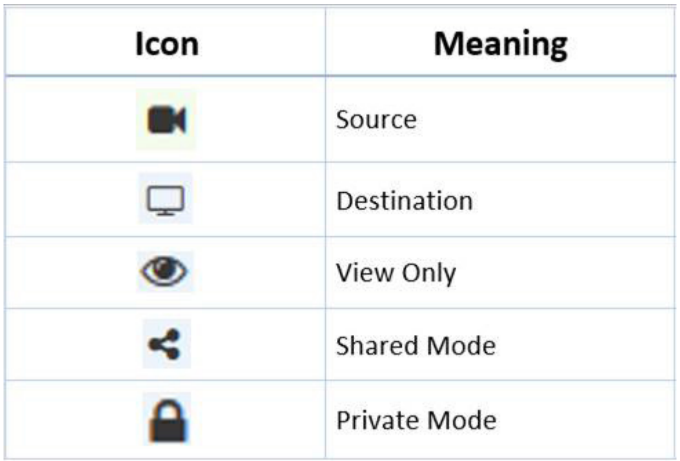
Available Destinations :

- □ EMDSE RX2 (47)
- □ EMD4K RX with USB 2.0
- □ Emerald4K 2
- □ EMD2002SE-R RX2
- □ EMD2002SE-R RX1
- □ EMDSE RX1 (46)

Cancel | ‹ Back | Next ›

FIGURE 11-31. SELECT DESTINATIONS SCREEN

The icons on the destination screen are:



Icon	Meaning
🎥	Source
🖵	Destination
👁	View Only
⋖	Shared Mode
🔒	Private Mode

FIGURE 11-32. ICONS ON THE DESTINATIONS SCREEN

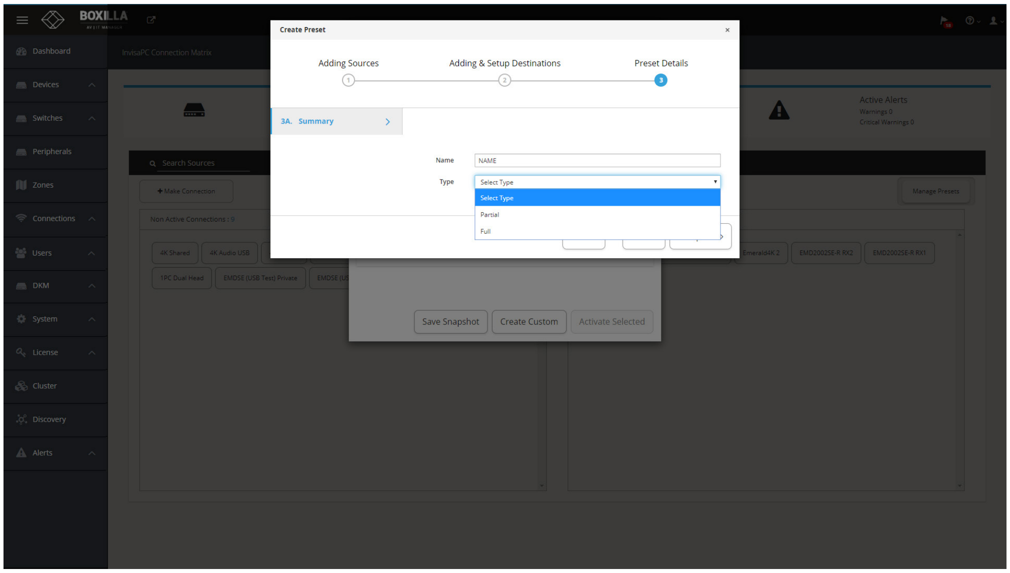
Both preset types will forcibly take any source and destinations required to establish their configuration, i.e., if those TX / VM and RX are already in active connections then these connections will be broken.

The partial type applies only to the specific Tx/Vm and RX that are selected in this preset type.

The full type is applied to all the Tx/Vm and RX. Any Tx/Vm and RX not selected in this preset type will become inactive when this preset is launched.

Click “Complete” to save the preset.

CHAPTER 11: CONNECTIONS



Name: NAME

Type: Select Type

FIGURE 11-33. SAVE PRESET SCREEN

The following methods are available to activate presets:

1. Direct preset activation in the Viewer: The first three presets (ordered by creation) are presented directly in the Viewer and can be activated with a direct click.
2. Activation via Manage Presets: All presets can be activated with the “Activate Selected” option in “Manage Presets.” This is mandatory for any preset that is the fourth or later one created, as there is no other method to activate these presets from within Boxilla.

Under manage presets, we have a snapshot option, which will automatically save the current active connections as a “ Preset”.

CHAPTER 12: USERS

Users are defined in the Boxilla system to provide rights to manage the system, rights to connect to different target devices and rights to set parameters for connections.

12.1 USER TYPES

There are three types of users that can be created in an Emerald or InvisaPC system:

1. Administrator: Users of this class have full rights to configure the system. They can create/modify/delete users and connection, change network settings, etc.
2. Power User: Users of this class can modify resolution for connections to virtual desktops and change his/her local password.
3. Standard Users: Users of this class can only select from a list of pre-defined connections to access and view system information. They cannot change any configuration settings.

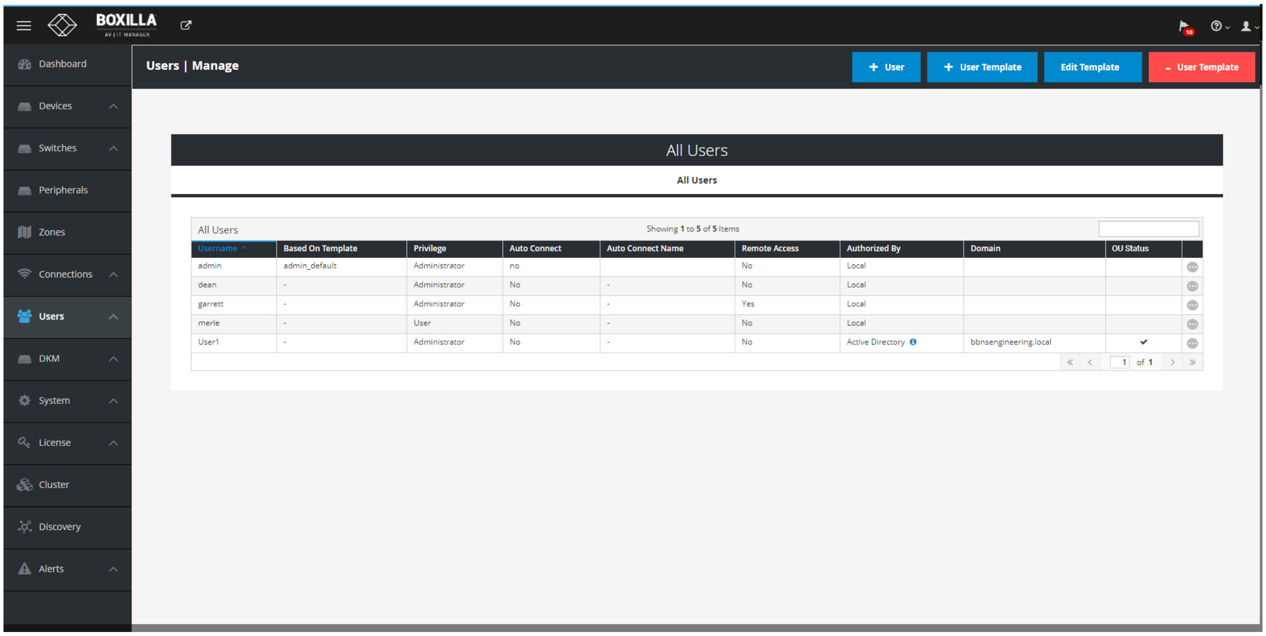
The Boxilla has one default user — admin, which is a member of the administrator group. This user is defined by default and cannot be deleted. Boxilla currently supports up to 1,000 individual users.

NOTE: The Boxilla user cannot be an Active Directory user; the user must be local to the Boxilla system.

To manage users, an administrator selects the Users button on the main menu.

12.2 USER—MANAGE

The User—Manage screen is used to create, edit and delete users as shown in Figure 12-1. It provides a list of the currently created users.



All Users

Showing 1 to 5 of 5 Items

Username	Based On Template	Privilege	Auto Connect	Auto Connect Name	Remote Access	Authorized By	Domain	OU Status
admin	admin_default	Administrator	no		No	Local		
dean	-	Administrator	No	-	No	Local		
garrett	-	Administrator	No	-	Yes	Local		
merle	-	User	No	-	No	Local		
User1	-	Administrator	No	-	No	Active Directory	bbnsengineering.local	✓

1 of 1

FIGURE 12-1. USERS—MANAGE

12.2.1 ADD USER

To create a user, click on the +User button at the top of the page and this opens up the new user wizard. The initial page of this wizard is shown in Figure 12-2.

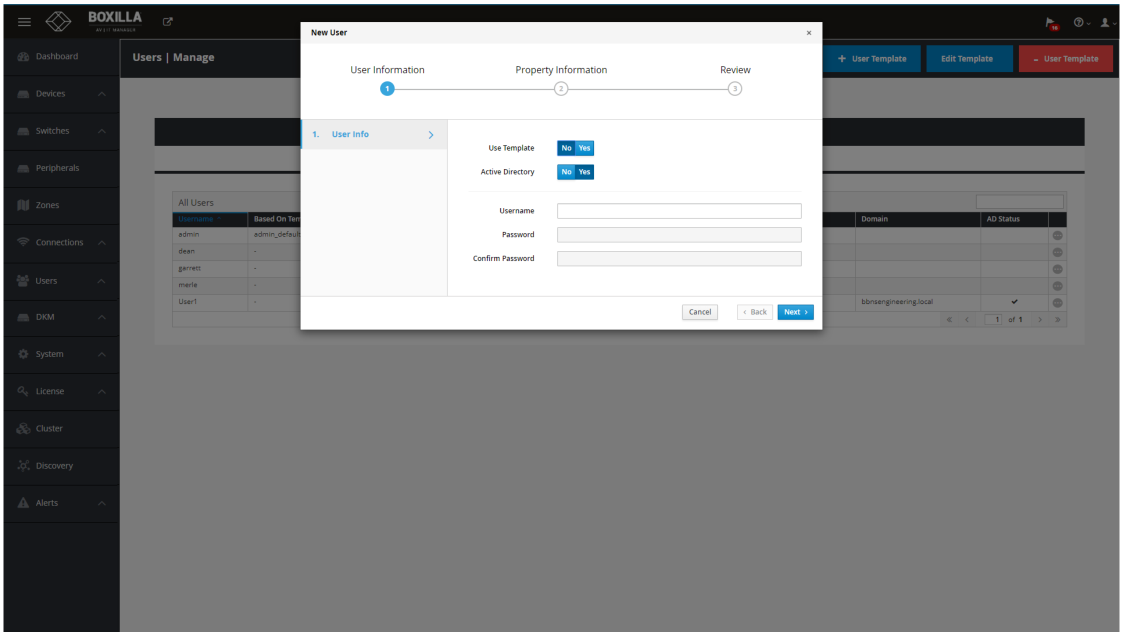


FIGURE 12-2. NEW USER WIZARD

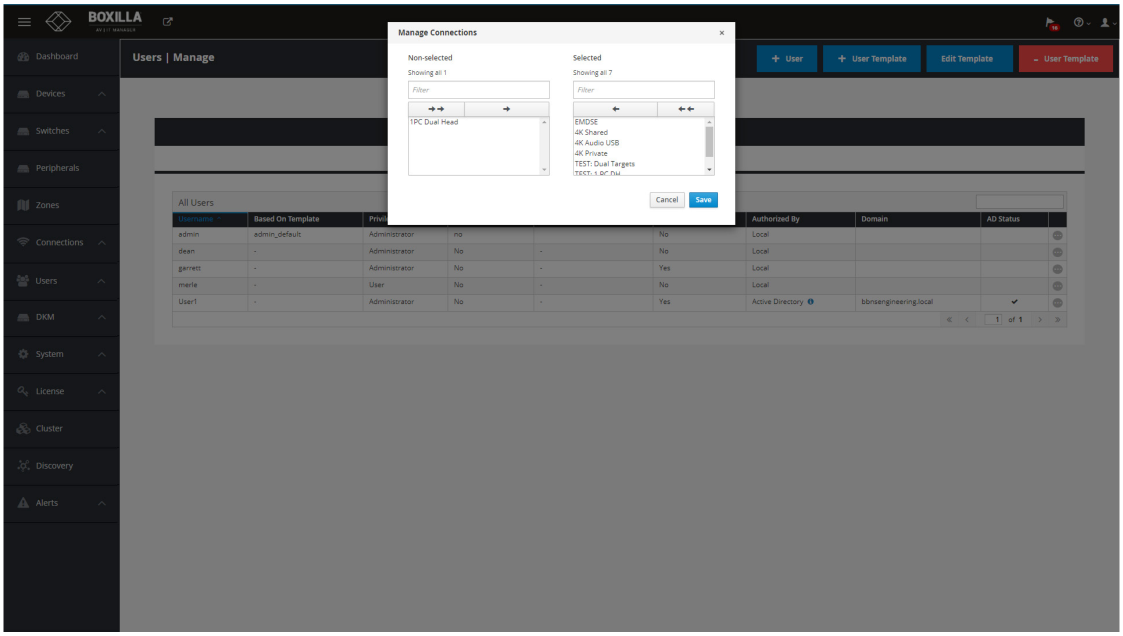
The administrator can use a template to follow a common set of properties for a user as described in the next section. The definitions of the properties of a user are:

- User Name: This is a unique name that uses 1–32 characters. The username can be any valid username for a Microsoft O/S. This means the username cannot contain " "/ \ [ ] ; | = + * ? < > `.
- Active Directory: Select "Yes" if the user belongs to Active Directory that is enabled on Boxilla.
- Password: This field can be a minimum of 0 characters (i.e. blank) and a maximum of 32 characters. The password can be any valid password for a Microsoft O/S. The user password MAY contain the following special characters , ~ : ! @ # $ % ^ & ' { } which means the password cannot contain " "/ \ [ ] : ; | = , + * ? < > `'
- User Privilege: This field defines the type of user the new user will be: Administrator, General User or Power User.
- Auto-Connect: This enable/disable whether the Emerald or InvisaPC Receiver attempts to connect immediately to the selected connection after a logon by this user. This automatic connection only occurs after a logon. If a user exits the connection, the connection tab is displayed to the user for selection of a connection.

Once the new user fields have been filled out, you must click the Save button to create the new user. Clicking the Save button causes the validation of the new username, checking that it is unique and that the two password entries match. If this validation fails, a pop-up window displays the reason for the failure, and the new user is not created. After dismissing the pop-up window, the user can fix the error and click Save again.

12.2.2 MANAGE USER CONNECTIONS

The new user must be allocated Connections that he/she can access. This is done by clicking on "Manage Connection" option on the ellipsis "•••" icon in the required user row. The required connections are selected from the available Connections—click on the connection in the Non-Selected List and then click the "->" button). This causes the selected connections to be "added" to a user's selected connection window as shown in Figure 12-3. This will also include the set of configured bonded connections. Click Save to complete the selection. It is a similar process to edit an existing users list of connections. To remove a connection from a user, select the specific connection in the Selected list (i.e. current connections allocated to the user) and click on the "<-" button. Click Save to complete the task.



Manage Connections ×

Non-selected
Showing all 1
Filter
1PC Dual Head

Selected
Showing all 7
Filter
EMDSE
4K Shared
4K Audio USB
4K Private
TEST: Dual Targets
TEST: 1 PC DH

Cancel Save

All Users

Username	Based On Template	Privil				Authorized By	Domain	AD Status
admin	admin_default	Administrator	no		No	Local		
dean	-	Administrator	No	-	No	Local		
garrett	-	Administrator	No	-	Yes	Local		
merle	-	User	No	-	No	Local		
User1	-	Administrator	No	-	Yes	Active Directory	bbnsengineering.local	✓

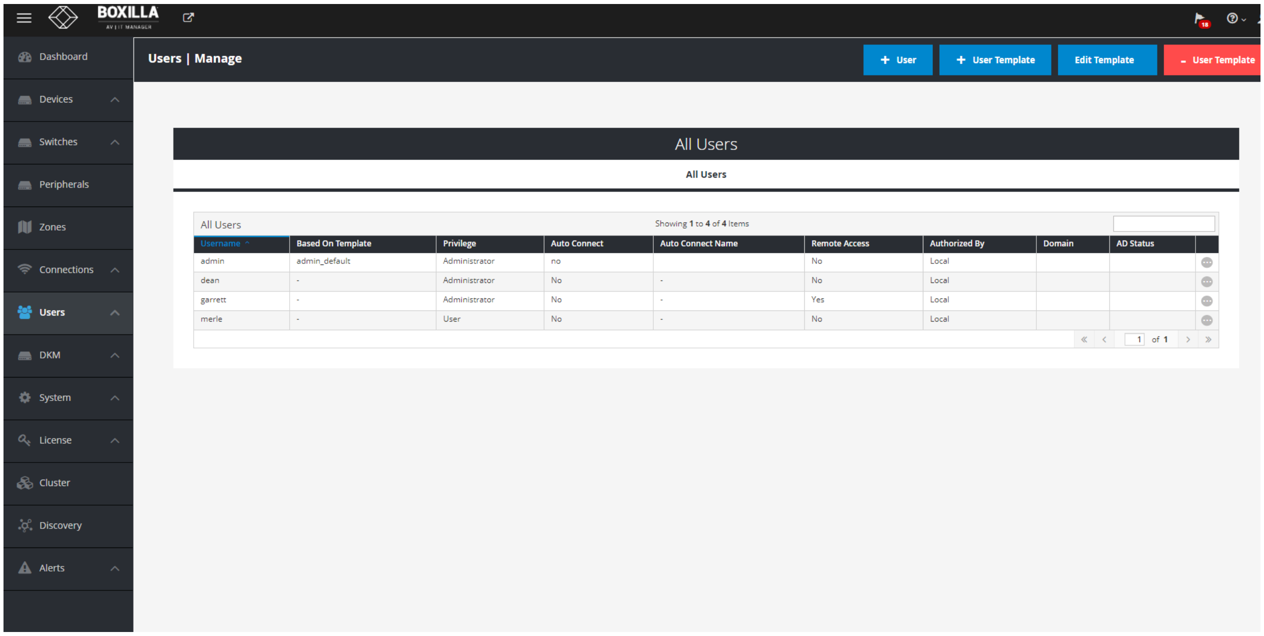
1 of 1

FIGURE 12-3. MANAGE USER CONNECTIONS

12.2.3 ACTIVE DIRECTORY USER MANAGEMENT

When you create a new user and save it as an Active Directory user, you will see the "OU Status" change to a loading spinner. This means Boxilla is attempting to retrieve the DN string for the user that contains the OU and CN information. If the retrieve was successful, the spinner will change to a "tick" or check mark and we will store the new OU tree information in our database. If the retrieve was not successful, then the spinner will change to an X. If the Boxilla administrator wishes to manually specify an OU for this user, then they can manually "edit" the user and they will then be presented with the text fields to enter the OU information manually. In Boxilla 3.6.0, the administrator no longer needs to configure AD users in Boxilla.

CHAPTER 12: USERS



All Users

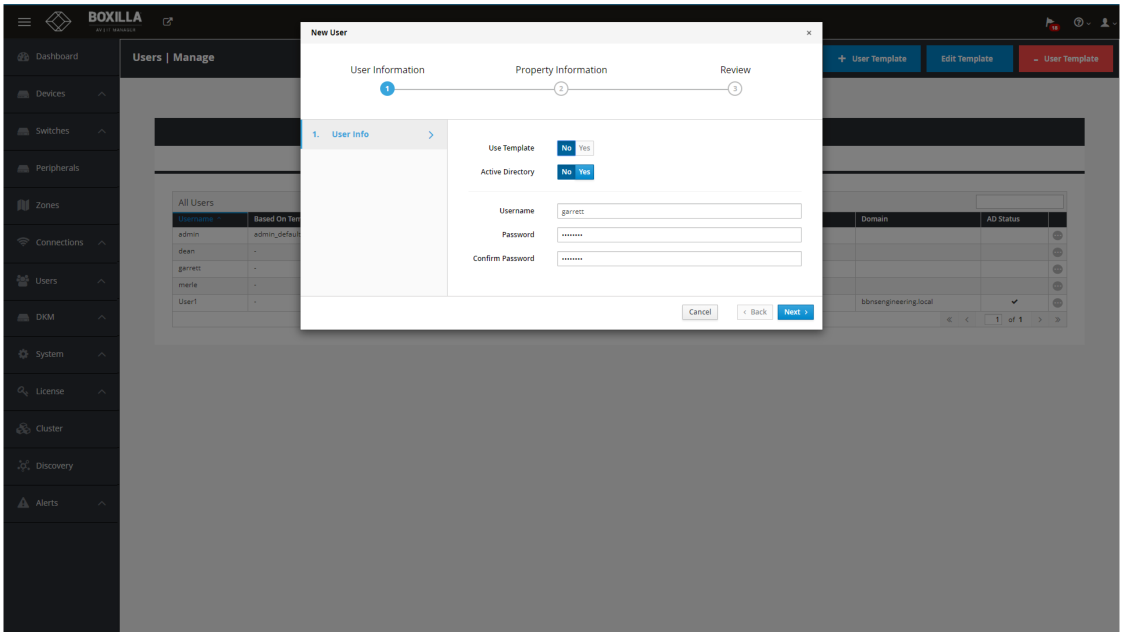
All Users

All Users — Showing 1 to 4 of 4 Items

Username ^	Based On Template	Privilege	Auto Connect	Auto Connect Name	Remote Access	Authorized By	Domain	AD Status
admin	admin_default	Administrator	no		No	Local		
dean	-	Administrator	No	-	No	Local		
garrett	-	Administrator	No	-	Yes	Local		
merle	-	User	No	-	No	Local		

1 of 1

FIGURE 12-4. USERS —> MANAGE



New User

Use Template: [✓ No] Yes

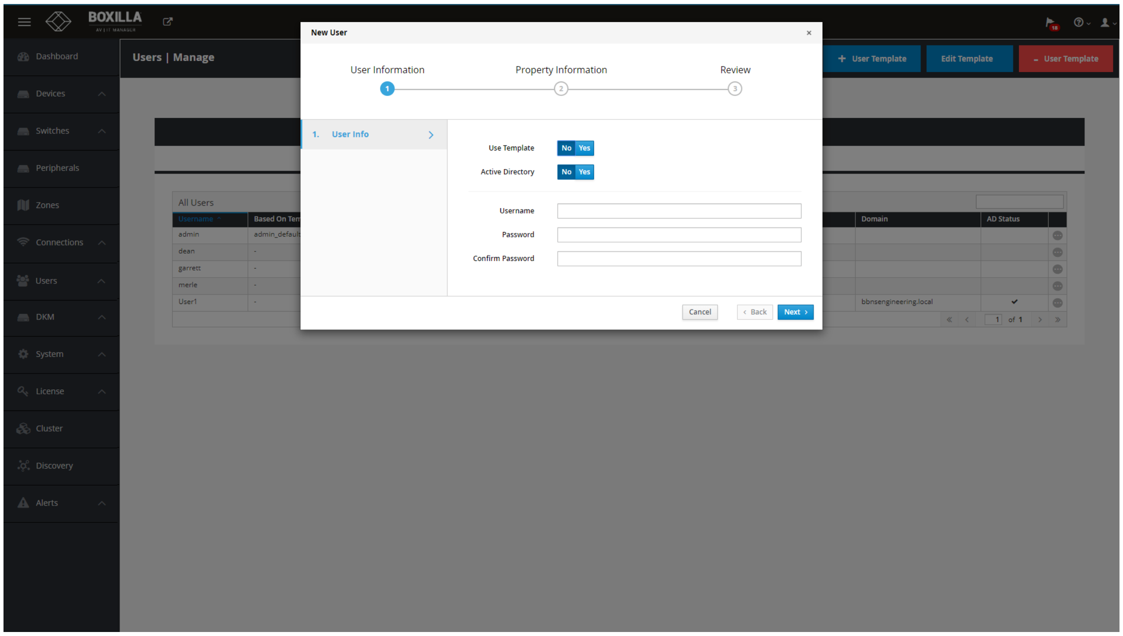
Active Directory: No [✓ Yes]

Username: garrett

Password: ••••••••

Confirm Password: ••••••••

FIGURE 12-5. EDIT USER DETAILS



New User

User Information — Property Information — Review

1. User Info

Use Template: No Yes

Active Directory: No Yes

Username

Password

Confirm Password

Cancel | Back | Next

FIGURE 12-6. CREATE AD USER

ACTIVE DIRECTORY USER LOGGING INTO RECEIVER

When a user logs onto the receiver as an AD user, Boxilla queries Active Directory server for authentication. When the Active Directory returns the result, the local user is allowed to log into the device.

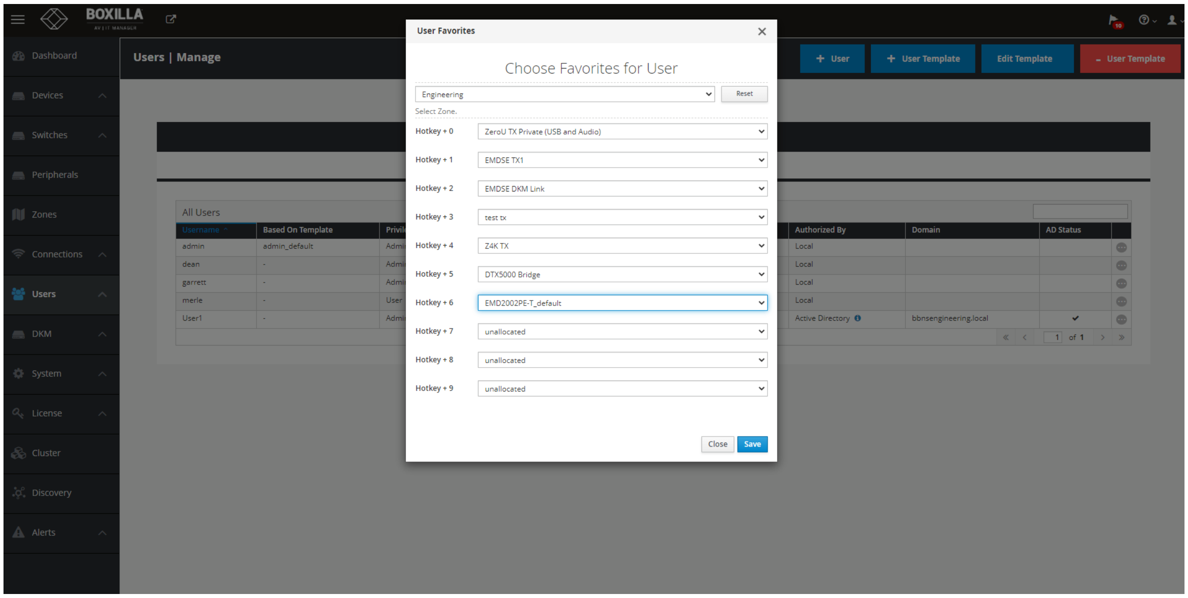
12.2.4 CONNECTION FAVORITES

Connection favorites provide a quick convenient mechanism for users to switch between their pre-defined connections. Favorites are configured by the administrator where a maximum of 10 favorites can be assigned to users using a combination of hotkey and [0-9].

Assigning Connection Favorites

A pre-requisite is that the user exists and has connections assigned.

The following screenshot demonstrates the administrator assigning connections for the user to the available hotkeys. Favorites do not need to be allocated sequentially and hotkeys can be skipped. Favorites can now be also assigned to bonded connections.



User Favorites

Choose Favorites for User

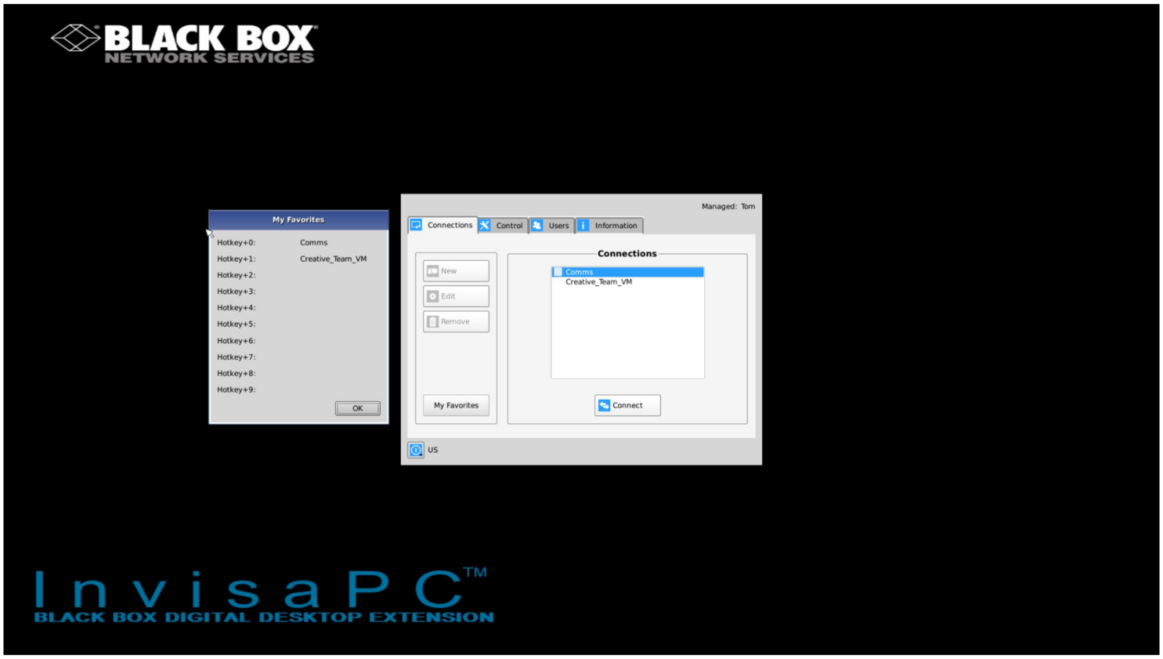
Engineering
Select Zone.

Hotkey + 0: ZeroU TX Private (USB and Audio)
Hotkey + 1: EMDSE TX1
Hotkey + 2: EMDSE DKM Link
Hotkey + 3: test tx
Hotkey + 4: Z4K TX
Hotkey + 5: DTX5000 Bridge
Hotkey + 6: EMD2002PE-T_default
Hotkey + 7: unallocated
Hotkey + 8: unallocated
Hotkey + 9: unallocated

FIGURE 12-7. CONNECTION FAVORITES SCREEN

Listing Connection Favorites:

When a user logs in they can view their assigned favorites.



My Favorites

Hotkey+0: Comms
Hotkey+1: Creative_Team_VM
Hotkey+2:
Hotkey+3:
Hotkey+4:
Hotkey+5:
Hotkey+6:
Hotkey+7:
Hotkey+8:
Hotkey+9:

Managed: Tom

Connections
Comms
Creative_Team_VM

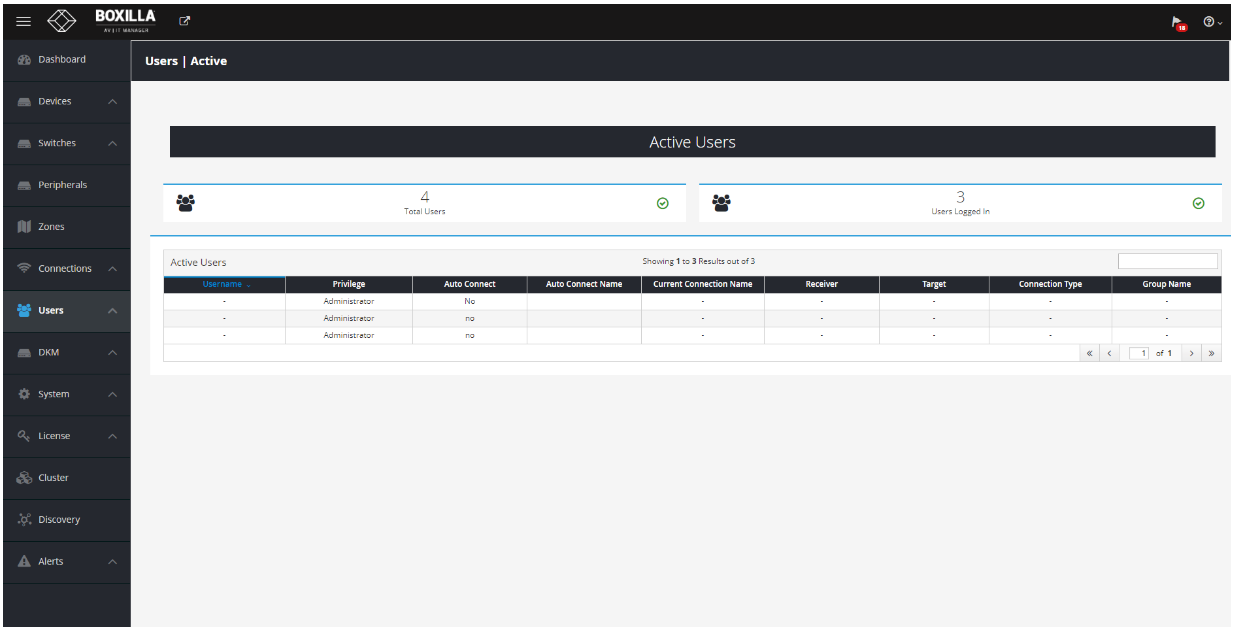
FIGURE 12-8. CONNECTION FAVORITES SCREEN

12.2.5 DELETE USER

To remove a user from the system, click on the ellipsis "•••" icon on the row of the user to be deleted and click on the delete option.

12.3 USER—ACTIVE

The User—Active page shows a list of all the users logged in to an Emerald or InvisaPC Receiver. The page provides information on what Receiver the user is logged in on and details on any active connection as shown in Figure 12-9.



Users | Active

Active Users

4
Total Users

3
Users Logged In

Active Users

Showing **1** to **3** Results out of 3

Username	Privilege	Auto Connect	Auto Connect Name	Current Connection Name	Receiver	Target	Connection Type	Group Name
-	Administrator	No		-	-	-	-	-
-	Administrator	no		-	-	-	-	-
-	Administrator	no		-	-	-	-	-

1 of **1**

FIGURE 12-9. ACTIVE USERS

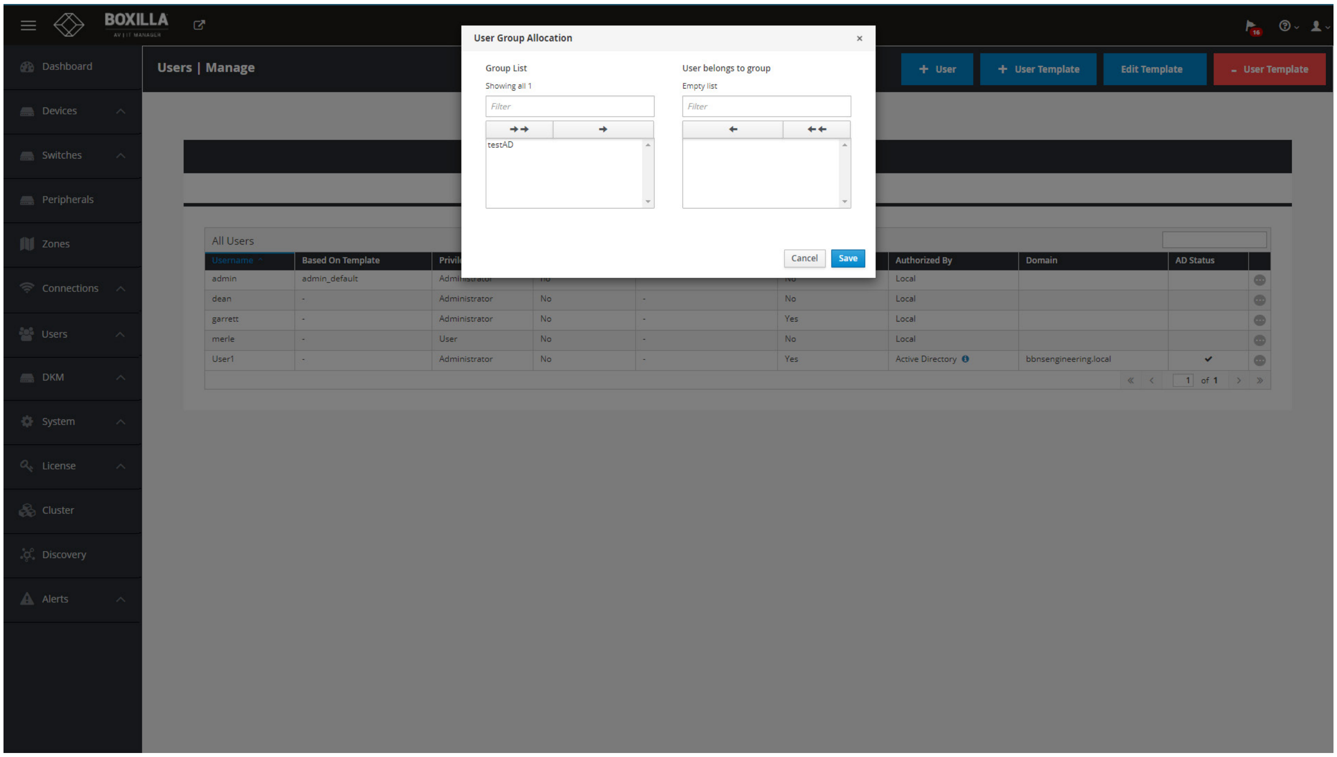
CHAPTER 12: USERS

12.4 MANAGE GROUPS

Once a user is registered in Boxilla, the administrator can assign the user to a User Group by using the Manage Groups option. Once the group profile is assigned to a user, that user will be able to make a connection to the targets found in that group. There are two default Connection Groups:

1) OU Undefined.

2) OU Not Found.



User Group Allocation ×

Group List
Showing all 1
Filter
testAD

User belongs to group
Empty list
Filter

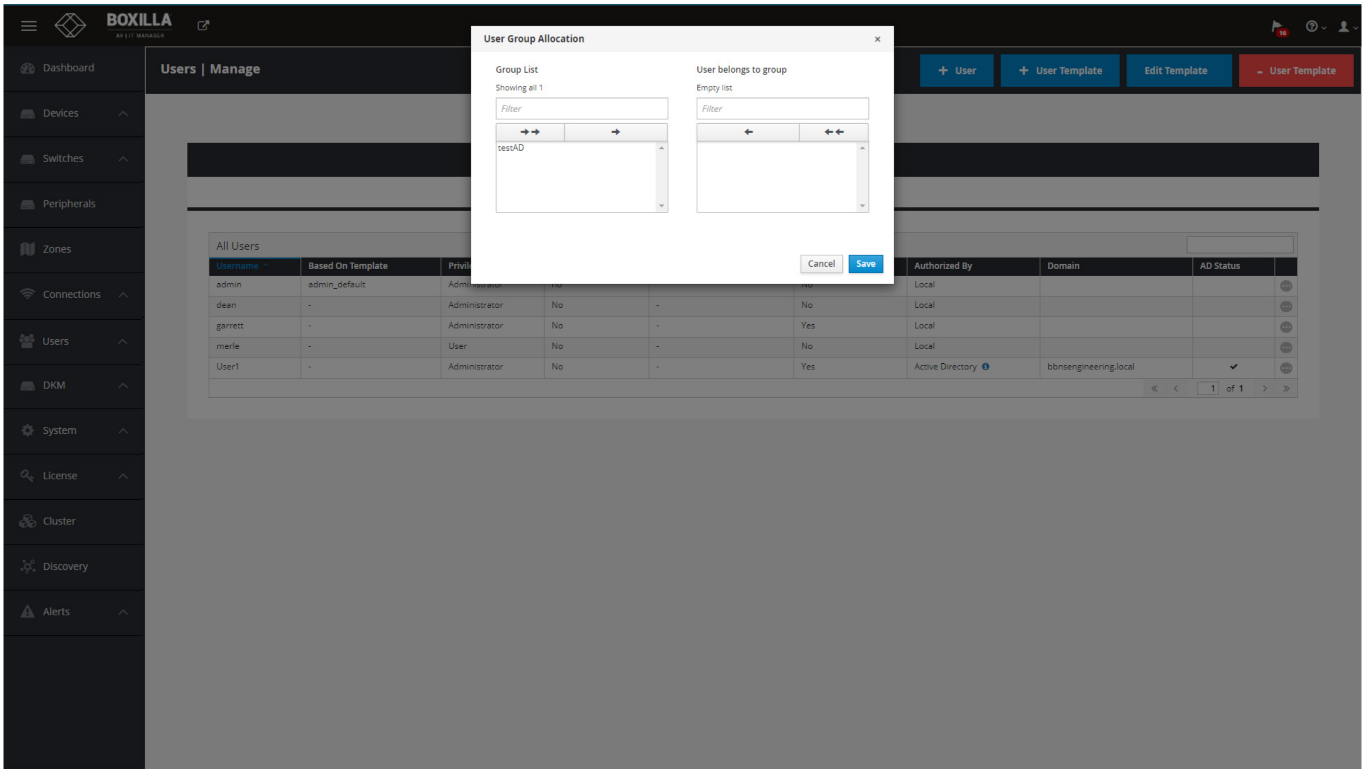
Cancel Save

All Users

Username	Based On Template	Privi…				Authorized By	Domain	AD Status
admin	admin_default	Administrator	No		No	Local		
dean	-	Administrator	No	-	No	Local		
garrett	-	Administrator	No	-	Yes	Local		
merle	-	User	No	-	No	Local		
User1	-	Administrator	No	-	Yes	Active Directory	bbnsengineering.local	✓

1 of 1

FIGURE 12-10. MANAGE GROUPS



Users | Manage

User Group Allocation

Group List
Showing all 1
testAD

User belongs to group
Empty list

All Users

Username	Based On Template	Privi				Authorized By	Domain	AD Status	
admin	admin_default	Administrator	No		No	Local			
dean	-	Administrator	No	-	No	Local			
garrett	-	Administrator	No	-	Yes	Local			
merle	-	User	No	-	No	Local			
User1	-	Administrator	No	-	Yes	Active Directory	bbnsengineering.local	✓	

FIGURE 12-11. USER GROUP ALLOCATION SCREEN

CHAPTER 13: DKM INTEGRATION

13.1 INTRODUCTION

This chapter considers integration aspects of Boxilla. The chapter is divided into two main sections, which include activities on the DKM end and on the Boxilla side. The chapter describes the configuration elements for Boxilla and DKM.

Boxilla manages DKM connections towards Emerald and InvisaPC appliances by means of Virtual CPUs. The VirtualCPU name must match the Emerald/InvisaPC Connection name. When the DKM Connection (vCPU to CON) is established, the DKM switch will echo this operation onto the network. This will be picked up by Boxilla and Boxilla will initiate the desired connections between the InvisaPC Receiver and the InvisaPC Transmitter/VM.

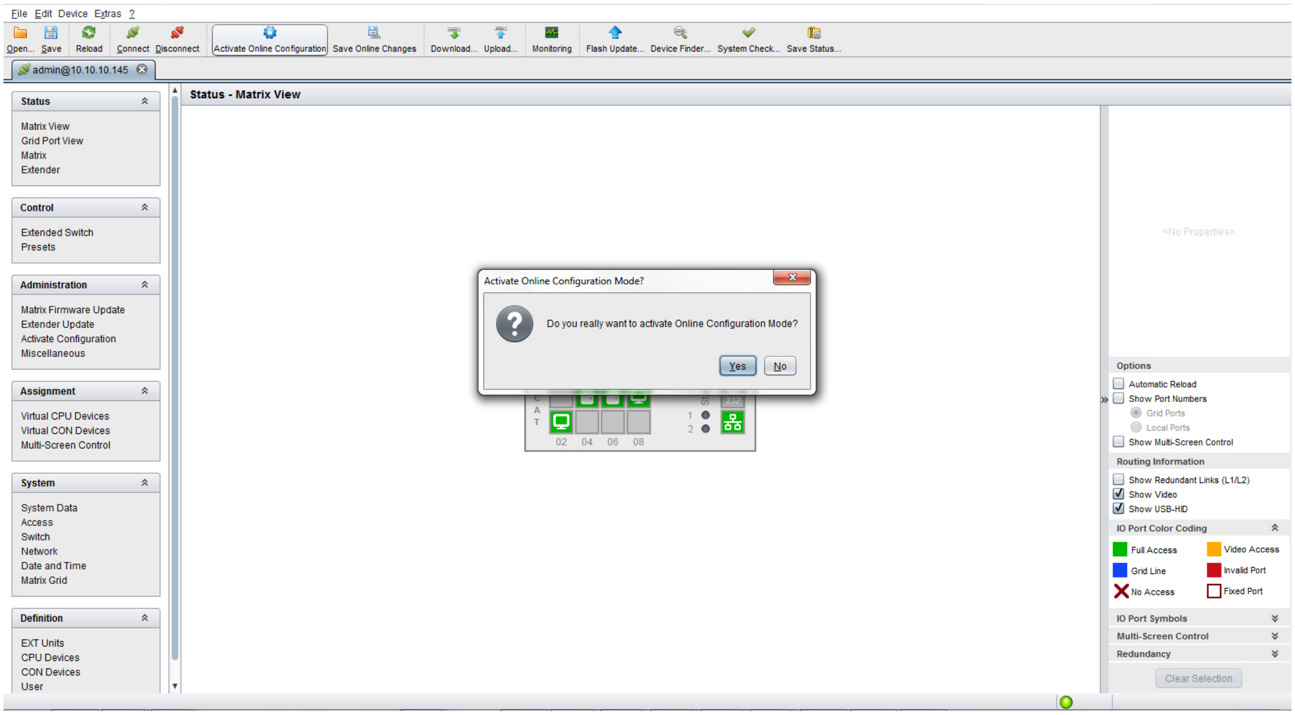
Follow these steps:

1. Create desired Emerald Connection.
2. Add a DKM Switch under Boxilla -> DKM -> Switches.
3. Create a Virtual CPU on the DKM JavaTool (named the same name as the Emerald/InvisaPC Connection). Physically attach this to the Emerald/InvisaPC Receiver. When the DKM CON is then connected to the VirtualCPU, the connection name will be picked up and the Emerald/InvisaPC leg of the connection will be set up.

13.2 STEPS TO CREATE AND MANAGE VCPU CONNECTIONS ON THE UTILITY

Assumed: You have the desired Emerald/InvisaPC connection setup.

Open the Java Tool and select "Activate Online Configuration," which is found in the toolbar of the DKM FX Tool. Select Yes when you are asked to confirm. NOTE: The screen you see depends on the version of the DKM Java Tool used.



Activate Online Configuration Mode?

Do you really want to activate Online Configuration Mode?

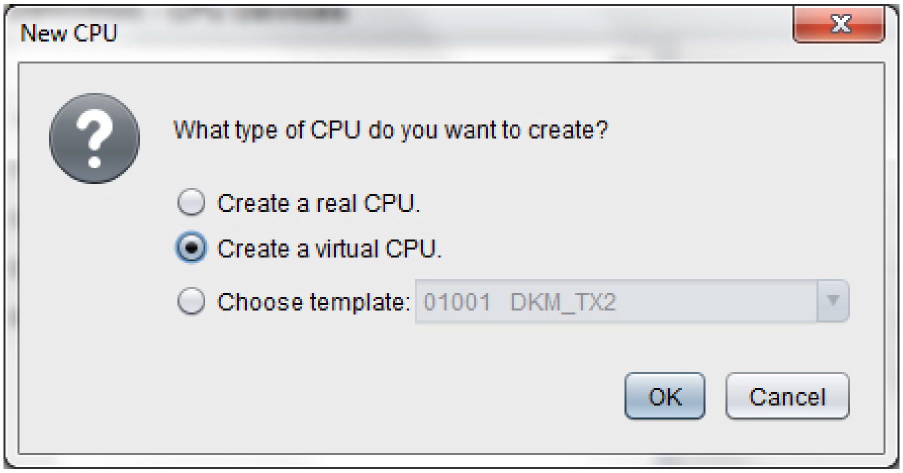
Options
☐ Automatic Reload
☐ Show Port Numbers
● Grid Ports
○ Local Ports
☐ Show Multi-Screen Control

Routing Information
☐ Show Redundant Links (L1/L2)
☑ Show Video
☑ Show USB-HID

IO Port Color Coding
🟩 Full Access 🟧 Video Access
🟦 Grid Line 🟥 Invalid Port
✗ No Access □ Fixed Port

FIGURE 13-1. JAVA TOOL SCREEN

Click "CPU Devices," which is a menu item under "Definition" on the lower left side. Next, select the "New Device" button on the lower right side of the screen. Select "Create a virtual CPU."



New CPU

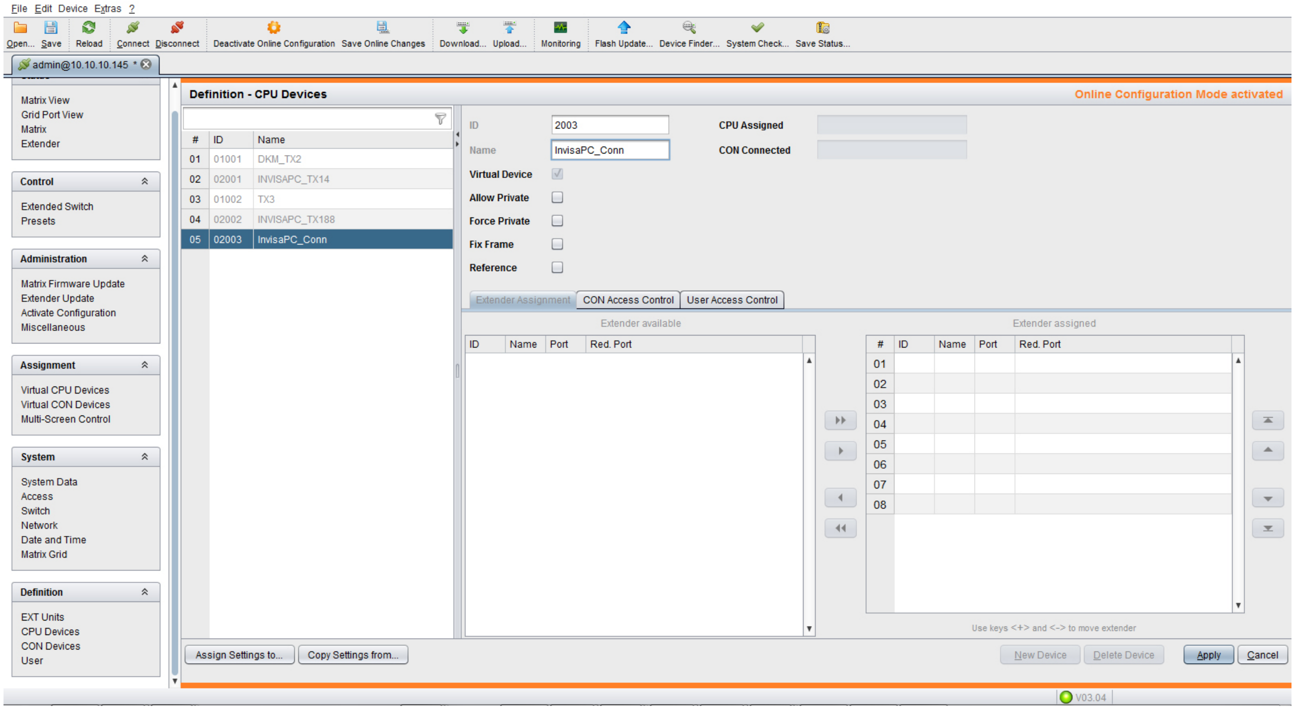
What type of CPU do you want to create?

○ Create a real CPU.
● Create a virtual CPU.
○ Choose template: 01001 DKM_TX2

FIGURE 13-2. CREATE A VIRTUAL CPU OPTION

You will then have the option to name your Virtual CPU.

IMPORTANT: This name must be the same as the Emerald/InvisaPC Connection name that you want it to be associated with.



Definition - CPU Devices

Online Configuration Mode activated

#	ID	Name
01	01001	DKM_TX2
02	02001	INVISAPC_TX14
03	01002	TX3
04	02002	INVISAPC_TX188
05	02003	InvisaPC_Conn

ID: 2003
Name: InvisaPC_Conn
CPU Assigned:
CON Connected:
Virtual Device ☑
Allow Private □
Force Private □
Fix Frame □
Reference □

Extender available

ID	Name	Port	Red. Port

Extender assigned

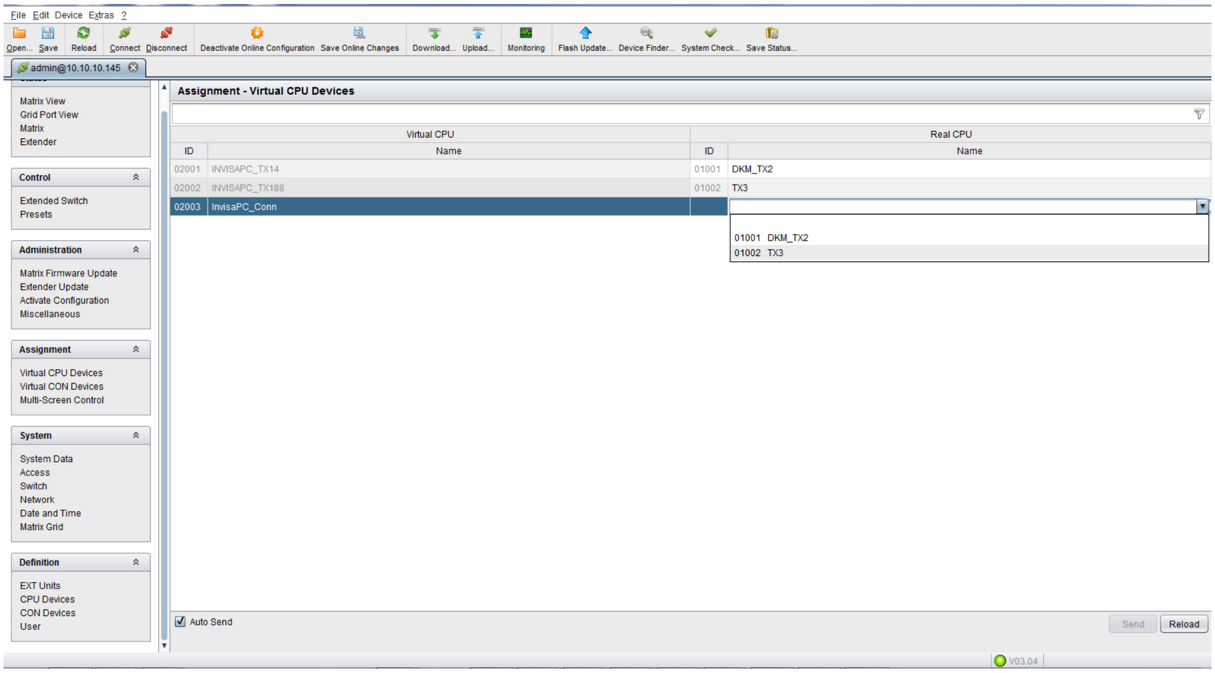
#	ID	Name	Port	Red. Port
01				
02				
03				
04				
05				
06				
07				
08				

Use keys <+> and <-> to move extender

FIGURE 13-3. NAME VIRTUAL CPU SCREEN

Press "Apply."

Next, navigate to “Virtual CPU Devices,” which appears under the “Assignment” tab on the main menu on the left side of the application window. Here you can assign your new Virtual CPU to the real CPU that‘s physically connected into your Emerald/InvisaPC receiver. This is done by clicking the empty space in the “Name” column and seeing the drop down of available Real CPUs.



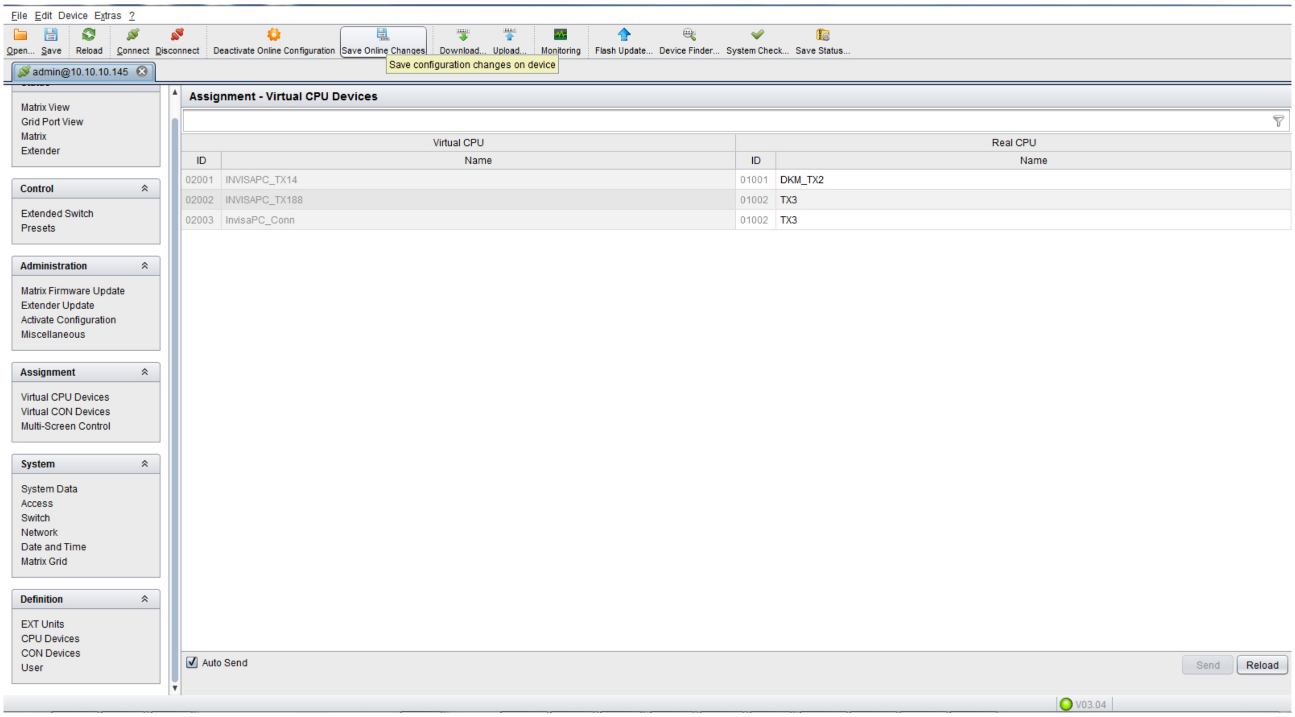
Assignment - Virtual CPU Devices

Virtual CPU		Real CPU	
ID	Name	ID	Name
02001	INVISAPC_TX14	01001	DKM_TX2
02002	INVISAPC_TX188	01002	TX3
02003	InvisaPC_Conn		▾

01001 DKM_TX2
01002 TX3

FIGURE 13-4. DROP DOWN LIST OF AVAILABLE REAL CPUS

Next, click “Save Online Changes.” This pushes the changes down to the DKM switch so even if it reboots it will hold onto the new settings.



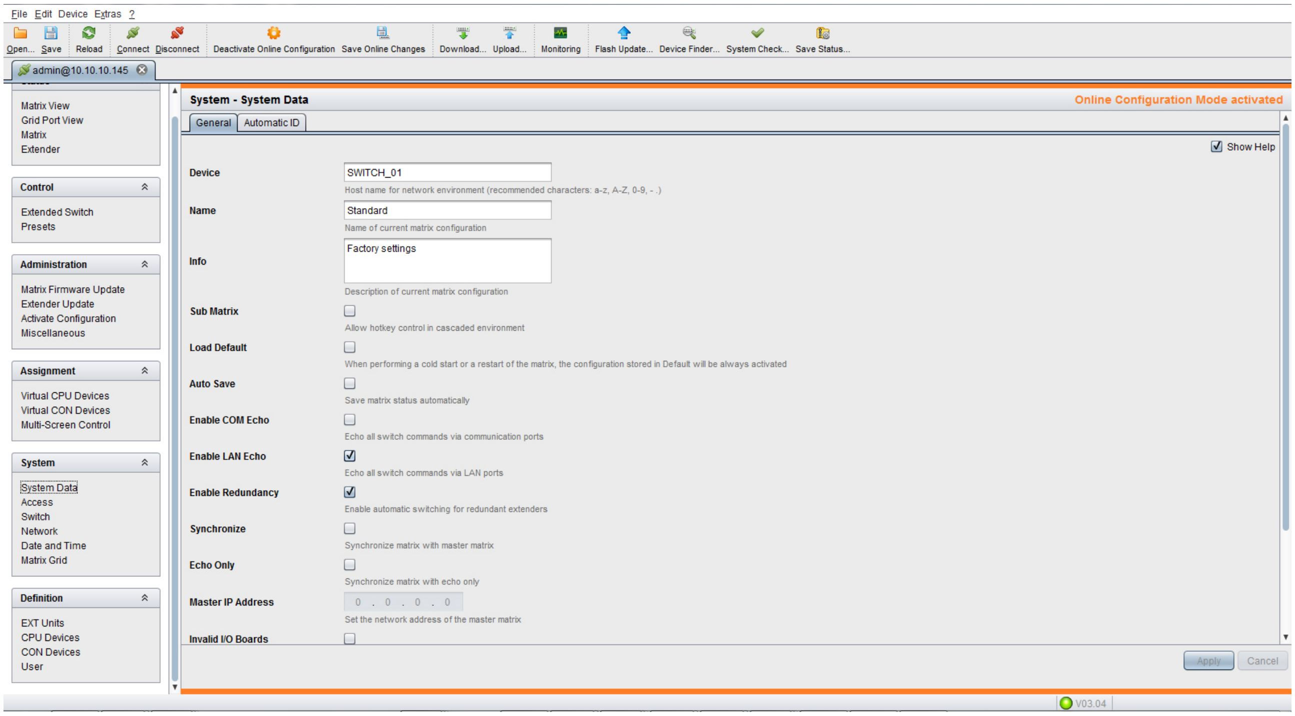
Assignment - Virtual CPU Devices

Virtual CPU		Real CPU	
ID	Name	ID	Name
02001	INVISAPC_TX14	01001	DKM_TX2
02002	INVISAPC_TX188	01002	TX3
02003	InvisaPC_Conn	01002	TX3

FIGURE 13-5. SAVED CHANGES

HOW TO ENABLE LAN ECHO

Next, you must Enable LAN Echo. This will enable the switch to echo the results of the connection initiations to the network, where Boxilla can put them up and set up the corresponding Emerald/InvisaPC Connections.



System - System Data Online Configuration Mode activated

Device: SWITCH_01
Host name for network environment (recommended characters: a-z, A-Z, 0-9, - .)

Name: Standard
Name of current matrix configuration

Info: Factory settings
Description of current matrix configuration

Sub Matrix ☐
Allow hotkey control in cascaded environment

Load Default ☐
When performing a cold start or a restart of the matrix, the configuration stored in Default will be always activated

Auto Save ☐
Save matrix status automatically

Enable COM Echo ☐
Echo all switch commands via communication ports

Enable LAN Echo ☑
Echo all switch commands via LAN ports

Enable Redundancy ☑
Enable automatic switching for redundant extenders

Synchronize ☐
Synchronize matrix with master matrix

Echo Only ☐
Synchronize matrix with echo only

Master IP Address: 0 . 0 . 0 . 0
Set the network address of the master matrix

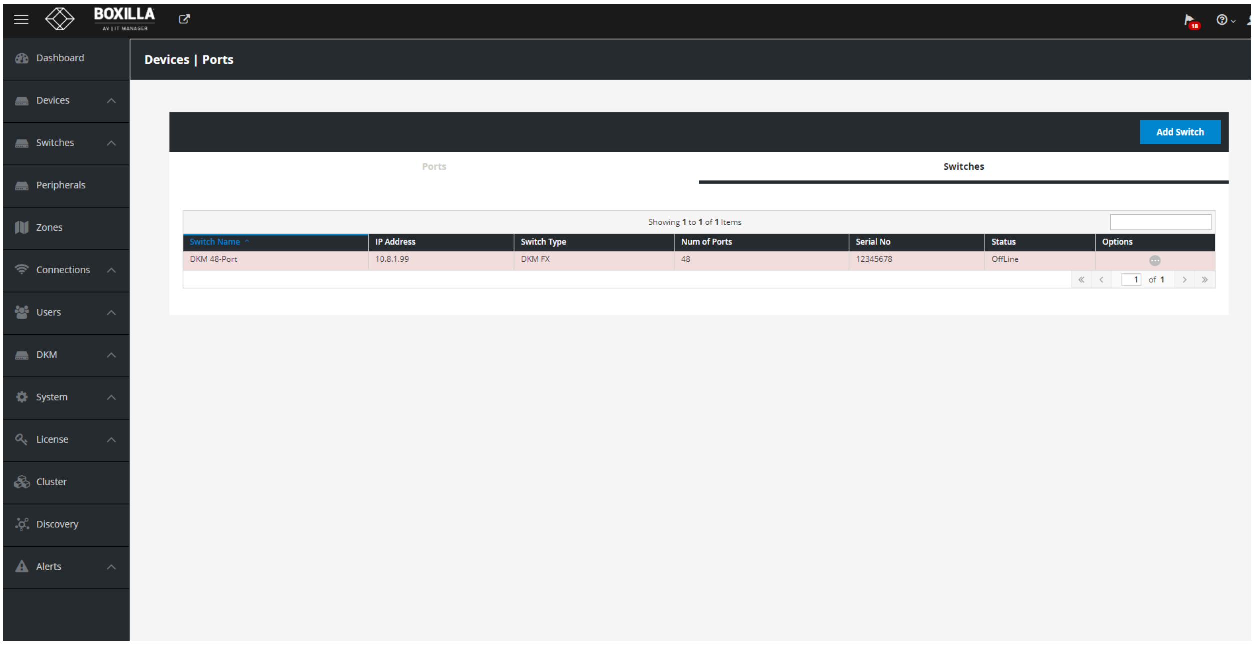
Invalid I/O Boards ☐

FIGURE 13-6. ENABLE LAN ECHO

If you encounter issues with the configuration not staying in place, you will need to save the DKM DTC file on a local computer, then using the Java Tool go to File>>Upload and activate the configuration which also requires a DKM switch reboot.

13.3 STEPS TO ADD SWITCHES

Under Boxilla, to add the DKM switch, navigate to DKM —Switches and click the blue "Add Switch" button on the top right of the screen.



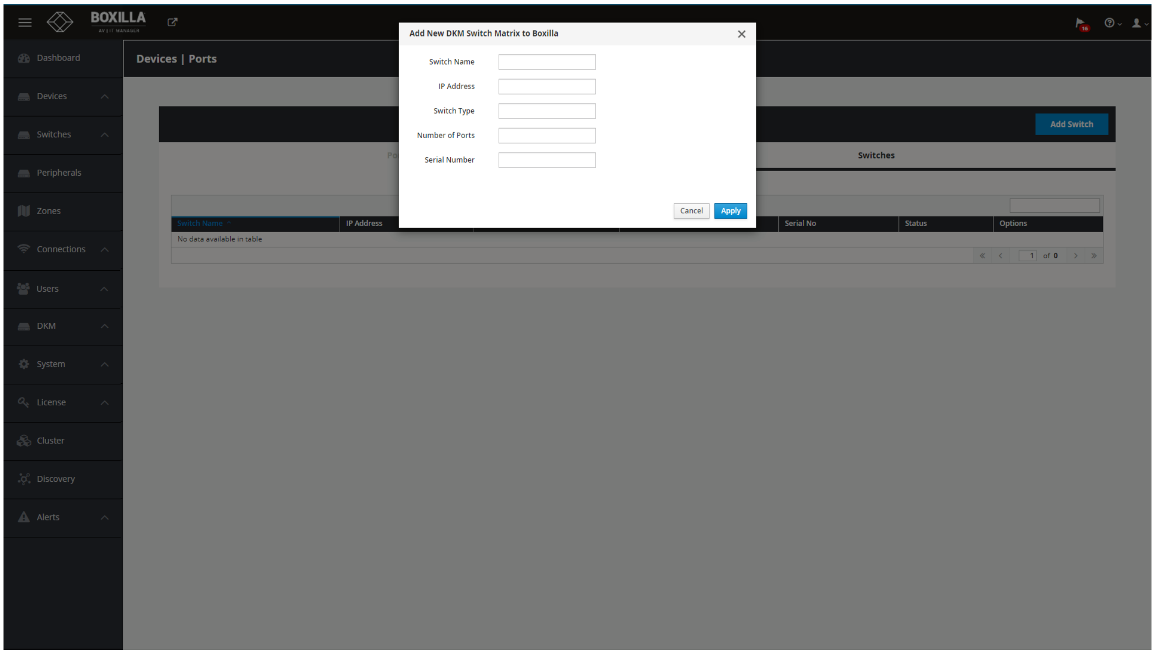
Showing 1 to 1 of 1 Items

Switch Name ^	IP Address	Switch Type	Num of Ports	Serial No	Status	Options
DKM 48-Port	10.8.1.99	DKM FX	48	12345678	OffLine	⋯

1 of 1

FIGURE 13-7. ADD SWITCH SCREEN

The Add new switch box will appear on the page. The only critical detail here is the IP address. Fill in the details and press Save.



Add New DKM Switch Matrix to Boxilla

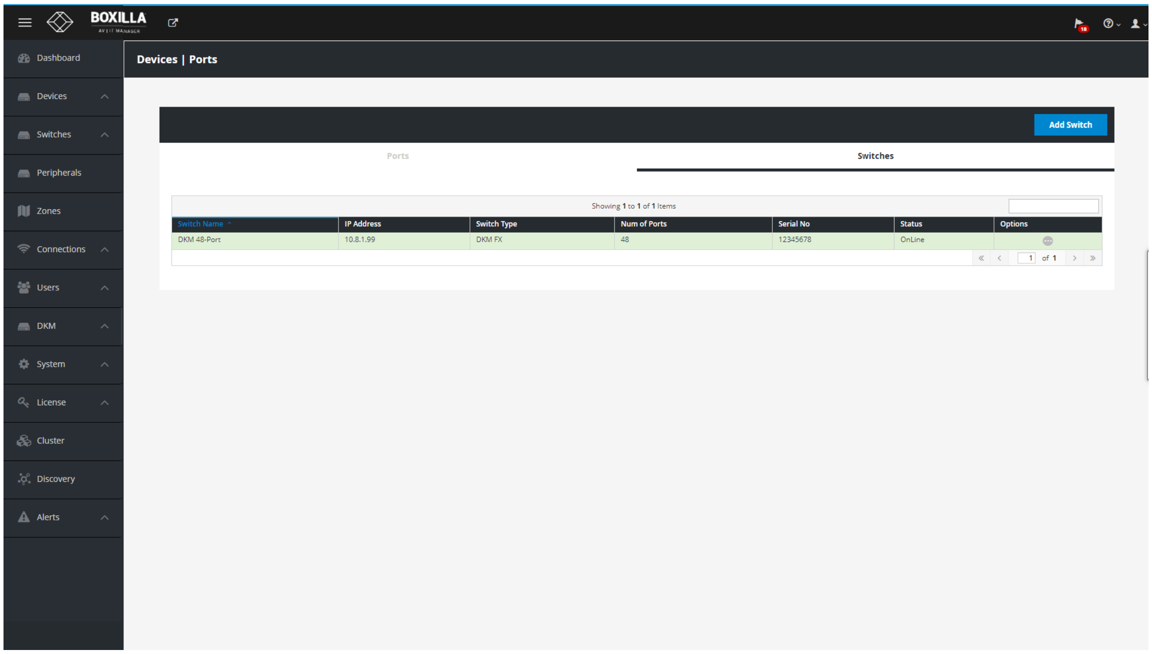
Switch Name
IP Address
Switch Type
Number of Ports
Serial Number

Switch Name	IP Address			Serial No	Status	Options
No data available in table						

1 of 0

FIGURE 13-8. ADD NEW SWITCH BOX

Once the switch is added successfully, it gets listed with an online status.



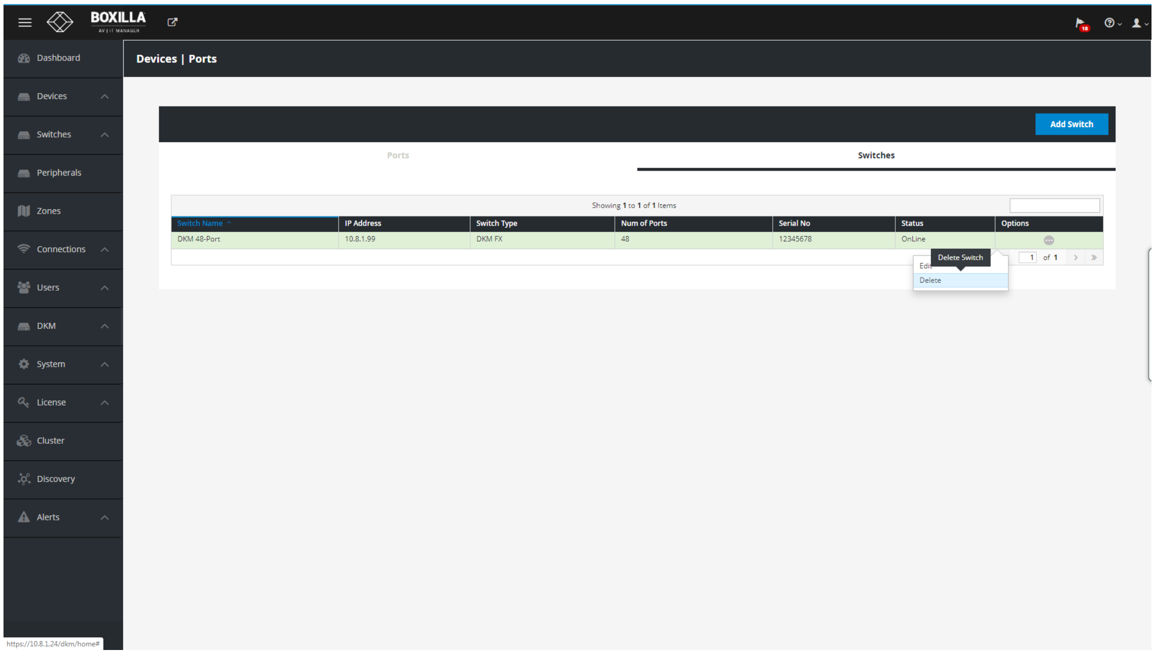
Showing 1 to 1 of 1 Items

Switch Name	IP Address	Switch Type	Num of Ports	Serial No	Status	Options
DKM 48-Port	10.8.1.99	DKM FX	48	12345678	OnLine	⋯

1 of 1

FIGURE 13-9. ONLINE STATUS OF SWITCH

If you wish to revert, select Delete from the dropdown list within options to delete the switch entry.



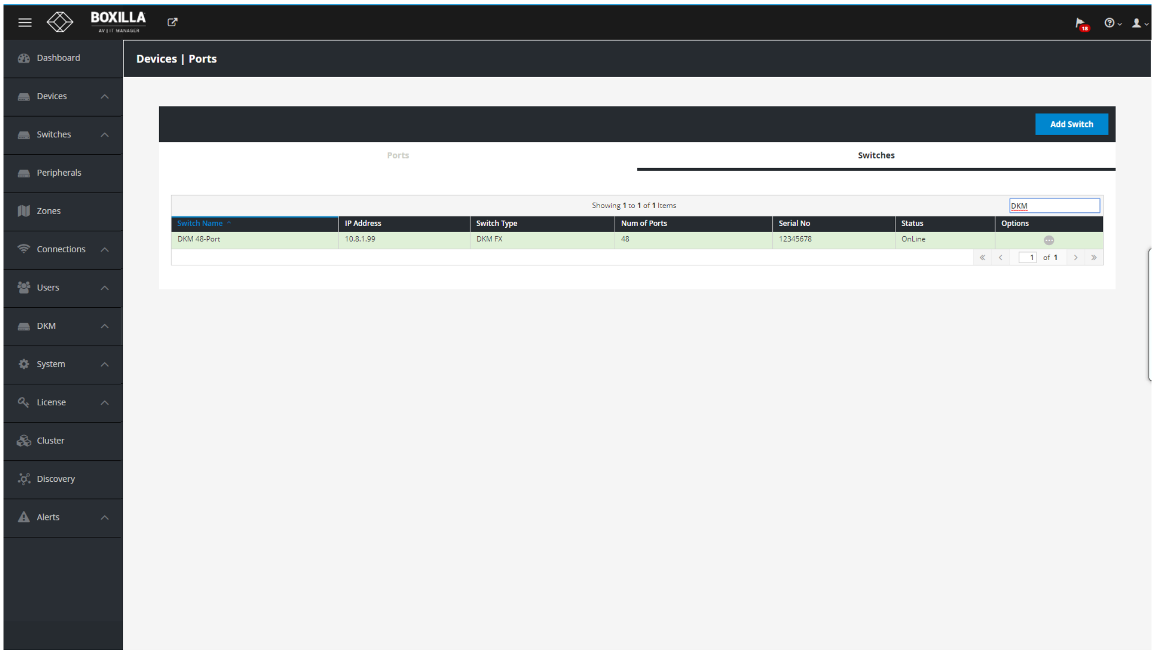
Showing 1 to 1 of 1 Items

Switch Name	IP Address	Switch Type	Num of Ports	Serial No	Status	Options
DKM 48-Port	10.8.1.99	DKM FX	48	12345678	OnLine	⋯

1 of 1

FIGURE 13-10. DELETE THE SWITCH ENTRY

If using multiple DKM switches, you can search for a switch by entering the switch name into quick search box at the right corner.



Showing 1 to 1 of 1 Items

DKM

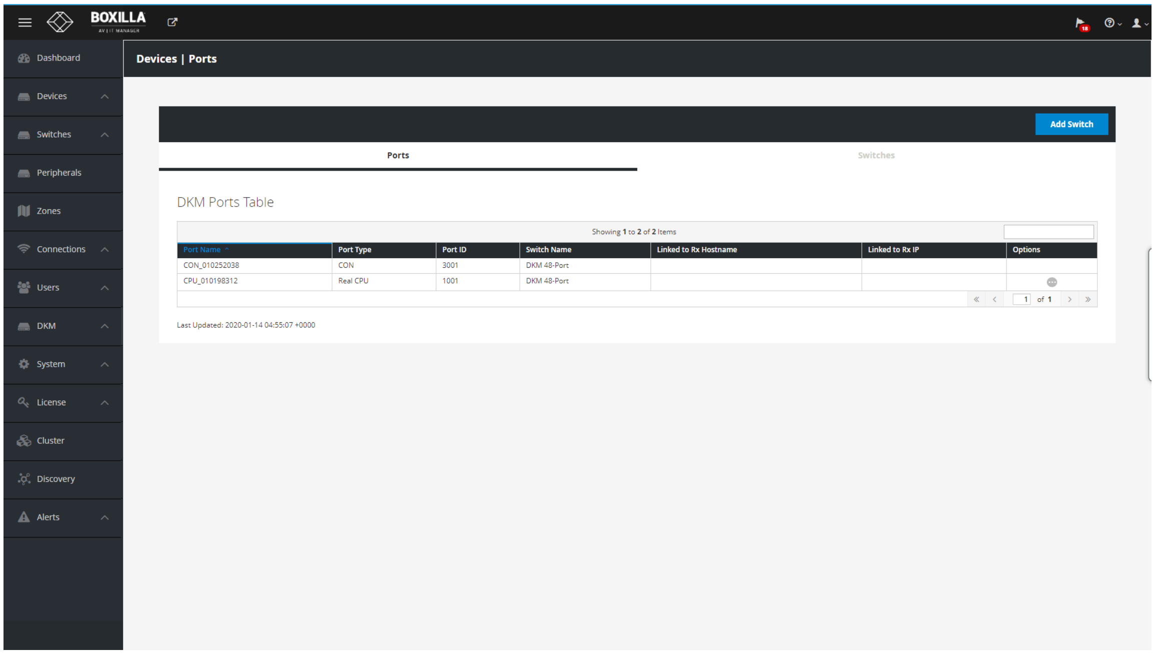
Switch Name ^	IP Address	Switch Type	Num of Ports	Serial No	Status	Options
DKM 48-Port	10.8.1.99	DKM FX	48	12345678	OnLine	⋯

1 of 1

FIGURE 13-11. SEARCH FOR A SWITCH

Once the switch is added successfully, all DKM CONs and DKM CPUs (physical) connected will be listed on Boxilla. Also any Virtual CPUs configured on the DKM switch will be listed. Boxilla will automatically update with any new DKM CONs, DKM CPUs and Virtual CPUs that may be added in the future. Follow the next steps to create a new connection.

The DKM Ports Table displays ports based on the DKM switch that has been added.



DKM Ports Table

Showing 1 to 2 of 2 Items

Port Name ^	Port Type	Port ID	Switch Name	Linked to Rx Hostname	Linked to Rx IP	Options
CON_010252038	CON	3001	DKM 48-Port			
CPU_010198312	Real CPU	1001	DKM 48-Port			⋯

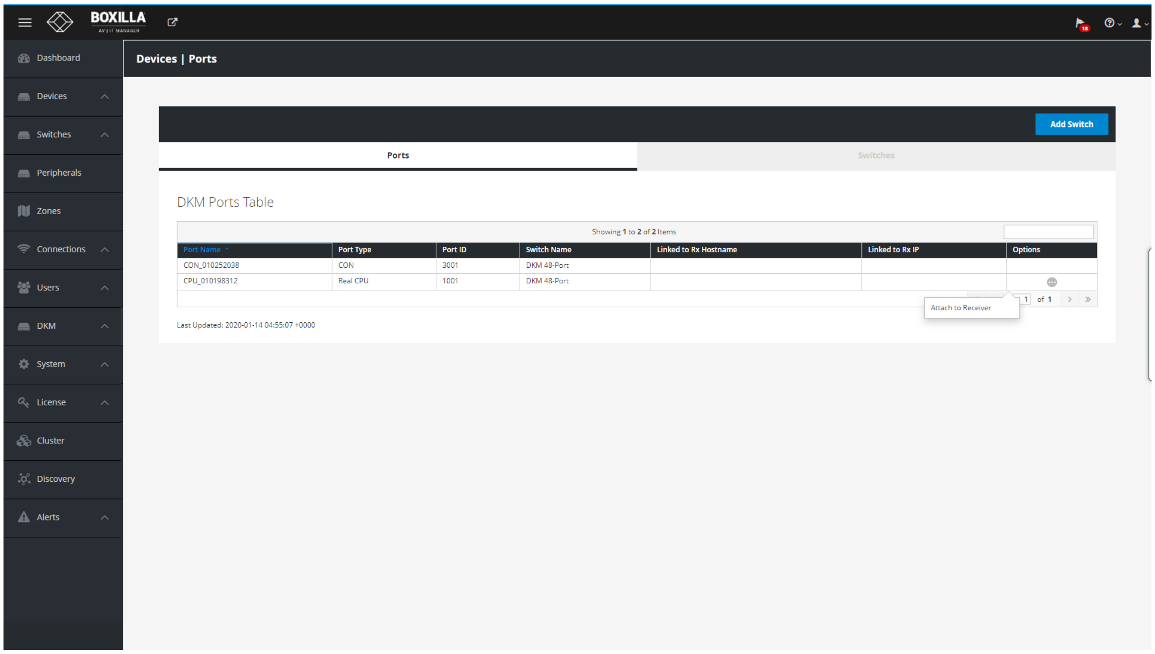
1 of 1

Last Updated: 2020-01-14 04:55:07 +0000

FIGURE 13-12. DKM PORTS TABLE

The "Last Updated" text at the bottom of the screen is the last time Boxilla audited the DKM switch.

Find the Virtual CPU in the "Ports" list on the DKM-Switches page. Click the options button on the right hand side to "Attach to InvisaPC Connection."



DKM Ports Table

Showing 1 to 2 of 2 Items

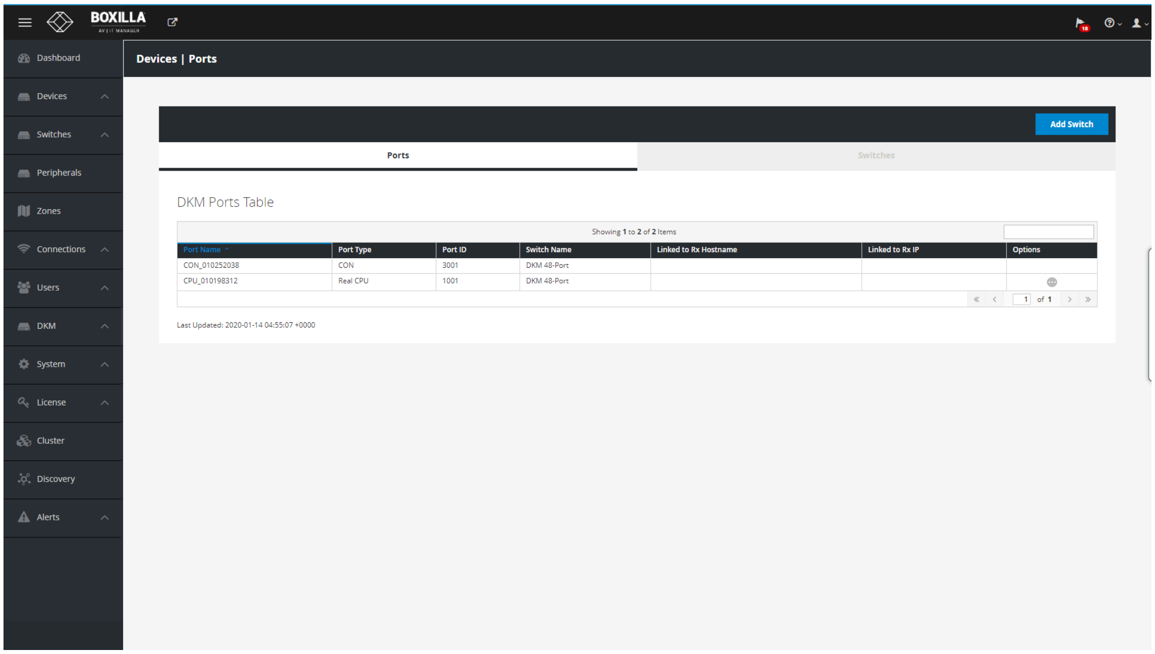
Port Name ^	Port Type	Port ID	Switch Name	Linked to Rx Hostname	Linked to Rx IP	Options
CON_010252038	CON	3001	DKM 48-Port			
CPU_010198312	Real CPU	1001	DKM 48-Port			⋯

1 of 1

Last Updated: 2020-01-14 04:55:07 +0000

FIGURE 13-13. ATTACH TO INVISAPC CONNECTION

If you wish to search for a specific port, enter the Port ID at the search box within ports table.



DKM Ports Table

Showing 1 to 2 of 2 Items

Port Name ^	Port Type	Port ID	Switch Name	Linked to Rx Hostname	Linked to Rx IP	Options
CON_010252038	CON	3001	DKM 48-Port			
CPU_010198312	Real CPU	1001	DKM 48-Port			⋯

1 of 1

Last Updated: 2020-01-14 04:55:07 +0000

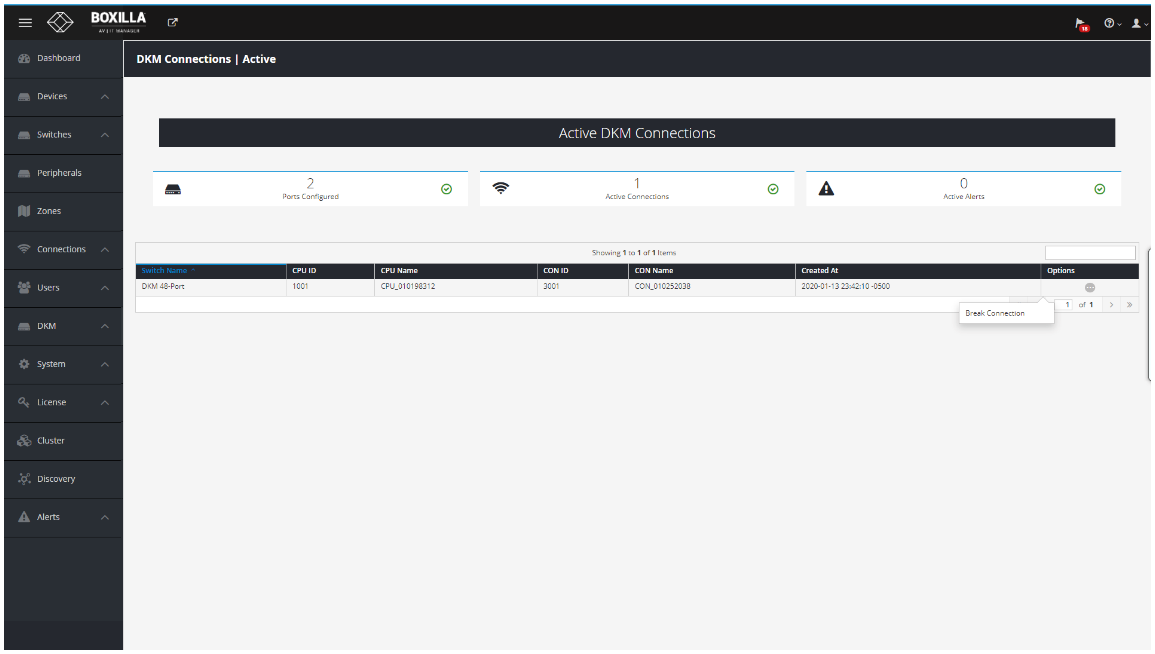
FIGURE 13-14. PORT ID SCREEN

To start a connection you have two options:

1. Manual connections using “Add custom Source,” which lasts until the connection is broken.

2. Saving connection configurations as “Presets,” which can be activated on demand.

To detach a connection, left-click on the connection name. You will see a popup box that gives you the option to disconnect.



DKM Connections | Active

Active DKM Connections

2 Ports Configured

1 Active Connections

0 Active Alerts

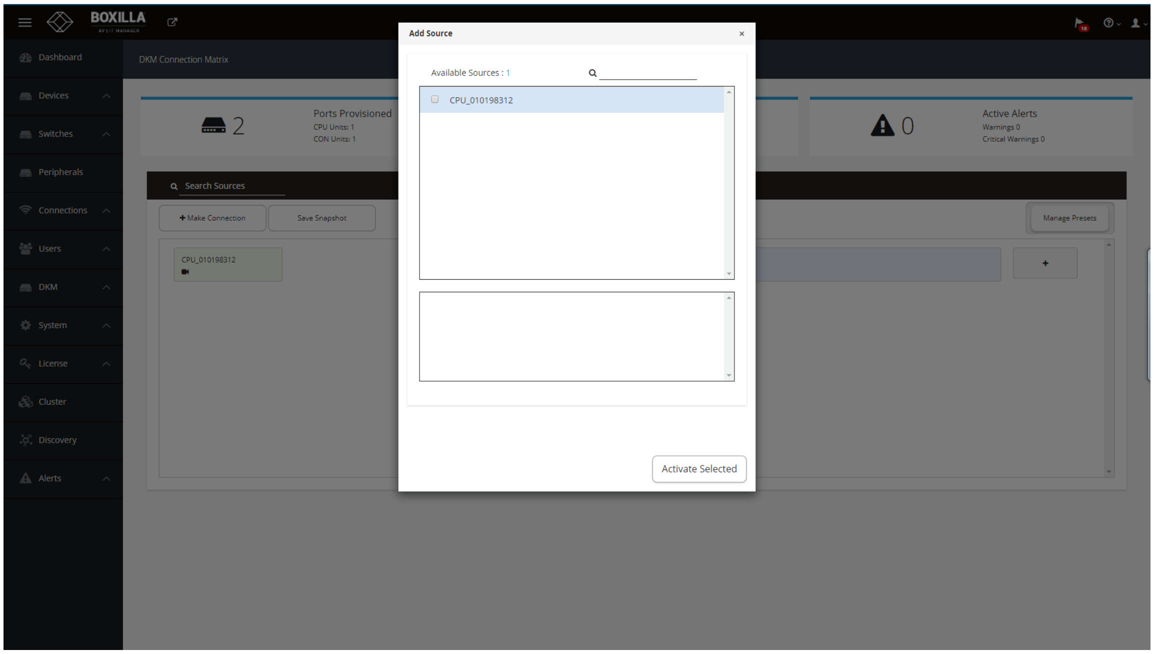
Showing 1 to 1 of 1 Items

Switch Name	CPU ID	CPU Name	CON ID	CON Name	Created At	Options
DKM 48-Port	1001	CPU_010198312	3001	CON_010252038	2020-01-13 23:42:10 -0500	⋯

FIGURE 13-15. DETACH CONNECTION SCREEN

13.4 ADD CUSTOM SOURCE

Under Viewer, click “Make a Connection” and select one or multiple sources from the list of available sources to activate, which will create connections with the selected sources.



2 Ports Provisioned
CPU Units: 1
CON Units: 1

0 Active Alerts
Warnings 0
Critical Warnings 0

CPU_010198312

Available Sources : 1

□ CPU_010198312

FIGURE 13-16. ADD CUSTOM SOURCE SCREEN

Once these connections are listed, each connection needs at least one destination added to form a functional connection.

Connections have the following options:

1. Detach Source: Break the connection by detaching the source.

2. Detach Destination: Break the connection by detaching the destination.

3. Add Destination: Add additional destinations to the source, e.g. if you wish to share the source.

You also have the option of saving the current connections in the Viewer as a preset via “Save Snapshot.” Save Snapshot is located under “Manage Presets.”

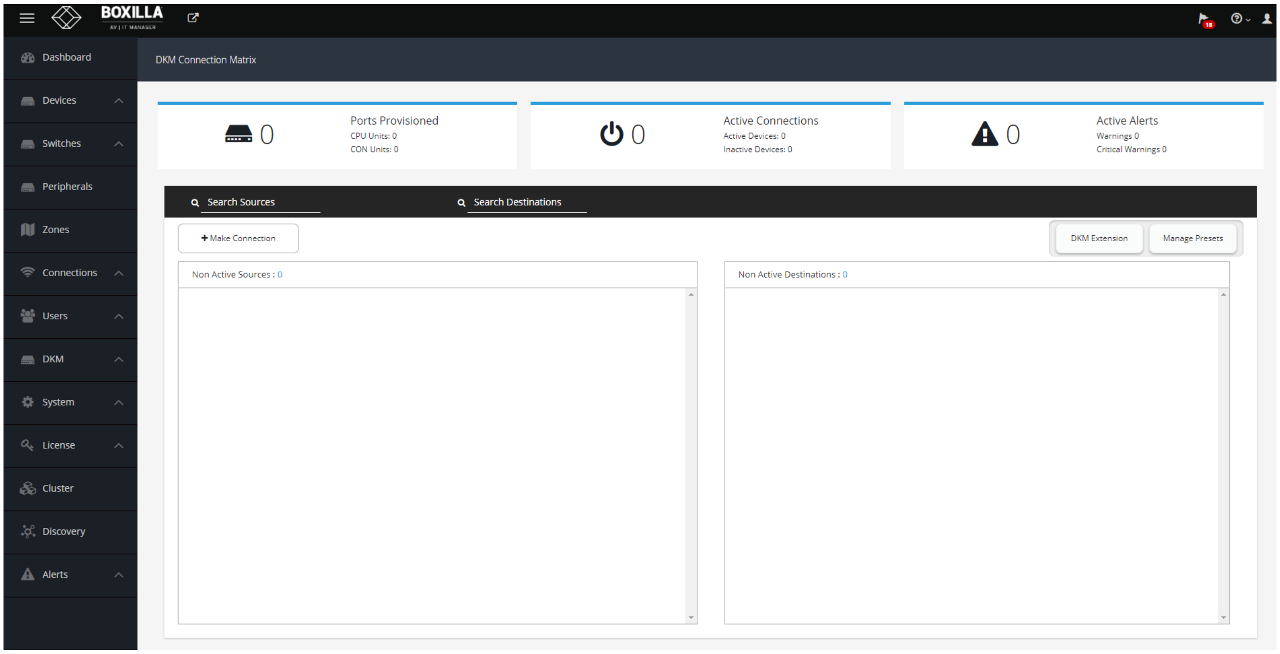


FIGURE 13-17. MANAGE PRESETS BUTTON

Search of available destinations can be completed within the “Add Destinations” popup box.

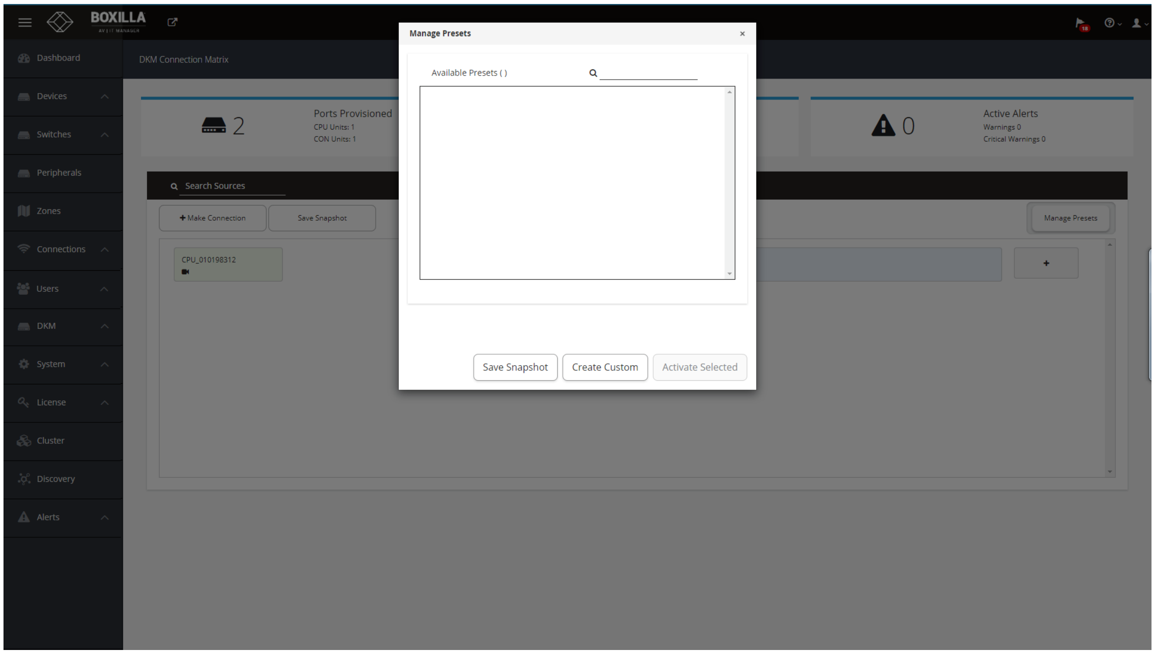


FIGURE 13-18. ADD DESTINATION POPUP BOX

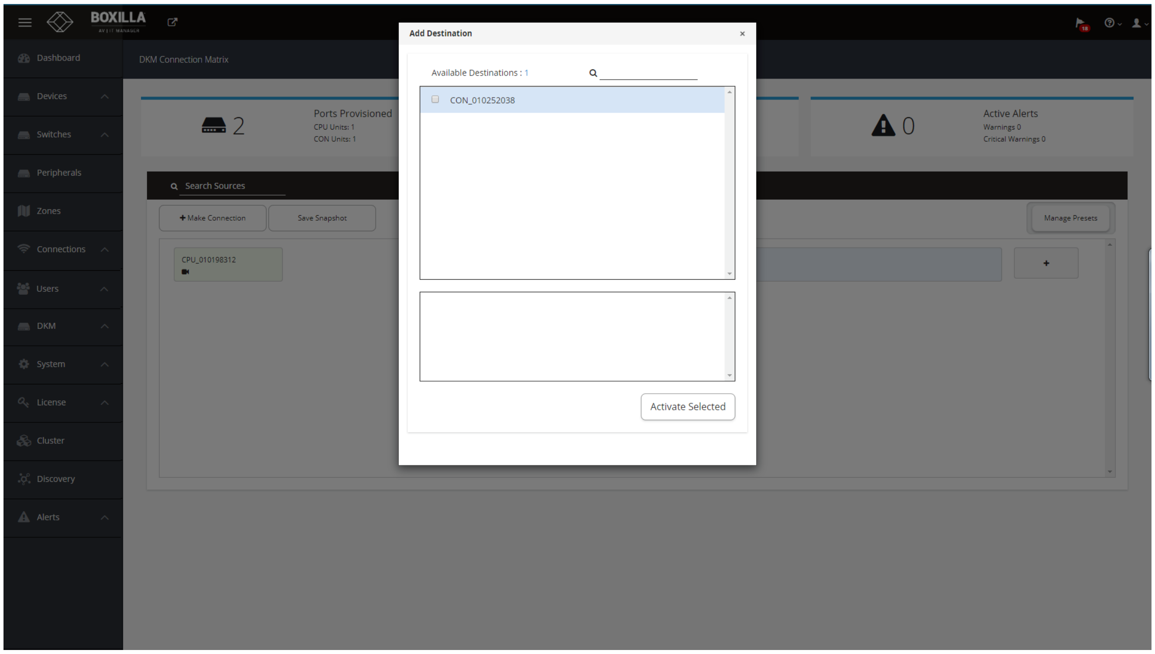


FIGURE 13-19. ADD DESTINATION POPUP BOX, ACTIVATE SELECTED BUTTON

Select the Destinations from the available destinations and click next.

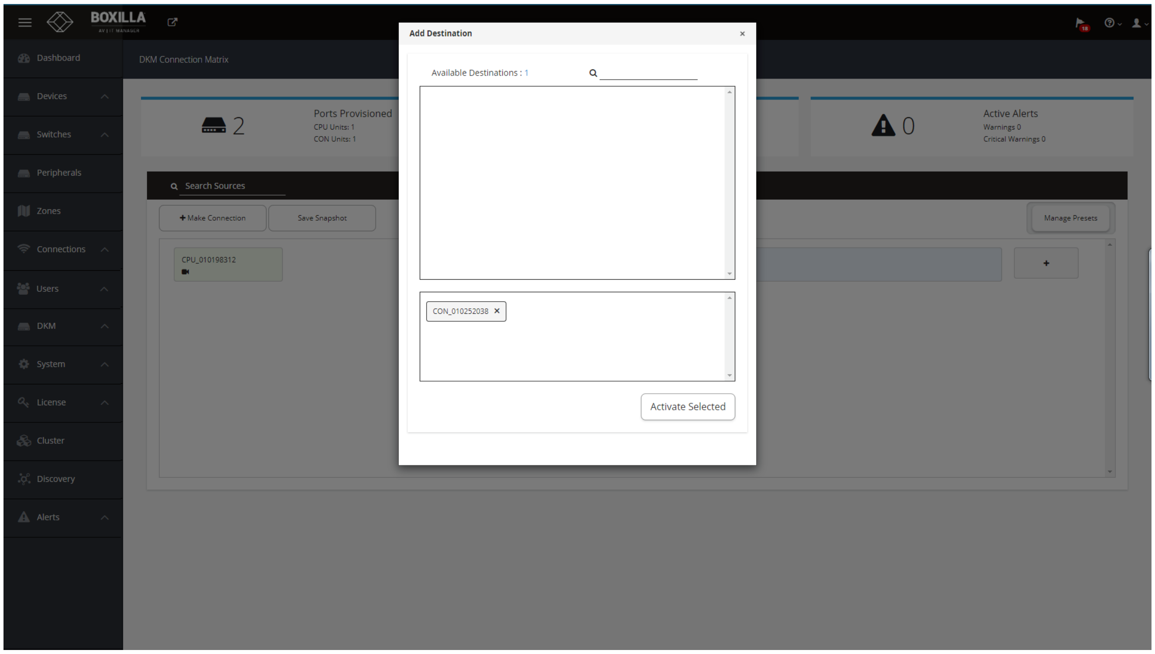
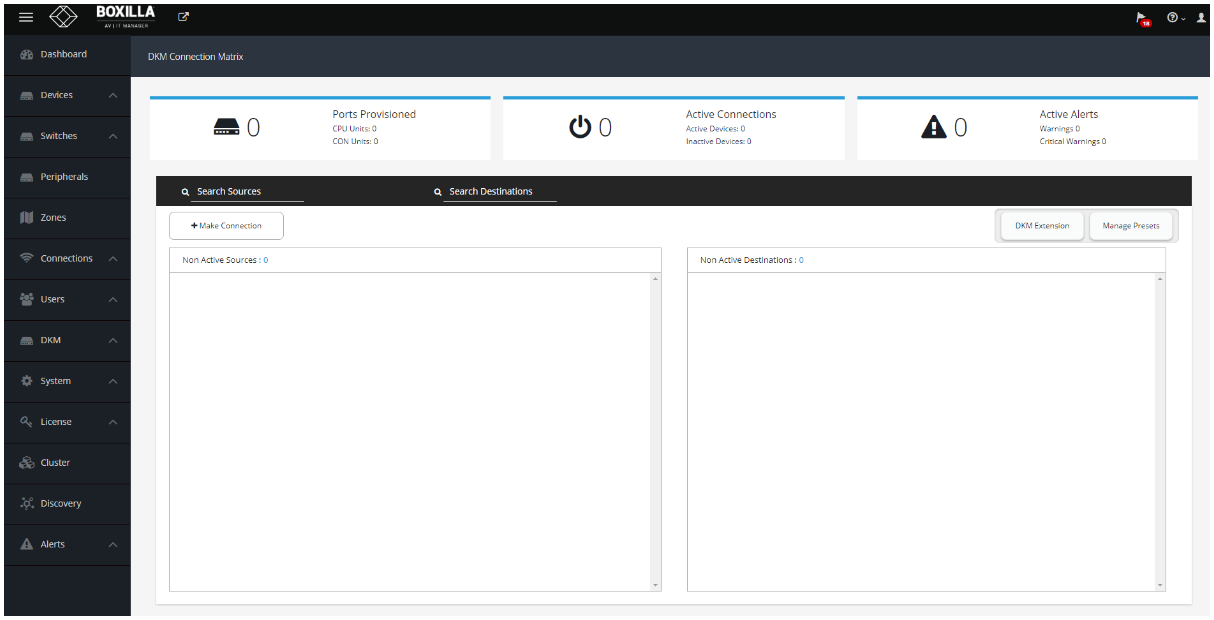


FIGURE 13-20. ADD DESTINATION RESULTING CONNECTION SCREEN

Once Activated, connections get listed under the Viewer screen.



DKM Connection Matrix

0 Ports Provisioned
CPU Units: 0
CON Units: 0

0 Active Connections
Active Devices: 0
Inactive Devices: 0

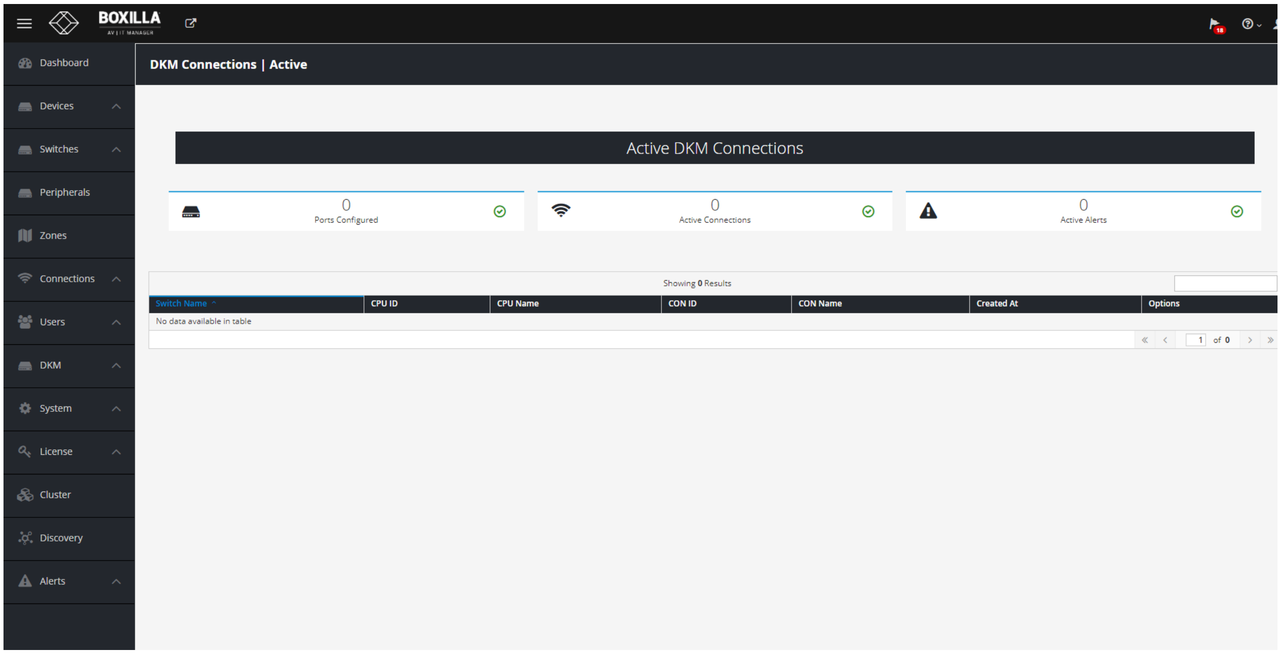
0 Active Alerts
Warnings 0
Critical Warnings 0

Non Active Sources : 0

Non Active Destinations : 0

FIGURE 13-21. VIEWER SCREEN

Active connections are listed under the Connections link. Each connection has the option of remotely breaking it.



DKM Connections | Active

Active DKM Connections

0
Ports Configured

0
Active Connections

0
Active Alerts

Showing **0** Results

Switch Name ^	CPU ID	CPU Name	CON ID	CON Name	Created At	Options
No data available in table						

1 of **0**

FIGURE 13-22. ACTIVE DKM CONNECTIONS

13.5 PRESETS

Under Viewer, click “Manage Presets,” then click “Create Custom” and select one or more available sources.

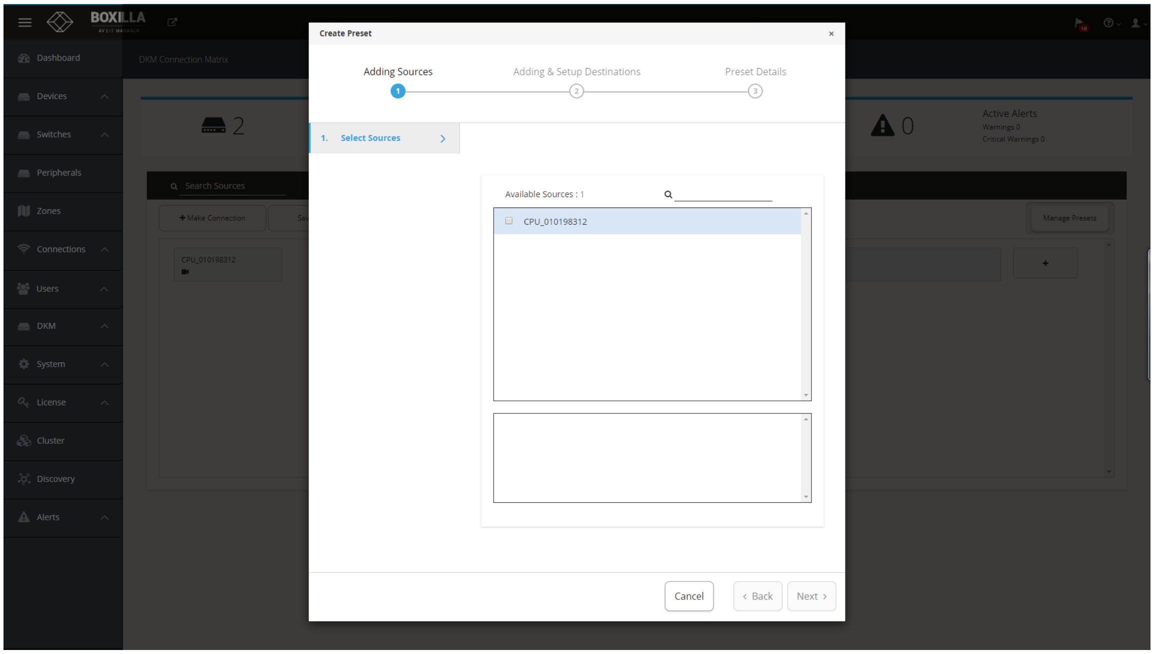


FIGURE 13-23. CREATE CUSTOM PRESETS

Next, select one or more destinations from the list of available destinations.

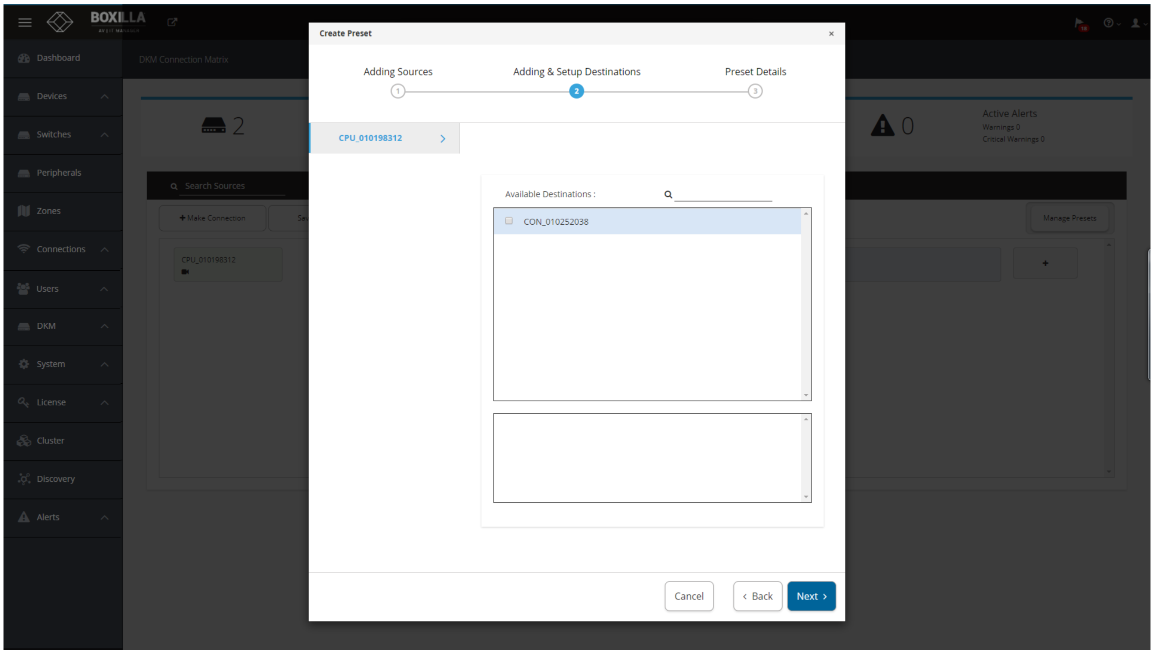


FIGURE 13-24. SELECT DESTINATIONS

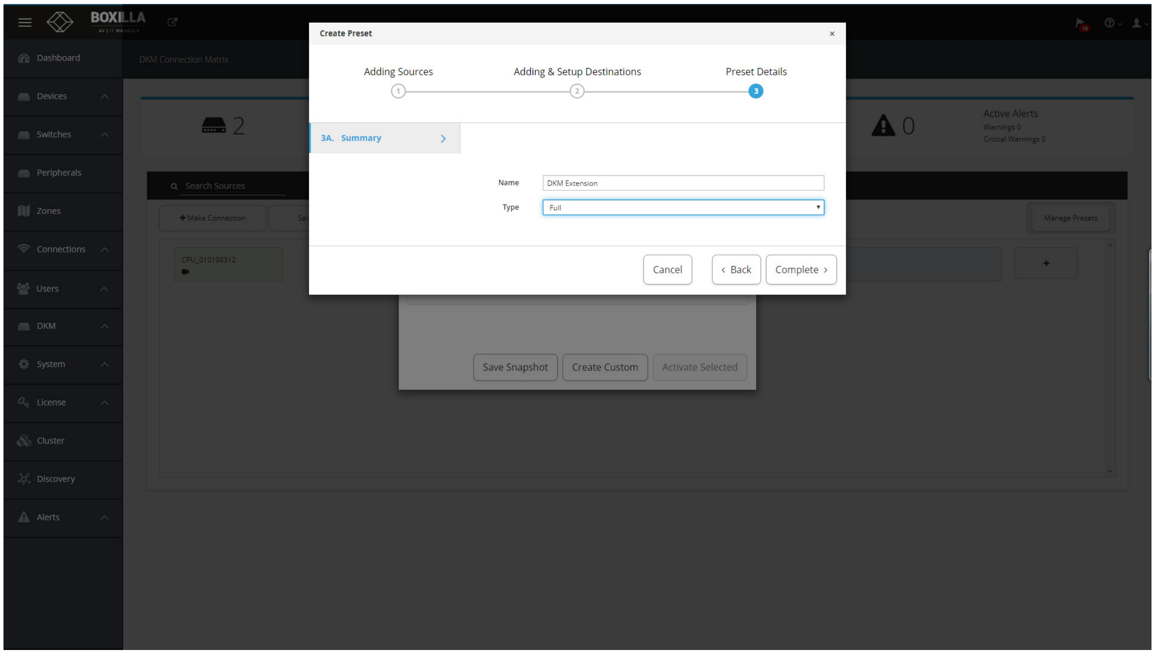
Now enter the name for the preset and choose the type of preset you want.

Both preset types will forcibly take any CONs and CPUs required to establish their configuration, i.e., if those CONs and CPUs are already in active connections then these connections will be broken.

The partial type applies only to the specific CONs and CPUs that are selected in this preset type.

The full type is applied to all the CONS and CPUS. Any CONs and CPUs not selected in this preset type will become inactive when this preset is launched.

Click "Complete" to save the preset.



Create Preset

Adding Sources · Adding & Setup Destinations · Preset Details (step 3)

3A. Summary

Name: DKM Extension

Type: Full

FIGURE 13-25. PRESETS SCREEN

The following methods are available to activate presets:

1. Direct preset activation in the Viewer: The first three presets (ordered by creation) are presented directly in the Viewer and can be activated with a direct click.

2. Activation via Manage Presets: All presets can be activated with the "Activate Selected" option in "Manage Presets." This is mandatory for any preset that is the fourth or later one created, as there is no other method to activate these presets from within Boxilla.

CHAPTER 13: DKM INTEGRATION

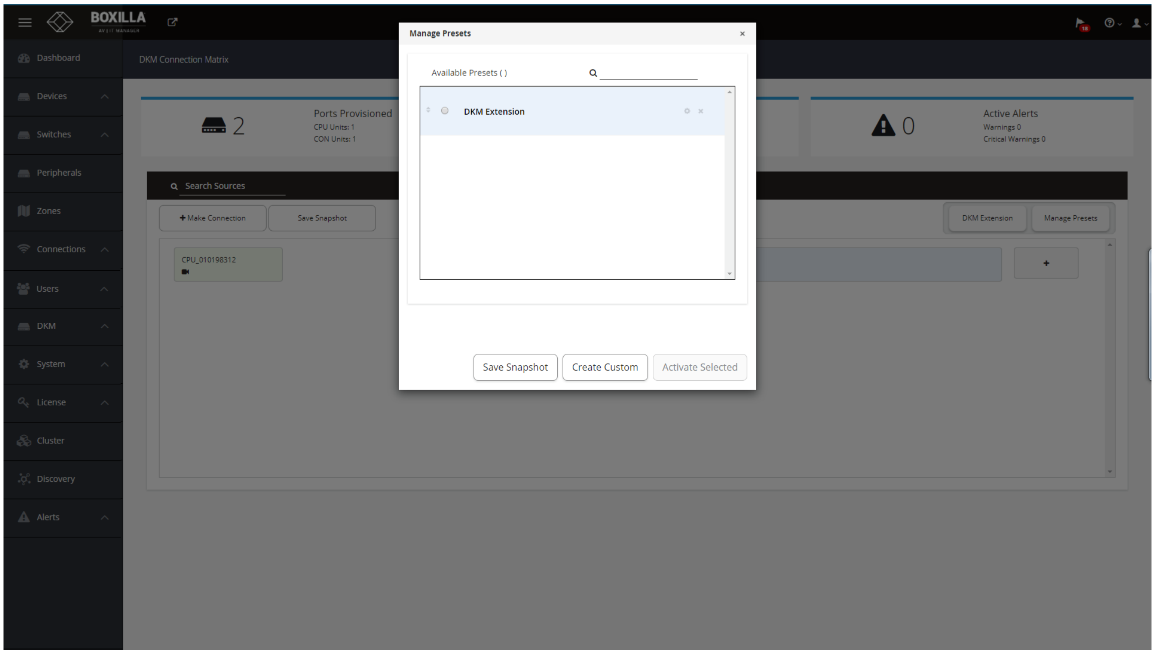
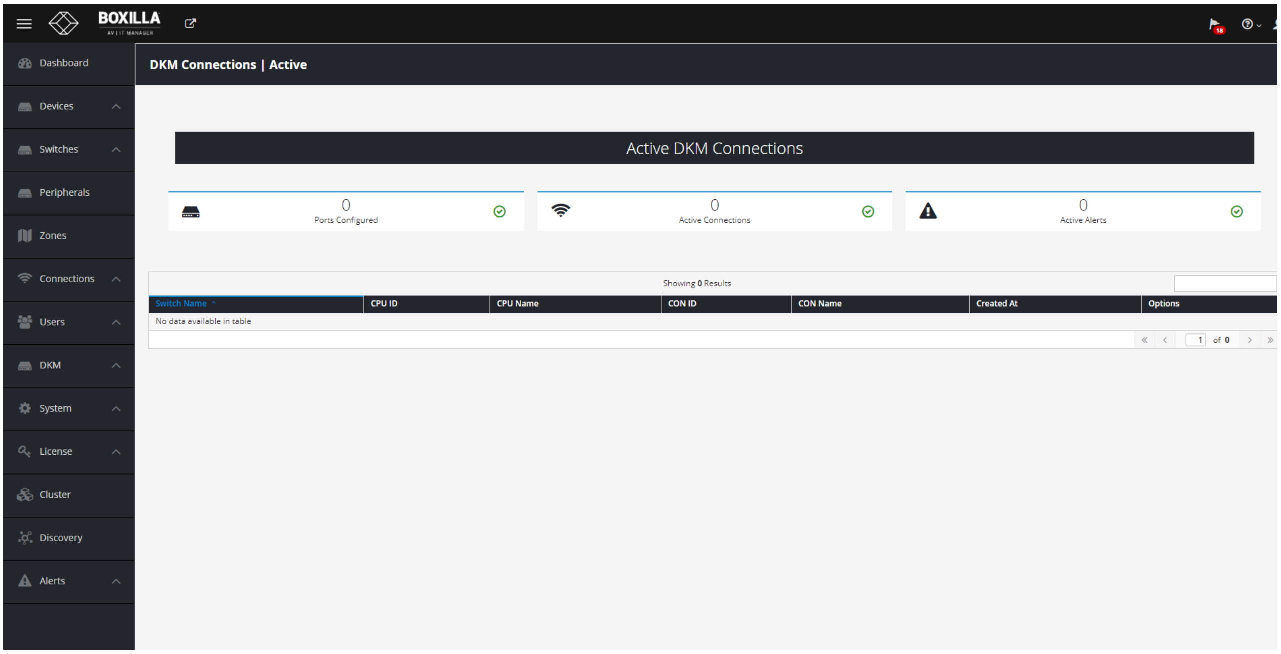


FIGURE 13-26. CREATE CUSTOM PRESETS COMPLETED SCREEN

Connections started via Presets will be displayed in the work area with the following options:

1. Detach Source: Break the connection by detaching the source.
2. Detach Destination: Break the connection by detaching the destination.
3. Add Destination: Add additional destinations to the source, e.g., if you wish to share the source.

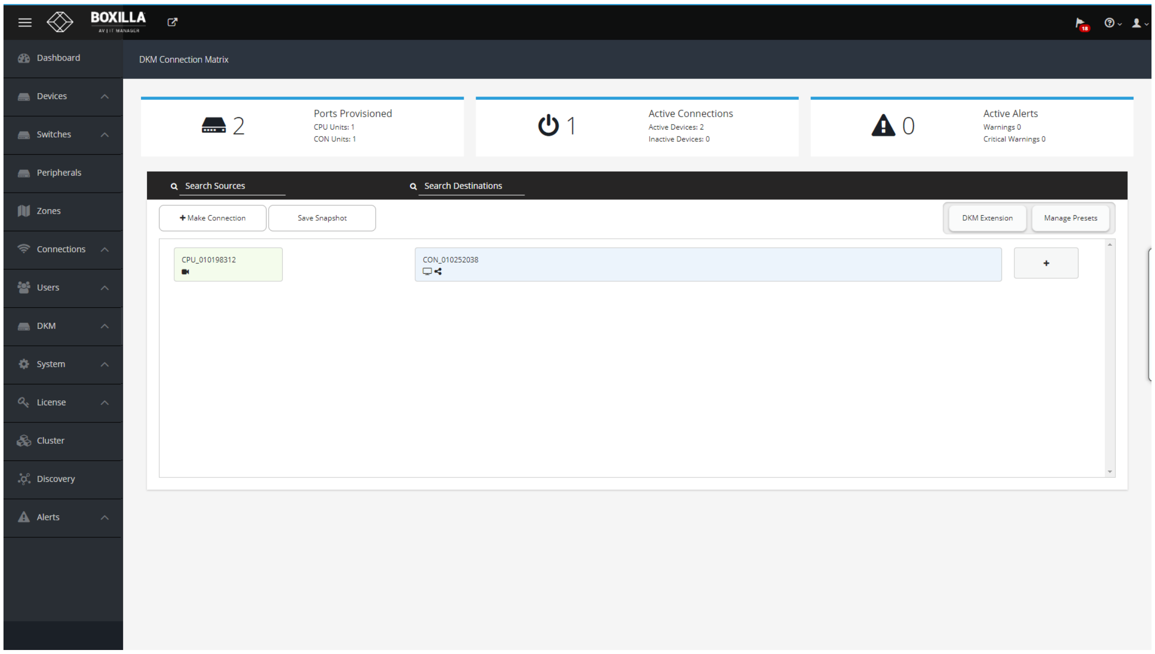


Switch Name	CPU ID	CPU Name	CON ID	CON Name	Created At	Options
No data available in table						

FIGURE 13-27. ACTIVE DESTINATIONS SCREEN

Deselect a source/destination

To disconnect a connection while active status , click on ‘x’ on either destination / source (in case of one to one only)



DKM Connection Matrix

2 Ports Provisioned
CPU Units: 1
CON Units: 1

1 Active Connections
Active Devices: 2
Inactive Devices: 0

0 Active Alerts
Warnings 0
Critical Warnings 0

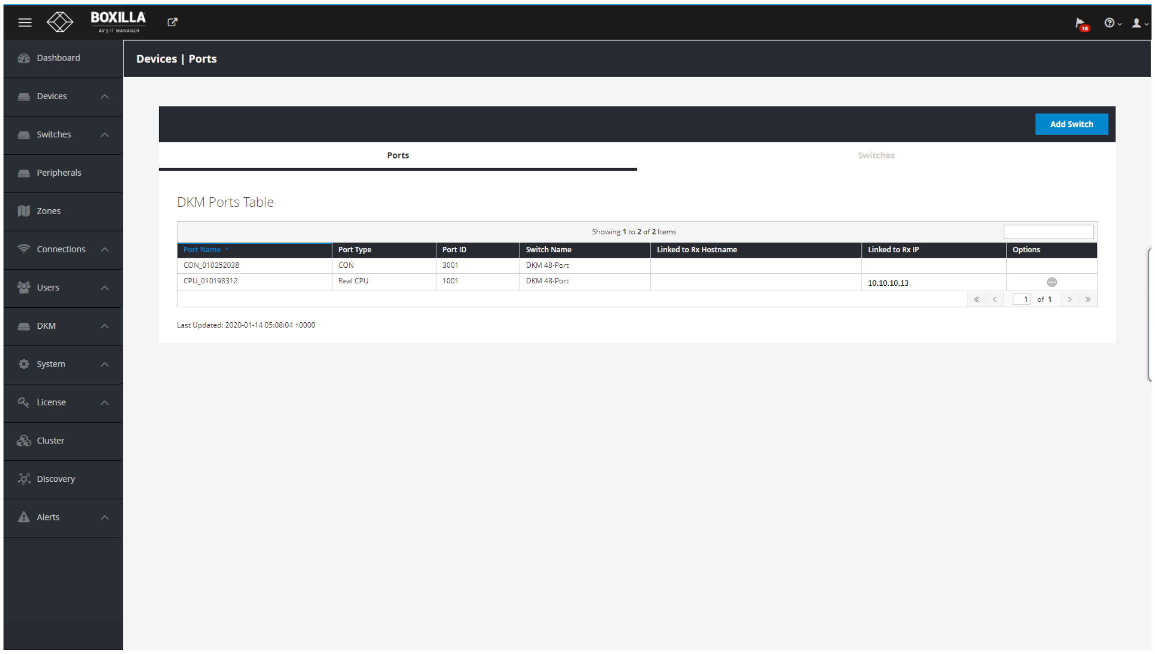
CPU_010198312

CON_010252038

FIGURE 13-28. DESELECT A SOURCE/DESTINATION

13.6 ATTACHING VIRTUAL CPUS TO AN EMERALD RX

Virtual CPU based connections from a DKM switch can be connected directly to a managed Emerald/InvisaPC RX on Boxilla by attaching them.



Devices | Ports

DKM Ports Table

Showing 1 to 2 of 2 Items

Port Name	Port Type	Port ID	Switch Name	Linked to Rx Hostname	Linked to Rx IP	Options
CON_010252038	CON	3001	DKM 48-Port			
CPU_010198312	Real CPU	1001	DKM 48-Port		10.10.10.13	⋯

1 of 1

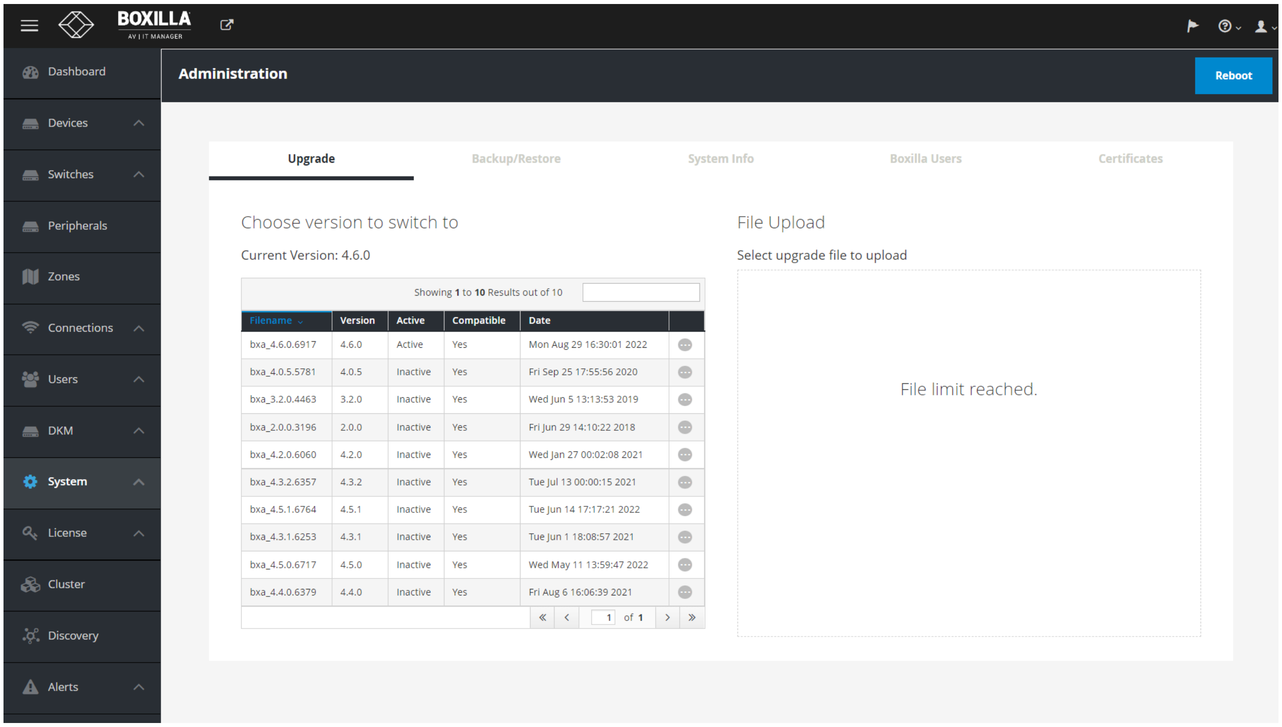
Last Updated: 2020-01-14 05:08:04 +0000

FIGURE 13-29. VIRTUAL CPUS CONNECTED TO INVISAPC SCREEN

SYSTEM —> ADMINISTRATION

The System button in the main menu brings up the System —> Administration —> Upgrade screen shown next. This screen allows the Boxilla unit itself to be managed:

- upgrade the firmware;



Choose version to switch to

Current Version: 4.6.0

Showing **1** to **10** Results out of 10

Filename	Version	Active	Compatible	Date
bxa_4.6.0.6917	4.6.0	Active	Yes	Mon Aug 29 16:30:01 2022
bxa_4.0.5.5781	4.0.5	Inactive	Yes	Fri Sep 25 17:55:56 2020
bxa_3.2.0.4463	3.2.0	Inactive	Yes	Wed Jun 5 13:13:53 2019
bxa_2.0.0.3196	2.0.0	Inactive	Yes	Fri Jun 29 14:10:22 2018
bxa_4.2.0.6060	4.2.0	Inactive	Yes	Wed Jan 27 00:02:08 2021
bxa_4.3.2.6357	4.3.2	Inactive	Yes	Tue Jul 13 00:00:15 2021
bxa_4.5.1.6764	4.5.1	Inactive	Yes	Tue Jun 14 17:17:21 2022
bxa_4.3.1.6253	4.3.1	Inactive	Yes	Tue Jun 1 18:08:57 2021
bxa_4.5.0.6717	4.5.0	Inactive	Yes	Wed May 11 13:59:47 2022
bxa_4.4.0.6379	4.4.0	Inactive	Yes	Fri Aug 6 16:06:39 2021

1 of **1**

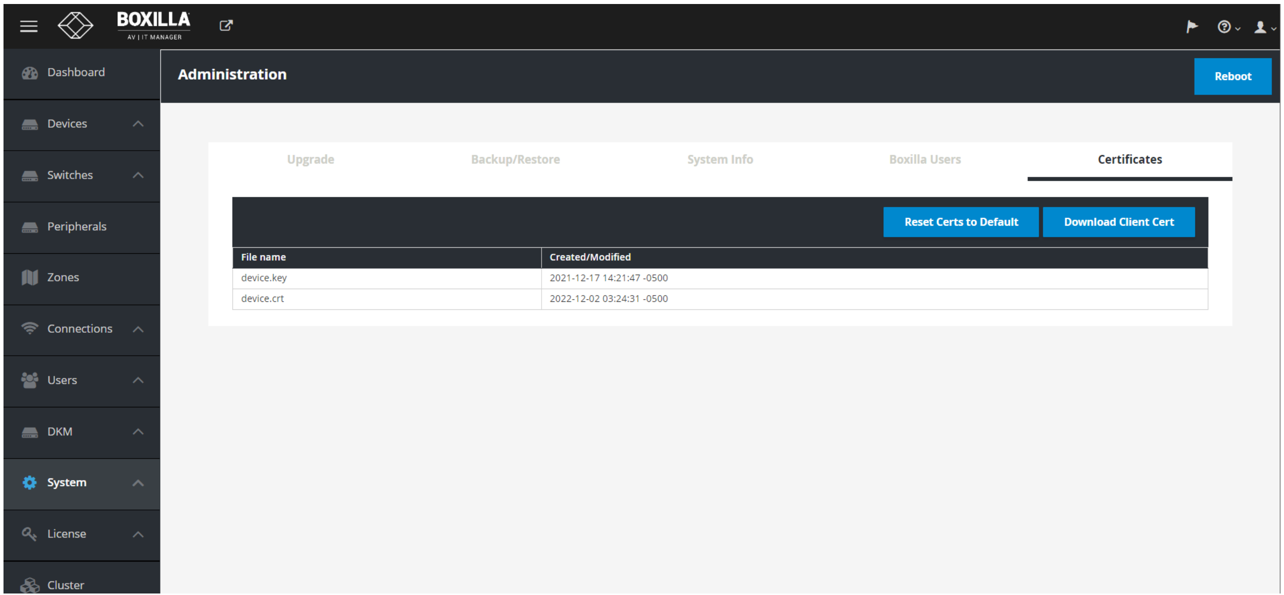
File Upload

Select upgrade file to upload

File limit reached.

FIGURE 14-1. UPGRADE FIRMWARE SCREEN

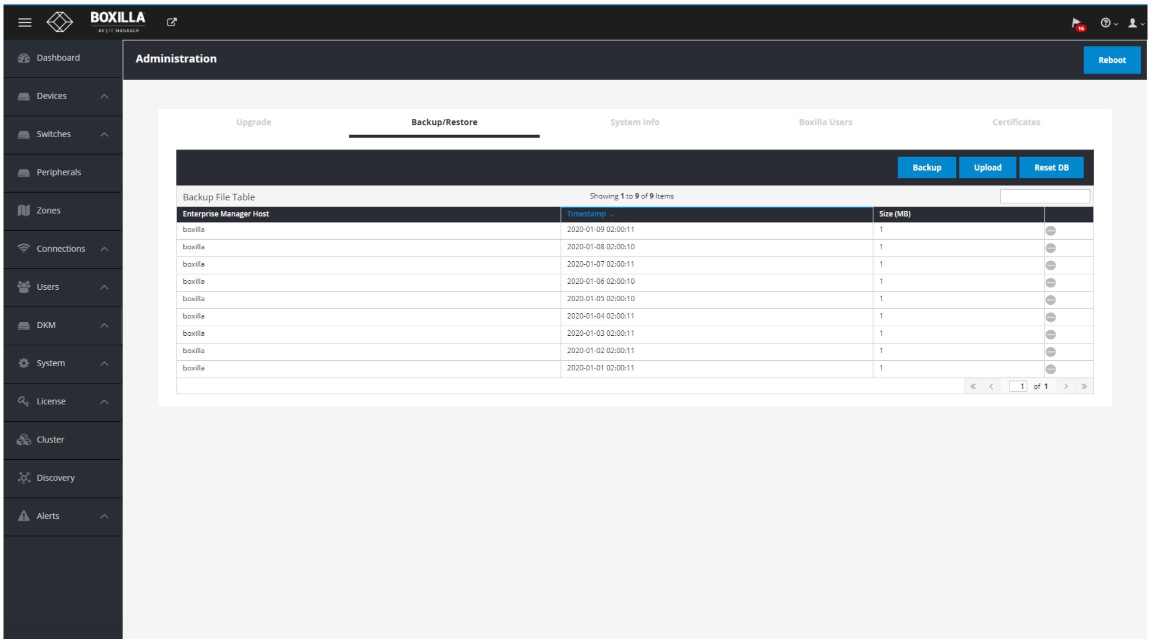
- generate your own self-signed certificate;



File name	Created/Modified
device.key	2021-12-17 14:21:47 -0500
device.crt	2022-12-02 03:24:31 -0500

FIGURE 14-2. CERTIFICATE SCREEN

- backup/restore the database (go to System —> Adminstration —> Backup/Restore);



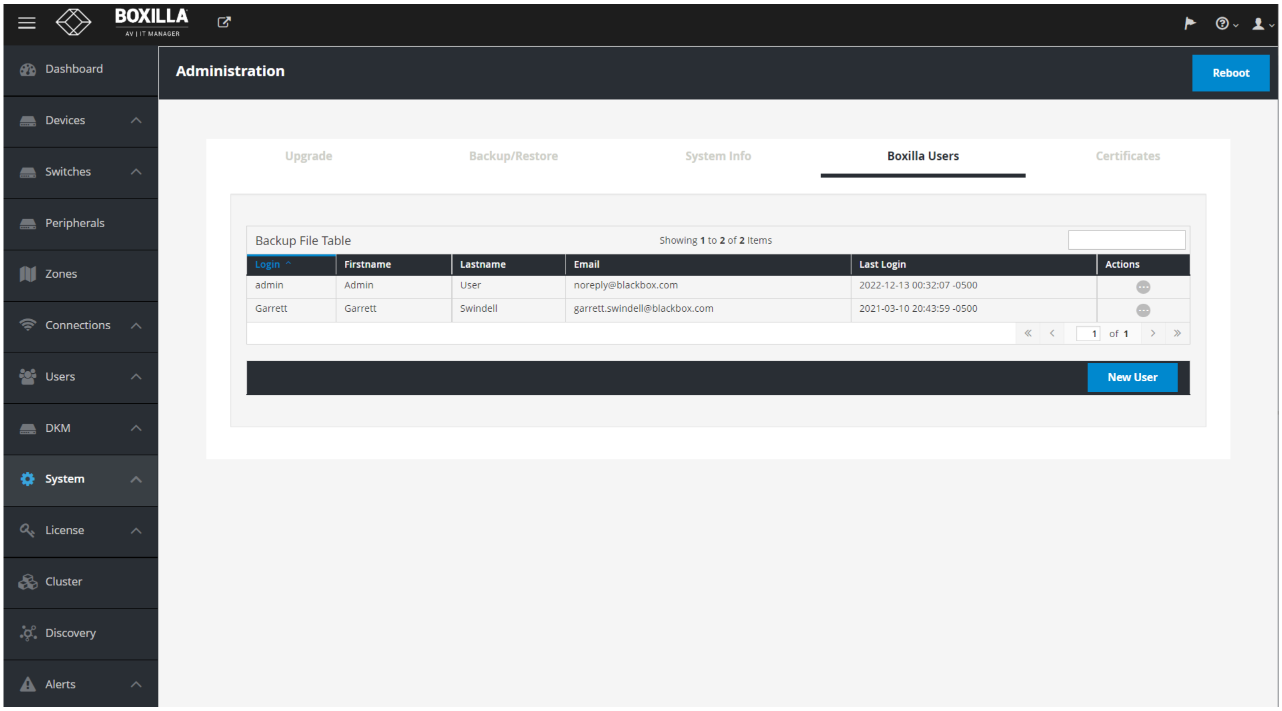
Backup File Table — Showing 1 to 9 of 9 Items

Enterprise Manager Host	Timestamp	Size (MB)
boxilla	2020-01-09 02:00:11	1
boxilla	2020-01-08 02:00:10	1
boxilla	2020-01-07 02:00:11	1
boxilla	2020-01-06 02:00:10	1
boxilla	2020-01-05 02:00:10	1
boxilla	2020-01-04 02:00:11	1
boxilla	2020-01-03 02:00:11	1
boxilla	2020-01-02 02:00:11	1
boxilla	2020-01-01 02:00:11	1

1 of 1

FIGURE 14-3. BACKUP/RESTORE DATABASE SCREEN

- Boxilla users can be added or modified



Backup File Table — Showing 1 to 2 of 2 Items

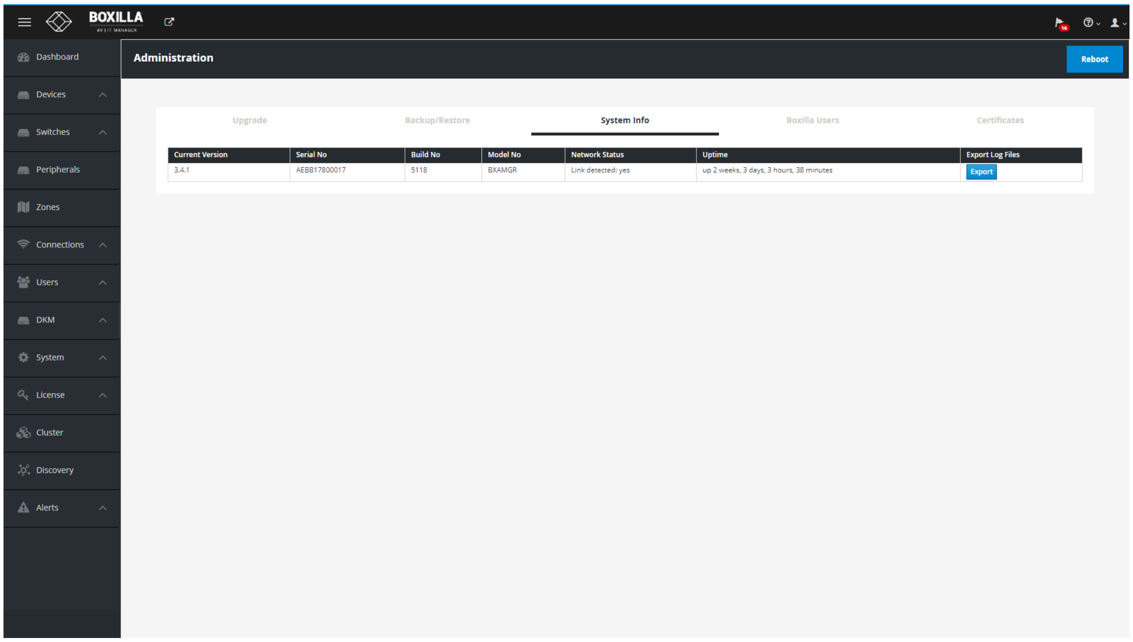
Login	Firstname	Lastname	Email	Last Login	Actions
admin	Admin	User	noreply@blackbox.com	2022-12-13 00:32:07 -0500	
Garrett	Garrett	Swindell	garrett.swindell@blackbox.com	2021-03-10 20:43:59 -0500	

1 of 1

FIGURE 14-4: BOXILLA USER SCREEN

CHAPTER 14: SYSTEM

- check system information (go to System —> Administration —> System Info page):

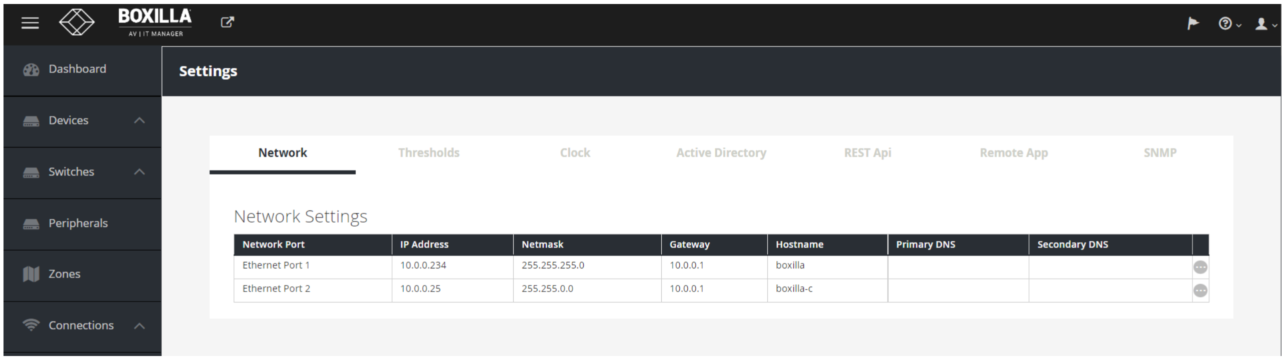


Current Version	Serial No	Build No	Model No	Network Status	Uptime	Export Log Files
3.4.1	AEBB17800017	5118	BXAMGR	Link detected: yes	up 2 weeks, 3 days, 3 hours, 38 minutes	Export

FIGURE 14-5. CHECK SYSTEM INFORMATION SCREEN

SYSTEM —> SETTINGS

- change network settings (go to System —> Settings —> Network page):

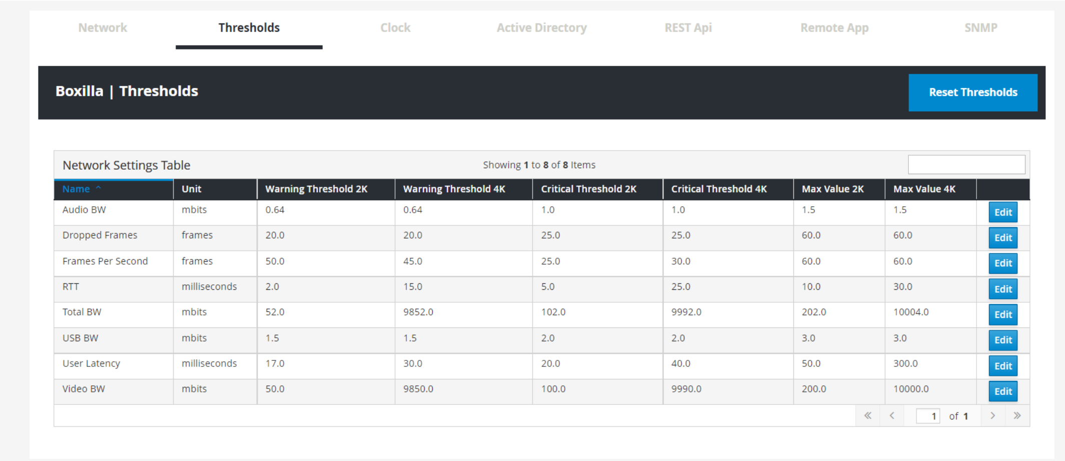


Network Settings

Network Port	IP Address	Netmask	Gateway	Hostname	Primary DNS	Secondary DNS	
Ethernet Port 1	10.0.0.234	255.255.255.0	10.0.0.1	boxilla			⋯
Ethernet Port 2	10.0.0.25	255.255.0.0	10.0.0.1	boxilla-c			⋯

FIGURE 14-6: NETWORK SCREEN

- set thresholds for alerts (go to System —> Settings —> Thresholds page):



Boxilla | Thresholds

Network Settings Table

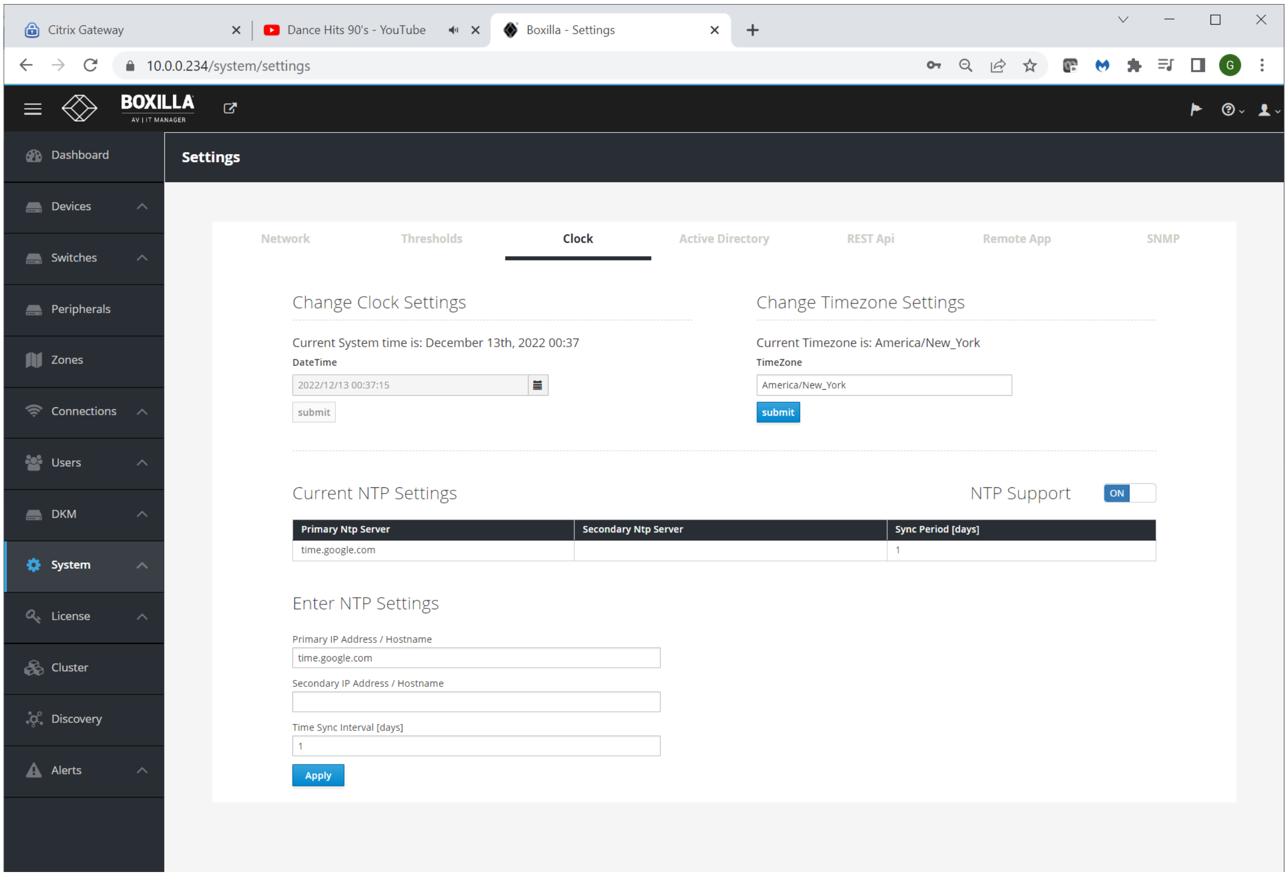
Showing **1** to **8** of **8** Items

Name ^	Unit	Warning Threshold 2K	Warning Threshold 4K	Critical Threshold 2K	Critical Threshold 4K	Max Value 2K	Max Value 4K	
Audio BW	mbits	0.64	0.64	1.0	1.0	1.5	1.5	Edit
Dropped Frames	frames	20.0	20.0	25.0	25.0	60.0	60.0	Edit
Frames Per Second	frames	50.0	45.0	25.0	30.0	60.0	60.0	Edit
RTT	milliseconds	2.0	15.0	5.0	25.0	10.0	30.0	Edit
Total BW	mbits	52.0	9852.0	102.0	9992.0	202.0	10004.0	Edit
USB BW	mbits	1.5	1.5	2.0	2.0	3.0	3.0	Edit
User Latency	milliseconds	17.0	30.0	20.0	40.0	50.0	300.0	Edit
Video BW	mbits	50.0	9850.0	100.0	9990.0	200.0	10000.0	Edit

1 of 1

FIGURE 14-7. SET THRESHOLDS FOR ACTIVE ALERTS SCREEN

- Clock



Settings

Change Clock Settings

Current System time is: December 13th, 2022 00:37

DateTime: 2022/12/13 00:37:15

submit

Change Timezone Settings

Current Timezone is: America/New_York

TimeZone: America/New_York

submit

Current NTP Settings

NTP Support: ON

Primary Ntp Server	Secondary Ntp Server	Sync Period [days]
time.google.com		1

Enter NTP Settings

Primary IP Address / Hostname: time.google.com

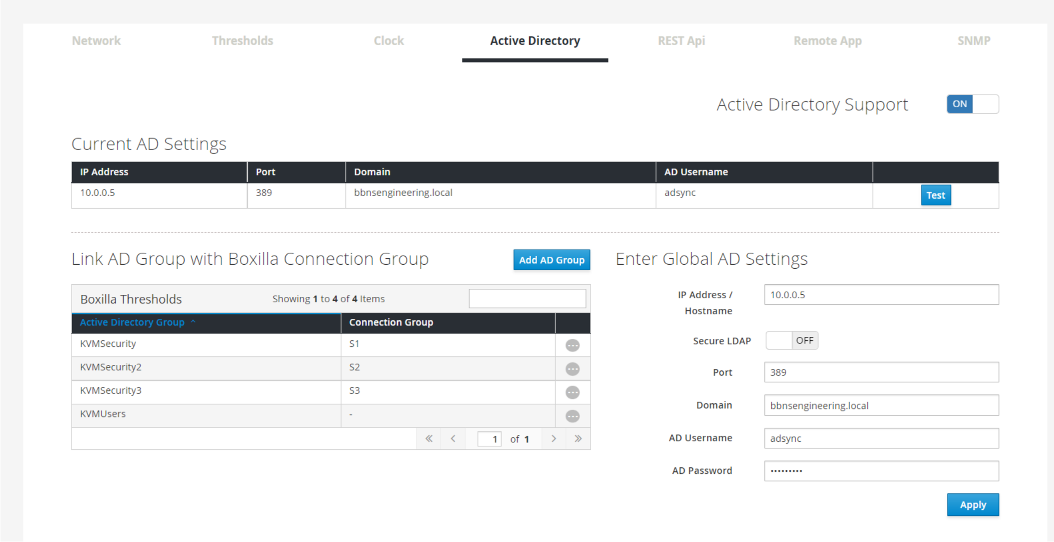
Secondary IP Address / Hostname:

Time Sync Interval [days]: 1

Apply

FIGURE 14-8. CLOCK

- Active Directory allows for the configuration of an AD server using LDAP or LDAPS



Active Directory Support ON

Current AD Settings

IP Address	Port	Domain	AD Username	
10.0.0.5	389	bbnsengineering.local	adsync	Test

Link AD Group with Boxilla Connection Group

Boxilla Thresholds Showing **1** to **4** of **4** Items

Active Directory Group ^	Connection Group	
KVMSecurity	S1	⋯
KVMSecurity2	S2	⋯
KVMSecurity3	S3	⋯
KVMUsers	-	⋯

« ‹ 1 of **1** › »

Enter Global AD Settings

IP Address / Hostname: 10.0.0.5

Secure LDAP: OFF

Port: 389

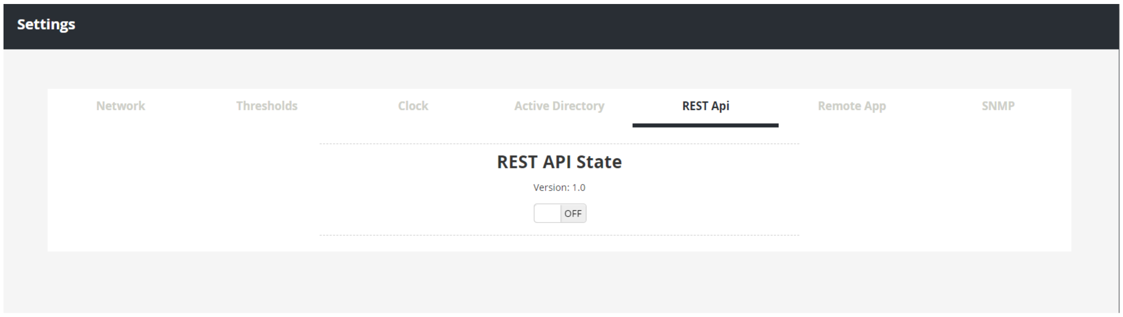
Domain: bbnsengineering.local

AD Username: adsync

AD Password: ••••••••••

FIGURE 14-9. ACTIVE DIRECTORY

- RESTapi



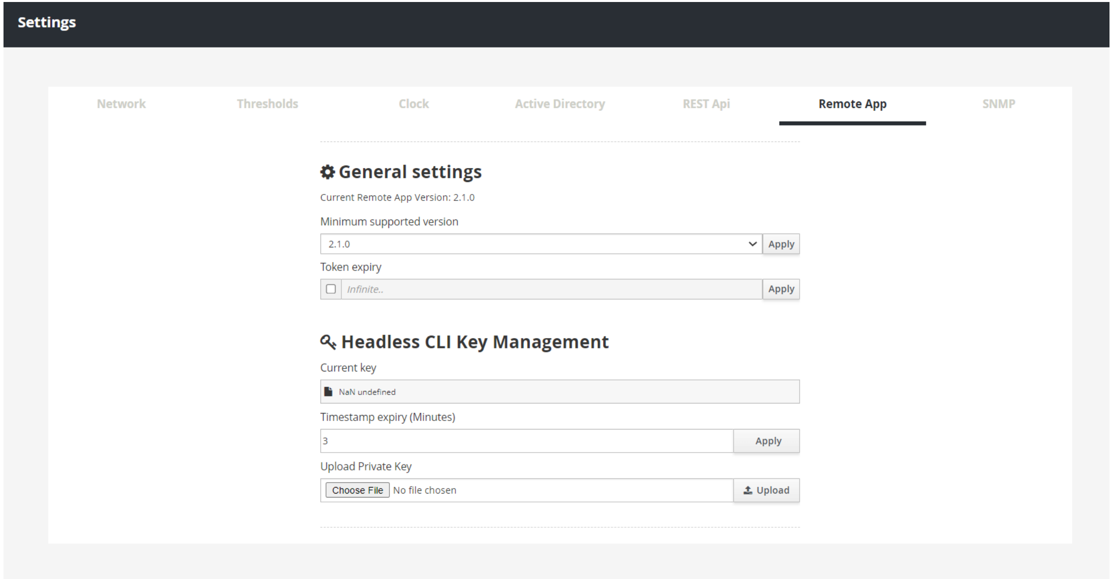
REST API State

Version: 1.0

OFF

FIGURE: 14-10. REST API

- Minimum Support for RemoteApp allows for the configuration of the RA version to be used with the system along with a timeout option. Headless CLI key management is also available for configuration.



General settings

Current Remote App Version: 2.1.0

Minimum supported version: 2.1.0 [Apply]

Token expiry: □ Infinite.. [Apply]

Headless CLI Key Management

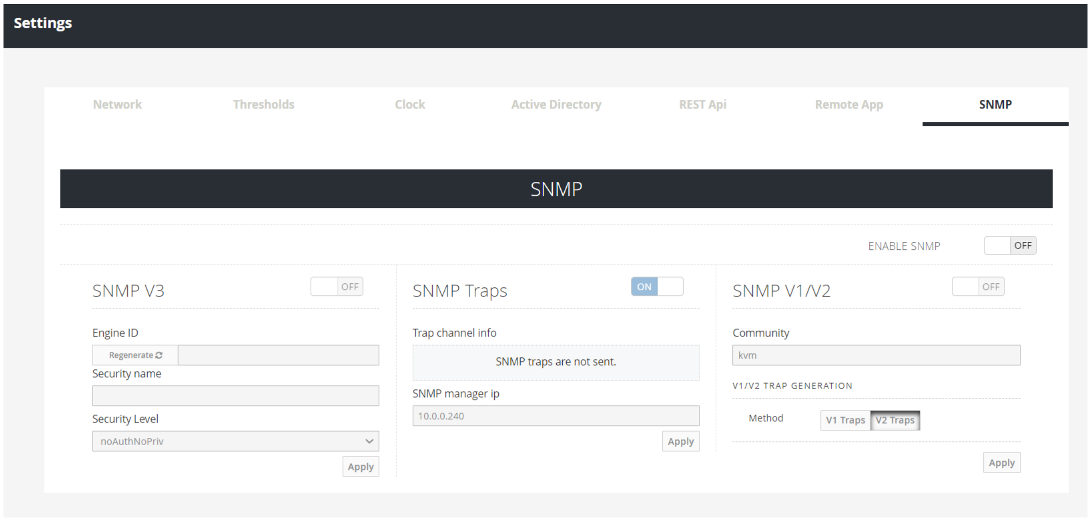
Current key: NaN undefined

Timestamp expiry (Minutes): 3 [Apply]

Upload Private Key: [Choose File] No file chosen [Upload]

FIGURE 14-11. REMOTE APP

- SNMP



SNMP

ENABLE SNMP: OFF

SNMP V3: OFF

Engine ID: [Regenerate]

Security name:

Security Level: noAuthNoPriv

[Apply]

SNMP Traps: ON

Trap channel info: SNMP traps are not sent.

SNMP manager ip: 10.0.0.240

[Apply]

SNMP V1/V2: OFF

Community: kvm

V1/V2 TRAP GENERATION

Method: V1 Traps [V2 Traps]

[Apply]

FIGURE 14-12. SNMP

The administrator can reboot the Boxilla unit by clicking on the Reboot button on the top right of the System —> Administration screen.

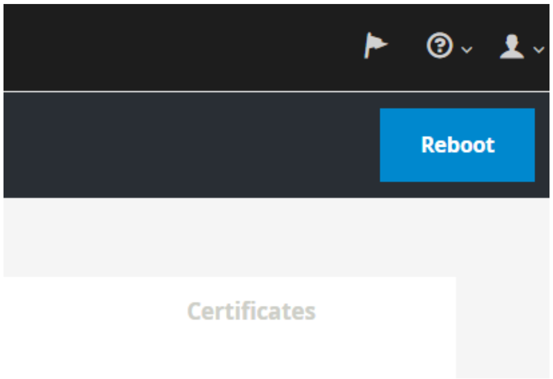


FIGURE 14-13. SYSTEM SCREEN—UPGRADE

14.1 SYSTEM—UPGRADING BOXILLA UNIT FIRMWARE

To upgrade the firmware on the Boxilla unit, choose the file to be used to upgrade and click on submit and follow the instructions provided. This will cause the new firmware to be added to the Backup Image table (i.e., the firmware file is copied onto the Boxilla unit). To initiate the upgrade of the the Boxilla unit, click on Activate on ellipsis "•••" icon options on the row of the firmware to be used to upgrade the unit.

NOTE: Boxilla supports the uploading and storage of a maximum of 10 Boxilla upgrade images.

The upgrade will not change the contents of the database. If you are upgrading to Boxilla 1.2 from a Boxilla 1.0, 1.0.1, or 1.1 unit, you will need to reboot the Boxilla unit when the upgrade is completed.

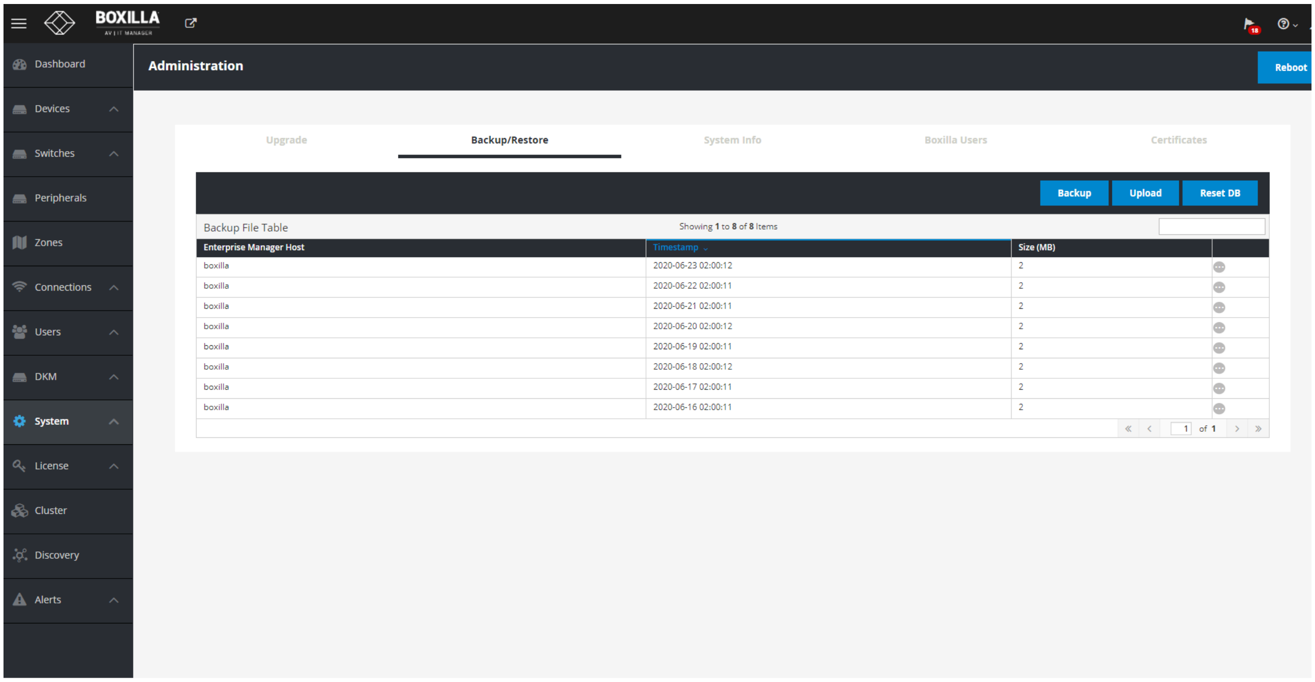
VERY IMPORTANT: Ensure the Boxilla unit stays powered-up during the upgrade. Losing power during an upgrade may cause the unit to cease functioning.

14.2 SYSTEM—BACKUP/RESTORE

The Administrator can backup and restore the database of the Boxilla unit on the Backup/Restore tab on the System screen.

When the Backup button is clicked, a complete backup of the Boxilla unit is created and added to the Backup table with a timestamp. This file is still on the Boxilla unit. To save this backup file to your local system, click on Download using the ellipsis "•••" icon found next to the specific backup.

The Boxilla will automatically back up the database nightly, and the files are stored locally on the unit for up to 8 days. Additionally, the Boxilla 4.6.1 and later adds an option for Remote Backup Support located at System -> Settings -> Backup. The administrator can also push the Boxilla backup out to an external server using RESTapi commands.



Backup File Table

Showing 1 to 8 of 8 Items

Enterprise Manager Host	Timestamp	Size (MB)	
boxilla	2020-06-23 02:00:12	2	•••
boxilla	2020-06-22 02:00:11	2	•••
boxilla	2020-06-21 02:00:11	2	•••
boxilla	2020-06-20 02:00:12	2	•••
boxilla	2020-06-19 02:00:11	2	•••
boxilla	2020-06-18 02:00:12	2	•••
boxilla	2020-06-17 02:00:11	2	•••
boxilla	2020-06-16 02:00:11	2	•••

1 of 1

FIGURE 14-14. SYSTEM BACKUP/RESTORE TAB

There is a two-step process to restore a Boxilla unit from an external backup file. First the file must be uploaded to the Backup table and then the backup file in the table must be imported into the Boxilla unit.

When the Upload button is clicked, the administrator is prompted for the filename to upload into the Backup Table. Once the upload has been completed, the administrator clicks on Import using the ellipsis "•••" icon found next to the specific backup.

Clicking on ResetDB purges the database on the Boxilla unit and restores it to a default state. The IP address will not be changed when using the ResetDB option.

The Enterprise Manager Host column refers to the name of the host machine where the backup was generated. Currently, this will always be this Boxilla unit.

14.3 SYSTEM —SYSTEM INFO

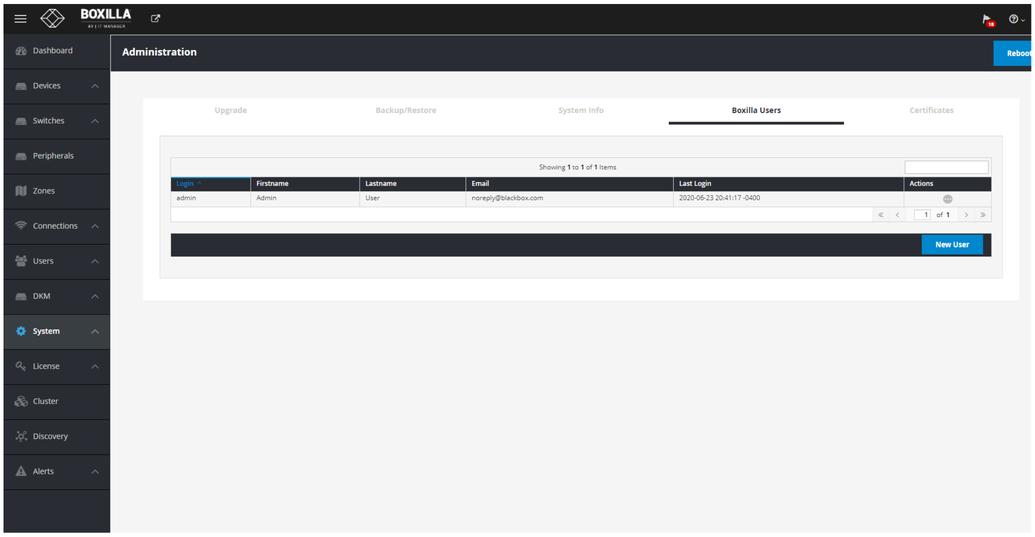
The System Info tab provides summary information on the Boxilla unit. This information is:

- Current Version: Version of firmware currently running on the Boxilla Unit.
- Serial No: The serial number of the Boxilla unit.
- Build No: The software build number (internal Black Box number to software control of firmware on the Boxilla unit).
- Model No: The model number of the Boxilla unit (internal Black Box number to indicate hardware version on Boxilla unit).
- Network Status: Whether Boxilla is active on the network.
- Uptime: Length of time that the Boxilla unit has been powered up.
- Export Log files: allows the administrator to export log files from the Boxilla unit.

14.4 SYSTEM — ADMINISTRATION — BOXILLA USERS

The System —> Administration — Boxilla Users tab shows a table of users for the Boxilla unit (not the same as users for the managed domain) as shown below, System Users. The users here should be considered Adminstrative users.

NOTE: Users can not be imported from Active Directory here, and only internal Boxilla users can be created and used.

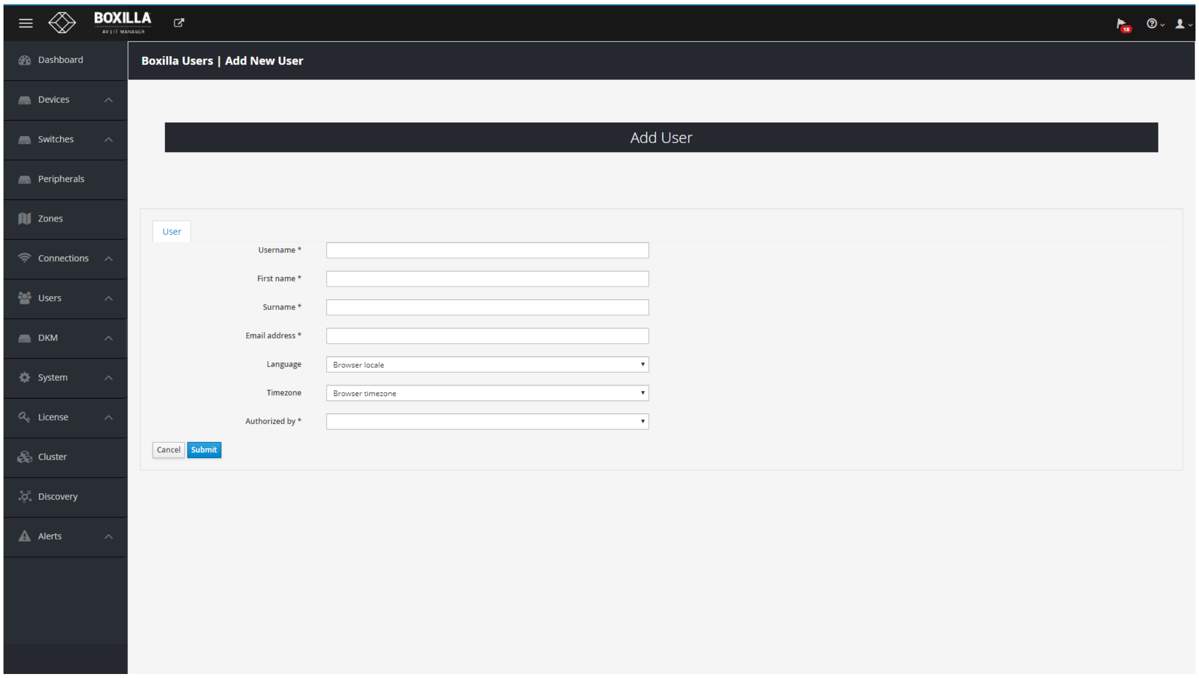


Showing 1 to 1 of 1 Items

Login	Firstname	Lastname	Email	Last Login	Actions
admin	Admin	User	noreply@blackbox.com	2020-06-23 20:41:17 -0400	⋯

1 of 1

FIGURE 14-15. SYSTEM USERS



Boxilla Users | Add New User

Username *	
First name *	
Surname *	
Email address *	
Language	Browser locale
Timezone	Browser timezone
Authorized by *	

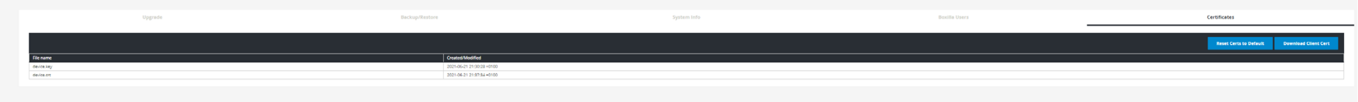
FIGURE 14-16. NEW SYSTEM USER

Enter Username, First name, Surname, Email address, Language, Time zone, and Authorized by. Then click Submit to save your changes or Cancel to cancel your entries.

14.5 CERTIFICATES

14.5.1 DOWNLOAD THE CLIENT CERTIFICATE

The Boxilla administrator can download the Client Certificate so it can be imported into a web browser to support a secure connection (i.e. green security lock). When the Download Client Cert is clicked on, Boxilla will automatically generate the .pem file for the user and download the file to the local Downloads folder. In a cluster environment, the .pem file will support the configured Virtual IP address together with the IP addresses of the Active & Standby Boxilla units.



File name	Created/Modified
device.key	2021-06-21 21:30:28 +0100
device.crt	2021-06-21 21:37:34 +0100

FIGURE 14-17. CERTIFICATES BUTTONS

Method for Importing CA Certificate (PEM format) to Client Windows PC (Recommended)

After the CA certificate is properly re-generated, users need to import it to the Trusted Root CA Certificate Store of the client PC so that any SSL connection from the client PC (via browser, Emerald remote app, etc.) to Boxilla would be secured.

For Windows platforms, the Trusted Root CA Certificate Store is configured by the Certificate Manager of Windows under both the “Current User” and the “Current Local Machine” User Access Control levels. When the CA certificate is imported into Chrome and IE/Edge browsers, the certificate is configured within the “Current User” Trusted Root CA Certificate Store that works for the current Windows user logged in only. If an alternate Windows user logs onto the PC, the CA certificate would NOT be present within the associated Trusted Root CA Certificate Store, and the SSL connections to Boxilla in this case would NOT be secured.

For this reason, we recommend that users import the CA certificate PEM file to the "Current Local Machine" Trusted Root CA Certificate Store, so that all Windows users of the PC are able to have the CA certificate configured in their own Trusted Root CA Certificate Stores.

The steps to import the CA certificate to "Current Local Machine" Trusted Root CA Certificate Store are as follows:

Step 1. In the client Windows PC, click the search button on the task bar and type in "Manage computer certificates", and then click the matching option within the menu and open the "Current Local Machine" Trusted RootCA Certificate Store in control panel. (In comparison, the option "Manage user certificates" is for the "Current User" Certificate Store):

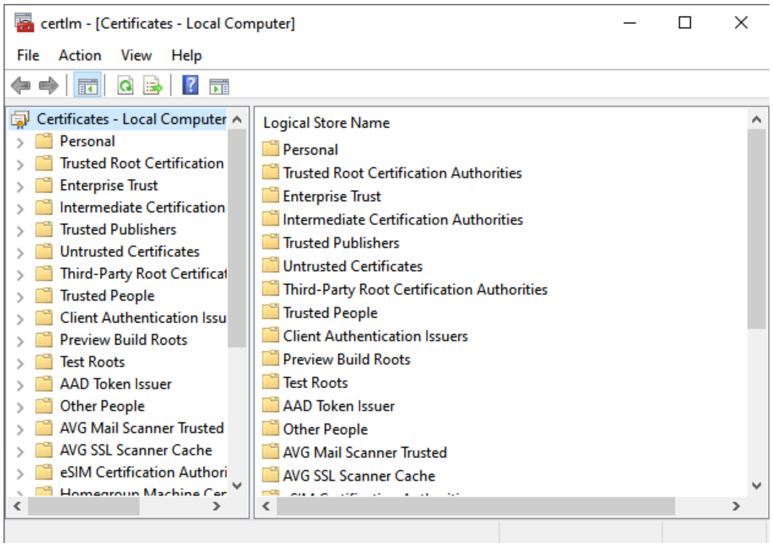


FIGURE 14-18. STEP 1

Step 2. In the certificate store, right click "Trusted Root Certification Authorities" -> "Certificates" and select "All Tasks" -> "Import"

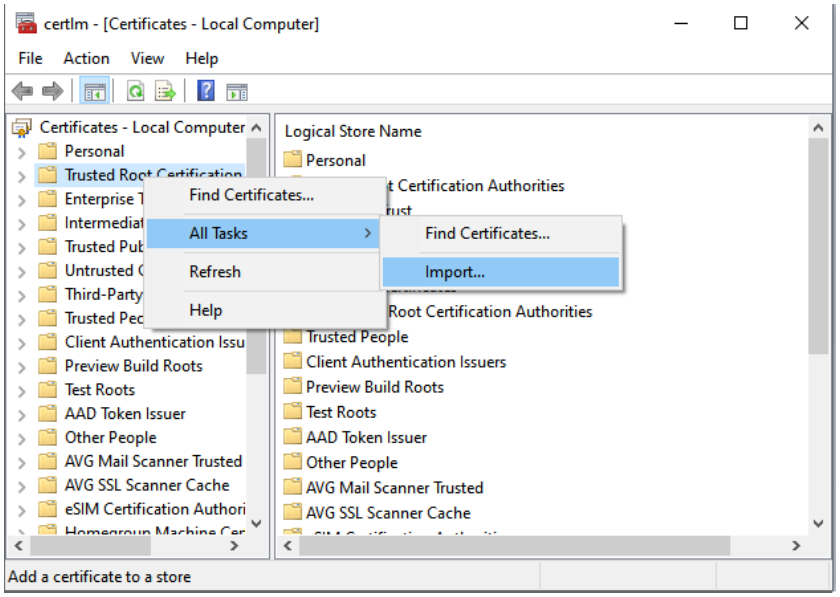
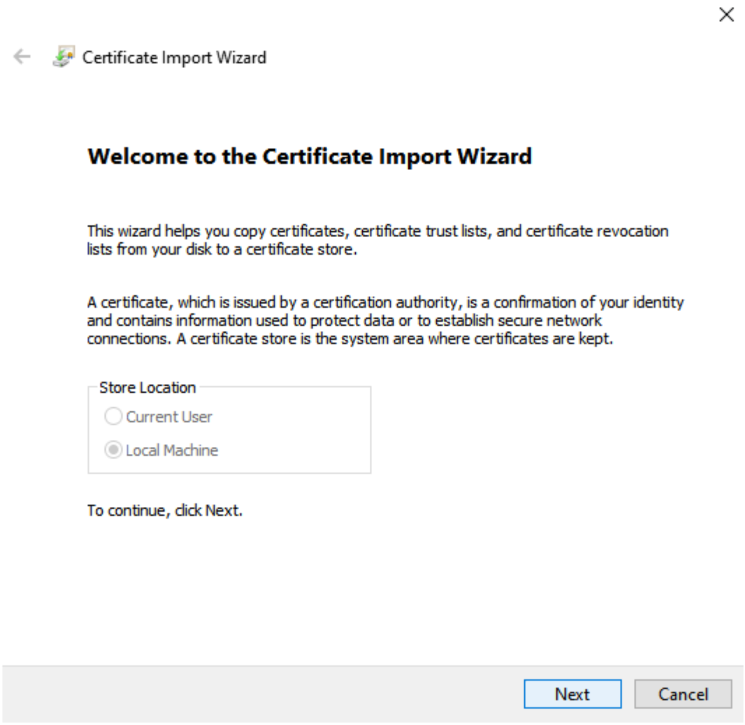


FIGURE 14-19. STEP 2



Certificate Import Wizard

Welcome to the Certificate Import Wizard

This wizard helps you copy certificates, certificate trust lists, and certificate revocation lists from your disk to a certificate store.

A certificate, which is issued by a certification authority, is a confirmation of your identity and contains information used to protect data or to establish secure network connections. A certificate store is the system area where certificates are kept.

Store Location

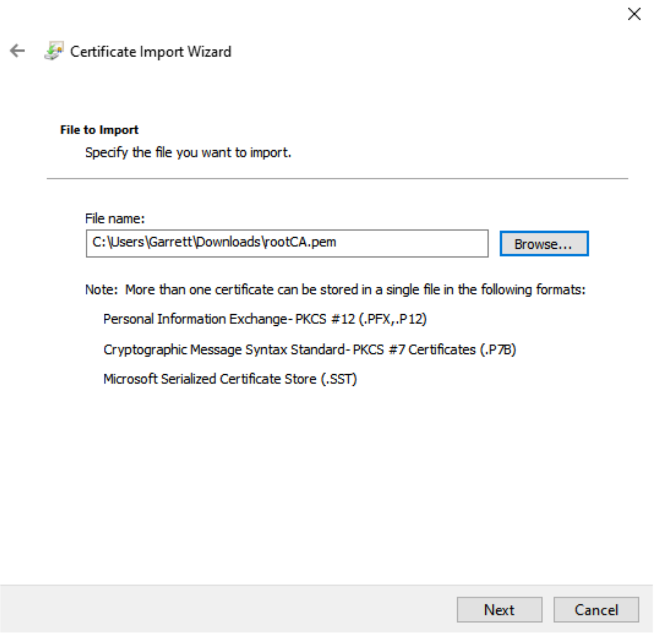
○ Current User

● Local Machine

To continue, click Next.

FIGURE 14-20. STEP 3

Step 3. In the wizard window, click “Next” and then select the re-generated CA certificate PEM file from local path:



Certificate Import Wizard

File to Import

Specify the file you want to import.

File name:

C:\Users\Garrett\Downloads\rootCA.pem

Note: More than one certificate can be stored in a single file in the following formats:

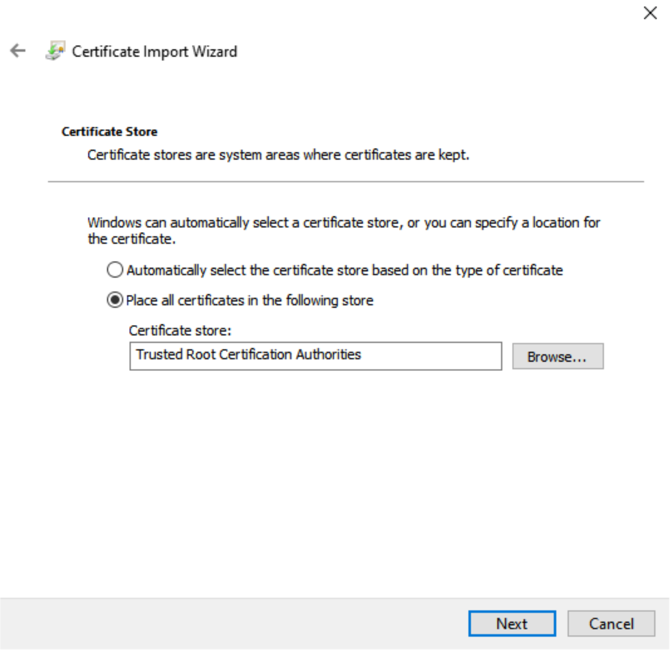
Personal Information Exchange- PKCS #12 (.PFX,.P12)

Cryptographic Message Syntax Standard- PKCS #7 Certificates (.P7B)

Microsoft Serialized Certificate Store (.SST)

FIGURE 14-21. STEP 3

Step 4. Click “Next” and in the next wizard window, making sure that the specified certificate store is “Trusted Root Certification Authorities” instead of letting Windows automatically select the certificate store based on the certificate type, before going forward:



Certificate Store

Certificate stores are system areas where certificates are kept.

Windows can automatically select a certificate store, or you can specify a location for the certificate.

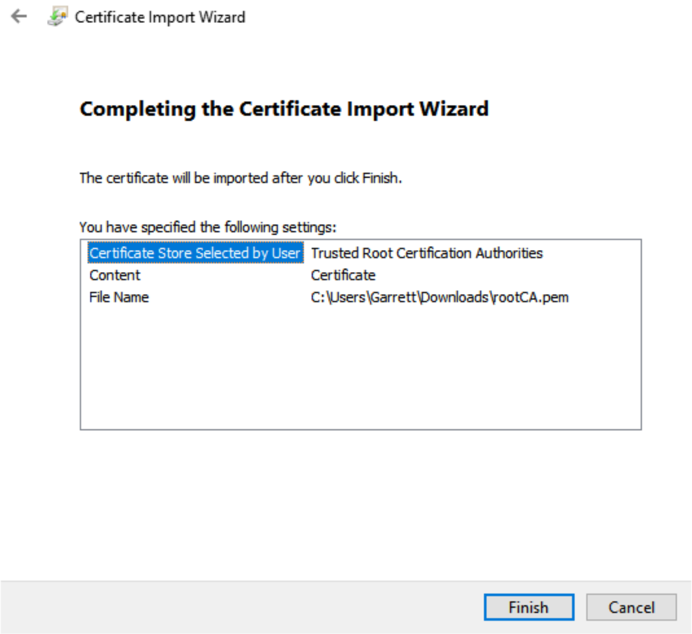
○ Automatically select the certificate store based on the type of certificate

● Place all certificates in the following store

Certificate store: Trusted Root Certification Authorities

FIGURE 14-22. STEP 4

Step 5. Click “Next” to redirect to the completing wizard window, and then click “Finish”



Completing the Certificate Import Wizard

The certificate will be imported after you click Finish.

You have specified the following settings:

Certificate Store Selected by User	Trusted Root Certification Authorities
Content	Certificate
File Name	C:\Users\Garrett\Downloads\rootCA.pem

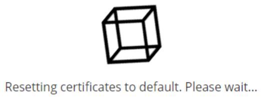
FIGURE 14-23. STEP 5

The re-generated CA certificate should be successfully imported to the certificate store for “Current Local Machine” now, and SSL connections from the client Windows PC should be secured for any Windows users.

The browser session to Boxilla should be secured without the additional need for importing the CA certificate to the browsers anymore, as described in the last section.

14.5.2 RESET CERTIFICATES TO DEFAULT

The Boxilla Administrator can also select the Reset the Certificate to Default option if they believe the certificates within Boxilla are not correct.



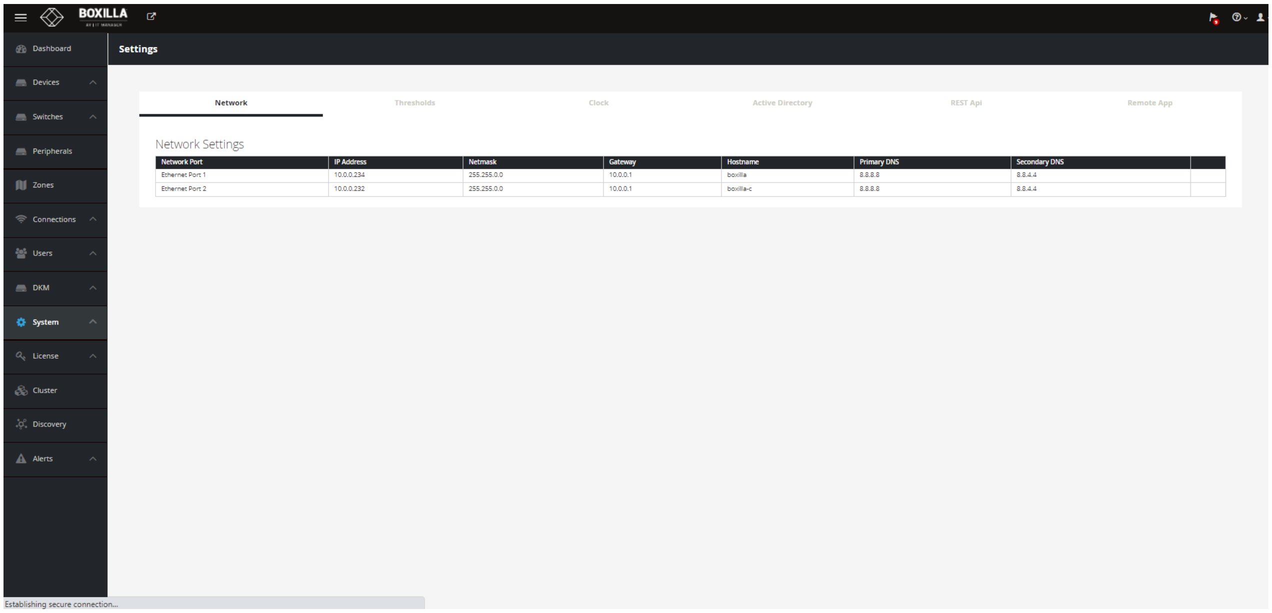
Resetting certificates to default. Please wait...

FIGURE 14-24. RESETTING CERTIFICATES TO DEFAULT

14.6 SYSTEM—SETTINGS—NETWORK

The System —> Settings —> Network tab shows the IP settings for the Boxilla unit and enables the Administrator to change the IP settings for the Boxilla unit (enter IP address, Net Mask, Gateway, and DNS in IPv4 format and click Apply). The second Ethernet port is disabled by default. Also note when setting up a Primay / Backup Boxilla that if the Primary Ethernet 2 is enabled, it must also be enabled on the Backup, otherwise they will fail to link together.

NOTE: Ethernet Port 2 is disabled by default.



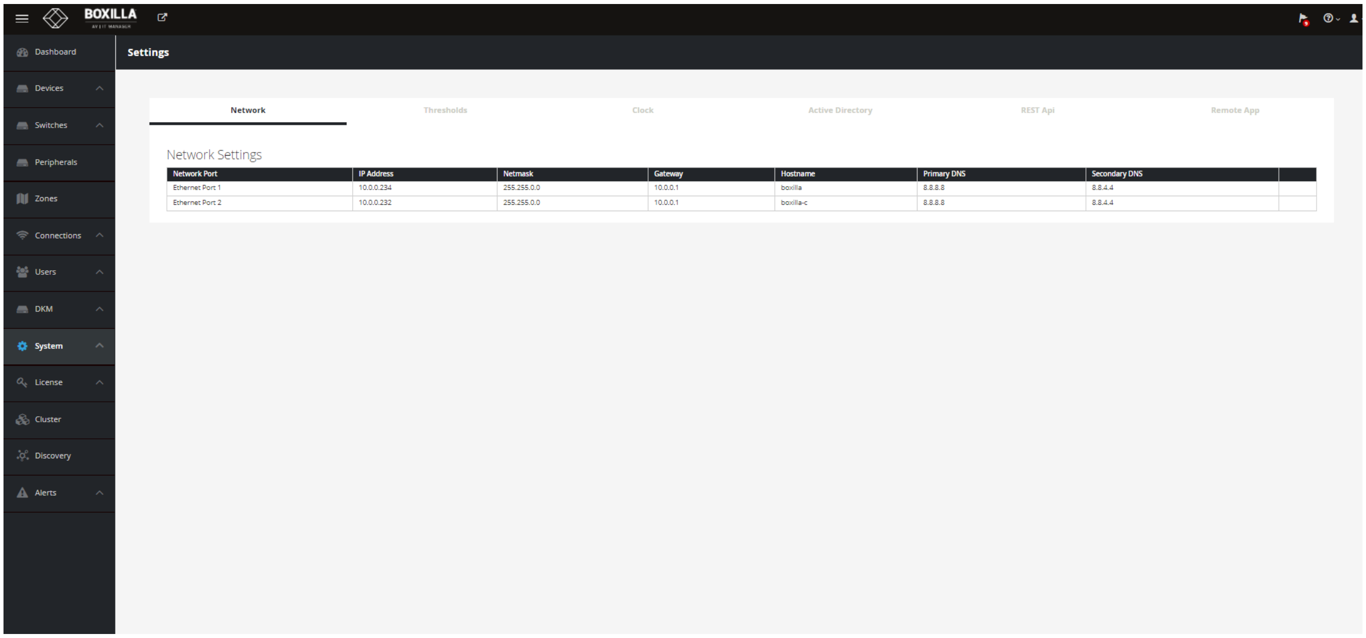
Network Settings

Network Port	IP Address	Netmask	Gateway	Hostname	Primary DNS	Secondary DNS	
Ethernet Port 1	10.0.0.234	255.255.0.0	10.0.0.1	boxilla	8.8.8.8	8.8.4.4	
Ethernet Port 2	10.0.0.232	255.255.0.0	10.0.0.1	boxilla-c	8.8.8.8	8.8.4.4	

Establishing secure connection...

FIGURE 14-25 SYSTEM —> SETTINGS —> NETWORK SCREEN

NOTE: Ethernet Port 2 does not support KVM traffic. All KVM traffic is routed through Ethernet Port 1.



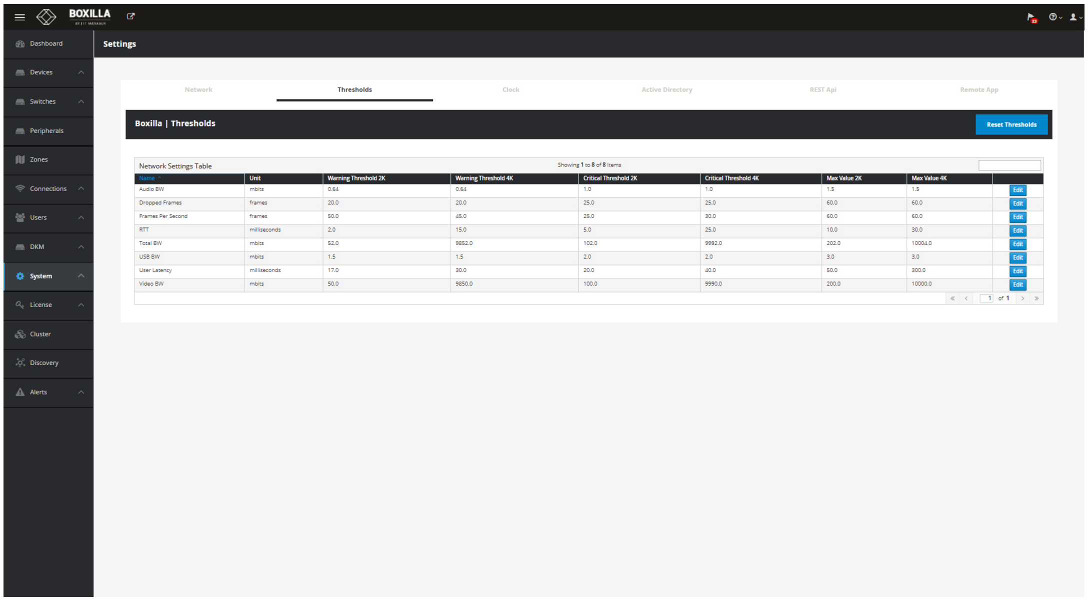
Network Settings

Network Port	IP Address	Netmask	Gateway	Hostname	Primary DNS	Secondary DNS
Ethernet Port 1	10.0.0.234	255.255.0.0	10.0.0.1	boxilla	8.8.8.8	8.8.4.4
Ethernet Port 2	10.0.0.232	255.255.0.0	10.0.0.1	boxilla-c	8.8.8.8	8.8.4.4

FIGURE 14-26. SYSTEM —> SETTINGS —> NETWORK SCREEN 3

14.7 SYSTEM — SETTINGS —THRESHOLDS

The System —> Settings—> Threshold tab shows the level used to define an alert for various measurements recorded on a connection and enables the Administrator to change them.



Network Settings Table

Showing 1 to 8 of 8 Items

Name	Unit	Warning Threshold 2K	Warning Threshold 4K	Critical Threshold 2K	Critical Threshold 4K	Max Value 2K	Max Value 4K	
Audio BW	mbits	0.64	0.64	1.0	1.0	1.5	1.5	Edit
Dropped Frames	frames	20.0	20.0	25.0	25.0	60.0	60.0	Edit
Frames Per Second	frames	50.0	45.0	25.0	30.0	60.0	60.0	Edit
RTT	milliseconds	2.0	15.0	5.0	25.0	10.0	30.0	Edit
Total BW	mbits	52.0	9852.0	102.0	9992.0	202.0	10004.0	Edit
USB BW	mbits	1.5	1.5	2.0	2.0	3.0	3.0	Edit
User Latency	milliseconds	17.0	30.0	20.0	40.0	50.0	300.0	Edit
Video BW	mbits	50.0	9850.0	100.0	9990.0	200.0	10000.0	Edit

1 of 1

FIGURE 14-27. ALERT THRESHOLDS

The Warning Threshold sets the level above which a measurement must be below to be classified as normal or at “info” level. Measurements above the Warning Threshold and below Critical Threshold are classified as at “Warning” level. Measurements at or above the Critical Threshold are classified as “Critical” level. The following alert settings show the default configuration but can be adjusted by a system administrator.

- 2K AUDIO BANDWIDTH: WARNING: 0.64; CRITICAL: 1.0; MAX: 1.5
- 4K AUDIO BANDWIDTH: WARNING: 0.64; CRITICAL: 1.0; MAX: 1.5

- 2K DROPPED FRAMES: WARNING: 20; CRITICAL: 25; MAX: 60
- 4K DROPPED FRAMES: WARNING: 20; CRITICAL 25; MAX: 60

- 2K FRAMES PER SECOND: WARNING: 50; CRITICAL 25; MAX: 60
- 4K FRAMES PER SECOND: WARNING: 45; CRITICAL: 30; MAX 60

- 2K RTT: WARNING: 2; CRITICAL: 5; MAX: 10
- 4K RTT: WARNING: 15; CRITICAL: 25; MAX: 30

- 2K TOTAL BANDWIDTH: WARNING: 52; CRITICAL: 102; MAX: 202
- 4K TOTAL BANDWIDTH: WARNING: 9852; CRITICAL: 9992.0; MAX:10004

- 2K USB BANDWIDTH: WARNING: 1.5; CRITICAL: 2.0; MAX: 3.0
- 4K USB BANDWIDTH: WARNING: 1.5; CRITICAL: 2.0; MAX: 3.0

- 2K USER LATENCY: WARNING: 17; CRITICAL: 20; MAX: 50
- 4K USER LATENCY: WARNING: 30; CRITICAL: 40; MAX: 300

- 2K VIDEO BANDWIDTH: WARNING: 50; CRITICAL: 100; MAX: 200
- 4K VIDEO BANDWIDTH: WARNING: 9850; CRITICAL: 9990; MAX: 10000

In an existing deployment, these values are updated via the 'Reset Threshold's' button.

Clarification on Frames Per Second (FPS) Alert:

A Critical FPS Alert is generated when the Frames Per Second value drops below the critical value AND the Dropped Frames value goes above the critical value a FPS critical alert is generated.

A Warning FPS Alert is generated when the Frames Per Second value drops below the warning value AND the Dropped Frames value goes above the warning value a FPS warning alert is generated.

The color coding on graphs and tables for measurements (such as Bandwidth) follow these rules:

- Info Level (or normal level): color set as Green
- Warning Level: color set as Amber
- Critical Level : color set as Red

14.8 SYSTEM — SETTINGS — CLOCK

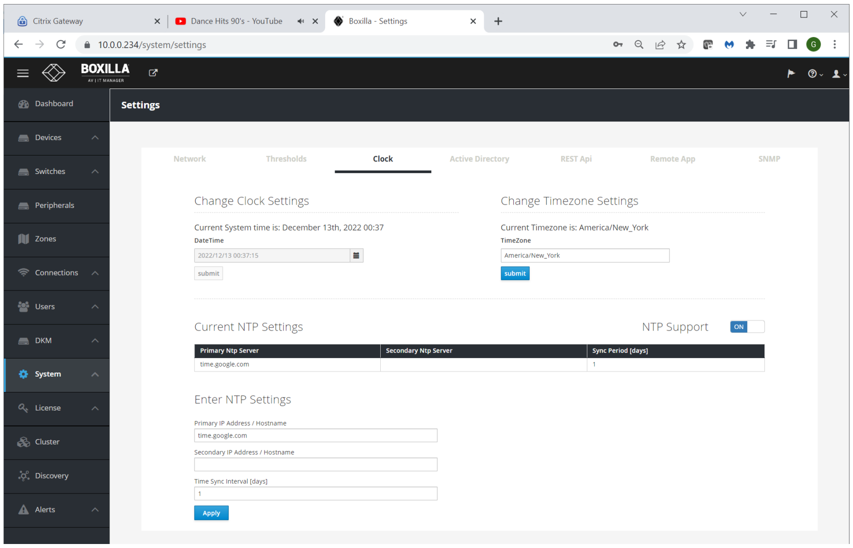
The System —> Settings —> Clock tab enables the Administrator to see the current system time and to change it.

There are two options for the Clock.

1. Manually configure time, time is not maintained.

2. Use NTP Server to set and maintain time.

Time Zone setting can be applied to both options above.



Change Clock Settings

Current System time is: December 13th, 2022 00:37

DateTime: 2022/12/13 00:37:15

submit

Change Timezone Settings

Current Timezone is: America/New_York

TimeZone: America/New_York

submit

Current NTP Settings

NTP Support: ON

Primary Ntp Server	Secondary Ntp Server	Sync Period [days]
time.google.com		1

Enter NTP Settings

Primary IP Address / Hostname: time.google.com

Secondary IP Address / Hostname:

Time Sync Interval [days]: 1

Apply

FIGURE 14-28. CLOCK (OR TIME) SETTINGS

14.9 SYSTEM — SETTINGS — ACTIVE DIRECTORY

Active Directory is a Directory Services implementation that allows for user/group authentication, group policies etc. LDAP (lightweight Directory Access Protocol) is a cross platform protocol used for such directory services authentication. The Boxilla also supports Secure LDAP which can allow the LDAPS protocol or StartTLS to be used if using a Boxilla at firmware 4.6 or later.

14.9.1 ADMIN USER ENABLING ACTIVE DIRECTORY ON BOXILLA

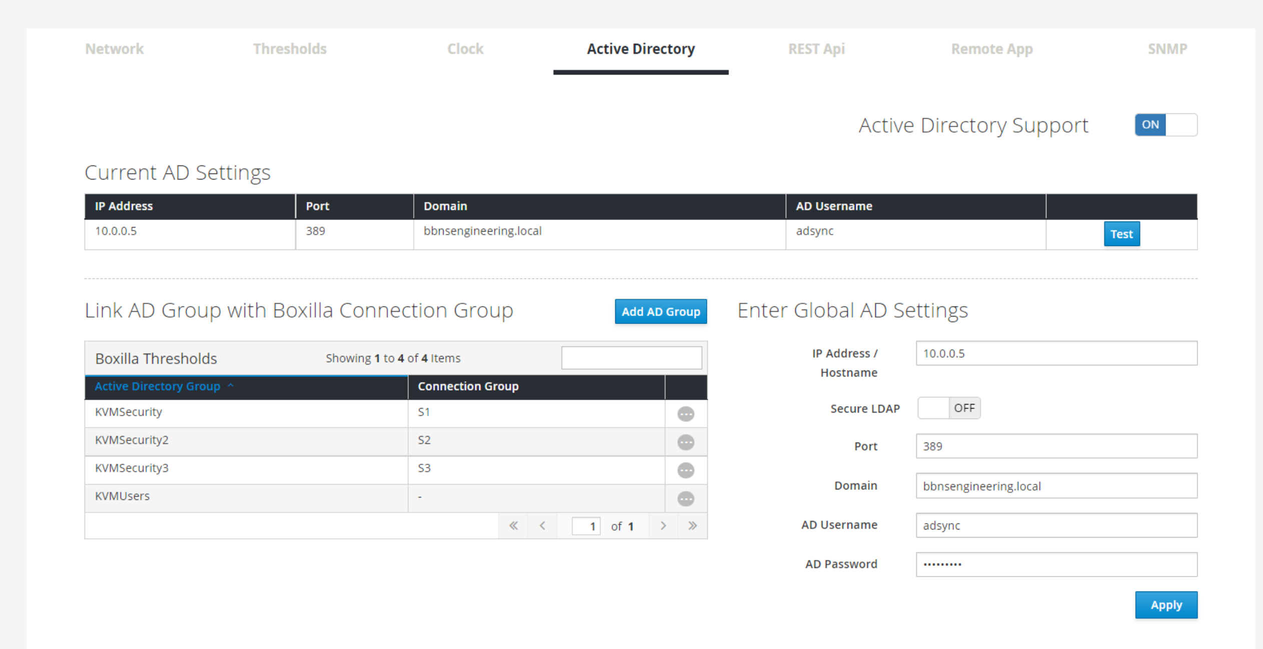
The Boxilla administrator can enable Active Directory for the KVM Network by enabling Active Directory authentication by switching the option ON/OFF under System -> Settings -> Active Directory tab

Boxilla can support the Active Directory Organizational Units/Security Groups as active group types. They need to be manually added and use the same naming convention that is on the server hosting Active Directory.

To enable Active Directory support on Boxilla:

1. In System -> Settings -> Active Directory tab, you will see the ON/OFF switch, which needs to be ON to globally enable Active Directory support.
2. You then need to enter the Active Directory server details. Secure LDAP setting (if required), IP, Port (by default this is 389), the domain of the active directory server, and the AD Username and AD Password, which are any administrator account on Active Directory. This account is not used for authentication and is used to retrieve OU information for the users in Boxilla.

3. You then save your settings and Boxilla is set up for Active Directory support.
4. The Boxilla should automatically import all AD Groups into the table on the same page for easy access of management.



Active Directory Support: ON

Current AD Settings

IP Address	Port	Domain	AD Username	
10.0.0.5	389	bbnsengineering.local	adsync	Test

Link AD Group with Boxilla Connection Group

Boxilla Thresholds — Showing 1 to 4 of 4 Items

Active Directory Group ^	Connection Group	
KVMSecurity	S1	⋯
KVMSecurity2	S2	⋯
KVMSecurity3	S3	⋯
KVMUsers	-	⋯

1 of 1

Enter Global AD Settings

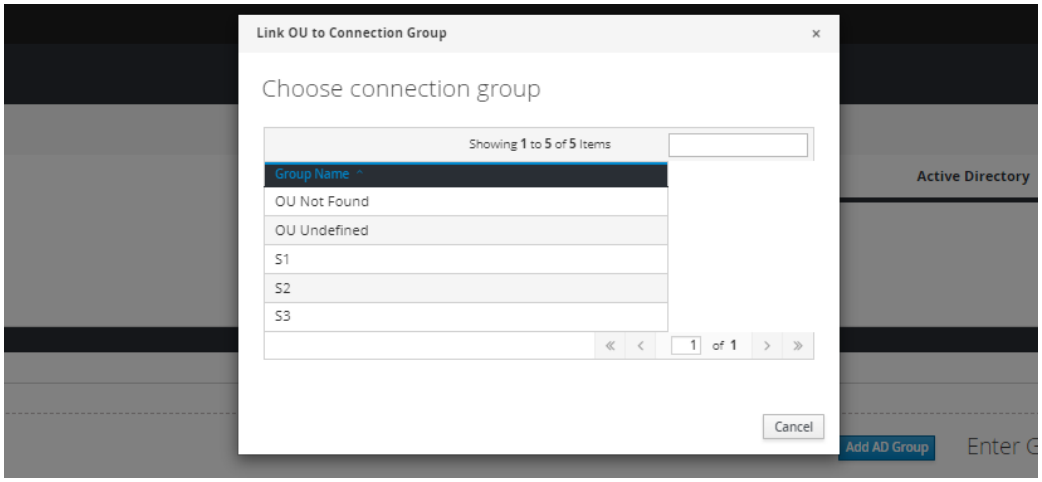
IP Address / Hostname	10.0.0.5
Secure LDAP	OFF
Port	389
Domain	bbnsengineering.local
AD Username	adsync
AD Password	•••••••••

FIGURE 14-29. ACTIVE DIRECTORY DETAILS—SYSTEM CONFIGURATION

Boxilla supports Secure LDAP (LDAPS) via STARTTLS in version 4.6 and later , and it is considered the “LDAP over SSL”. It will use port 636 by default and can be setup with or without server side certificate validation. STARTTLS will use port 389 by default. The Boxilla also supports Azure Active Directory with or without a certificate. Boxilla supports LDAPS / STARTTLS which uses a CA certificate that can be uploaded by the administrator. The Certificate SAN field is mandatory, and the value to be entered is the contents of the SAN field for the Active Directory Server Certificate. This feature also supports Certificate SAN which is typically the domain name (This can cause issues if it doesn’t match the certificate).

14.9.2 LINKING AN ACTIVE DIRECTORY OU TO A BOXILLA CONNECTION GROUP

The Boxilla admin user will have the option to specify what Active Directory OU or Security Group is linked to a Connection Group. Once Active Directory is successfully connected, Boxilla may automatically retrieve a few OUs and store them in its database (not all), but not Security Groups. The Boxilla administrator has the option to associate the Active Directory user with connections by adding them to the Users List (as an AD user), or they can assign the connection group to the entire OU or Security Group. Connections are automatically assigned to the users once configured and the receiver is logged out and back in.



Group Name ^
OU Not Found
OU Undefined
S1
S2
S3

FIGURE 14-30. CONNECTING OU TO CONNECTION GROUP

14.9.3 USING ACTIVE DIRECTORY WITH ORGANIZATIONAL UNITS (OUS)

When configuring the Active Directory credentials within Boxilla, you have the option to enter the details of the AD server and then test the connection to make sure it is successful. Once connected to the AD, the OU list (Organization Unit) may update with available OU groups found within the AD server automatically, however most of the time the OU will need to be added manually, or will become visible once a user/member of that OU is manually added to Users as an AD user. The administrator may now Link an OU with a Connection Group (which is configured under Connections). Only those users will have access to the connection list, thus limiting the number of connections for that OU group. If any user needs more unique connections, the administrator can add that AD user to the Users list and manually configure available connections. The user will see a composite access control list from the OU Group and Custom Configuration. Any AD user can now login to the receiver even though their username may not be found under the Users profile, as long as they are part of the AD group they can login. If an AD user profile is still under the Users menu, it is because they were added prior to the firmware update or they require more unique connection options that may not fit other users within the same OU. If for any reason the user(s) within the OU shouldn't have access to any KVM hardware, you can Delete the OU and the users in that OU won't have access to the system, or you can configure certain users for Groups that are empty. This in turn will not allow those users to access the system.

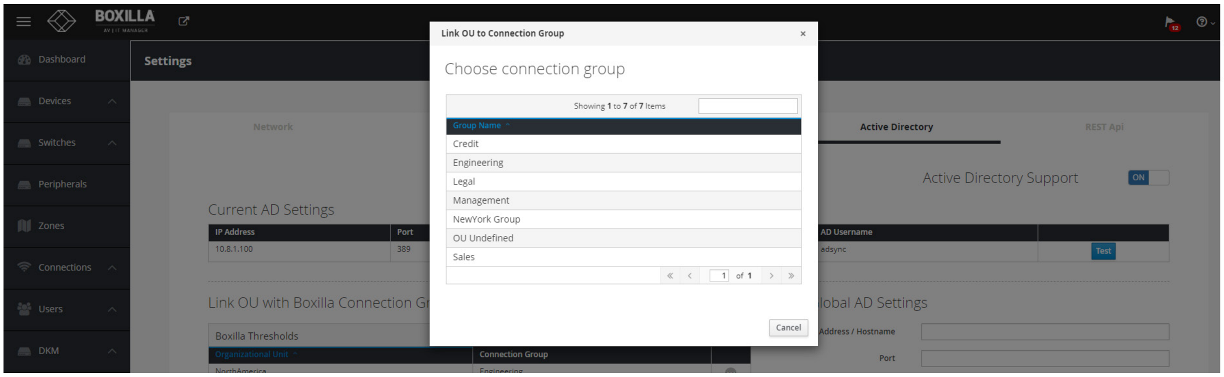
OU Setup

The Admin will be able to add OUs and assign these OUs to Connection groups. See Section 11.2, Connections — Groups.

When the user above is authenticated as described above and the OU matches one added by the admin they will get access to the assigned connection groups.

If the OU cannot be matched, the user can define a connection group: “OU undefined.”

If the OU cannot be found or there is no OU, the user can define another connection group: “No OU found.”



Link OU to Connection Group

Choose connection group

Showing 1 to 7 of 7 Items

Group Name
Credit
Engineering
Legal
Management
NewYork Group
OU Undefined
Sales

1 of 1

IP Address	Port
10.8.1.100	389

AD Username
adsync

Organizational Unit	Connection Group
NorthAmerica	Engineering

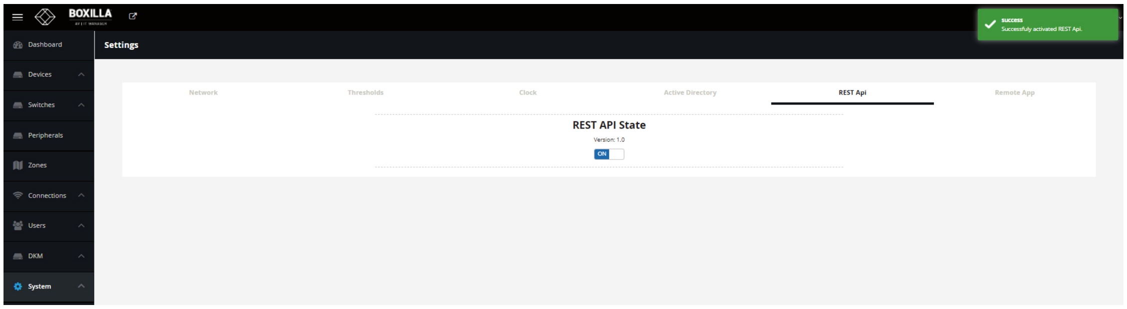
FIGURE 14-31. OU GROUPING

14.9.4 USING ACTIVE DIRECTORY WITH SECURITY GROUPS

Security Groups may also be used within Boxilla by manually entering the Security Group Name (name from AD server must match Boxilla). The administrator may now Link a Security Group with a Connection Group (which is configured under Connections). Only those users will have access to the connection list, thus limiting the number of connections for that Security Group. If any user needs more unique connections, the administrator can add that AD user to the Users list and manually configure available connections. The user will see a composite access control list from the OU Group and Custom Configuration. Any AD user can now login to the receiver even though their username may not be found under the Users profile, as long as they are part of the AD group they can login.If for any reason the user(s) within the Security Group shouldn’t have access to any KVM hardware, you can Delete the Security Group and the users in that group won’t have access to the system, or you can configure certain users for Groups that are empty. This in turn will not allow those users to access the system.

14.10 SYSTEM — SETTINGS — REST API

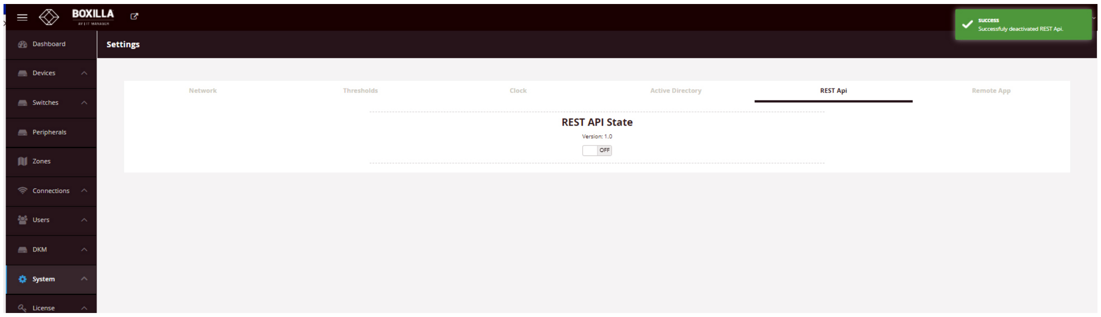
This will enable REST API support on the Boxilla so other 3rd-party devices can communicate with the manager to perform additional functions.



success
Successfuly activated REST Api.

REST API State
Version: 1.0

FIGURE 14-32. API ON



success
Successfuly deactivated REST Api.

REST API State
Version: 1.0

FIGURE 14-33. API OFF

14.11 SYSTEM — SETTINGS — REMOTE APP

Minimum Supported Remote App Version: The recommended minimum revision of Remote App will be set by Boxilla and automatically be set following an upgrade of the system.

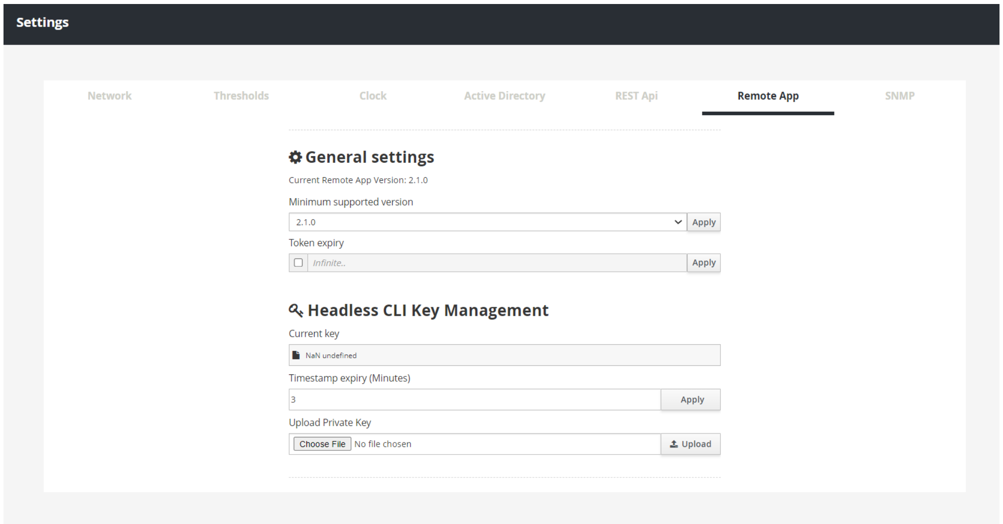
However, the Boxilla user can decide to set another minimum version. Versions to choose from will automatically be added to the list following a failed login attempt from a Remote App user at a lower revision.

The Boxilla administrator will be notified of a failed attempt. A minimum supported Remote App version will create a Boxilla alert.

The Boxilla administrator can decide to advise the app user to upgrade or in an exception could change the setting in Boxilla to match the lower revision. The Boxilla Administrator should only change this Minimum supported version if advised by the Black Box support team.

Remote App error message:

The Remote App will check on login if the Remote App is at a compatible version of Boxilla.



General settings

Current Remote App Version: 2.1.0

Minimum supported version: 2.1.0 Apply

Token expiry: □ Infinite.. Apply

Headless CLI Key Management

Current key: NaN undefined

Timestamp expiry (Minutes): 3 Apply

Upload Private Key: Choose File No file chosen Upload

FIGURE 14-34 REMOTE APP

Boxilla 4.6 allows the administrator to not only set the RemoteApp compatibility / version, but it also allows configuration of a Headless CLI key management feature. Boxilla 4.3.2 together with Remote App 2.4.0 extends Remote App User Authentication by supporting the configuration of a validity period for each User's Authentication.

The Token Expiry option allows for configuration of a timeout for the RemoteApp when not in use. This period is configured via the 'Token expiry' field. When a Remote App User's Authentication period expires, any existing connections will be terminated, the user will be automatically logged out from the Remote App. If the User wishes to continue using the Remote App, the User needs to re-authenticate by logging back into the Remote App.

To configure the 'Token expiry' field, select the field by clicking on the tick box, then click on the field to enter the relevant token value (Days & Hours).

Note: Each token expires following a successful User Logout.

The valid ranges for these field include:

- Days 0-999.
- Hours 1-99.

14.12 SNMP

The Boxilla SNMP features improves the system reliability by allowing notifications to be sent out. The SNMP feature supports MIB files that contain pre-defined definitions of commands that can be used which include:

- Node IP Address
- Node State
- Cluster Replicating Alert and Latency
- Status of Active / Primary Boxilla devices
- Information on all devices
- Description context of Boxilla alerts
- Information on device IP, Mac Address, and Display Settings
- Information on all network switches such as switch name, IP address, Mac Address, and Switching Information
- Device Status (Device Offline, Device Online)

The followed data can be retreived via the SNMP Get requests:

*DevieInfo: Name, Mac, IP, Model, State

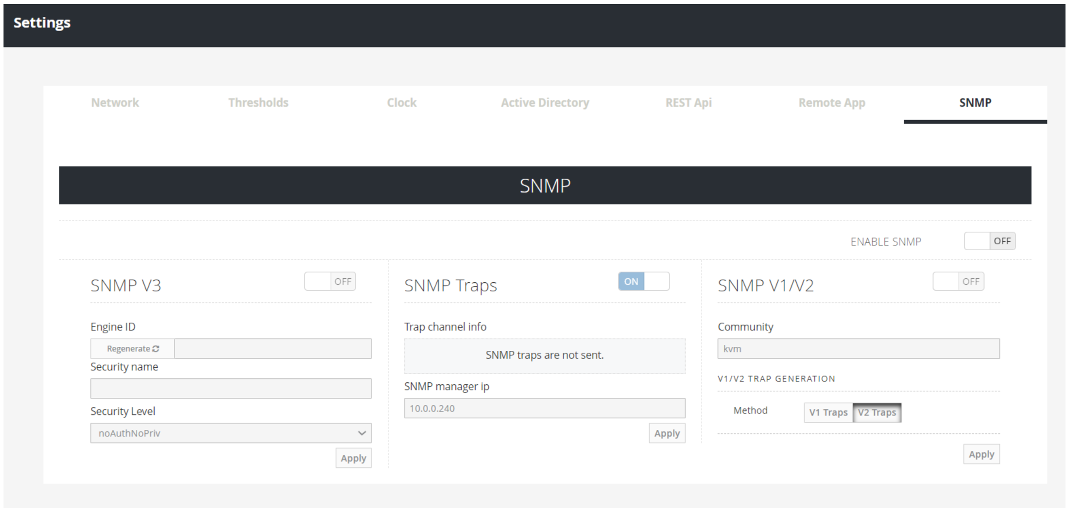
*SwitchInfo: Name, Mac, IP, Model, State

*ClusterNodeInfo: ID, Name, IP, State, ReplicationLag

The Boxilla administrator can also configure SNMP traps using SNMP V1, V2, and V3 and a community string can be declared.

A EngineID (application ID) can be used if an external SNMP manager is having connection issues. A Security Name can be used like a user name configuration for privacy. Security levels can be adjusted and will use different encryption methods. These methods include “no AuthNoPriv” which is the weakest. The “authNoPriv” can be used as a medium encryption option, while the “authPriv” is the strongest method.

An Authentication Protocol can be set using MD5 or SHA. The Authentication Key is like a password for the Security Name, and it can use a Privacy Protocol like DES and a Privacy Key.



ENABLE SNMP OFF

SNMP V3 OFF

Engine ID

Security name

Security Level: noAuthNoPriv

SNMP Traps ON

Trap channel info: SNMP traps are not sent.

SNMP manager ip: 10.0.0.240

SNMP V1/V2 OFF

Community: kvm

V1/V2 TRAP GENERATION

Method: V1 Traps [✓ V2 Traps]

FIGURE 14-35 SNMP

SNMP Summary:

SNMP V3: This option can be enabled, and it supports options for the EngineID, Security Name, and Security Level. Options for the security level include:

noAuthNoPriv

authNoPriv: Requires Authentication Protocol using MD5 or SHA, and an Authentication key

authPriv: Requires everything the authNoPriv has, but includes Privacy Protocol options for DES or AES. This option also requires the Privacy Key.

SNMP Traps: When enabled, this option will generate the SNMP Traps and send it to an SNMP manager using SNMP V2. Enter the IP address of the SNMP manager IP to complete the configuration.

SNMP V1/V2: When enabled, this allows the Boxilla administrator to configure the Community string which by default is “kvm”. The options are available to use V1 or V2 Traps.

TABLE 14-1. SNMP DEFINITIONS

```
Table:
-- Organization (BlackBox) root OID definition by enterprise number
BLACKBOX-ENTITY-MIB DEFINITIONS ::= BEGIN
  IMPORTS
    MODULE-IDENTITY, NOTIFICATION-TYPE,
OBJECT-TYPE, -- GW for SMIv2 compliance and consistency
enterprises, INTEGER, Gauge32, IpAddress
  FROM SNMPv2-SMI
TEXTUAL-CONVENTION,
DisplayString, DateAndTime, TruthValue, MacAddress
  FROM SNMPv2-TC
    MODULE-COMPLIANCE,
    NOTIFICATION-GROUP,
    OBJECT-GROUP
  FROM SNMPv2-CONF;

blackbox MODULE-IDENTITY
LAST-UPDATED “202208250000Z”
ORGANIZATION “Black Box Corp.”
CONTACT-INFO
“1000 Park Drive Lawrence,
PA 15055 United States of America
E-mail: support@blackbox.com”
DESCRIPTION
    “The MIB module representing BlackBox Devices’
    implementation of enterprise specific MIBs
    for Boxilla, Emerald and peripherial products.”
    REVISION  “202201310000Z”
    DESCRIPTION “Initial”

::= { enterprises 6878 }

blackboxEntity OBJECT IDENTIFIER ::= { blackbox 100 }
blackboxEntityNotifications OBJECT IDENTIFIER ::= { blackboxEntity 0 }
blackboxEntityGet OBJECT IDENTIFIER ::= { blackboxEntity 1 }
```

```
DeviceState ::= TEXTUAL-CONVENTION
STATUS current
DESCRIPTION
“State of Emerald device.”
SYNTAX INTEGER { online(1), offline(2) }

SwitchState ::= TEXTUAL-CONVENTION
STATUS current
DESCRIPTION
“State of BlackBox network switch.”
SYNTAX INTEGER { online(1), offline(2) }

ClusterInfoAvailability ::= TEXTUAL-CONVENTION
STATUS current
DESCRIPTION
“Availability of Boxilla cluster info.”
SYNTAX INTEGER { unavailable(0), available(1) }

ClusterReplicationLagLev ::= TEXTUAL-CONVENTION
STATUS current
DESCRIPTION
“Boxilla cluster replication lag level.”
SYNTAX INTEGER { unknown(0), normal(1), warning(2), critical(3) }

ClusterNodeState ::= TEXTUAL-CONVENTION
STATUS current
DESCRIPTION
“State of Boxilla cluster node.”
SYNTAX INTEGER { active(1), standby(2), detached(3), failed(4), failedstandby(5) }

__*******************************************************************************
-- Data objects
__*******************************************************************************

alertDescription OBJECT-TYPE
SYNTAX DisplayString
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
```

```
"Description context of Boxilla alert."
::= { blackboxEntity 2 }

--******************************************************************************
-- SNMP GETs
--******************************************************************************

deviceInfoTable OBJECT-TYPE
SYNTAX SEQUENCE OF DeviceInfoEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
"Information of all Emerald devices."
::= { blackboxEntityGet 1 }

deviceInfoEntry OBJECT-TYPE
  SYNTAX DeviceInfoEntry
  MAX-ACCESS not-accessible
  STATUS current
  DESCRIPTION
"Information entry of each Emerald device."
  INDEX { deviceName }
  ::= { deviceInfoTable 1 }

DeviceInfoEntry ::= SEQUENCE {
deviceName   DisplayString,
deviceIp    IpAddress,
deviceMac    MacAddress,
deviceModel    DisplayString,
deviceState DeviceState
}

deviceName OBJECT-TYPE
SYNTAX DisplayString
MAX-ACCESS read-only
STATUS current
  DESCRIPTION
"Device name with this deviceInfoEntry."
  ::= { deviceInfoEntry 1 }
```

```
deviceIp OBJECT-TYPE
SYNTAX IpAddress
MAX-ACCESS read-only
STATUS current
  DESCRIPTION
"Device IP address with this deviceInfoEntry."
  ::= { deviceInfoEntry 2 }

deviceMac OBJECT-TYPE
SYNTAX MacAddress
MAX-ACCESS read-only
STATUS current
  DESCRIPTION
"Device MAC address with this deviceInfoEntry."
  ::= { deviceInfoEntry 3 }

deviceModel OBJECT-TYPE
SYNTAX DisplayString
MAX-ACCESS read-only
STATUS current
  DESCRIPTION
"Device model with this deviceInfoEntry."
  ::= { deviceInfoEntry 4 }

deviceState OBJECT-TYPE
SYNTAX DeviceState
MAX-ACCESS read-only
STATUS current
  DESCRIPTION
"Device state with this deviceInfoEntry."
  ::= { deviceInfoEntry 5 }

switchInfoTable OBJECT-TYPE
SYNTAX SEQUENCE OF SwitchInfoEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
"Information of all network switches."
```

```
::= { blackboxEntityGet 2 }

switchInfoEntry OBJECT-TYPE
 SYNTAX SwitchInfoEntry
 MAX-ACCESS not-accessible
 STATUS current
 DESCRIPTION
"Information entry of each network switch."
 INDEX { switchName }
 ::= { switchInfoTable 1 }

SwitchInfoEntry ::= SEQUENCE {
switchName DisplayString,
switchIp IpAddress,
switchMac MacAddress,
switchModel DisplayString,
switchState SwitchState
}

switchName OBJECT-TYPE
SYNTAX DisplayString
MAX-ACCESS read-only
STATUS current
 DESCRIPTION
"Switch name with this switchInfoEntry."
 ::= { switchInfoEntry 1 }

switchIp OBJECT-TYPE
SYNTAX IpAddress
MAX-ACCESS read-only
STATUS current
 DESCRIPTION
"Switch IP address with this switchInfoEntry."
 ::= { switchInfoEntry 2 }

switchMac OBJECT-TYPE
SYNTAX MacAddress
MAX-ACCESS read-only
STATUS current
```

```
  DESCRIPTION
"Switch MAC address with this switchInfoEntry."
  ::= { switchInfoEntry 3 }

switchModel OBJECT-TYPE
SYNTAX DisplayString
MAX-ACCESS read-only
STATUS current
  DESCRIPTION
"Switch model with this switchInfoEntry."
  ::= { switchInfoEntry 4 }

switchState OBJECT-TYPE
SYNTAX SwitchState
MAX-ACCESS read-only
STATUS current
  DESCRIPTION
"Switch state with this switchInfoEntry."
  ::= { switchInfoEntry 5 }

-- cluster info section
clusterInfoAvailability OBJECT-TYPE
SYNTAX ClusterInfoAvailability
MAX-ACCESS read-only
STATUS current
  DESCRIPTION
"Availability status of the clusterInfo."
  ::= { blackboxEntityGet 3 }

clusterInfoTable OBJECT-TYPE
SYNTAX SEQUENCE OF ClusterInfoEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
"Information of Boxilla clusters."
::= { blackboxEntityGet 4 }

clusterInfoEntry OBJECT-TYPE
  SYNTAX ClusterInfoEntry
  MAX-ACCESS not-accessible
  STATUS current
  DESCRIPTION
"Information entry for a Boxilla cluster."
  INDEX { clusterId }
  ::= { clusterInfoTable 1 }

ClusterInfoEntry ::= SEQUENCE {
clusterId DisplayString,
clusterVirtualIp IpAddress,
clusterReplicationLagLev   ClusterReplicationLagLev,
clusterNodeInfoTableSize INTEGER
}

clusterId OBJECT-TYPE
SYNTAX DisplayString
MAX-ACCESS read-only
STATUS current
  DESCRIPTION
"Boxilla Cluster ID."
  ::= { clusterInfoEntry 1 }

clusterVirtualIp OBJECT-TYPE
SYNTAX IpAddress
MAX-ACCESS read-only
STATUS current
  DESCRIPTION
"Boxilla Cluster Virtual IP address."
  ::= { clusterInfoEntry 2 }

clusterReplicationLagLev OBJECT-TYPE
SYNTAX ClusterReplicationLagLev
MAX-ACCESS read-only
STATUS current
  DESCRIPTION
"Boxilla Cluster Replication lag level."
  ::= { clusterInfoEntry 3 }

 clusterNodeInfoTableSize OBJECT-TYPE
```

```
  SYNTAX   INTEGER
  MAX-ACCESS read-only
  STATUS   current
  DESCRIPTION
    “Size of the clusterNodeInfoTable.”
  ::= { clusterInfoEntry 4 }

clusterNodeInfoTable OBJECT-TYPE
SYNTAX SEQUENCE OF ClusterNodeInfoEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
“Information entry for the Boxilla cluster nodes.”
::= { blackboxEntityGet 5 }

clusterNodeInfoEntry OBJECT-TYPE
  SYNTAX ClusterNodeInfoEntry
  MAX-ACCESS not-accessible
  STATUS current
  DESCRIPTION
“Information entry for a Boxilla cluster node.”
  INDEX { clusterNodeId }
  ::= { clusterNodeInfoTable 1 }

ClusterNodeInfoEntry ::= SEQUENCE {
clusterNodeId INTEGER,
clusterNodeName DisplayString,
clusterNodeIp IpAddress,
clusterNodeState ClusterNodeState
}

clusterNodeId OBJECT-TYPE
SYNTAX INTEGER
MAX-ACCESS read-only
STATUS current
  DESCRIPTION
“Node id in clusterNodeInfoEntry.”
  ::= { clusterNodeInfoEntry 1 }
```

```
clusterNodeName OBJECT-TYPE
SYNTAX DisplayString
MAX-ACCESS read-only
STATUS current
  DESCRIPTION
“Node name in clusterNodeInfoEntry.”
  ::= { clusterNodeInfoEntry 2 }

clusterNodeIp OBJECT-TYPE
SYNTAX IpAddress
MAX-ACCESS read-only
STATUS current
  DESCRIPTION
“Node IP address in clusterNodeInfoEntry.”
  ::= { clusterNodeInfoEntry 3 }

clusterNodeState OBJECT-TYPE
SYNTAX ClusterNodeState
MAX-ACCESS read-only
STATUS current
  DESCRIPTION
“Node state in clusterNodeInfoEntry.”
  ::= { clusterNodeInfoEntry 4 }

--********************************************************************************
-- Traps
--********************************************************************************

deviceOffLine NOTIFICATION-TYPE
  OBJECTS {
deviceName,
deviceIp,
deviceMac,
deviceModel
  }
  STATUS current
  DESCRIPTION
“Emerald device is offline”
  ::= { blackboxEntityNotifications 1 }
```

```
switchOffLine NOTIFICATION-TYPE
  OBJECTS {
switchName,
switchIp,
switchMac,
switchModel
  }
  STATUS current
  DESCRIPTION
"Switch is offline"
  ::= { blackboxEntityNotifications 2 }

clusterReplicationAlert NOTIFICATION-TYPE
  OBJECTS {
clusterId,
alertDescription
  }
  STATUS current
  DESCRIPTION
"Cluster replication failure"
  ::= { blackboxEntityNotifications 3 }

-- *
-- * SNMPv2 Conformance Information *******************************************
-- *

bbMibConformance  OBJECT IDENTIFIER ::= { blackboxEntity 3 }
bbMibGroups    OBJECT IDENTIFIER ::= { bbMibConformance 1 }

bbMibBasicGroup  OBJECT-GROUP
  OBJECTS {
alertDescription
}
STATUS current
  DESCRIPTION
"Objects used in the traps."
  ::= { bbMibGroups 1 }
```

```
bbMibTrapGroup NOTIFICATION-GROUP
  NOTIFICATIONS {
deviceOffLine,
switchOffLine,
clusterReplicationAlert
  }
  STATUS current
  DESCRIPTION
"BlackBox SNMP traps."
  ::= { bbMibGroups 2 }

bbMibGetGroup OBJECT-GROUP
  OBJECTS {
deviceName,
deviceIp,
deviceMac,
deviceModel,
deviceState,
switchName,
switchIp,
switchMac,
switchModel,
switchState,
clusterInfoAvailability,
clusterId,
clusterVirtualIp,
clusterReplicationLagLev,
clusterNodeInfoTableSize,
clusterNodeId,
clusterNodeName,
clusterNodeIp,
clusterNodeState
  }
  STATUS current
  DESCRIPTION
"BlackBox retrievable objects"
  ::= { bbMibGroups 3 }

END
```

CHAPTER 15: LICENSE

15.1 LICENSE PAGE — BOXILLA LICENSING

Boxilla licensing allows for customization of the system. It gives the ability to add licenses to Boxilla to define number of Users, Connections, and Devices to be supported in a Managed Domain. Release 2.0 default licensing model will be 25 Devices, 25 Connections, and 25 Users (BXAMGR-R2).

The system supports the addition of:

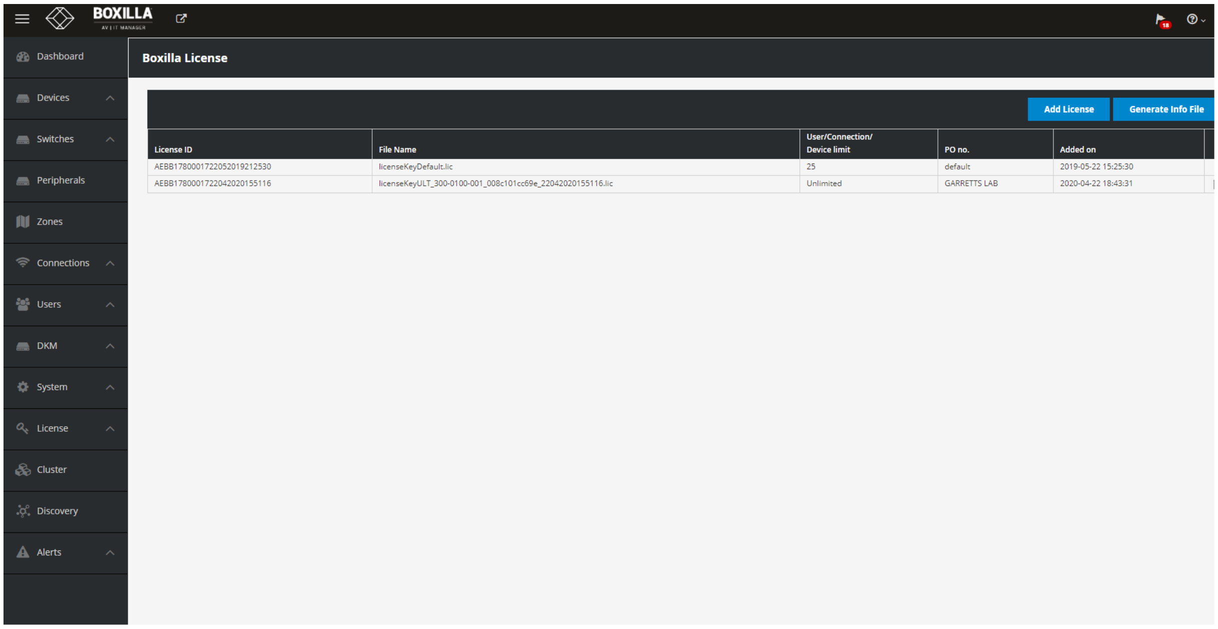
- BXAMGR-R2-LIC-25 (25 more devices/users/connections)
- BXAMGR-R2-LIC-50 (50 more devices/users/connections)
- BXAMGR-R2-LIC-100 (100 more devices/users/connections)
- BXAMGR-R2-LIC-200 (200 more devices/users/connections)
- BXAMGR-R2-LIC-300 (300 more devices/users/connections)
- BXAMGR-R2-LIC-ULT (unlimited devices/users/connections)
- BXAMGR-R2-LICBAK-25 (Boxilla KVM Manager 25 Device License for Active and Standby Boxilla)
- BXAMGR-R2-LICBAK-100 (Boxilla KVM Manager 100 Device License for Active and Standby Boxilla)
- BXAMGR-R2-LICBAK-200 (Boxilla KVM Manager 200 Device License for Active and Standby Boxilla)
- BXAMGR-R2-LICBAK-300 (Boxilla KVM Manager 300 Device License for Active and Standby Boxilla)
- BXAMGR-R2-LICBAK-ULT (Boxilla KVM Manager Unlimited Device License for Active and Standby Boxilla)

Licenses can be added under the System -> License Page.

To find the current license, the License button and you will be able to verify the Boxilla Endpoint and RemoteApp licenses available.

15.1.1 HOW TO REQUEST A LICENSE

To procure a new license file, generate the info file from your current system using Generate Info File option at the top of the License page. The info file will be downloaded onto the local machine. Provide the info file to Black Box Technical Support (contact us at 877-877-2269 or info@blackbox.com) to generate the license file for you. Additional licenses will need to be purchased.

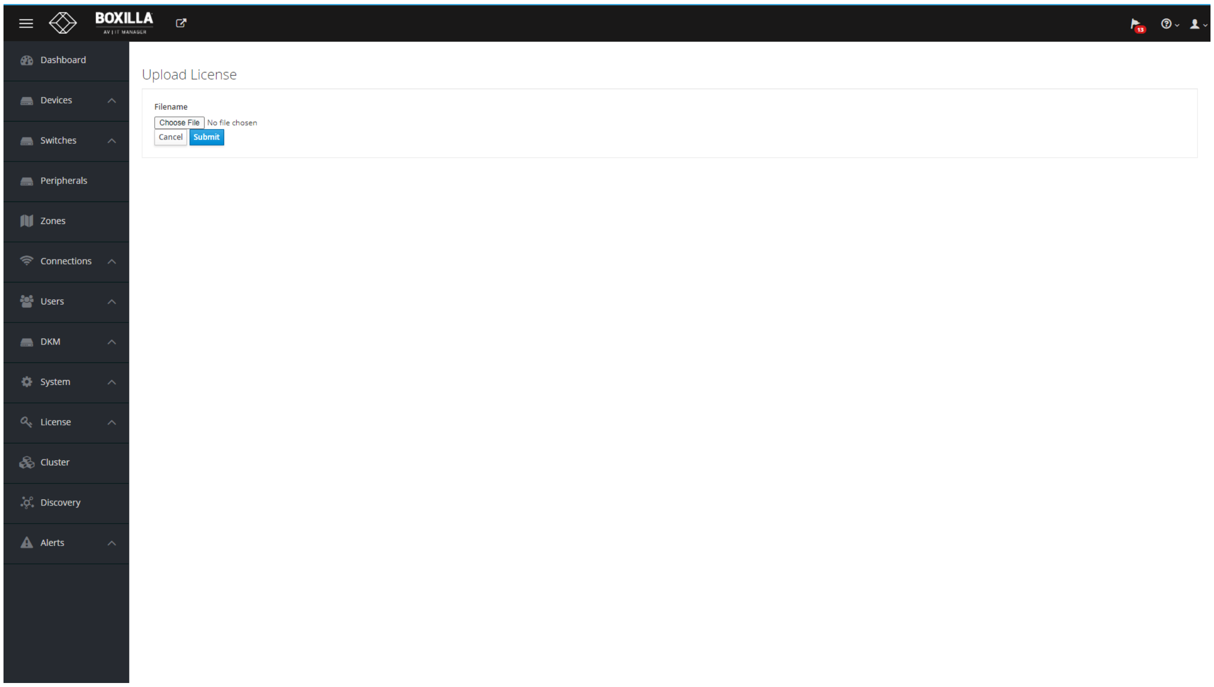


License ID	File Name	User/Connection/ Device limit	PO no.	Added on
AEBB1780001722052019212530	licenseKeyDefault.lic	25	default	2019-05-22 15:25:30
AEBB1780001722042020155116	licenseKeyULT_300-0100-001_008c101cc69e_22042020155116.lic	Unlimited	GARRETTS LAB	2020-04-22 18:43:31

FIGURE 15-1. ADD LICENSE SCREEN

15.1.2 HOW TO UPLOAD A LICENSE FILE

Once you receive the license file, upload the new license.



Upload License

Filename

No file chosen

FIGURE 15-2. UPLOAD LICENSE SCREEN

CHAPTER 16: CLUSTER

16.1 INTRODUCTION

The Boxilla system can support a Primary/Standby manager that allows the standby to take over if the Primary is not online. This ensures a smooth operating environment for users and administrators.

16.2 BEFORE YOU BEGIN/PREREQUISITES

Before you begin configuring the Boxilla managers for Primary / Standby mode, verify the following prerequisites have been met first; otherwise, the Primary / Standby mode will not work.

- Boxilla managers must have firmware 3.0 or higher
- Boxilla managers must be on the same firmware version
- Boxilla managers must be using the same endpoint/RemoteApp licenses
- Boxilla managers must be on the same subnet and connected to the network so they can be seen
- Both the Primary / Standby must have matching Ethernet Port Configurations (i.e. if Primary has Ethernet 2 enabled, so does the standby, if it is disabled on the Primary, then the Standby must also be disabled).
- DNS settings must match, and the DNS server must be accessible from the Boxilla.

16.3 OVERVIEW OF OPERATION

When the system is configured for Primary / Standby, you will use a Virtual IP address to access the managers (*you won't use the actual Boxilla IP address unless you are initially creating the cluster, updating the managers, or breaking the clusters*), and all activity will be managed via the Virtual IP address. The Virtual IP address is assigned during the configuration of the Primary Boxilla.

If the Primary Boxilla goes offline and the Virtual IP is no longer accessible, it will take approximately 4 minutes between the time the Primary goes offline and when you can access the Virtual IP again. This timeout occurs to make sure the Primary is truly offline before the Standby takes over. Once this time has elapsed, you can access the Virtual IP again to manage the system.

In certain situations, when the Primary Boxilla goes offline and the Standby takes over, you will be required to login into the Virtual IP interface to make sure both Boxilla managers are operating in their proper roles after bringing the Primary back online, and in some instances when the Primary comes back online, you may need to swap the roles (Primary / Standby). In this situation, where the roles must be swapped, it is because both managers think they are Primary, but they do not have valid Standby configurations. To swap the roles, simply select the ellipsis "•••" icon and select "Make Standby" for the old Primary.

An example of this situation is when the Primary Boxilla gets disconnected from the network and comes back eventually. If you log into the Virtual IP address and see that the Primary is still offline (but you can physically ping it and access it on its own IP), click the ellipsis "•••" icon of the old Primary Boxilla, and click on "Make Standby". This will address the roles for all managers' part of that cluster.

When configuring the Primary / Standby system, keep in mind the following functions and what they really do:

- Make Standalone – This will factory restore the Boxilla and clear the users, connections, and endpoints, but keep the existing network configuration, endpoint licenses, and firmware.
- Detach – This will disconnect the Boxilla from the cluster, but will keep all of its configuration parameters including users, connections, and endpoints. This is used to perform firmware updates primarily, or to start the Cluster Dissolving process.
- Prepare Standby – This will take the active configuration of the designated Primary and overwrite the configuration in the Standby Boxilla manager.

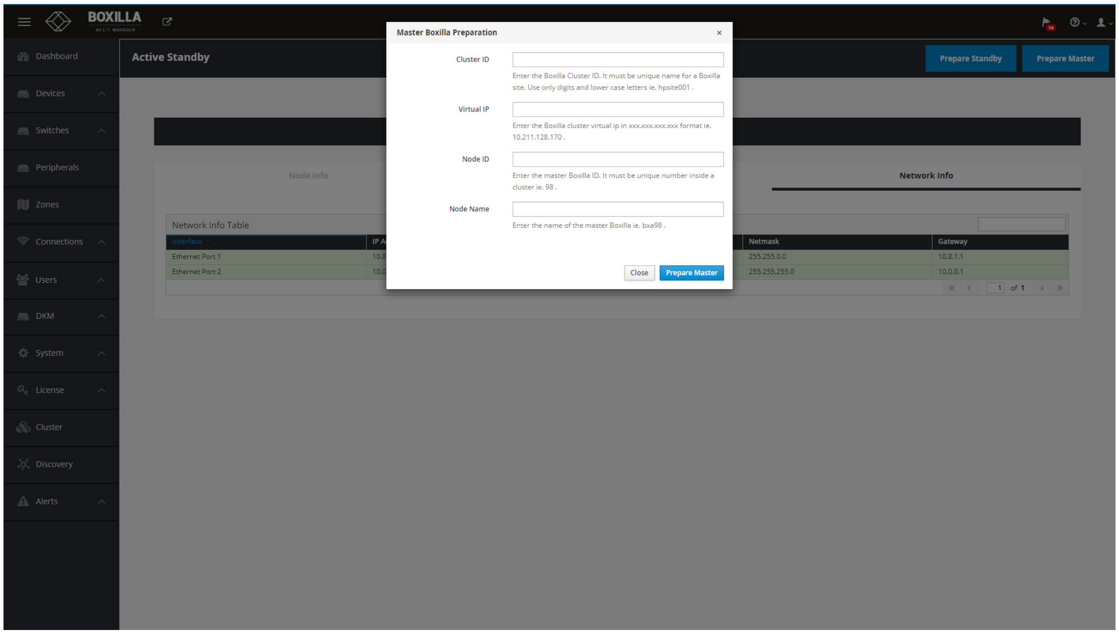
CHAPTER 16: CLUSTER

16.4 CREATING THE CLUSTER

To create a Boxilla Primary / Standby system, first make sure you have met all of the prerequisites as stated above. The next step is to make a backup of the existing Boxilla configuration in case it is needed to be uploaded to restore the system endpoints, connections, users, and settings.

PREPARING THE PRIMARY

1. Within the Boxilla Primary manager, login and navigate to “Cluster” in the menu.
2. Click the “Prepare Master” button and enter the configuration information. Use the help windows throughout this process. The Virtual IP will be used as a single point of access to the Primary / Standby cluster.



Master Boxilla Preparation

Cluster ID

Enter the Boxilla Cluster ID. It must be unique name for a Boxilla site. Use only digits and lower case letters ie. hpsite001 .

Virtual IP

Enter the Boxilla cluster virtual ip in xxx.xxx.xxx.xxx format ie. 10.211.128.170 .

Node ID

Enter the master Boxilla ID. It must be unique number inside a cluster ie. 98 .

Node Name

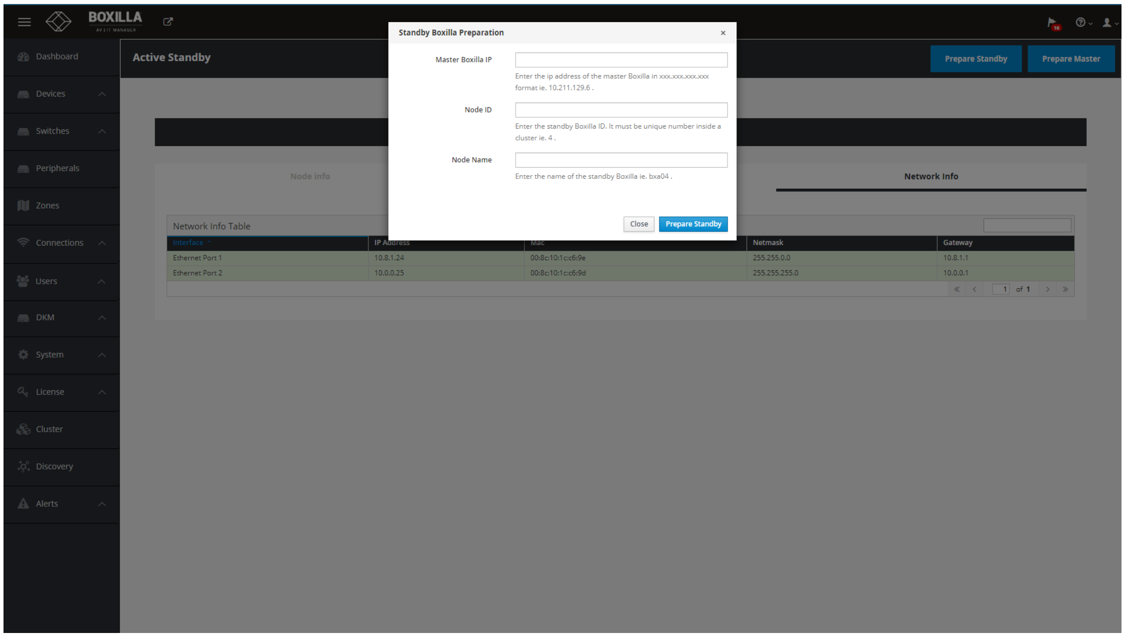
Enter the name of the master Boxilla ie. bxa98 .

Close | Prepare Master

FIGURE 16-1. SETUP NEW MASTER SCREEN

PREPARING THE STANDBY

1. Within the Boxilla Standby manager, login and navigate to “Cluster” in the menu.
2. Click the “Prepare Standby” button and enter the configuration information. Use the help windows throughout this process.



Standby Boxilla Preparation ×

Master Boxilla IP

Enter the ip address of the master Boxilla in xxx.xxx.xxx.xxx format ie. 10.211.129.6 .

Node ID

Enter the standby Boxilla ID. It must be unique number inside a cluster ie. 4 .

Node Name

Enter the name of the standby Boxilla ie. bxa04 .

Network Info Table

Interface ^	IP Address	Mac	Netmask	Gateway
Ethernet Port 1	10.8.1.24	00:8c:10:1c:c6:9e	255.255.0.0	10.8.1.1
Ethernet Port 2	10.0.0.25	00:8c:10:1c:c6:9d	255.255.255.0	10.0.0.1

1 of 1

FIGURE 16-2. STANDBY BOXILLA PREPARATION

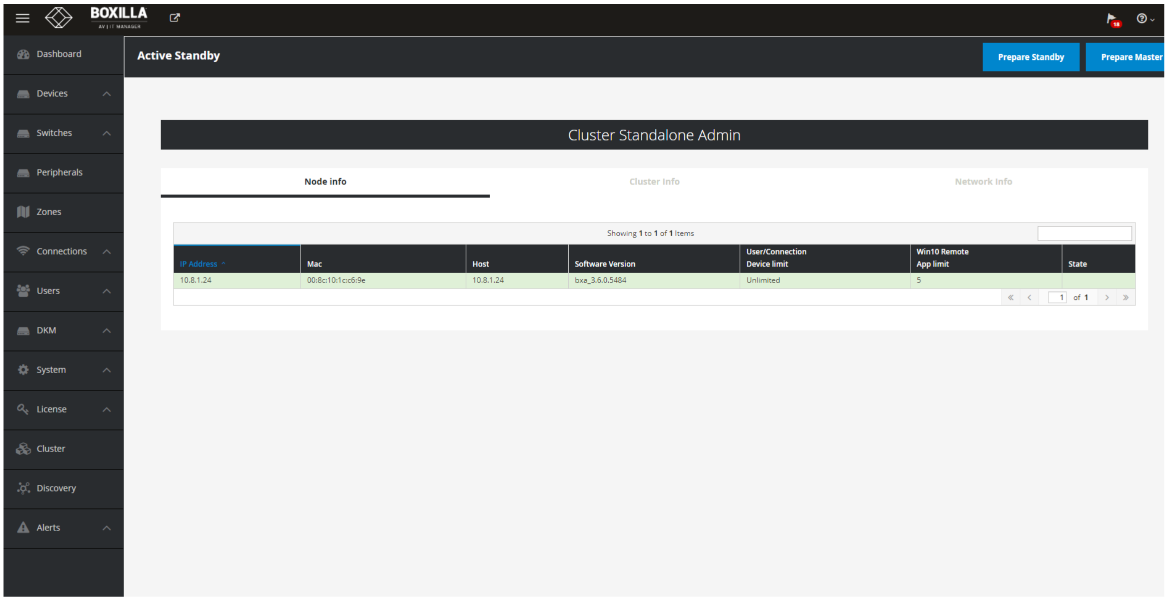
At this time, you should only be able to access the Boxilla Primary web interface and Virtual IP web interface. The Standby manager can be pinged, but the Standby web interface will be disabled on purpose.

NOTE 1: You will only use the Virtual IP address unless you are dissolving or detaching a cluster (i.e. to perform an update as an example).

NOTE 2: The Standby Boxilla will disable its web interface once part of the system.

You now have a Primary / Standby system configured.

The configured cluster shows up in the Node Info tab on the screen.



Cluster Standalone Admin

Showing 1 to 1 of 1 Items

IP Address ^	Mac	Host	Software Version	User/Connection Device limit	Win10 Remote App limit	State
10.8.1.24	00:8c:10:1c:c6:9e	10.8.1.24	bxa_3.6.0.5484	Unlimited	5	

1 of 1

FIGURE 16-3. CONFIGURED CLUSTER PRIMARY VIEW

16.5 CLUSTER SWITCHOVER

Boxilla 4.3 now adds the option to switch over a Standby BXA to an Active BXA. This operation is available as an option on the Standby BXA in the Cluster Admin page.

16.6 FAILOVER

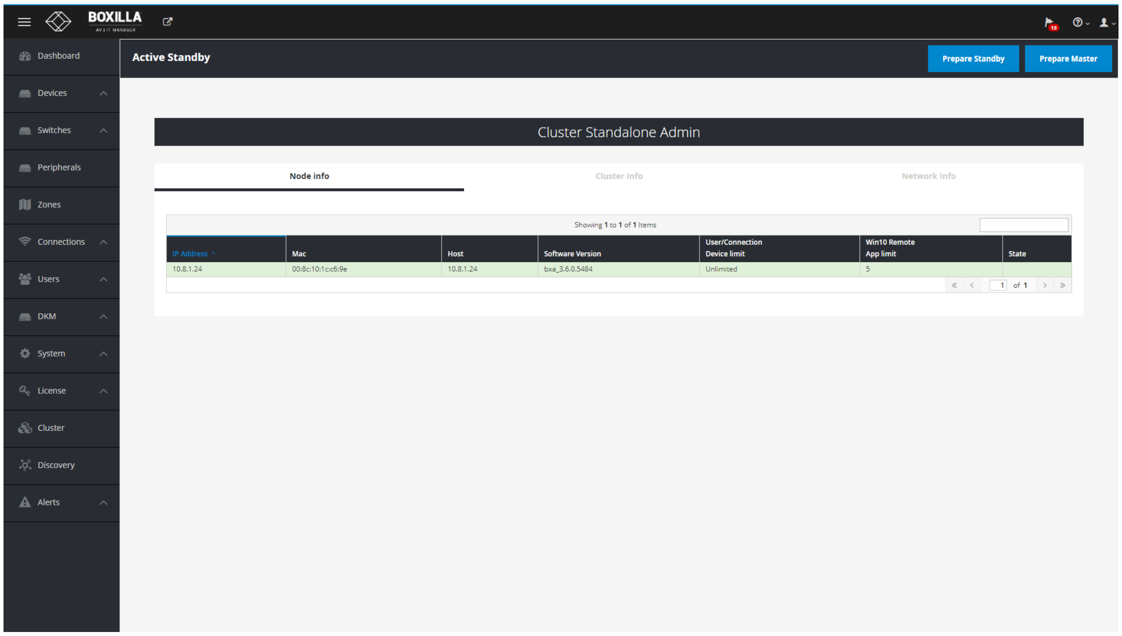
When a Primary / Standby system is configured and the acting Primary is disconnected or goes offline, it will take about 4 minutes before the Standby will take over and begin responding as the new Primary. There will be a small window where the Virtual IP web interface cannot be accessed.

Once the system has been identified as having performed a failover, it is important as a system admin to go into the Virtual IP web interface and make sure your Primary / Standby are operating in their correct roles. Depending on the circumstances and firmware version of the Boxilla, the system may be restored naturally without any user intervention, but it is always good practice to make sure.

In Boxilla 4.3, a failed unit is automatically recovered back into the cluster once the failure condition has been resolved. There is now no need to perform the Prepare Standby action.

NOTE: An extensive list of Cluster alerts has been added in Boxilla 4.3. There alerts provide status information on Cluster failover and recovery operations.

In software versions before 4.3, if you navigate to this page and see that the “old Primary” is in a “failed” state, you can simply click the ellipsis “•••” icon near the failed controller and click “Prepare Standby”. This will in turn flip the Primary / Standby roles (IP addresses of the Boxilla managers will remain the same) and initialize the cluster again so you still have a Primary / Standby configuration.



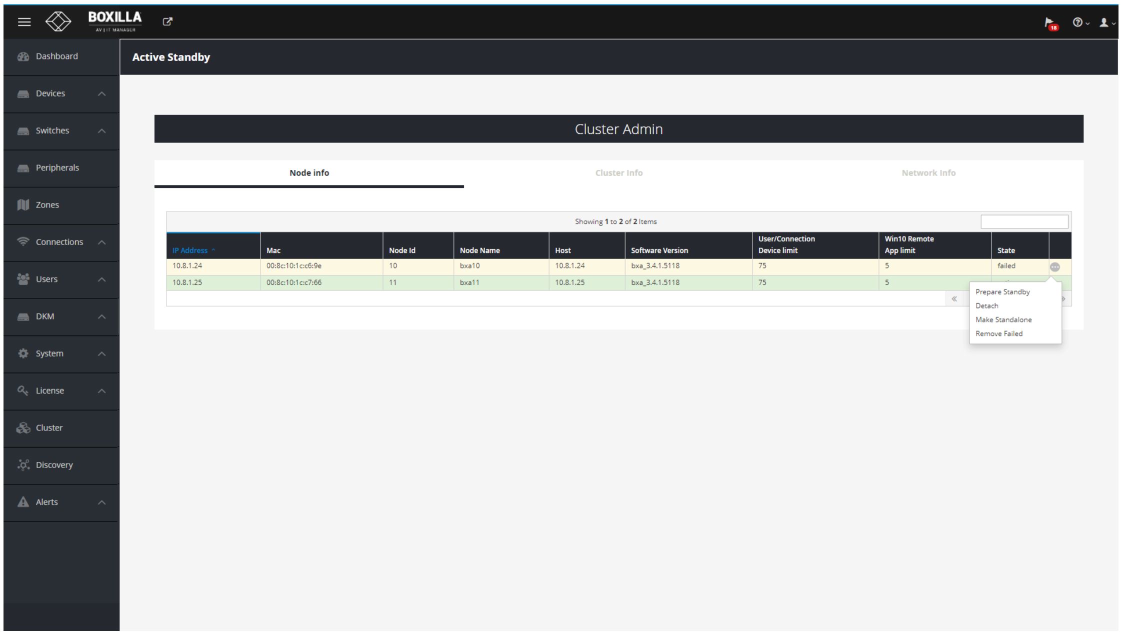
Cluster Standalone Admin

Showing 1 to 1 of 1 Items

IP Address	Mac	Host	Software Version	User/Connection Device limit	Win10 Remote App limit	State
10.8.1.24	00:8c:10:1c:c6:9e	10.8.1.24	bxa_3.6.0.5484	Unlimited	5	

1 of 1

FIGURE 16-4. PRIMARY FAILED VIEW BACKUP ACTIVE SCREEN



Showing **1** to **2** of **2** Items

IP Address	Mac	Node Id	Node Name	Host	Software Version	User/Connection Device limit	Win10 Remote App limit	State
10.8.1.24	00:8c:10:1c:c6:9e	10	bxa10	10.8.1.24	bxa_3.4.1.5118	75	5	failed
10.8.1.25	00:8c:10:1c:c7:66	11	bxa11	10.8.1.25	bxa_3.4.1.5118	75	5	

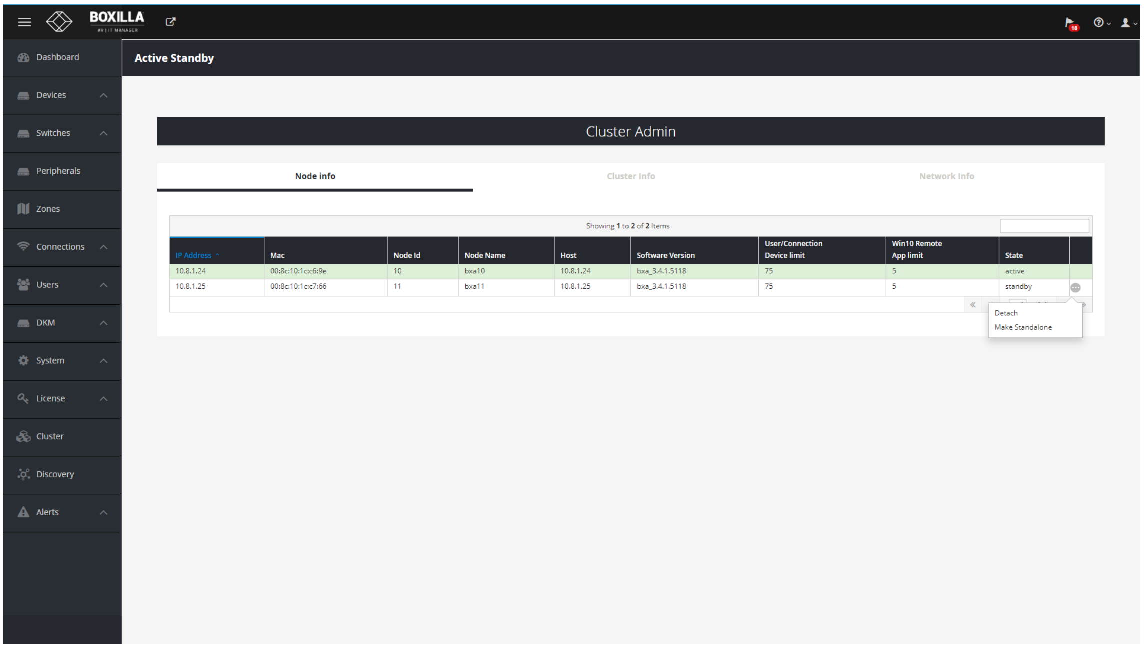
FIGURE 16-5. OPTIONS FOR FAILED VIEW BACKUP DROP-DOWN BOX

16.7 PRIMARY/STANDBY FIRMWARE UPDATES

When firmware needs to be applied to the Boxilla managers in a Primary / Standby configuration, a special process needs to be followed. Be sure to make a copy of your Boxilla configuration so you can easily upload it later in case it gets lost.

1. Navigate to the Virtual IP web interface, login, and go to the Cluster menu. In this menu, click the ellipsis "•••" icon of the active Standby and select "Detach". Remember the Standby web interface is disabled when it is part of a cluster, so detaching it allows the administrator to gain access to it again.

IMPORTANT: Be sure to use the "Detach" or you will lose your configuration.



Showing **1** to **2** of **2** Items

IP Address	Mac	Node Id	Node Name	Host	Software Version	User/Connection Device limit	Win10 Remote App limit	State
10.8.1.24	00:8c:10:1c:c6:9e	10	bxa10	10.8.1.24	bxa_3.4.1.5118	75	5	active
10.8.1.25	00:8c:10:1c:c7:66	11	bxa11	10.8.1.25	bxa_3.4.1.5118	75	5	standby

FIGURE 16-6. DETACH BOXILLA FROM DROP-DOWN BOX

2. Navigate to the Standby Boxilla IP Address (not the Virtual IP) and perform the firmware upgrade.
3. Now that the Standby Boxilla is updated first, make this the Primary (role switch) by going into the Cluster menu and clicking the Switchover button.
4. Go back to the old Primary and perform the firmware upgrade; once done, make it a Standby by clicking the “Prepare Standby” button.
5. Now your Primary / Standalone is back in order and operating.

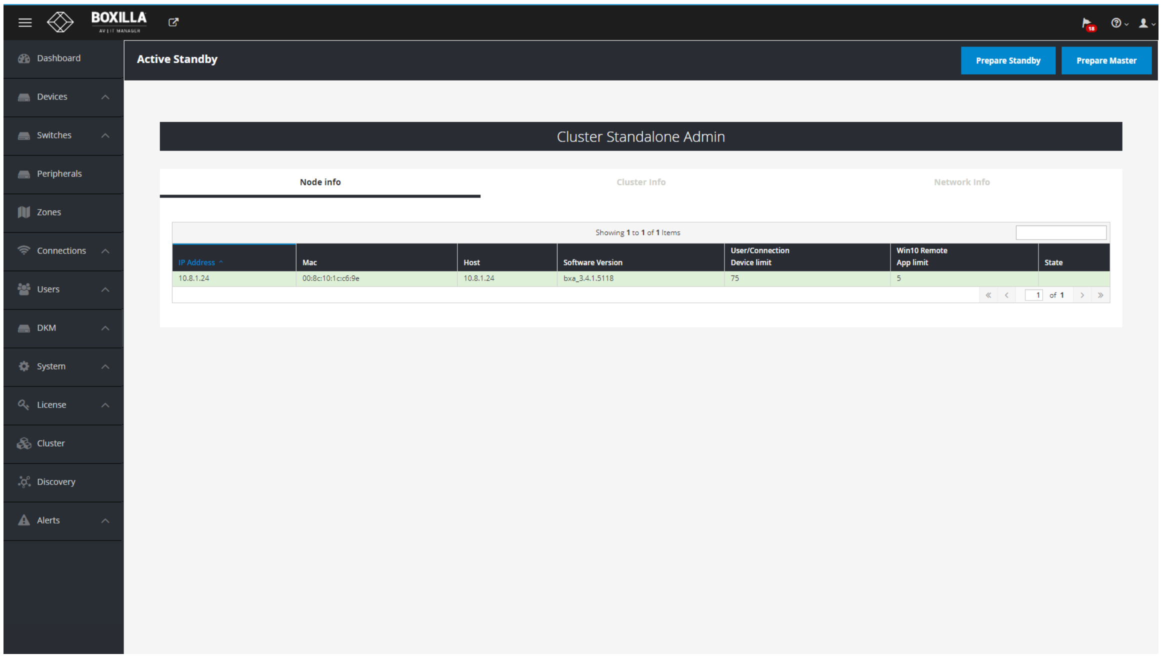
16.8 DISSOLVE CLUSTER

In certain situations or environments, you may need to dissolve the Boxilla Primary / Standby Cluster. Some of these reasons include:

- Replacing / Swapping in new Boxilla hardware
- Wanting to only have a single Boxilla manager without a Standby manager
- Technical reasons that include syncronization problems

To dissolve a cluster, follow these steps.

1. Navigate to the Primary Boxilla IP address web interface and login.
2. Go to the Cluster menu and verify you still see the Primary and Standby.
3. Next to the Standby Boxilla, click the ellipsis “•••” icon and then click on “Make Standalone”. This will factory restore your Standby Boxilla removing the users, connections, and endpoints, but it will remember the Boxilla firmware and network settings.
4. Once the Standby is removed, the web interface will show a button in the top right named “Dissolve Cluster”. Click this to finish the process.



Active Standby

Cluster Standalone Admin

Showing 1 to 1 of 1 Items

IP Address	Mac	Host	Software Version	User/Connection Device limit	Win10 Remote App limit	State
10.8.1.24	00:8c:10:1c:c6:9e	10.8.1.24	bxa_3.4.1.5118	75	5	

1 of 1

FIGURE 16-7. DISSOLVED CLUSTER SHOWING ONLY ONE CONTROLLER

Now that the Boxilla Primary / Standby are dissolved, the Virtual IP will no longer work, and you must navigate to the original Boxilla IP addresses to gain access to the web interface.

Alerts in Boxilla log significant events within the Boxilla and its managed domain. Alerts can be normal events such as users logging in, a user making a connection, a user disconnecting or logging out.

Alerts are classified as Info, Warning or Critical. Normal events are Info Alerts. Events that may be indicate an unusual activity level is classified as a Warning Alert. Events that indicate a potential serious negative impact on the system is classified as a Critical event.

Events that are classified as Critical are:

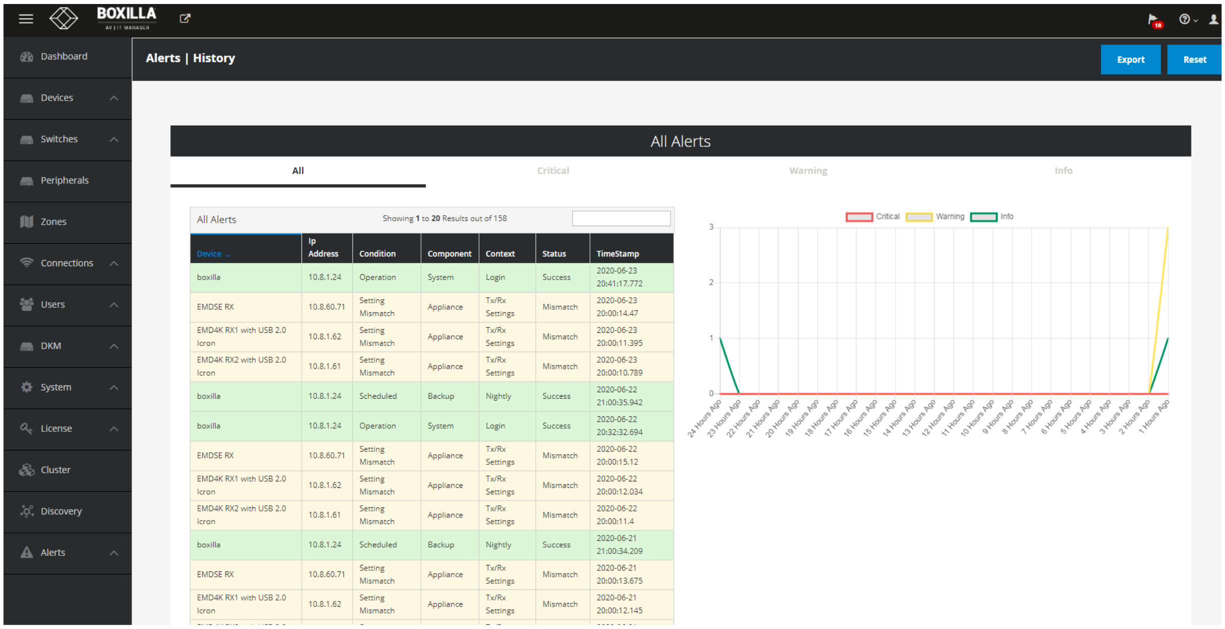
- Failure to update the IP Address of a managed appliance.
- Failure to retrieve appliance details.
- Failure to UnManage a managed appliance.
- Failure to reboot a managed appliance.
- Failure to Upgrade a managed appliance.
- When a managed appliance goes Off-Line

Events that are classified as Warnings are:

- When a user fails to login.
- Firmware on a device mismatches domain’s active firmware version
- When a device transitions to Out of Service during an upgrade.
- System threshold is exceeded
- Forced connection fails to establish

17.1 ALERTS— HISTORY

Alert history is a time-stamped log of events across the system. This history can be examined by either looking at all Alerts, or filtering them down to just Critical, Warning or Info by selecting the appropriate tab on the Alerts—History screen as shown in Figure 17-1. The Boxilla will retain up to 10,000 alerts per category for a maximum of 8 days.



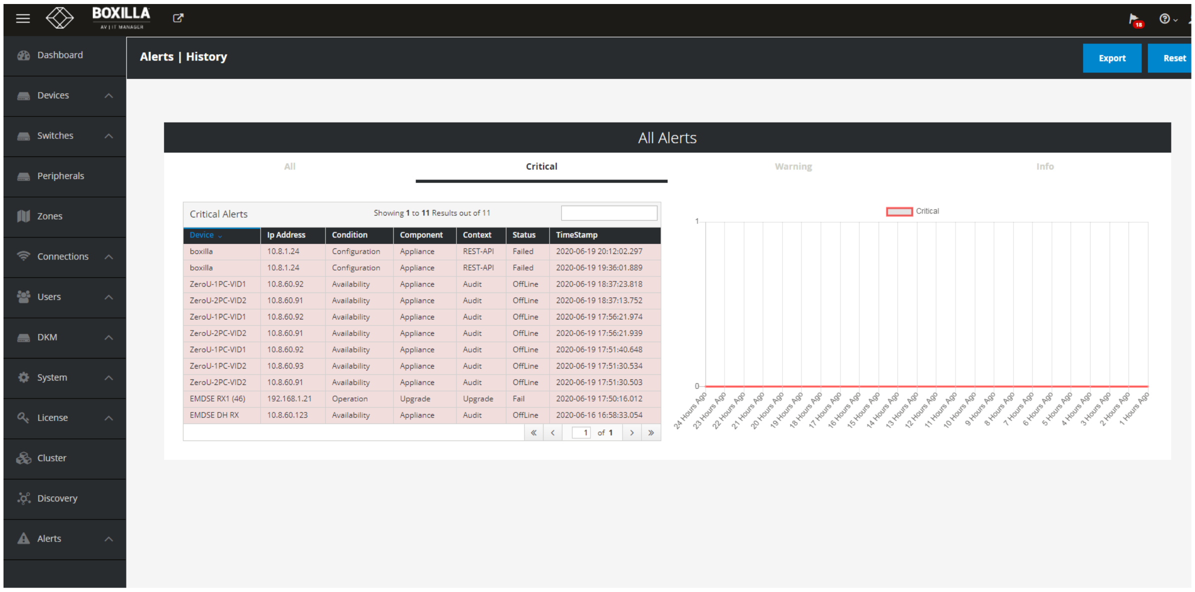
All Alerts

Showing **1** to **20** Results out of 158

Device ⌄	Ip Address	Condition	Component	Context	Status	TimeStamp
boxilla	10.8.1.24	Operation	System	Login	Success	2020-06-23 20:41:17.772
EMDSE RX	10.8.60.71	Setting Mismatch	Appliance	Tx/Rx Settings	Mismatch	2020-06-23 20:00:14.47
EMD4K RX1 with USB 2.0 Icron	10.8.1.62	Setting Mismatch	Appliance	Tx/Rx Settings	Mismatch	2020-06-23 20:00:11.395
EMD4K RX2 with USB 2.0 Icron	10.8.1.61	Setting Mismatch	Appliance	Tx/Rx Settings	Mismatch	2020-06-23 20:00:10.789
boxilla	10.8.1.24	Scheduled	Backup	Nightly	Success	2020-06-22 21:00:35.942
boxilla	10.8.1.24	Operation	System	Login	Success	2020-06-22 20:32:32.694
EMDSE RX	10.8.60.71	Setting Mismatch	Appliance	Tx/Rx Settings	Mismatch	2020-06-22 20:00:15.12
EMD4K RX1 with USB 2.0 Icron	10.8.1.62	Setting Mismatch	Appliance	Tx/Rx Settings	Mismatch	2020-06-22 20:00:12.034
EMD4K RX2 with USB 2.0 Icron	10.8.1.61	Setting Mismatch	Appliance	Tx/Rx Settings	Mismatch	2020-06-22 20:00:11.4
boxilla	10.8.1.24	Scheduled	Backup	Nightly	Success	2020-06-21 21:00:34.209
EMDSE RX	10.8.60.71	Setting Mismatch	Appliance	Tx/Rx Settings	Mismatch	2020-06-21 20:00:13.675
EMD4K RX1 with USB 2.0 Icron	10.8.1.62	Setting Mismatch	Appliance	Tx/Rx Settings	Mismatch	2020-06-21 20:00:12.145

FIGURE 17-1. ALERTS HISTORY

Critical logs are shown below.



Critical Alerts

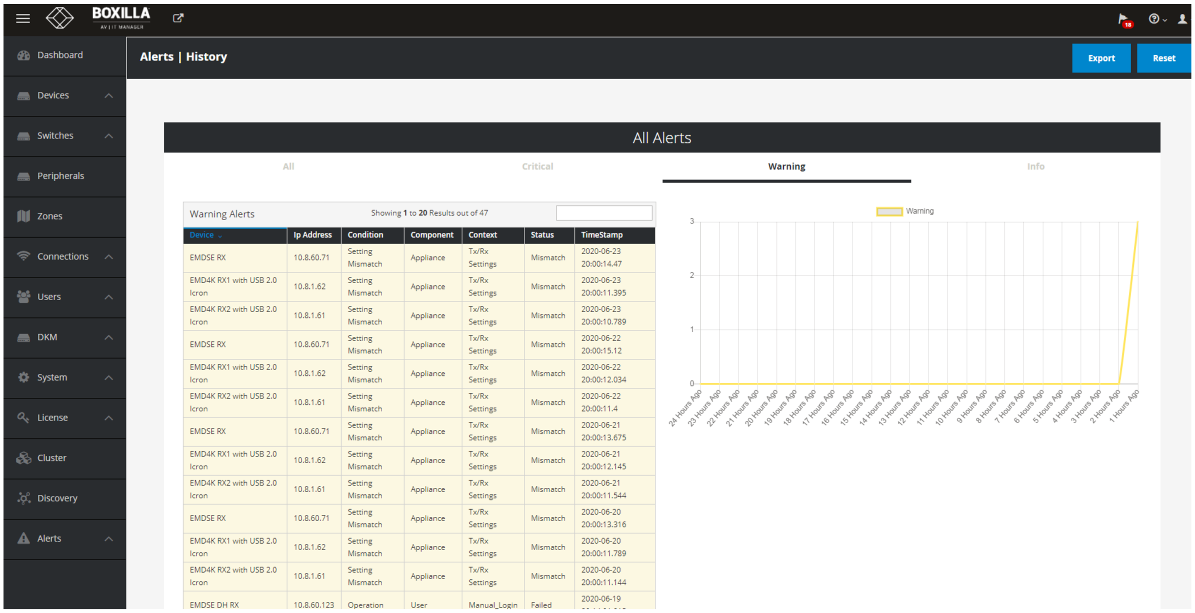
Showing **1** to **11** Results out of 11

Device ⌄	Ip Address	Condition	Component	Context	Status	TimeStamp
boxilla	10.8.1.24	Configuration	Appliance	REST-API	Failed	2020-06-19 20:12:02.297
boxilla	10.8.1.24	Configuration	Appliance	REST-API	Failed	2020-06-19 19:36:01.889
ZeroU-1PC-VID1	10.8.60.92	Availability	Appliance	Audit	OffLine	2020-06-19 18:37:23.818
ZeroU-2PC-VID2	10.8.60.91	Availability	Appliance	Audit	OffLine	2020-06-19 18:37:13.752
ZeroU-1PC-VID1	10.8.60.92	Availability	Appliance	Audit	OffLine	2020-06-19 17:56:21.974
ZeroU-2PC-VID2	10.8.60.91	Availability	Appliance	Audit	OffLine	2020-06-19 17:56:21.939
ZeroU-1PC-VID1	10.8.60.92	Availability	Appliance	Audit	OffLine	2020-06-19 17:51:40.648
ZeroU-1PC-VID2	10.8.60.93	Availability	Appliance	Audit	OffLine	2020-06-19 17:51:30.534
ZeroU-2PC-VID2	10.8.60.91	Availability	Appliance	Audit	OffLine	2020-06-19 17:51:30.503
EMDSE RX1 (46)	192.168.1.21	Operation	Upgrade	Upgrade	Fail	2020-06-19 17:50:16.012
EMDSE DH RX	10.8.60.123	Availability	Appliance	Audit	OffLine	2020-06-16 16:58:33.054

« ‹ 1 of **1** › »

FIGURE 17-2. CRITICAL

Warning logs are shown next.



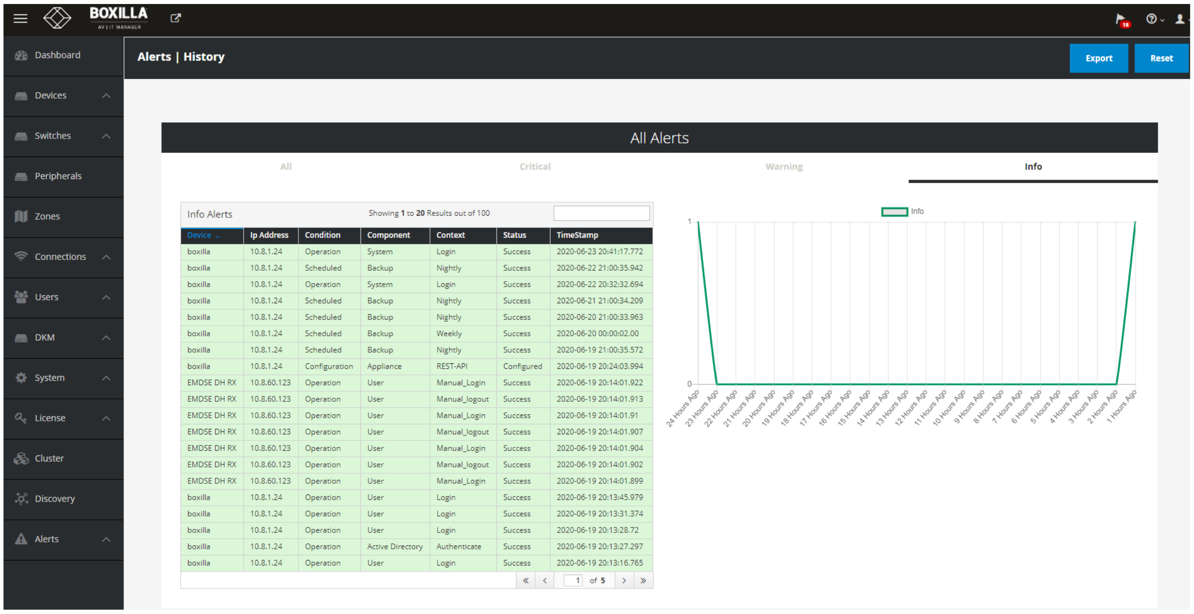
Warning Alerts

Showing **1** to **20** Results out of 47

Device	Ip Address	Condition	Component	Context	Status	TimeStamp
EMDSE RX	10.8.60.71	Setting Mismatch	Appliance	Tx/Rx Settings	Mismatch	2020-06-23 20:00:14.47
EMD4K RX1 with USB 2.0 Icron	10.8.1.62	Setting Mismatch	Appliance	Tx/Rx Settings	Mismatch	2020-06-23 20:00:11.395
EMD4K RX2 with USB 2.0 Icron	10.8.1.61	Setting Mismatch	Appliance	Tx/Rx Settings	Mismatch	2020-06-23 20:00:10.789
EMDSE RX	10.8.60.71	Setting Mismatch	Appliance	Tx/Rx Settings	Mismatch	2020-06-22 20:00:15.12
EMD4K RX1 with USB 2.0 Icron	10.8.1.62	Setting Mismatch	Appliance	Tx/Rx Settings	Mismatch	2020-06-22 20:00:12.034
EMD4K RX2 with USB 2.0 Icron	10.8.1.61	Setting Mismatch	Appliance	Tx/Rx Settings	Mismatch	2020-06-22 20:00:11.4
EMDSE RX	10.8.60.71	Setting Mismatch	Appliance	Tx/Rx Settings	Mismatch	2020-06-21 20:00:13.675
EMD4K RX1 with USB 2.0 Icron	10.8.1.62	Setting Mismatch	Appliance	Tx/Rx Settings	Mismatch	2020-06-21 20:00:12.145
EMD4K RX2 with USB 2.0 Icron	10.8.1.61	Setting Mismatch	Appliance	Tx/Rx Settings	Mismatch	2020-06-21 20:00:11.544
EMDSE RX	10.8.60.71	Setting Mismatch	Appliance	Tx/Rx Settings	Mismatch	2020-06-20 20:00:13.316
EMD4K RX1 with USB 2.0 Icron	10.8.1.62	Setting Mismatch	Appliance	Tx/Rx Settings	Mismatch	2020-06-20 20:00:11.789
EMD4K RX2 with USB 2.0 Icron	10.8.1.61	Setting Mismatch	Appliance	Tx/Rx Settings	Mismatch	2020-06-20 20:00:11.144
EMDSE DH RX	10.8.60.123	Operation	User	Manual_Login	Failed	2020-06-19

FIGURE 17-3. WARNING

You can also collect info logs.



Info Alerts

Showing **1** to **20** Results out of 100

Device	Ip Address	Condition	Component	Context	Status	TimeStamp
boxilla	10.8.1.24	Operation	System	Login	Success	2020-06-23 20:41:17.772
boxilla	10.8.1.24	Scheduled	Backup	Nightly	Success	2020-06-22 21:00:35.942
boxilla	10.8.1.24	Operation	System	Login	Success	2020-06-22 20:32:32.694
boxilla	10.8.1.24	Scheduled	Backup	Nightly	Success	2020-06-21 21:00:34.209
boxilla	10.8.1.24	Scheduled	Backup	Nightly	Success	2020-06-20 21:00:33.963
boxilla	10.8.1.24	Scheduled	Backup	Weekly	Success	2020-06-20 00:00:02.00
boxilla	10.8.1.24	Scheduled	Backup	Nightly	Success	2020-06-19 21:00:35.572
boxilla	10.8.1.24	Configuration	Appliance	REST-API	Configured	2020-06-19 20:24:03.994
EMDSE DH RX	10.8.60.123	Operation	User	Manual_Login	Success	2020-06-19 20:14:01.922
EMDSE DH RX	10.8.60.123	Operation	User	Manual_logout	Success	2020-06-19 20:14:01.913
EMDSE DH RX	10.8.60.123	Operation	User	Manual_Login	Success	2020-06-19 20:14:01.91
EMDSE DH RX	10.8.60.123	Operation	User	Manual_logout	Success	2020-06-19 20:14:01.907
EMDSE DH RX	10.8.60.123	Operation	User	Manual_Login	Success	2020-06-19 20:14:01.904
EMDSE DH RX	10.8.60.123	Operation	User	Manual_logout	Success	2020-06-19 20:14:01.902
EMDSE DH RX	10.8.60.123	Operation	User	Manual_Login	Success	2020-06-19 20:14:01.899
boxilla	10.8.1.24	Operation	User	Login	Success	2020-06-19 20:13:45.979
boxilla	10.8.1.24	Operation	User	Login	Success	2020-06-19 20:13:31.374
boxilla	10.8.1.24	Operation	User	Login	Success	2020-06-19 20:13:28.72
boxilla	10.8.1.24	Operation	Active Directory	Authenticate	Success	2020-06-19 20:13:27.297
boxilla	10.8.1.24	Operation	User	Login	Success	2020-06-19 20:13:16.765

« ‹ 1 of **5** › »

FIGURE 17-4. INFO

17.2 ALERTS—ACTIVE

Active Alerts are alerts that are currently active, e.g. devices that are offline, thresholds that are exceeded, and devices with mis-matched software versions.

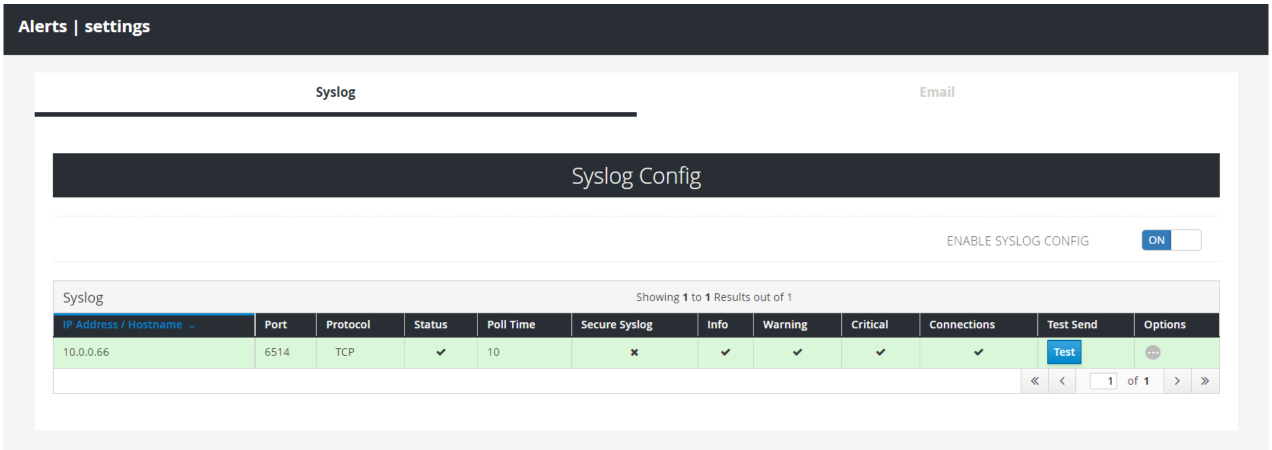
These active alerts are cleared when the devices are back online, device metrics return to below threshold levels, and devices are upgraded to the domain's active firmware version.

17.3 SYSLOG

Syslog supports the configurable generation of Alert History event and Active Connection statistics to an external Syslog Server.

The administrator can use an external SYSLOG server to capture all of the alert details. During the configuration of the SYSLOG server, you can select which alerts you would like to capture on the remote SYLOG server (Info, Warning, Critical, Connections. Secure SYSLOG is also supported.

The Secure SYSLOG uses port 6514 by default, and, when enabled, the CA Certificate and Authentication Mode options become available.

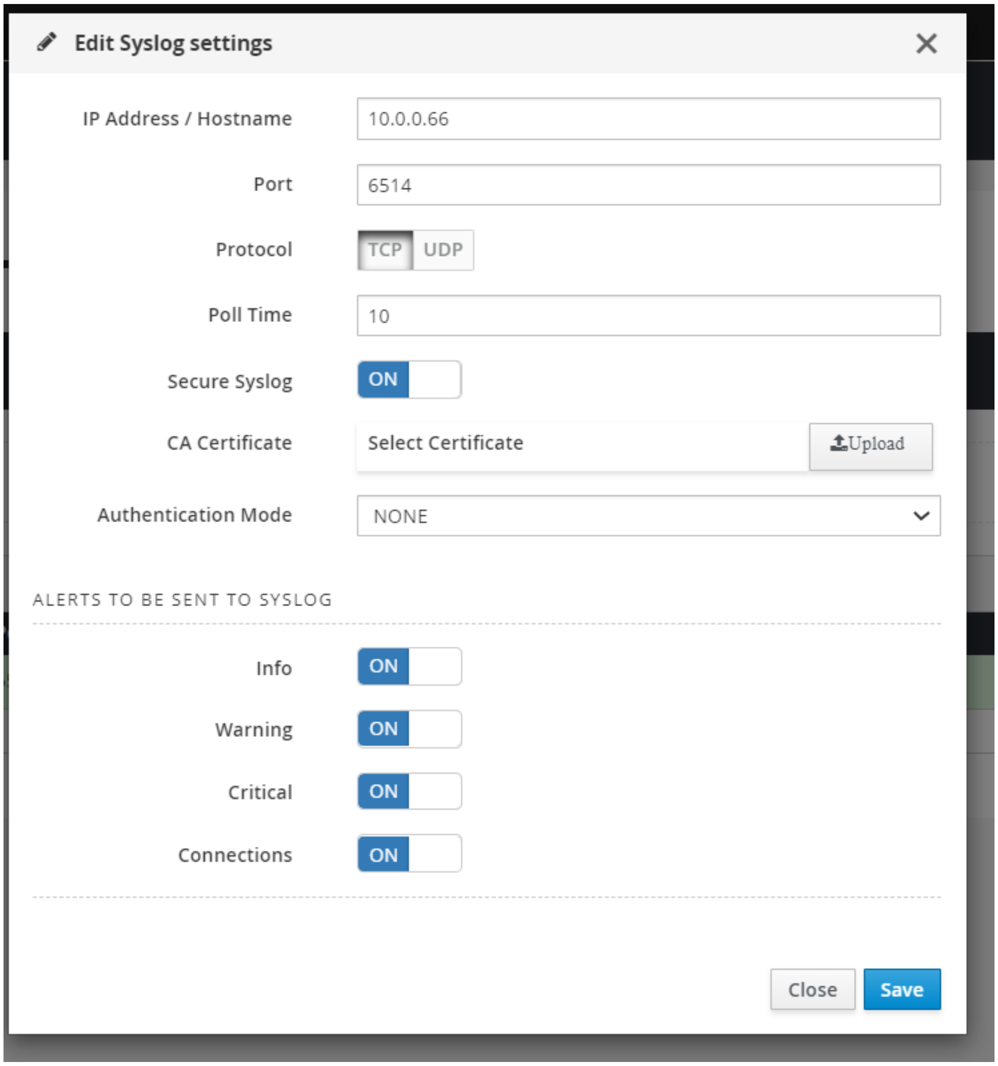


ENABLE SYSLOG CONFIG ON

Syslog Showing 1 to 1 Results out of 1

IP Address / Hostname	Port	Protocol	Status	Poll Time	Secure Syslog	Info	Warning	Critical	Connections	Test Send	Options
10.0.0.66	6514	TCP	✓	10	✗	✓	✓	✓	✓	Test	⋯

FIGURE 17-5. SYSLOG



Edit Syslog settings

IP Address / Hostname: 10.0.0.66

Port: 6514

Protocol: [✓ TCP] UDP

Poll Time: 10

Secure Syslog: ON

CA Certificate: Select Certificate

Authentication Mode: NONE

ALERTS TO BE SENT TO SYSLOG

Info: ON

Warning: ON

Critical: ON

Connections: ON

FIGURE 17-6. ADD SYSLOG SERVER

- IP Address/Hostname – This is the IP address or hostname of the server where the external syslog server is running.
- Port – The port the syslog server is listening on.
- Protocol - Select TCP or UDP depending on the SYSLOG configuration.
- Poll time – Poll time sets how often (in minutes) active connections will send connection stats to the syslog server.
- Secure Syslog - Turning this on allows additional configuration.
- CA Certificate - This generated by the user, so it can be imported.
- Authentication Mode - Set None, Validity, or Name based upon the configuration of the SYSLOG server.
- Alerts to be sent to syslog — You can limit what type of alerts are sent to the syslog server by turning these options on/off.

NOTE: Black Box can provide a technical document with detailed steps on how to configure Secure SYSLOG. If you need this, please contact us at techsupport@blackbox.com.

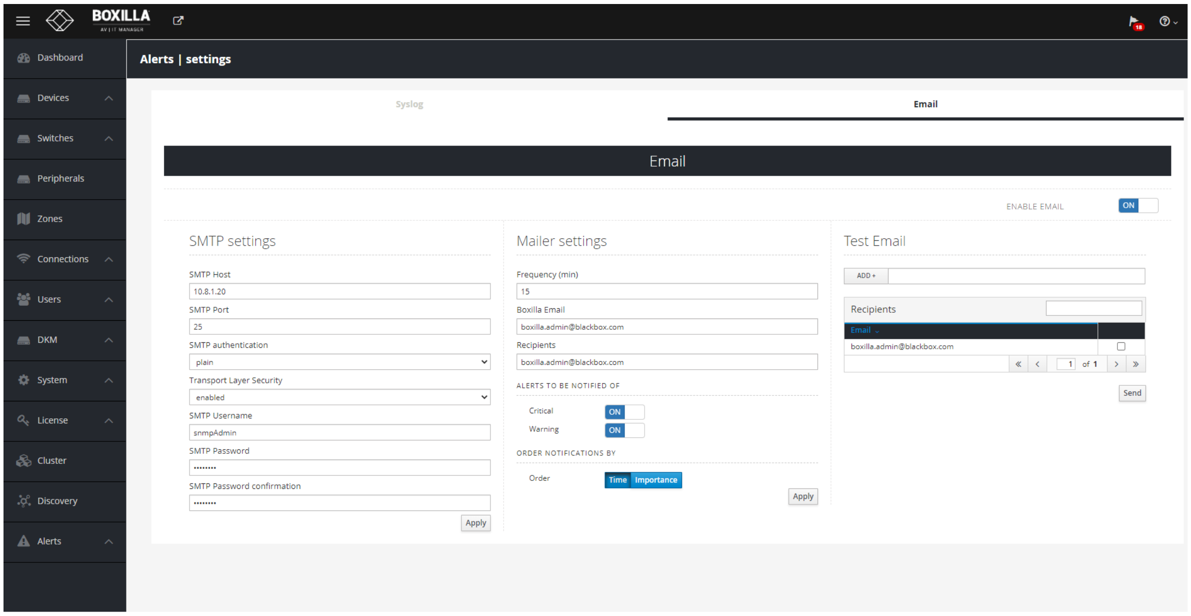
17.4 ALERTS — SETTINGS — EMAIL

An administrator can configure an SMTP server that is a mail system for logging. This page also offers additional settings to send the Boxilla admin emails on system info/alerts.

1) SMTP stands for Simple Mail Transfer Protocol. The Boxilla offers the SMTP configuration to allow a user to enter their mail server information so that the Boxilla can properly communicate with the server using the protocol. The information required here is used to find and authenticate against the mail server so that a communication link can be made.

2) Mailer Settings allows the Boxilla administrator to configure who the email is from and who it is going to, and how often to check. You may also configure what alerts (critical and/or information) are in the message.

3) Test Email allows the Boxilla administrator to perform a quick verification of the SMTP setting to make sure the emails are getting through properly without having to wait for an actual alert to be sent. This Test Email feature is typically used at the time of configuration and during troubleshooting.



ENABLE EMAIL: ON

SMTP settings

SMTP Host: 10.8.1.20
SMTP Port: 25
SMTP authentication: plain
Transport Layer Security: enabled
SMTP Username: snmpAdmin
SMTP Password: ••••••••
SMTP Password confirmation: ••••••••
Apply

Mailer settings

Frequency (min): 15
Boxilla Email: boxilla.admin@blackbox.com
Recipients: boxilla.admin@blackbox.com

ALERTS TO BE NOTIFIED OF
Critical: ON
Warning: ON

ORDER NOTIFICATIONS BY
Order: Time Importance
Apply

Test Email

ADD +

Recipients

Email	
boxilla.admin@blackbox.com	□

« ‹ 1 of 1 › »

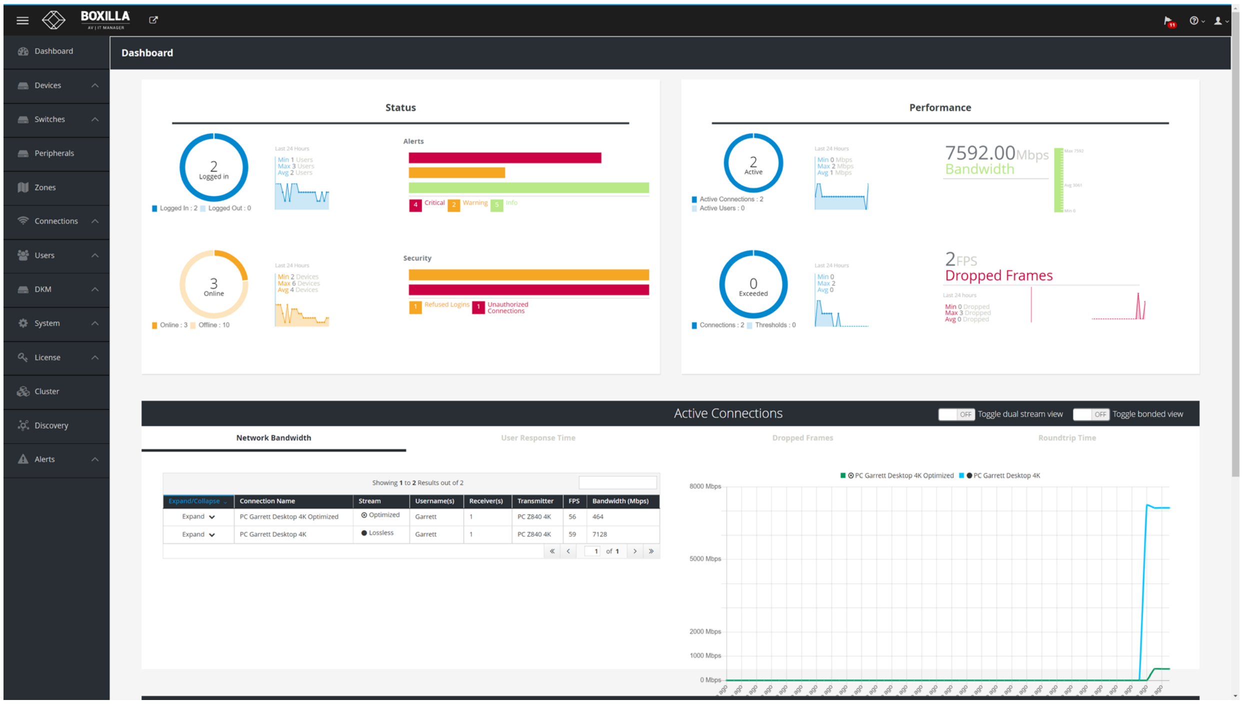
Send

FIGURE 17-7. ALERTS — SETTINGS — EMAIL

CHAPTER 18: DASHBOARD

The dashboard is divided into three main areas: Status & Performance Indicators, Active Connections and Active Logins.

18.1 STATUS AND PERFORMANCE INDICATORS



Showing **1** to **2** Results out of 2

Expand/Collapse	Connection Name	Stream	Username(s)	Receiver(s)	Transmitter	FPS	Bandwidth (Mbps)
Expand	PC Garrett Desktop 4K Optimized	⊙ Optimized	Garrett	1	PC Z840 4K	56	464
Expand	PC Garrett Desktop 4K	● Lossless	Garrett	1	PC Z840 4K	59	7128

« ‹ 1 of **1** › »

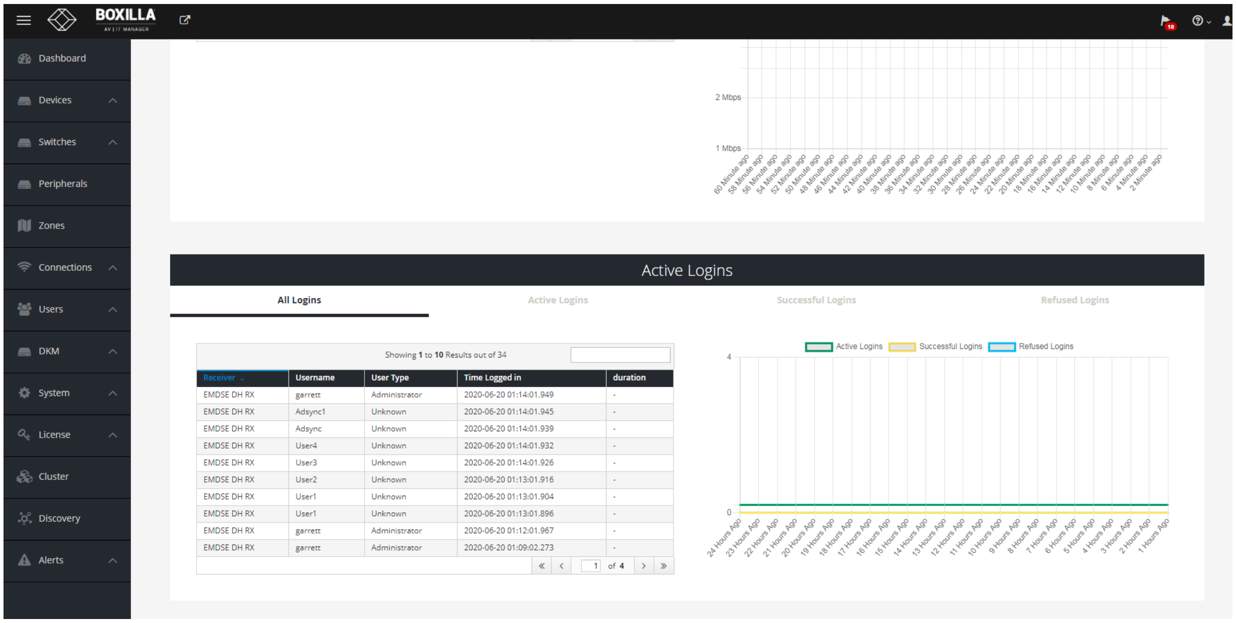
FIGURE 18-1. DASHBOARD TOP

The Status and Performance Indicators are defined as:

Status:

1. Logged-In—number of users currently logged-in is displayed in the center of ring. The Ring shows the number of users logged-in on Receivers and the number of Receiver units with no one logged-in (i.e. shows % of Receiver units that have a user logged in).

The graph portion of the Logged-In indicator shows the minimum, maximum and average number of users logged-in over the last 24 hours and a graph of number logged-in over the last 24-hours.



Showing **1** to **10** Results out of 34

Receiver	Username	User Type	Time Logged in	duration
EMDSE DH RX	garrett	Administrator	2020-06-20 01:14:01.949	-
EMDSE DH RX	Adsync1	Unknown	2020-06-20 01:14:01.945	-
EMDSE DH RX	Adsync	Unknown	2020-06-20 01:14:01.939	-
EMDSE DH RX	User4	Unknown	2020-06-20 01:14:01.932	-
EMDSE DH RX	User3	Unknown	2020-06-20 01:14:01.926	-
EMDSE DH RX	User2	Unknown	2020-06-20 01:13:01.916	-
EMDSE DH RX	User1	Unknown	2020-06-20 01:13:01.904	-
EMDSE DH RX	User1	Unknown	2020-06-20 01:13:01.896	-
EMDSE DH RX	garrett	Administrator	2020-06-20 01:12:01.967	-
EMDSE DH RX	garrett	Administrator	2020-06-20 01:09:02.273	-

« ‹ 1 of **4** › »

FIGURE 18-2. ACTIVE LOGINS

2. Devices Online—the number of devices (Receivers and Transmitter units) in the managed domain at this time that are online is displayed in the center of the ring. The Ring shows the number of devices in the managed domain that are online and offline. A device is considered online if Boxilla can contact it over the network—and offline if not contactable.

The graph portion of the Devices Online indicator shows the minimum, maximum and average number of devices online over the last 24 hours and a graph of number devices online over the last 24-hours.

3. Alerts—the number of alerts in each category of Critical, Warning and Info (see section 11 for definition of the different categories).

4. Security—the number of Refused Logins and the number of Unauthorized Connections. Refused Logins are counted on each Receiver when a user fails a login attempt. Unauthorized Connections are counted on Receivers and Transmitters when they detected something has attempted to connect to them in an unauthorized manner—such as devices not part of our managed domain trying to connect to a managed device or an attempt to access a service using a network protocol not authorized on a device (SSH, SNMP, etc.) as may occur during a port-scan attack.

Performance:

1. Active Connections—number of currently Active connections is displayed in center of Ring. The Ring shows the number of Active connections on Receiver units with Active Users (i.e. logged in) and the number of Receivers with no connection that have users logged in. If using Dual-Stream (4K receiver and 2K receiver connected to a 4K target), the Dashboard will show the two connections which can then be expanded to see more information.

The graph portion of the Active Connections indicator shows the minimum, maximum and average number of Active Connections over the last 24 hours and a graph of Active Connections over the last 24 hours.

2. Threshold Exceeded —the number of connections with a threshold exceeded is shown in the center of the Ring. The thresholds are defined in section 11.4. The Ring shows the number of active connections that have a threshold exceeded and the number of connections with no threshold exceeded.

The graph portion of the Threshold Exceeded indicator shows the minimum, maximum and average number of connections with a threshold exceeded over the last 24 hours and a graph of number connections with a threshold exceeded over the last 24 hours.

3. Bandwidth— the current total network bandwidth generated by the devices in the domain (i.e., the sum of the network bandwidth of all the active connections) is displayed as a number on the indicator.

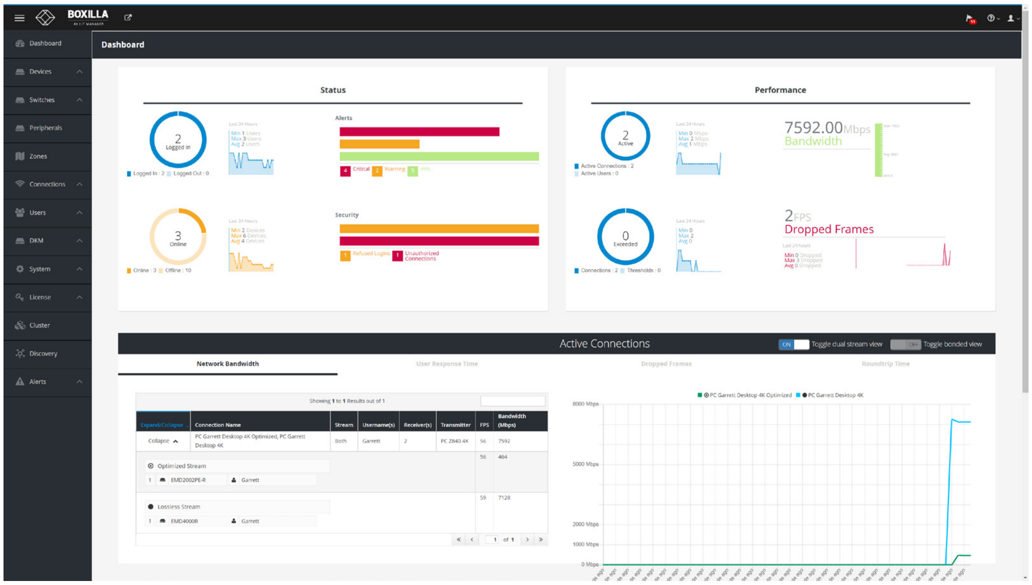
The graph portion of the Bandwidth indicator shows the minimum, maximum and average total bandwidth last 24 hours.

4. Dropped Frames— the current number of dropped frames summed across all active connections in frames-per-seconds.

The graph portion of the Dropped Frames indicator shows the minimum, maximum and average number of Dropped Frames across all active connection over the last 24 hours and a graph of Dropped Frames across all active connection over the last 24 hours.

18.2 ACTIVE CONNECTIONS

The Active Connections section of the dashboard displays the 10 most active connections in the managed domain. The table portion provides a sortable list of the active connections. Each column can be used to sort the table—in ascending or descending order—just click on a column header to sort and click again to invest sort order. The filter box at the top right of the table will filter the table based on the filter box contents.



Showing 1 to 1 Results out of 1

Expand/Collapse	Connection Name	Stream	Username(s)	Receiver(s)	Transmitter	FPS	Bandwidth (Mbps)
Collapse ^	PC Garrett Desktop 4K Optimized, PC Garrett Desktop 4K	Both	Garrett	2	PC Z840 4K	56	7592
⦿ Optimized Stream 1 EMD2002PE-R Garrett						56	464
● Lossless Stream 1 EMD4000R Garrett						59	7128

« ‹ 1 of 1 › »

FIGURE 18-3. ACTIVE CONNECTION VIEW

The Active Connection view in this example shows an active Dual-Stream connection where a 4K and 2K receiver are accessing a 4K Connection

The first five columns of the table are fixed for all the tabs that can be selected (Network Bandwidth, User Response, Dropped Frames or Roundtrip Time). The columns are defined as:

- Connection Name—the name of the active connection
- User Name—the user name logged into the Receiver that has initiated the active connection
- Receiver—the name of the Receiver on the active connection
- Transmitter—the name of the Transmitter on the active connection
- FPS—the current frames per second being encoded/transferred on the connection

The contents of the last column in the table will vary depending on the tab selected—Network Bandwidth, User Response, Dropped Frames or Roundtrip Time.

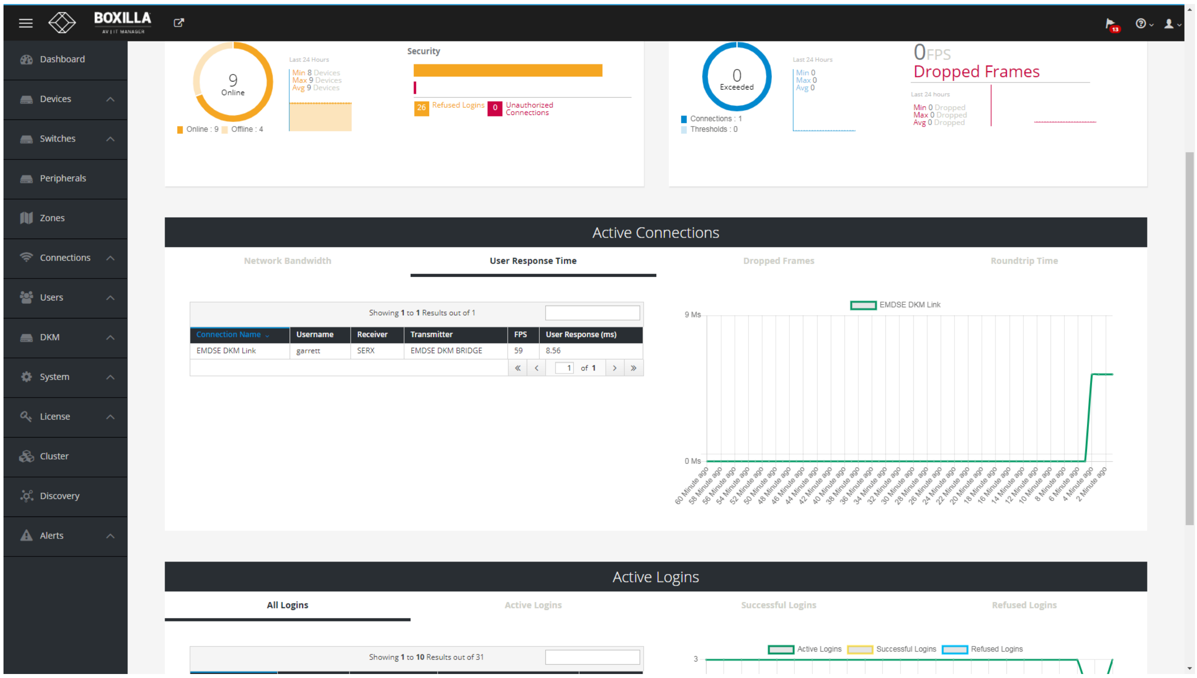
CHAPTER 18: DASHBOARD

The last column displays when the selected tab is:

- Network Bandwidth—the total network bandwidth that this connection is generating (in Mbps). Typically, 0 Mbps for a static screen and up to 250 Mbps when playing a 1080p video.

  NOTE: 4K connections can consume up to 9.5Gbps.

- User-Response Time—the time it takes for an event on the server to be displayed on the Monitor attached to the receiver. This includes video encode time in the Transmitter, network latency and video decode time in the Receiver as part of its calculation (in milliseconds). Typically 8–16 ms but can grow to 20–30 ms on congested networks due to dropped frames.



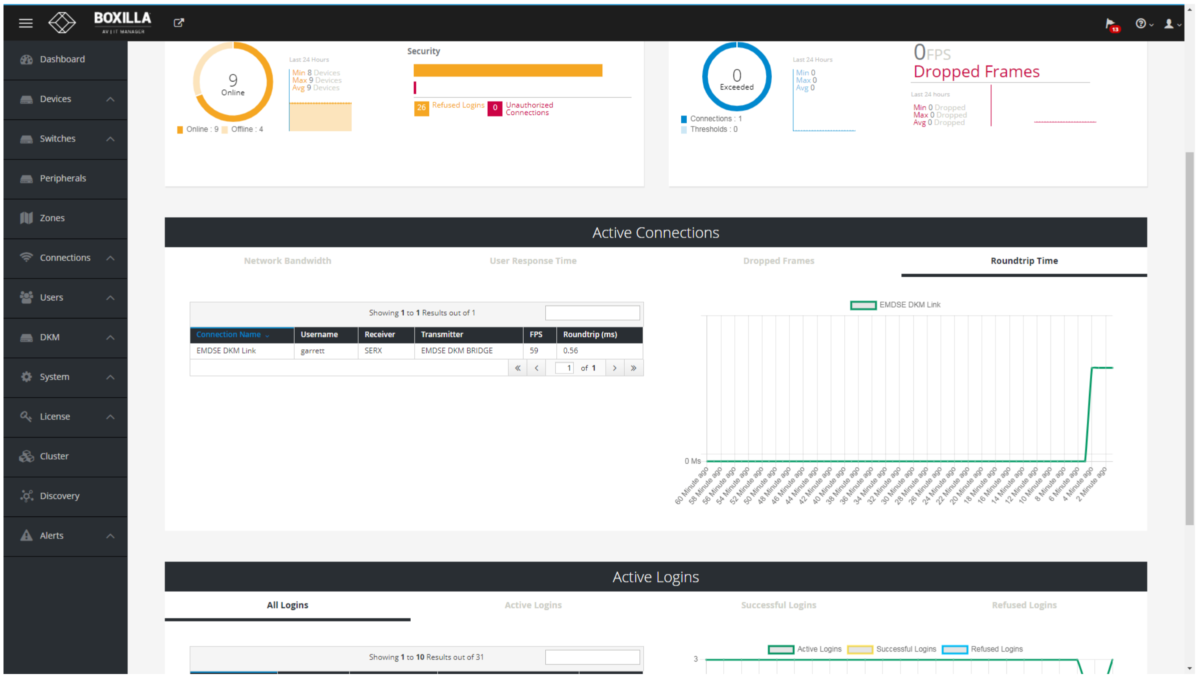
Showing 1 to 1 Results out of 1

Connection Name	Username	Receiver	Transmitter	FPS	User Response (ms)
EMDSE DKM Link	garrett	SERX	EMDSE DKM BRIDGE	59	8.56

Showing 1 to 10 Results out of 31

FIGURE 18-4. USER RESPONSE TIME

- Dropped Frames—the number of dropped frames in the Transmitter that is part of this connection. Dropped frames usually result from network congestion (in frames-per-second). Typically will be 0 fps.
- Round-trip time—measures the network round-trip time experienced at an IP packet level for the active connection (in milliseconds). Typically this will be 0 ms on a gigabit network with low congestion.



Showing **1** to **1** Results out of 1

Connection Name	Username	Receiver	Transmitter	FPS	Roundtrip (ms)
EMDSE DKM Link	garrett	SERX	EMDSE DKM BRIDGE	59	0.56

FIGURE 18-5. ROUNDTRIP TIME

The graph part of the Active Connections dashboard displays a graph of the last column over time, so it can be network bandwidth, user-response time, dropped frames per second or roundtrip time.

18.3 ACTIVE LOGINS

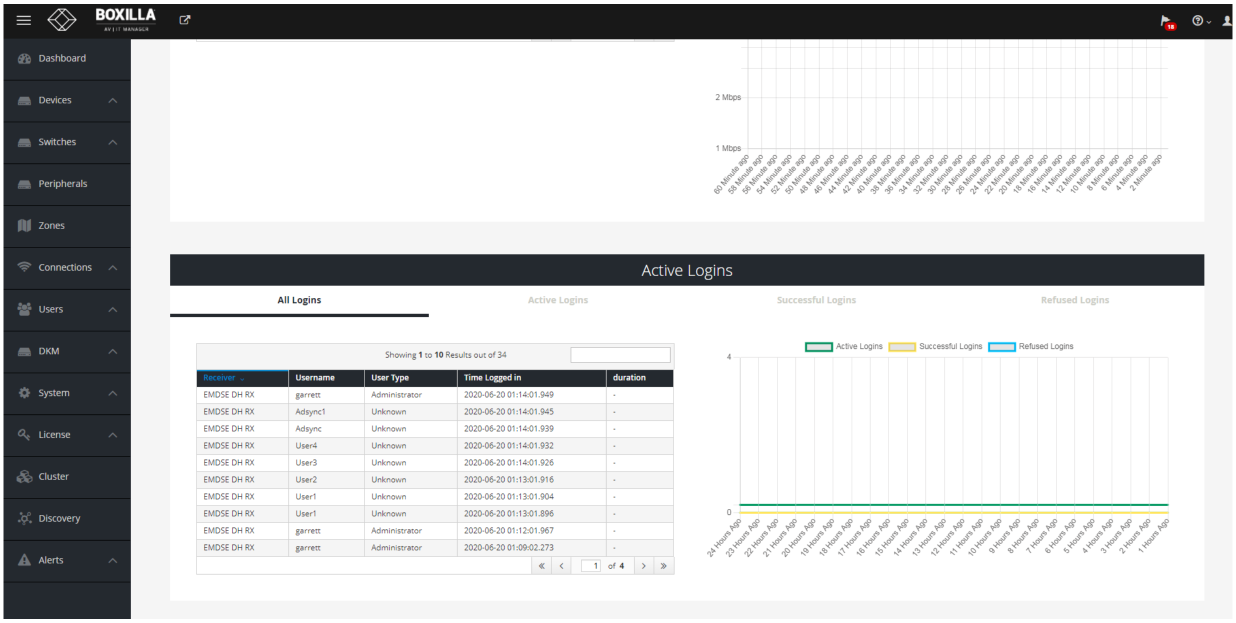
The Active Logins section of the dashboard displays the current active logins in the managed domain. The table portion provides a sortable list of the active connections. Each column can be used to sort the table— in ascending or descending order—just click on column header to sort and click again to invest sort order. The filter box at the top right of the table will filter the table based on the filter box contents.

The table portion has the following columns:

- Receiver— the receiver name that has been logged into
- Username—the user name that has logged into the Receiver
- User-Type—the type of user that has logged in: administrator, Power User, User (see section 9.1 for definitions of user types)
- Time Logged In —when the user logged-in
- Duration—how long the user has been logged-in

There are four tabs in the Active Logins section:

- All Logins—all logins and attempts



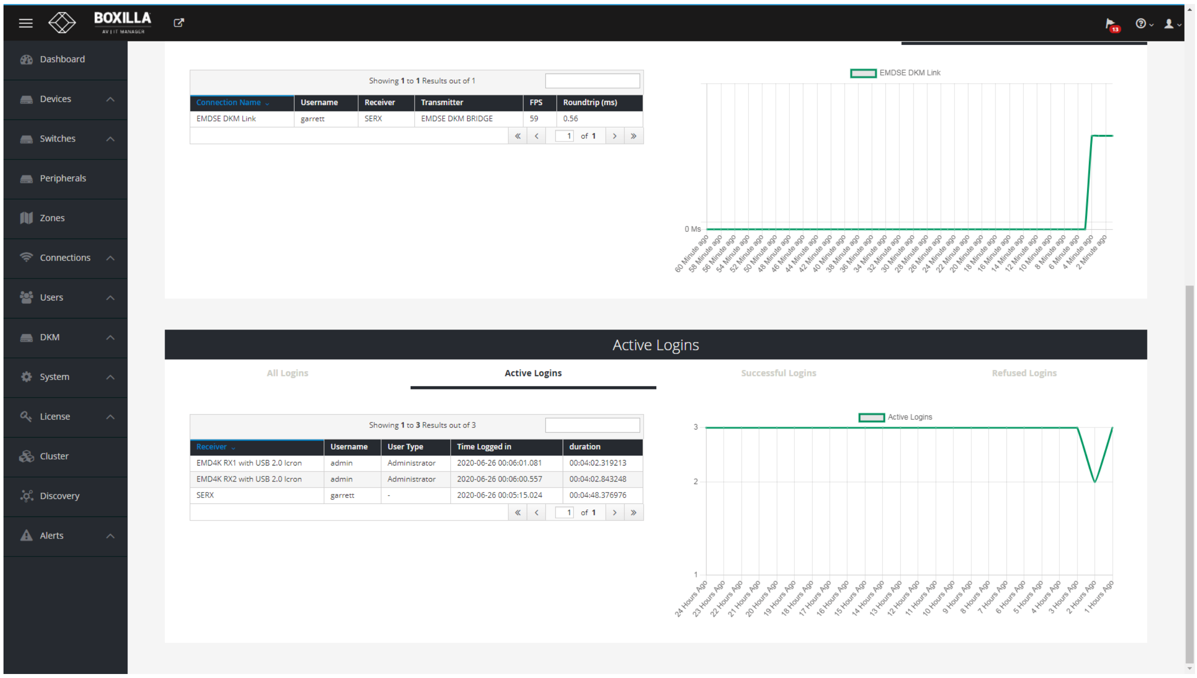
Showing **1** to **10** Results out of 34

Receiver	Username	User Type	Time Logged in	duration
EMDSE DH RX	garrett	Administrator	2020-06-20 01:14:01.949	-
EMDSE DH RX	Adsync1	Unknown	2020-06-20 01:14:01.945	-
EMDSE DH RX	Adsync	Unknown	2020-06-20 01:14:01.939	-
EMDSE DH RX	User4	Unknown	2020-06-20 01:14:01.932	-
EMDSE DH RX	User3	Unknown	2020-06-20 01:14:01.926	-
EMDSE DH RX	User2	Unknown	2020-06-20 01:13:01.916	-
EMDSE DH RX	User1	Unknown	2020-06-20 01:13:01.904	-
EMDSE DH RX	User1	Unknown	2020-06-20 01:13:01.896	-
EMDSE DH RX	garrett	Administrator	2020-06-20 01:12:01.967	-
EMDSE DH RX	garrett	Administrator	2020-06-20 01:09:02.273	-

1 of **4**

FIGURE 18-6. DASHBOARD BOTTOM

- Active Logins—all current active logins



Showing **1** to **1** Results out of 1

Connection Name	Username	Receiver	Transmitter	FPS	Roundtrip (ms)
EMDSE DKM Link	garrett	SERX	EMDSE DKM BRIDGE	59	0.56

1 of **1**

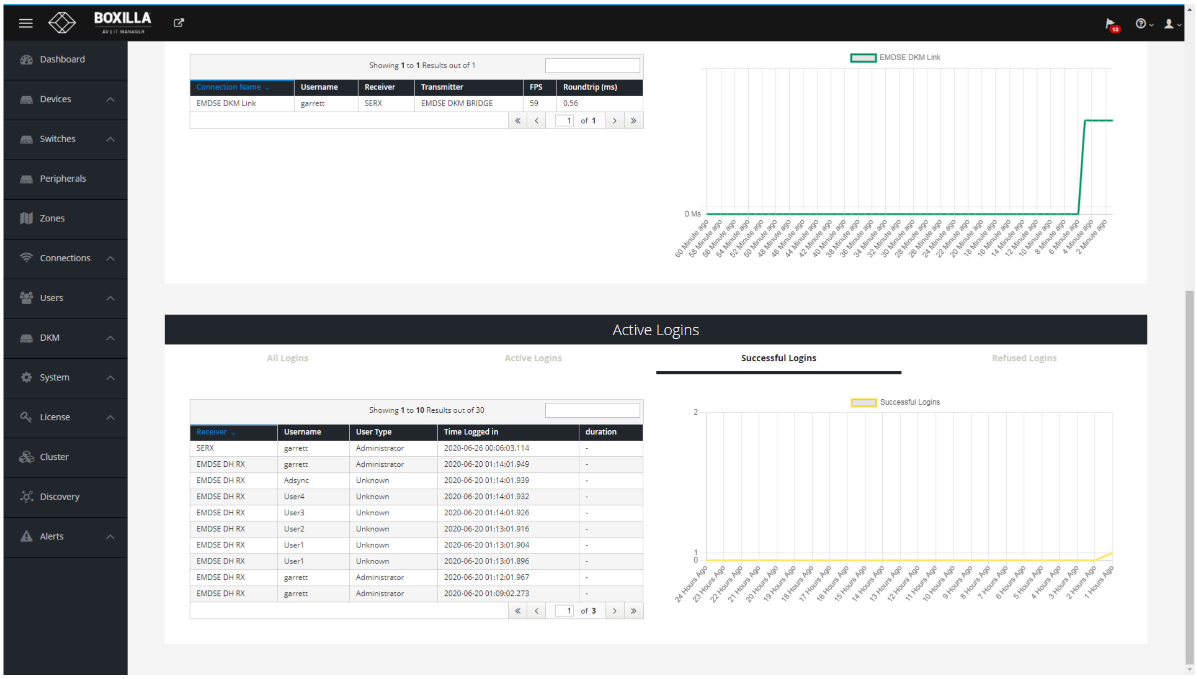
Showing **1** to **3** Results out of 3

Receiver	Username	User Type	Time Logged in	duration
EMD4K RX1 with USB 2.0 Icron	admin	Administrator	2020-06-26 00:06:01.081	00:04:02.319213
EMD4K RX2 with USB 2.0 Icron	admin	Administrator	2020-06-26 00:06:00.557	00:04:02.843248
SERX	garrett	-	2020-06-26 00:05:15.024	00:04:48.376976

1 of **1**

FIGURE 18-7. ACTIVE LOGINS

- Successful Logins—all Successful logins, both currently active logins and previous ones



Showing **1** to **1** Results out of 1

Connection Name	Username	Receiver	Transmitter	FPS	Roundtrip (ms)
EMDSE DKM Link	garrett	SERX	EMDSE DKM BRIDGE	59	0.56

1 of **1**

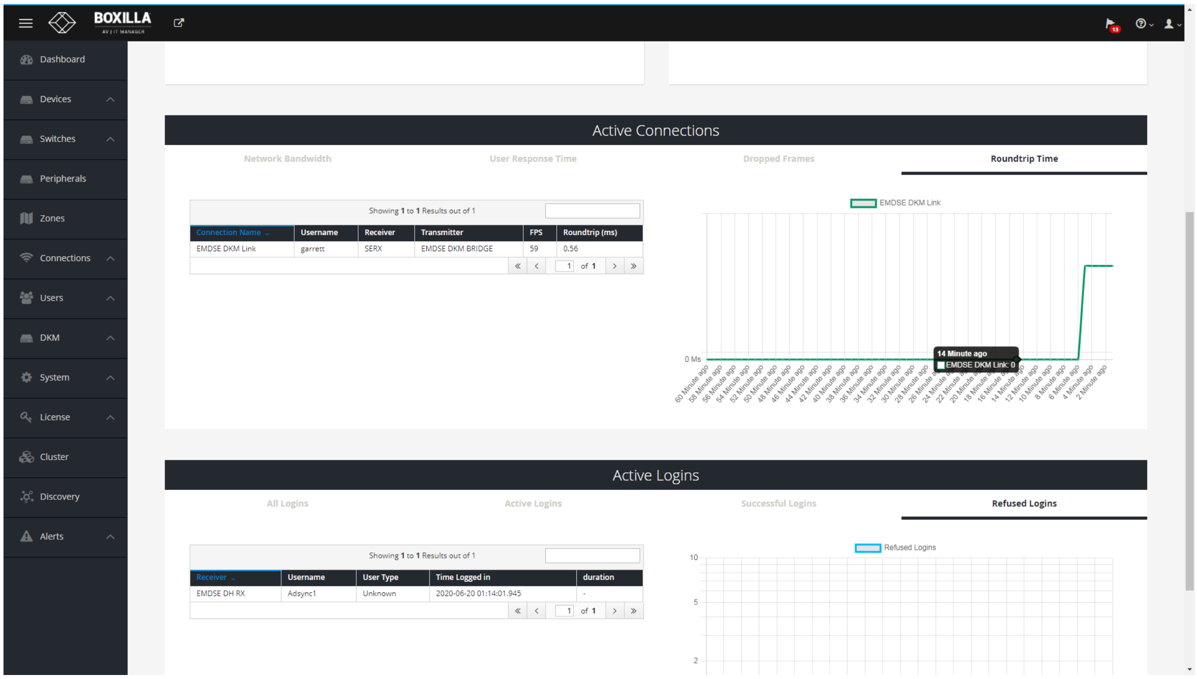
Showing **1** to **10** Results out of 30

Receiver	Username	User Type	Time Logged in	duration
SERX	garrett	Administrator	2020-06-26 00:06:03.114	-
EMDSE DH RX	garrett	Administrator	2020-06-20 01:14:01.949	-
EMDSE DH RX	Adsync	Unknown	2020-06-20 01:14:01.939	-
EMDSE DH RX	User4	Unknown	2020-06-20 01:14:01.932	-
EMDSE DH RX	User3	Unknown	2020-06-20 01:14:01.926	-
EMDSE DH RX	User2	Unknown	2020-06-20 01:13:01.916	-
EMDSE DH RX	User1	Unknown	2020-06-20 01:13:01.904	-
EMDSE DH RX	User1	Unknown	2020-06-20 01:13:01.896	-
EMDSE DH RX	garrett	Administrator	2020-06-20 01:12:01.967	-
EMDSE DH RX	garrett	Administrator	2020-06-20 01:09:02.273	-

1 of **3**

FIGURE 18-8. SUCCESSFUL LOGINS

- Refused Logins—all refused logins



Showing **1** to **1** Results out of 1

Connection Name	Username	Receiver	Transmitter	FPS	Roundtrip (ms)
EMDSE DKM Link	garrett	SERX	EMDSE DKM BRIDGE	59	0.56

1 of **1**

Showing **1** to **1** Results out of 1

Receiver	Username	User Type	Time Logged in	duration
EMDSE DH RX	Adsync1	Unknown	2020-06-20 01:14:01.945	-

1 of **1**

FIGURE 18-9. REFUSED LOGINS

CHAPTER 19: REPLACING YOUR BOXILLA

The graph part of the Active Logins dashboard displays a graph of the selected tab information over time.

This section defines what an Administrator should do to ensure the Boxilla unit can be replaced and the system restored with its previous settings.

A key maintenance task is for the Administrator to backup the system so the system can be restored to a known state. See section 11.4.

1. Remove the original Boxilla from the network. Connect the new Boxilla in its place and power up.
2. Before connecting the new Boxilla unit to the main network, connect the Boxilla unit to a network switch that is isolated from the main network.
3. Use a computer connected to the same switch to login to the new Boxilla Unit.
4. Set the IP address of the Boxilla unit to match that of the original unit. (Ideally, you have all this done in advance of failure.)
5. Add Licenses to the new Boxilla unit, if required.
6. Upload and Activate Certificates to the new Boxilla unit, if required.
7. Restore a backup file of the original Boxilla database to the new device.
8. Navigate to Devices | Settings page, and all devices should appear as OnLine after 10 seconds.
9. The replacement Boxilla unit is now operational.

APPENDIX B: BOXILLA AND EMERALD PROTOCOLS

OVERVIEW

Emerald or InvisaPC uses standard IP protocols for communication between Receivers and Transmitters.

TABLE B-1. PORT USAGE PER APPLIANCE

COMPONENT	APPLICATION	PORT	EMERALD 4K	EMERALD PE/ZU
Appliance	Appliance REST HTTP	TCP: 7778	Yes	Yes
	Appliance REST HTTPS	TCP: 8888	Yes	Yes
	Communications	TCP: 22	Yes	Yes
	Manager Discovery (to Appliance): Multicast 224.0.1.249. Appliance listens on UDP Port	UDP: 39150	Yes	Yes
	(4K Only) Default Slave Multicast IP Port (IP: 239.0.0.1)	UDP: 8000	Yes	No
	(4K only) Default Master Multicast IP Port (IP: 239.0.0.1)	UDP: 8001	Yes	No
	Audio (Private/Multi Unicast)	TCP: 9000	Yes (1.2 onwards)	Yes (5.0x onwards)
	Video EMDSE & 4K	TCP: 16384	Yes	Yes (5.3x onwards)
	Video, 2nd channel, (Paired only)	TCP: 16385	No	Yes (5.4x only)
	Reserved – Future	TCP: 16387	—	—
	Reserved – Future	TCP: 16388	—	—
	Multicast 225.0.0.37 (Appliance – recovery)	UDP: 12345	Yes	Yes
	RDP VM & RDP Broker	TCP: 3389 (default)	Yes (Default)	Yes (Default)
	TX connections	TCP: 3389	Yes	Yes
Boxilla	Boxilla REST HTTPS	TCP: 443	—	—
	Communications	TCP: 22	—	—
	Discovery: Multicast 224.0.1.249 (Send)	UDP: 39150	—	—

NOTE: Firewalls on the WAN may cause audio to fail due to a protocol issue that prevents it traversing some firewalls. The audio channel does not perform the SYN/SYNACK sequence which leads to some of these streams being blocked.

APPENDIX C: REGULATORY INFORMATION

C.1 FCC AND IC STATEMENTS

Federal Communications Commission and Industry Canada Radio Frequency Interference Statements

This equipment generates, uses, and can radiate radio-frequency energy, and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference- to radio communication. It has been tested and found to comply with the limits for a Class A computing device in accordance with the specifications in Subpart B of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when the equipment is operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user at his own expense will be required to take whatever measures may be necessary to correct the interference.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This digital apparatus does not exceed the Class A limits for radio noise emission- from digital apparatus set out in the Radio Interference Regulation of Industry Canada.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le Règlement sur le brouillage radioélectrique publié par Industrie Canada.

C.2 SAFETY AND EMC APPROVALS AND MARKINGS/PATENT INFORMATION

C.2.1 SAFETY AND EMC APPROVALS AND MARKINGS

FCC and CE Safety certifications and EMC certifications for this product are obtained under one or more of the following designations: CMN (Certification Model Number), MPN (Manufacturer's Part Number) or Sales Level Model designation. The designation that is referenced in the EMC and/or safety reports and certificates are printed on the label applied to this product.

European Union Notification Warning: This is a class A product. In a domestic environment, this product may cause radio interference in which case the user may be required to take adequate measures.

C.2.2 PATENT INFORMATION

This product contains patented designs and is protected by U.S. and international patents and patents pending.

APPENDIX D: DISCLAIMER/TRADEMARKS

D.1 DISCLAIMER

Black Box Corporation shall not be liable for damages of any kind, including, but not limited to, punitive, consequential or cost of cover damages, resulting from any errors in the product information or specifications set forth in this document and Black Box Corporation may revise this document at any time without notice.

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NOTES

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