MuxLab Pro Digital Network Controller (MNC)
(Model: 500811)

Operation Manual

P/N: 94-000810-E SE-000810-E

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1. Overview

1.1. Description

The MuxLab Pro Digital Network Controller is a Linux-based PC that allows users to control hub-installed MuxLab products.

When installed on a local area network (LAN), the MuxLab Pro Digital Network Controller can scan the LAN for MuxLab products and allows the user to auto-discover, configure and control these products through an Ethernet Web interface.

An Application Program Interface (API) is available supporting a number of third party partner control applications running on smartphones and tables.

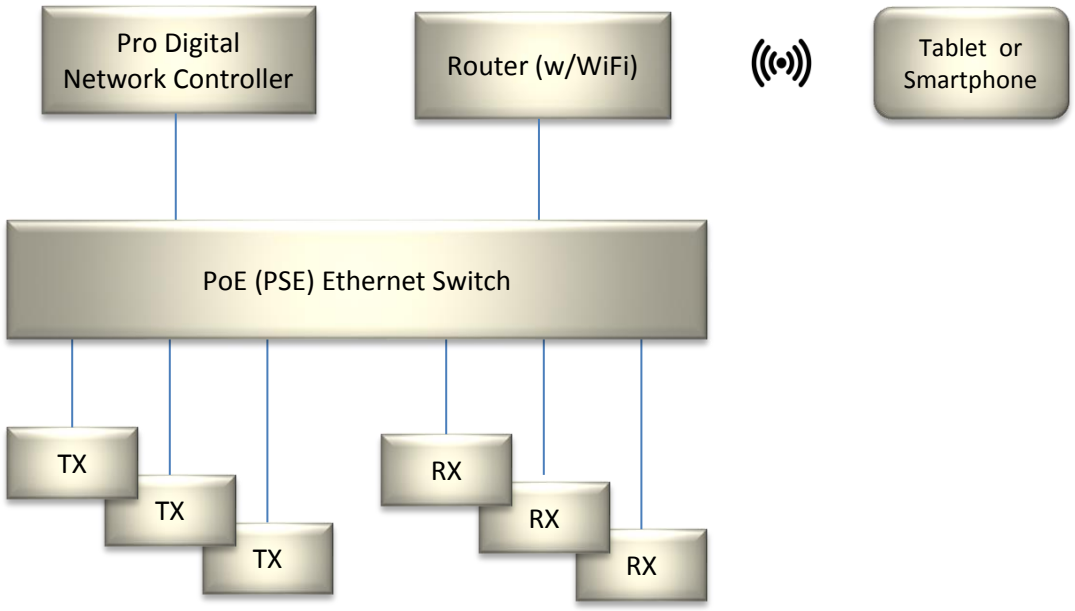


Figure 1: System Overview

Applications include but are not limited to commercial and residential AV systems, classroom projector systems, digital signage, video wall systems, boardroom systems, multi-room systems, classroom training, retail systems, collaborative PC systems, and medical information systems.

1.2. Features

(Front View) (Rear & Side View)

Figure 1: Pro Digital Network Controller

Front Panel

- Power LED
- Power button

Back Panel

- VGA video out port
- HDMI video out port
- LAN port (RJ-45 jack)
- Audio in (3.5 mm)
- Audio out (3.5 mm)
- Micro SD memory slot
- K lock
- Power connector

Side Panel

- Three (3) USB 2.0 ports

2. Technical Specifications

MuxLab ProDigital Network Controller	
CPU	Intel Z3735F
Memory	2GB DDR3
BIOS	AMI BIOS
VGA	Resolution up to 1920 x 1200
Keyboard and Mouse	USB keyboard and mouse (sold separately)
Peripherals	• USB 2.0 ports (3x) • micro SD slot (1x) • Network interface (1x) • VGA Video out port (1x) • HDMI Video out port (1x) • Audio in via 3.5mm port (1x) • Audio out via 3.5mm port (1x)
Operating System	Ubuntu 14.04 LTS
Operating Temperature	5 ºC to 50 ºC
Dimensions	4.52 x 4.52 x 1.4 inch (115 x 115 x 35 mm)
Weight	1.1lbs (0.5kg)
Accessories Included	External Power Adaptor
Regulatory	FCC, CE, RoHS, WEEE
Order Information	500811 Pro Digital Network Controller

Table 1: Technical Specifications

3. Installation and Use

3.1. Part List

The MuxLab Pro Digital Network Controller comes with the following parts:

- Base unit (1x)
- External Power Adapter (1x)

Please verify that both parts are present before proceeding.

Figure 2: Base Unit

Figure 3: External Power Adaptor

3.2. Product Overview

The external connections and connection indicators of the MuxLab Pro Digital Network Controller are detailed in Figure 4 and Figure 5. Please familiarize yourself with them before installing the unit.

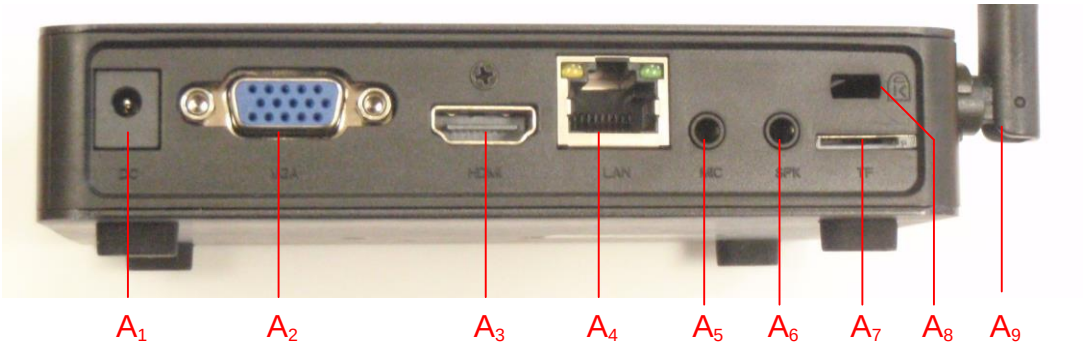


Figure 4: Rear Panel

A_1 = DC Power
A_2 = VGA video out
A_3 = HDMI video out
A_4 = RJ45 Ethernet
A_5 = Audio in
A_6 = Audio out
A_7 = Micro SD Memory Slot
A8 = K Lock
A9 = Wifi antenna (not supported in current software release)

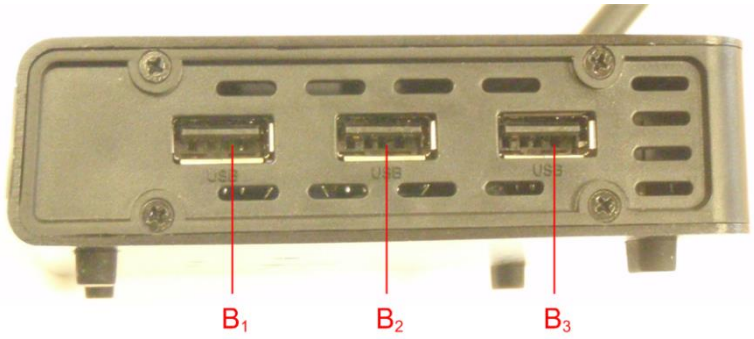


Figure 5: Side Panel

B_1 = USB 2.0 #1
B_2 = USB 2.0 #2
B_3 = USB 2.0 #3

3.3. Installation Procedure

Note that the examples below assume that the Ethernet Switch used does not support WiFi, and a Router with WiFi capability is required in order to communicate with smartphones and tablets for control purposes. Note that the WiFi antenna on the MuxLab Controller is not supported in the current software release.

Setting the Ethernet Switch & Router to the same Subnet as MuxLab Devices:

The MuxLab Pro Digital Network Controller comes with a default static IP address of 192.168.168.50 (with DHCP disabled). The MuxLab AV over IP Transmitters and Receivers are set to support DHCP by default. When no DHCP server is available the AV over IP Transmitters and Receivers fallback to a static IP address of 192.168.168.55 (for the 500752, 500753, 500754 and 500756 Transmitters) and 192.168.168.56 (for the 500752, 500753, 500754 and 500756 Receivers), and 192.168.168.58 (for the 500758 and 500759 Transmitters) and 192.168.168.59 (for the 500758 and 500759 Receivers).

These MuxLab products (MNC, and the AV over IP Transmitters & Receivers) work in conjunction with a PoE (PSE) Ethernet Switch (MuxLab recommends the Cisco SG300 Series) and a Router of your choice with WiFi capability to be able to communicate with a smartphone or tablet. The use of a smartphone or tablet to manage the MuxLab devices with third party software applications is optional but is the most common method of control and generally preferred, however MuxLab devices may also be managed via the Pro Digital Network Controller web interface.

In order for the DHCP server within the Ethernet Switch to support the MuxLab device subnet, set the static IP of the Ethernet Switch to **192.168.168.1** (recommended setting). Refer to the Ethernet Switch manual for instructions on how to accomplish this. MuxLab also has a guide specific to the Cisco SG300 Series, see document SE-000819-A (Configuring Network Setting of the Ethernet Switch & MuxLab AV over IP Devices), which can be found on MuxLab's website under any of the AV over IP product pages (as a download under the Operation Manual sub-category).

The Router with WiFi capability, must also be placed on the same subnet as the MuxLab devices and it should be set with a Static IP address, we recommend using a Static IP address of **192.168.168.2**. Refer to your Router documentation on how to accomplish this.

Setting MuxLab Devices, Ethernet Switch and Router to an Existing Subnet:

If the MuxLab AV over IP devices are being installed in an existing environment that has a working subnet already configured that cannot be easily changed, then the subnet of the MuxLab devices, the Ethernet Switch (if a new Ethernet Switch is required), and the Router with Wifi (if a new Router is required) must be changed in order to match the existing subnet. For this case we will use **192.168.2.x** as an

example subnet already in place and which must be supported. Note that this is only an example and may not necessarily reflect your actual subnet address.

If the Ethernet Switch does not already reside in the example subnet of 192.168.2.x, then set the static IP of the Ethernet Switch to a free static IP address (for the sake of this example we will use an IP address of **192.168.2.1**). Refer to the Ethernet Switch manual for instructions on how to accomplish this. MuxLab also has a guide specific to the Cisco SG300 Series, see document SE-000819-A (Configuring Network Setting of the Ethernet Switch & MuxLab AV over IP Devices), which can be found on MuxLab's website under any of the AV over IP product pages (as a download under the Operation Manual sub-category).

If the Router with WiFi does not already reside in the example subnet of 192.168.2.x, then set the static IP of the Router to a free static IP address (for the sake of this example we will use an IP address of **192.168.2.2**). Refer to your Router documentation on how to accomplish this.

The MuxLab AV over IP Transmitters and Receivers are set by default to support DHCP, and will automatically be set to the subnet specified by the DHCP Server. These units need only be physically connected into the network as described in their respective Installation Guides and by using the 500811 Pro Digital Network Controller to discover them. But before the MNC can be used, the new MNC subnet must also be set.

To change the subnet of the MNC requires a two-step process:

Process 1: Configuring the IP address of the MNC
Process 2: Physically installing the MNC in the network

Note:

- An example subnet address of 192.168.2.x of the existing network on which the MNC will be installed is assumed for this example process.
- The MNC comes with a static IP address of **192.168.168.50** and with DHCP disabled. This process explains how to change it to the example subnet of 192.168.2.x.

Process 1: Configuring the IP address of the MNC

Refer to Figure 4 and Figure 5.

1. On the back panel of the MNC:
   A. Plug the supplied power adaptor into the DC power jack. Ensure that the other end of the power adaptor is plugged into a power socket.
   B. Ensure that the power switch on the front of the unit is in the ON position (front button • pressed in).
   C. Connect one end of an Ethernet cable to the Ethernet port. Ensure that the other end of the Ethernet cable is connected to a computer.

Refer to Figure 6.

2. On the computer to which the MNC is connected, open up an Internet browser (Explorer, Chrome, Firefox, etc.) and type the following address in the address bar near the top of the screen:

   http://192.168.168.50/mnc/

   NOTE: **mnc** must be written in lower case

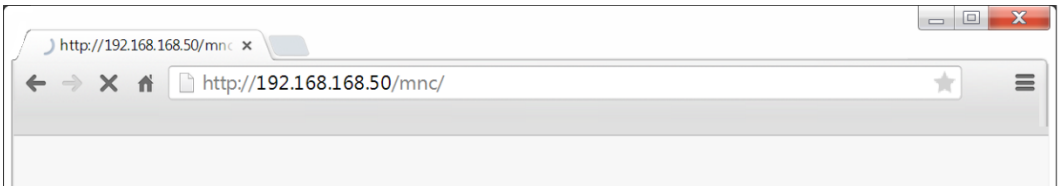
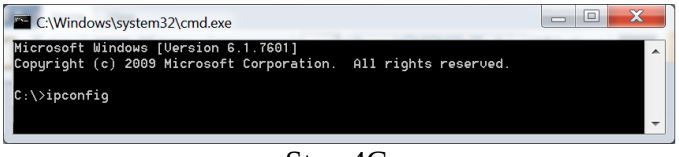


Figure 6: Internet Browser Entry

3. Press **Enter** on the keyboard. If the browser connects to the MNC, go to Step 7.
4. If the browser fails to connect to the MNC, a failure message will appear. Perform the following steps (Steps 4 through 6) in order to set the computer to the same subnet as the MNC, to be able to then change the MNC subnet (from Step 7 onward) to match the subnet of the existing installation (refer to Figure 7):
   A. Move the mouse to the bottom of the screen and click on the **Start** button at the lower left.
   B. Click into the *Search programs and files* field just above the **Start** button and type `cmd`. Press **Enter** on the keyboard.
   C. A DOS window will appear. Type `ipconfig` and press **Enter** on the keyboard.

Step 4A

Step 4B



Step 4C

Figure 7: Determining Computer IP Address

The following screen will appear (Figure 8).

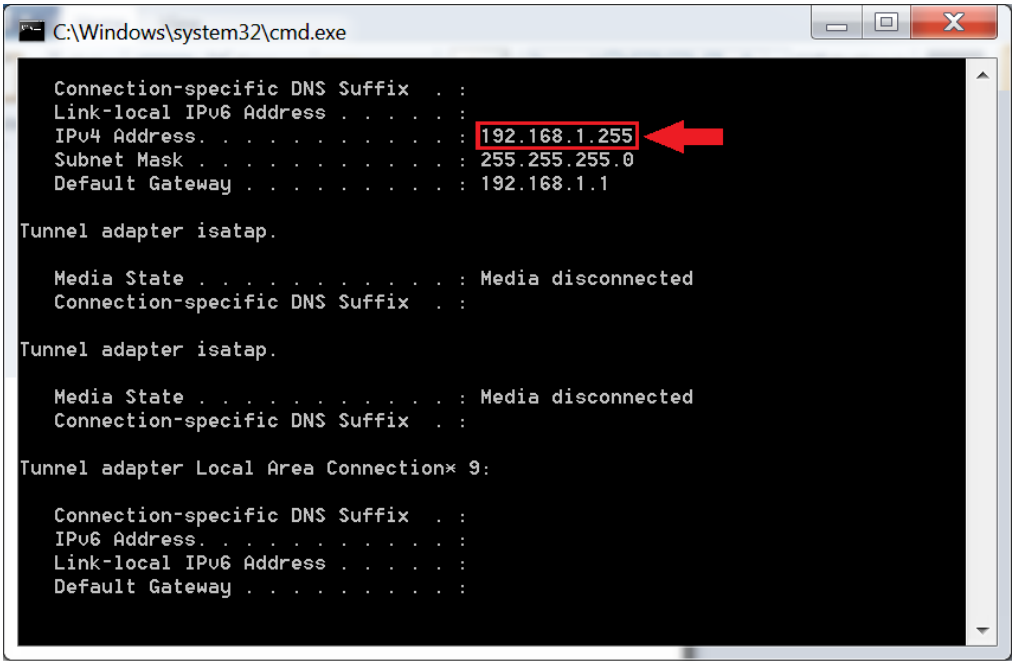


Figure 8: Computer IP Address

5. If the `IPv4 Address` (shown in the red box of Figure 8) does NOT begin with the numbers `192.168.168.x`, then perform the following steps (refer to **Figure 9** through **Figure 12**):

   A. Type `exit` and press **Enter** on the keyboard.

   B. Move the mouse to the bottom of the screen and click on the **Start** button at the lower left.

   C. Click on **Control Panel**

   D. Click on **Network and Internet**

   E. Click on **Network and Sharing Center**

   F. Click on **Local Area Connection**

   G. Click on **Properties**

   H. Click on **Internet Protocol Version 4 (TCP/IPv4)**. It will turn blue.

   I. Click on **Properties**

   J. Click the **Use the following IP address** radio button.

   K. In the **IP address** field, type the following:

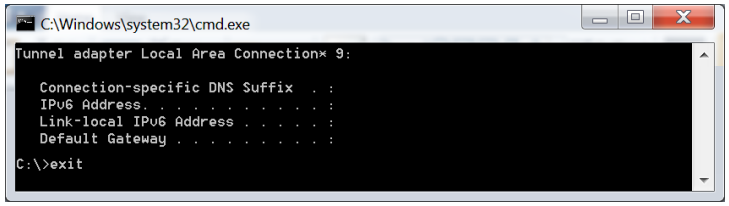
   192.168.168.*x*

   Where *x* can be any number from 2 to 254 except for 50 (since 50 is the MNC address). The example in Figure 12 has the PC set to a Static IP address of **192.168.168.12**

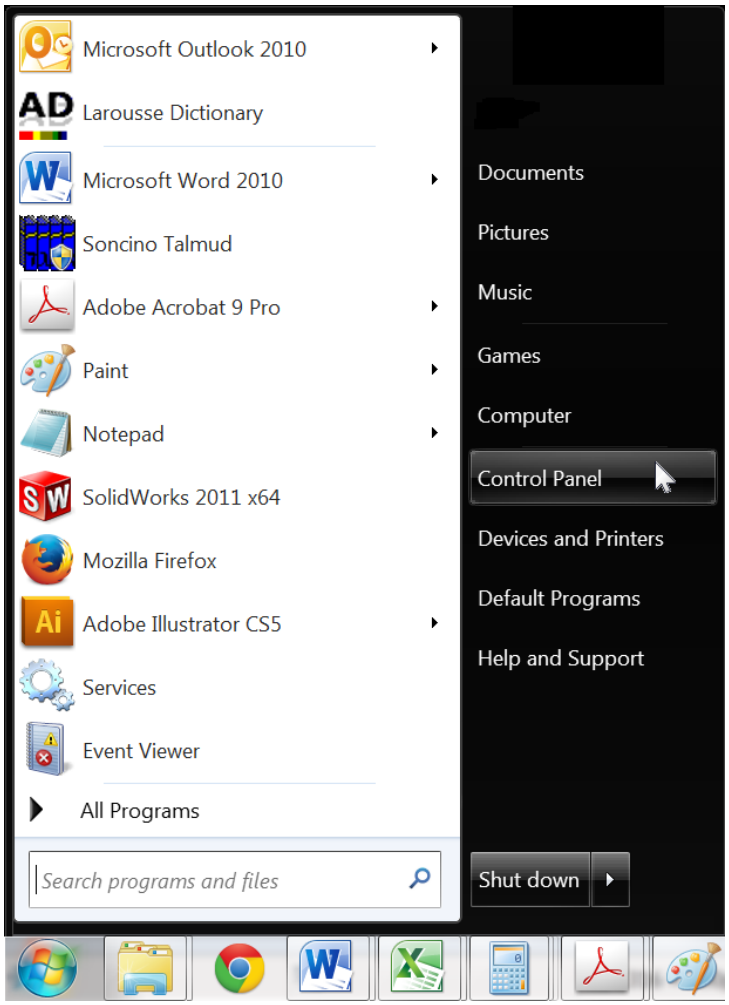
L. In the **Subnet mask** field, type the following:

255.255.255.0

M. Click on **OK**.

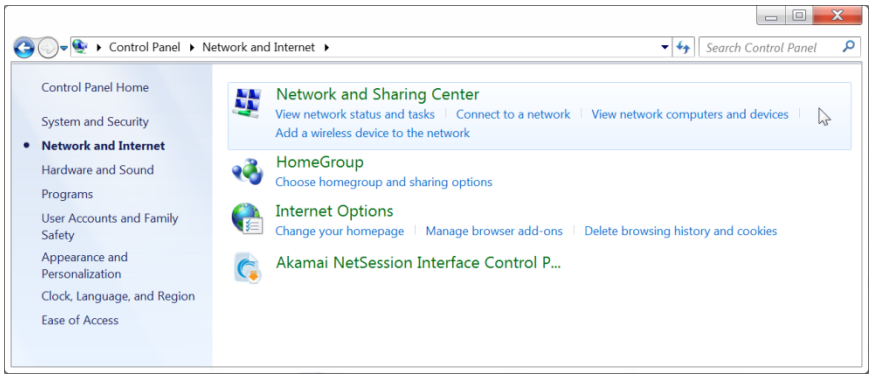


Step 5A

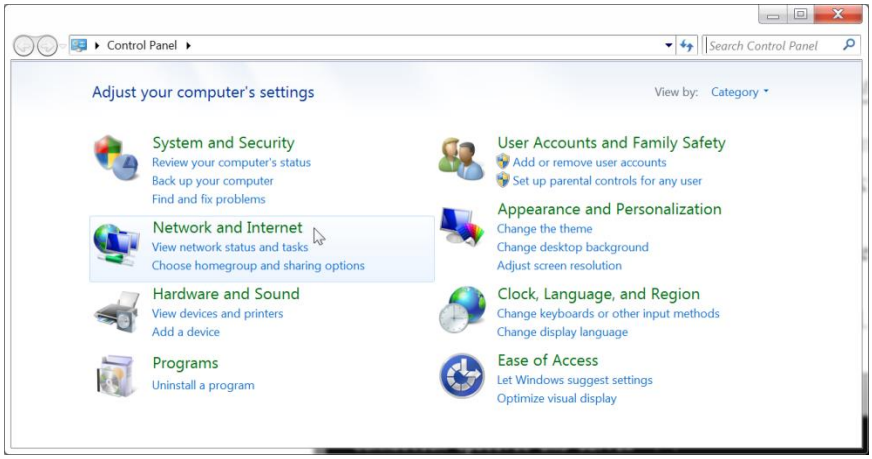


Steps 5B-5C

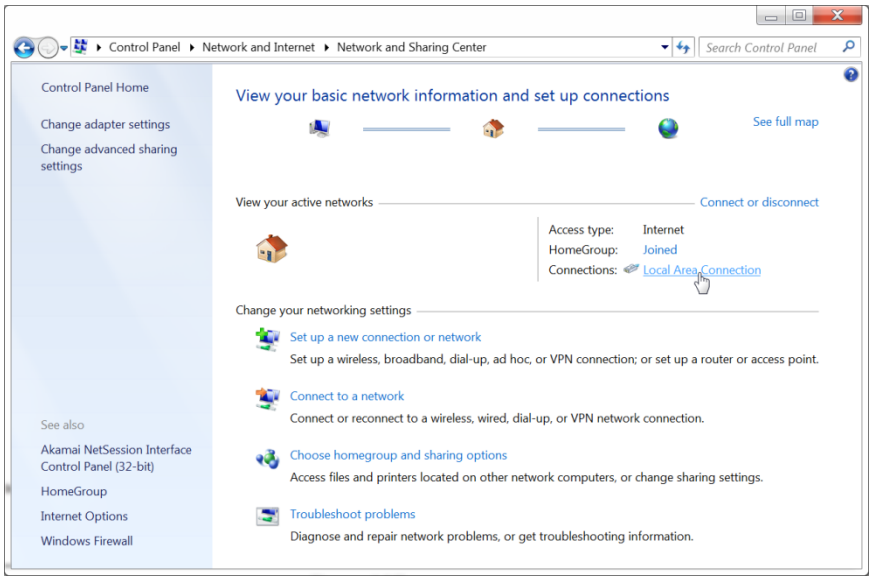
Figure 9



Step 5D

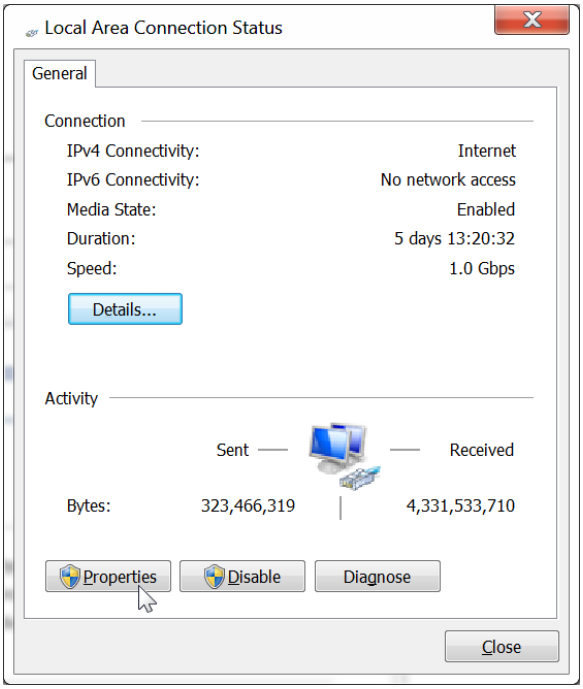


Step 5E

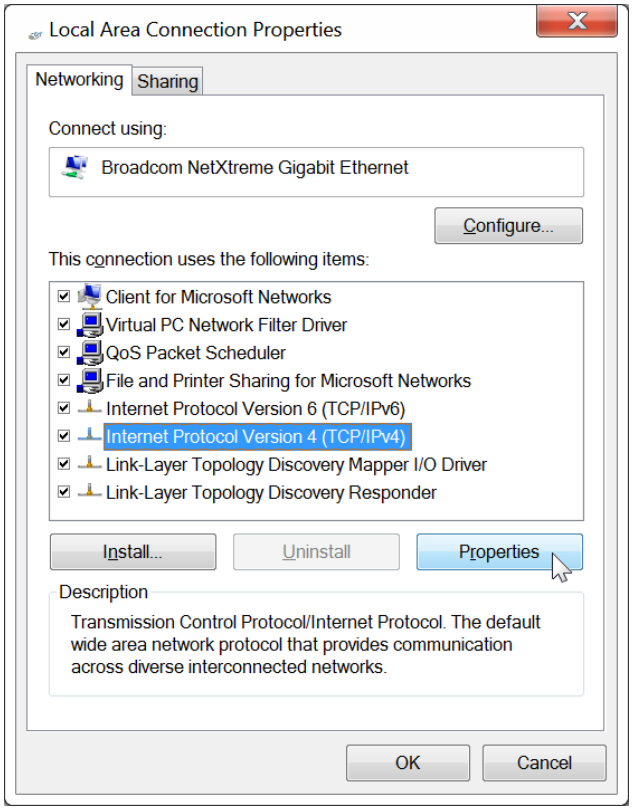


Step 5F

Figure 10

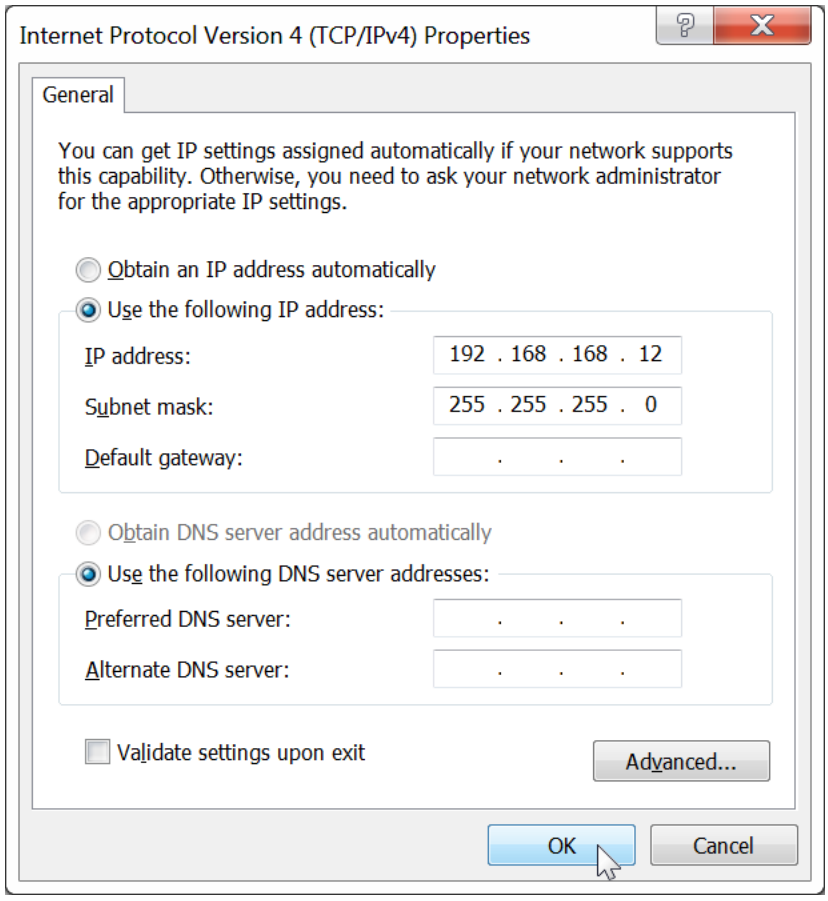


Step 5G



Steps 5H-5I

Figure 11



Steps 5J-5K-5L-5M

Figure 12

The computer is now ready to communicate with the MNC.

Refer to Figure 13.

6. Open up an Internet browser (Explorer, Chrome, Firefox, etc.) and type the following address in the address bar near the top of the screen:

   http://192.168.168.50/mnc/

   NOTE: **mnc** must be written in lower case

Figure 13: Internet Browser Entry

Refer to Figure 14.

7. The MuxLab Pro Digital Network Controller Web interface **Login Screen** will appear.

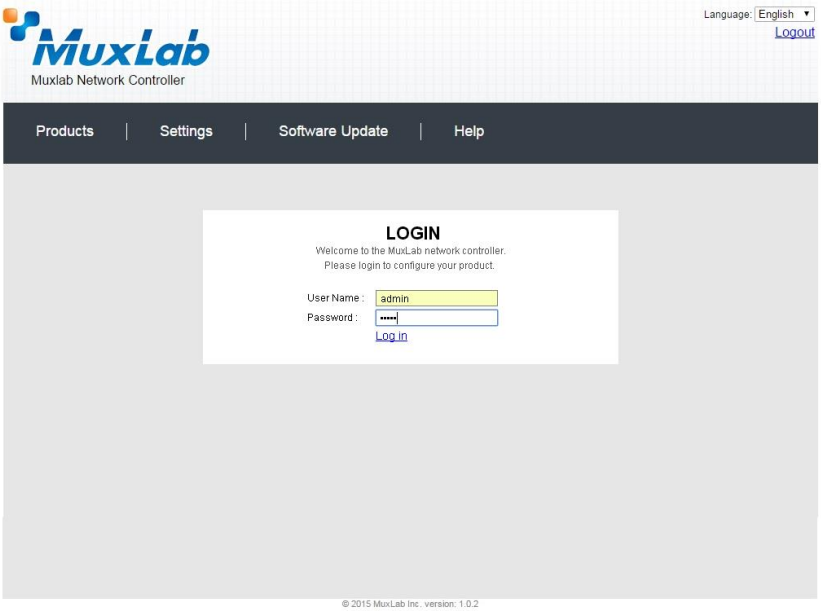


Figure 14 Login Screen

8. In the **User Name** field, type admin. Use lower case.
9. In the **Password** field, type admin. Use lower case.
10. Click **Log in**.

Refer to Figure 15

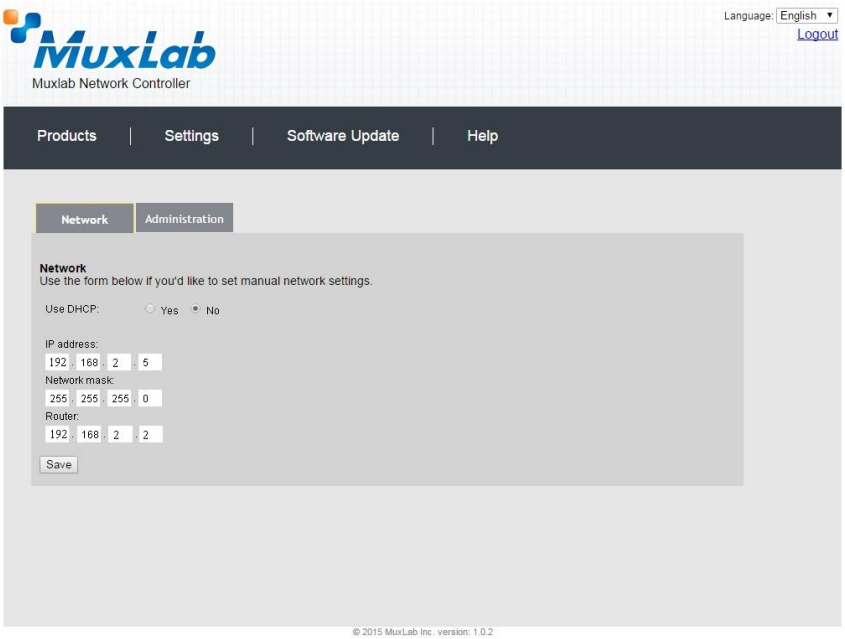


Figure 15 Network Settings Screen

11. Click the **Settings** tab. The Network Settings screen will appear.
12. Next to **Use DHCP**, ensure that the **No** radio button is selected.
13. In the **IP address** field, type the first 3 entries of the IP address of the network subnet on which the MNC will be installed, which in our example is 192.168.2.x.

    For example, type the following in the MNC **IP address** field:

    192.168.2.*x*

    Where *x* in our example can be any number from 3 to 254, and since "1" was used above for the Ethernet Switch and "2" was used for the Router, then for this example we will select "5" for a Static IP address of **192.168.2.5,** see Figure 15. **Error! Reference source not found.** Just make sure the Static IP address for the NC does conflict with the Static IP address of the Ethernet Switch and the Router or any other Static IP address already pre-assigned in the given network.
14. In the **Network mask** field, type **255.255.255.0**
15. In the **Router** field, type the IP address of the network Router (which in our example is **192.168.2.2**).
16. Click on **Save**. The MNC will reboot (Figure 16).

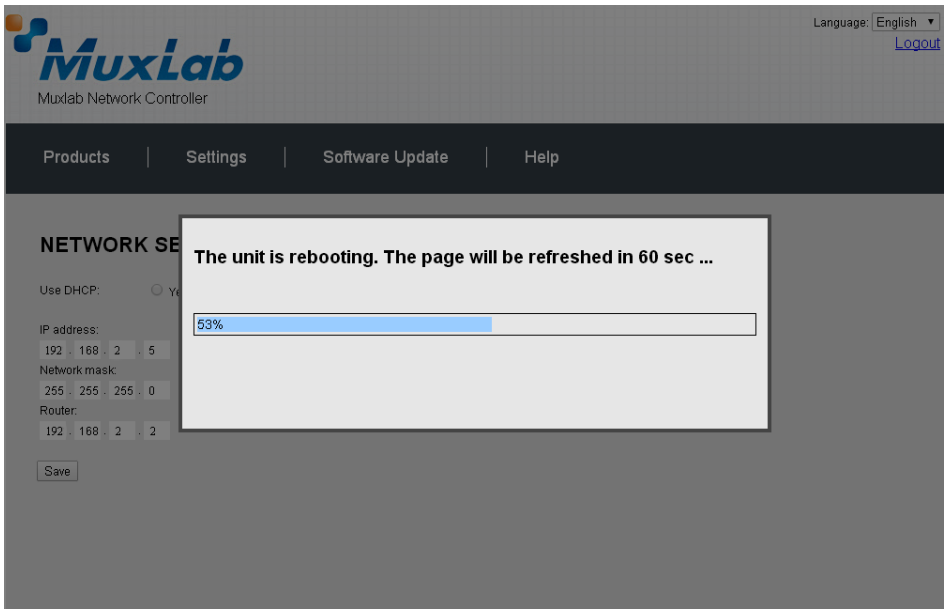


Figure 16 MNC Reboot Screen

The MNC is now configured to work with your network router.

Process 2: Physically installing the MNC to the network

1. Disconnect the Ethernet cable from the computer and connect it to either the Router or the Ethernet Switch. Ensure that the other end is still connected to the MNC. Also make sure that the Router is connected to the Ethernet Switch.

3.4. Ethernet Web Interface – Device Management

The Ethernet Web interface allows the user to manage the MNC and the AV over IP product family of extenders remotely from a Windows based computer. Make sure the computer is set to a Static IP address in the same subnet, which in our example is **192.168.2.x**. Follow steps 4, 5 & 6 in section 3.3 on how to accomplish this, but set using the subnet 192.168.2.x

Ensure that the computer is connected by an Ethernet cable to the network router on which the MNC is physically installed. Open up an Internet browser (Explorer, Chrome, Firefox, etc.) and type in the MNC IP address in the address bar near the top of the screen, such as, which in our example is 192.168.2.5:

192.168.2.5/mnc/

NOTE: **192.168.2.x** represents the first three IP address entries of the network subnet on which the MNC is physically installed.

The MuxLab Network Controller Web interface **Login Screen** will appear (**Figure 17**).

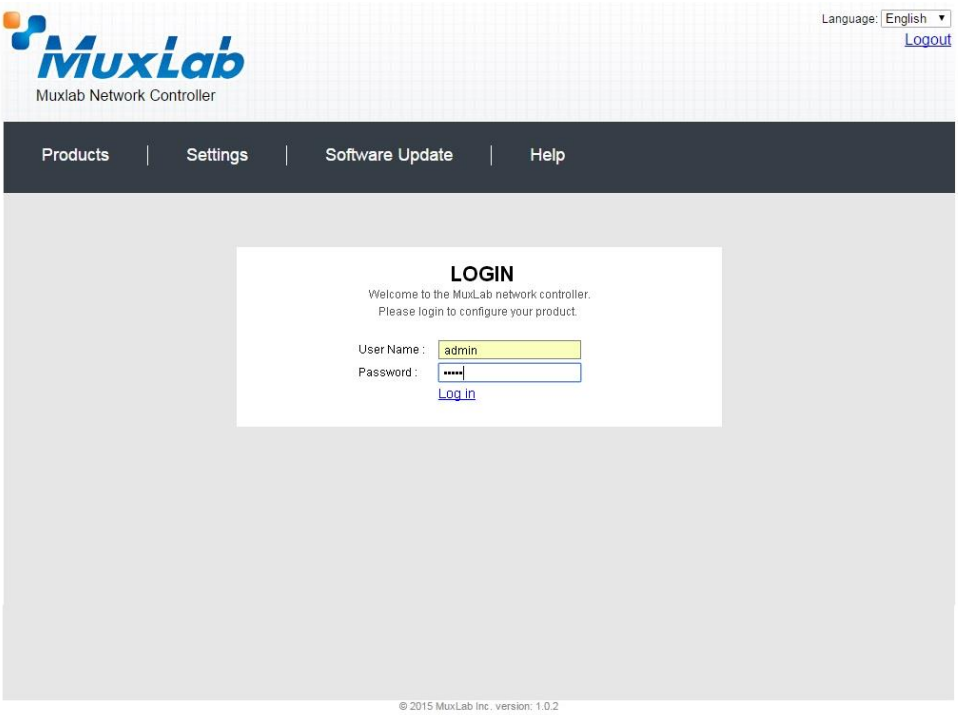


Figure 17 Login Screen

In the **User Name** field, type admin. Use lower case.

In the **Password** field, type admin. Use lower case.

Click **Log in**.

You are now ready to manage the MuxLab Pro Digital Network Controller.

Extender Models

The MuxLab Pro Digital Network Controller is designed to work with various MuxLab Extender models (refer to Table 2).

All Extender models are controlled using MuxLab's Network Controller software, although the setup for each differs from model to model.

NOTE:

On the following pages, the controls for each Extender model are presented separately. Please locate your Extender model in Table 2 and refer to the pages that describe its operation. There is no need to read the remainder of this manual in its entirety, each Extender section is complete and self-contained.

Model	Type	Resolution	Features	Pages
500752	HDMI	1080p/60	IR + PoE	22-39
500753	HDMI	1080p/60	RS232+IR+PoE	40-58
500754	HDMI (Video Wall Capable)	1080p/60	RS232+IR+PoE	59-81
500755	Audio	2 Ch Audio	RS232+IR+PoE	82-100
500756	SDI	3G-SDI	RS232+IR+PoE	101-119
500757	HDMI	1080p/30	RS232+IR+PoE	120-135
500758	HDMI	4K/30	Audio+RS232+IR+PoE	136-152
500759	HDMI (Video Wall Capable)	4K/30	Audio+RS232+IR+PoE	153-173
500755-AMP	Audio	2 Ch Audio w/AMP	RS232+IR+PoE(TX)	174- 192
500762	HDMI	1080p/60 & 4K/60	USB+RS232+IR+PoE	193-210

Table 2: Extender Models

Extender Model 500752

Products Screen

Once the user has logged in, the **Products** screen will appear (Figure 18).

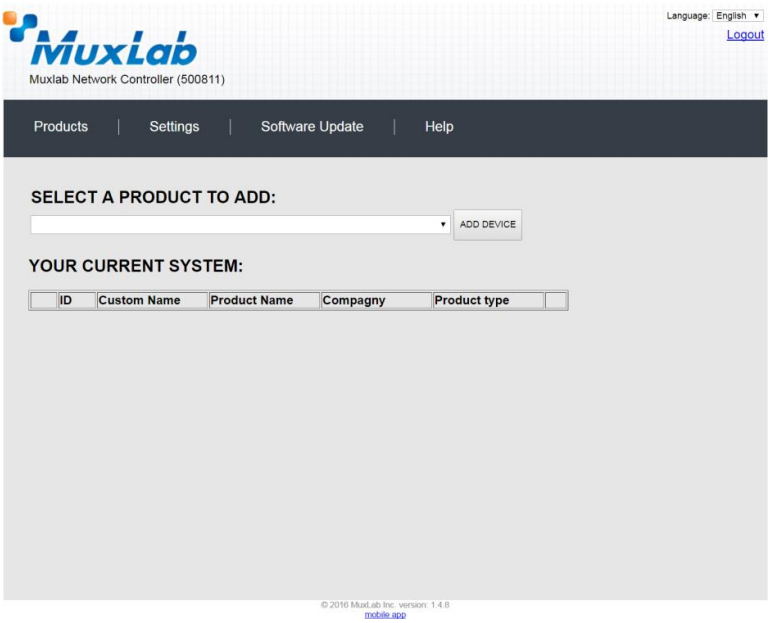


Figure 18: Products Screen – Initial View

In the **SELECT A PRODUCT TO ADD:** drop down box, select **Hdmi Over IP (500752/753/754/755/756)** and then click on **ADD DEVICE** (Figure 19).

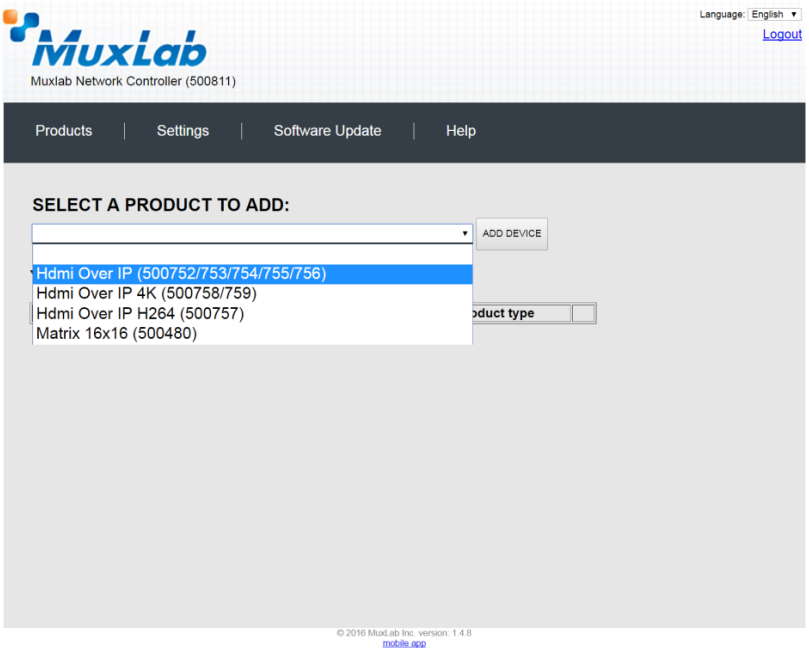


Figure 19: Products Screen – Selecting a Product

A dialog box appears asking the user to provide a custom name for the selected product (Figure 20). The user then types a name in the **Custom Name:** field and clicks on **OK**. Note that if the user decides to click on **CANCEL**, the previous screen appears (Figure 19), without a product being added.

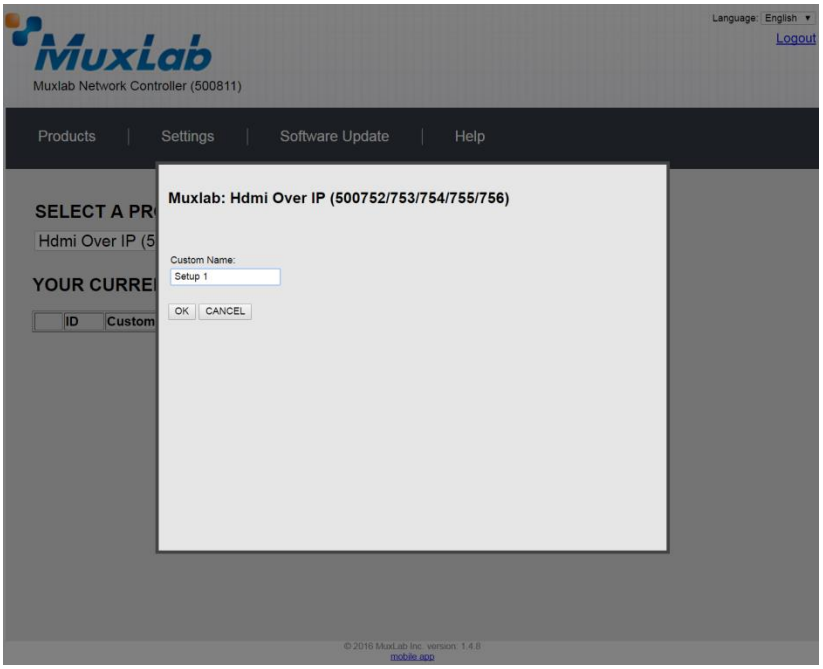


Figure 20: Products Screen – Naming a Product

The custom name has been added to **YOUR CURRENT SYSTEM** (Figure 21).

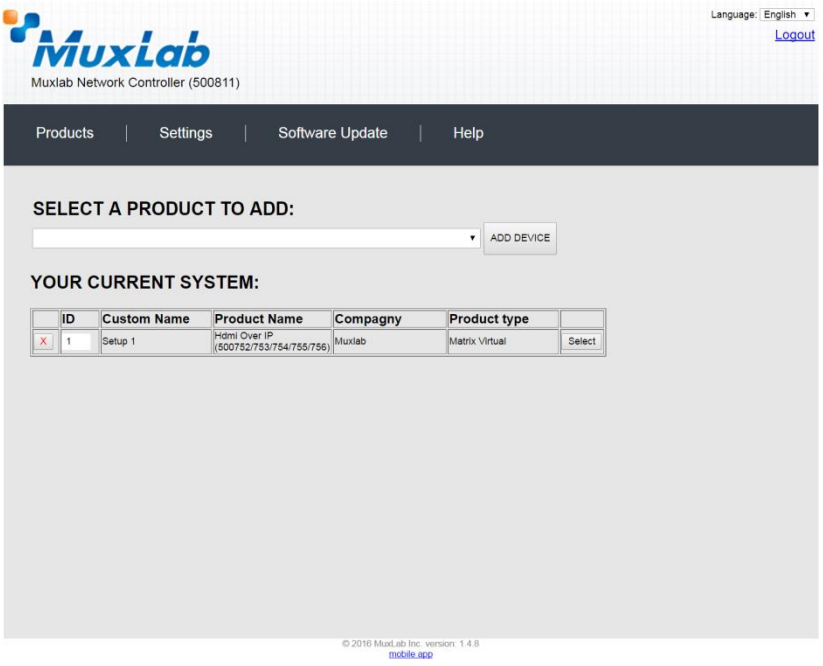


Figure 21: Products Screen – Your Current System Selection

The user can change the ID of each row by modifying the **ID** field. The user can also delete the entire row completely by clicking the X next to it.

To configure a given product, the user clicks on **Select**, which brings up a multi-tabbed screen (Figure 22).

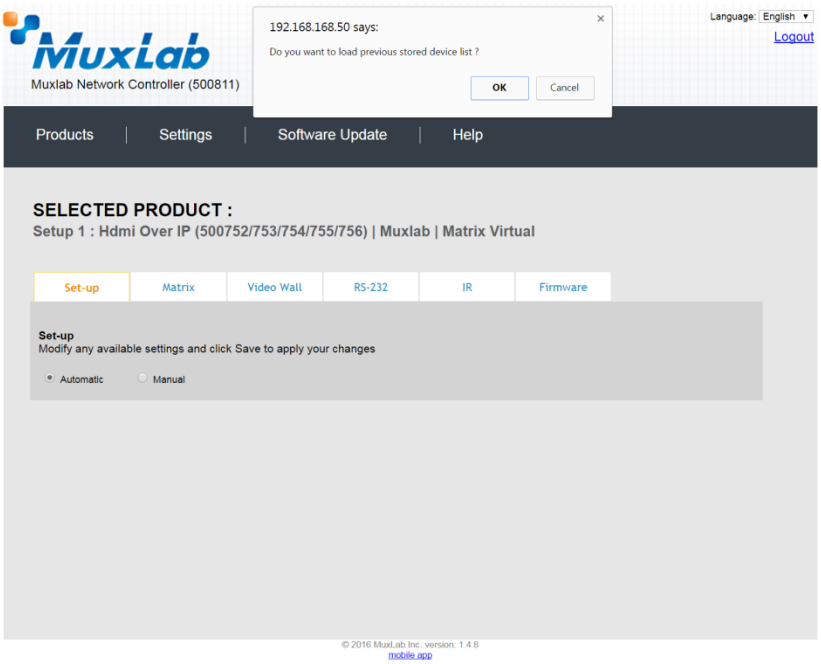


Figure 22: Products Screen – Load Dialog

By default, a dialog appears asking the user to load a previously saved device list (in case such a list has already been stored). This dialog will appear even if no device list has been previously saved.

Six tabs appear within the **Products** screen:

1. Set-up
2. Matrix
3. Video Wall
4. RS-232
5. IR
6. Firmware

1. Products Screen - Set-up Tab

The **Set-up** tab offers the user two options for the type of set-up allowed: **Automatic** or **Manual**.

Automatic means that the software will scan the system for every dip-switch enabled device. The software will then override its manual dip-switch address settings and place these units under software address control. (Automatic is recommended).

Manual means that the software will allow the manual dip-switch address settings of any found device to remain active.

After selecting **Automatic** or **Manual**, click on **Launch discovery** (Figure 23).

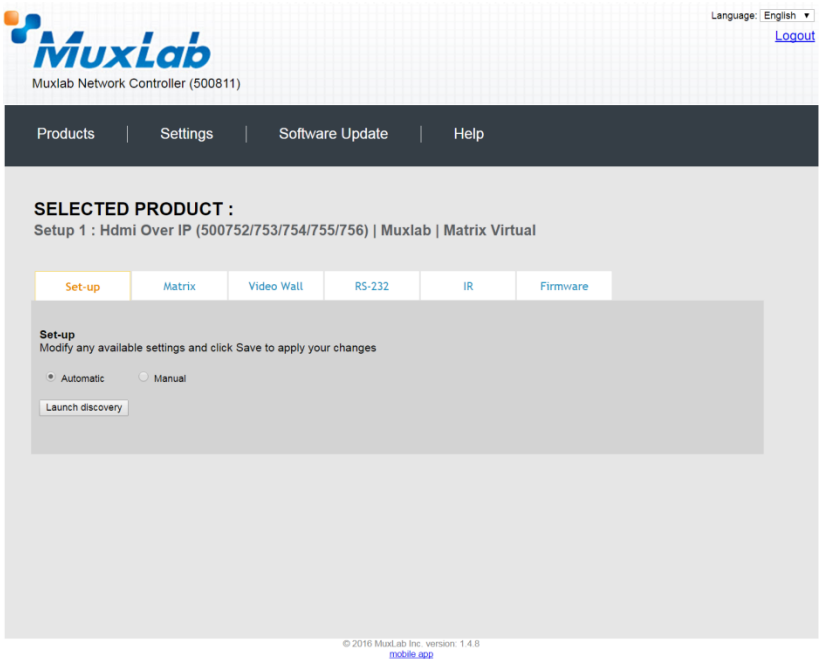


Figure 23: Products Screen – Set-up Tab

The system will scan the network for all source side devices (500752 transmitters) and display side devices (500752 receivers), and will display the scan results in tabular form (Figure 24).

Each 500752 transmitter and receiver can be assigned an arbitrary descriptive name, normally reflecting the end device that it is terminated to. To change the name of any Display (RX) or Source (TX) device, click the **Name** field to edit its contents. Several **Name** fields can be edited before saving changes, as shown in Figure 25 (orange highlighted fields).

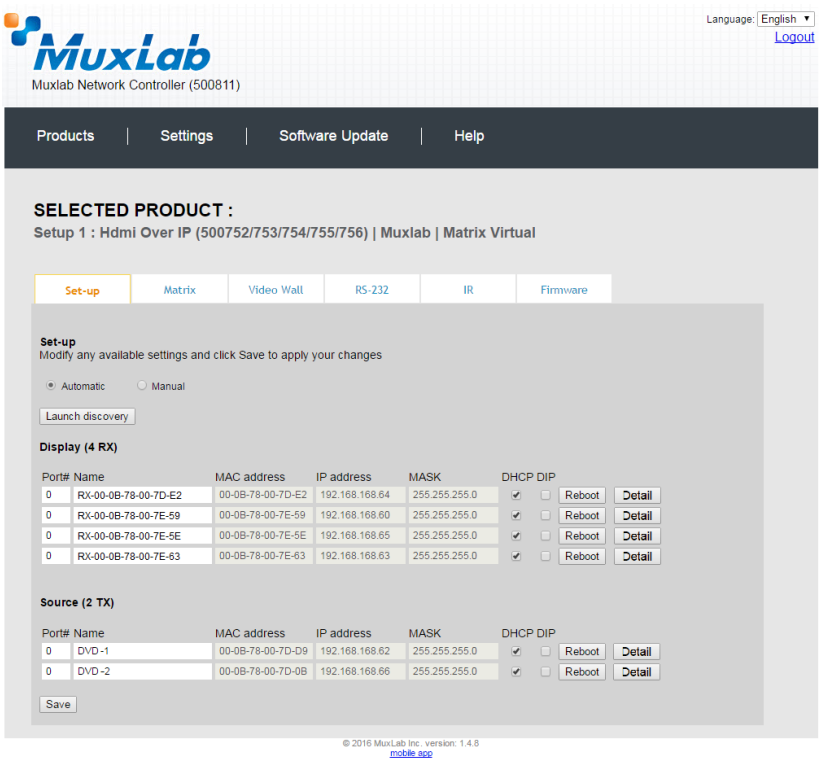


Figure 24: Products Screen – Set-up Tab

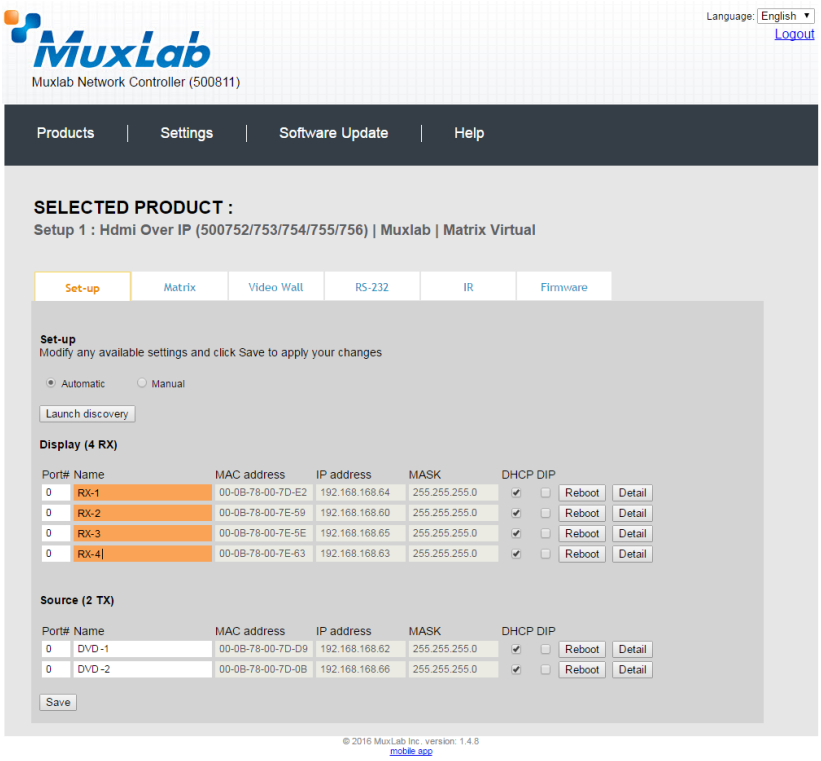


Figure 25: Name Editing

To save all name changes, click on **Save**. A green UPDATED tag will appear next to newly changed names (Figure 26).

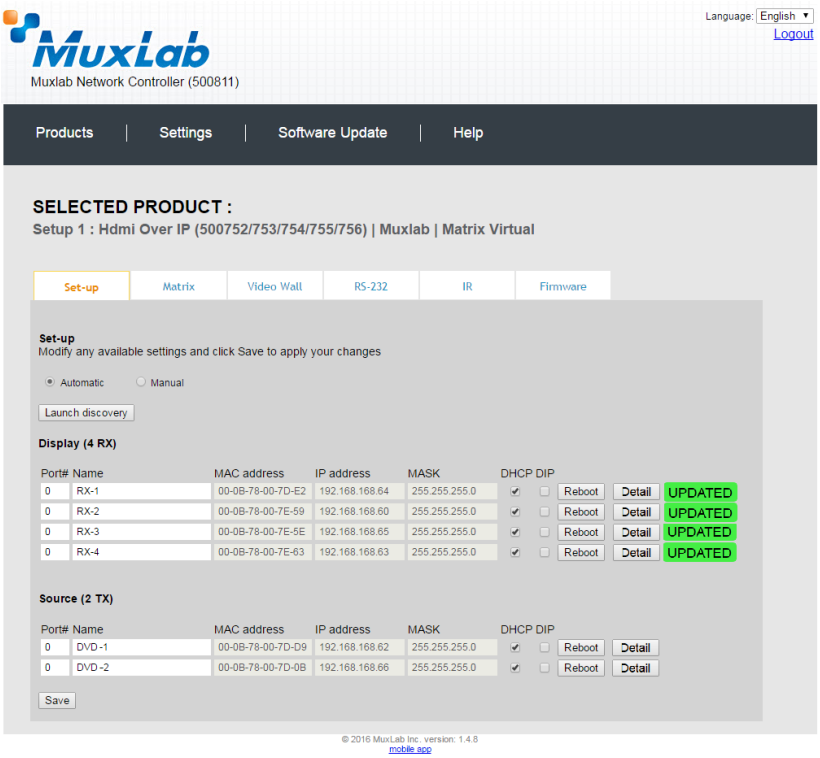


Figure 26: Saving Name Changes

To view and modify component parameters, click on the **Detail** button next to the given component. A dialog appears (Figure 27).

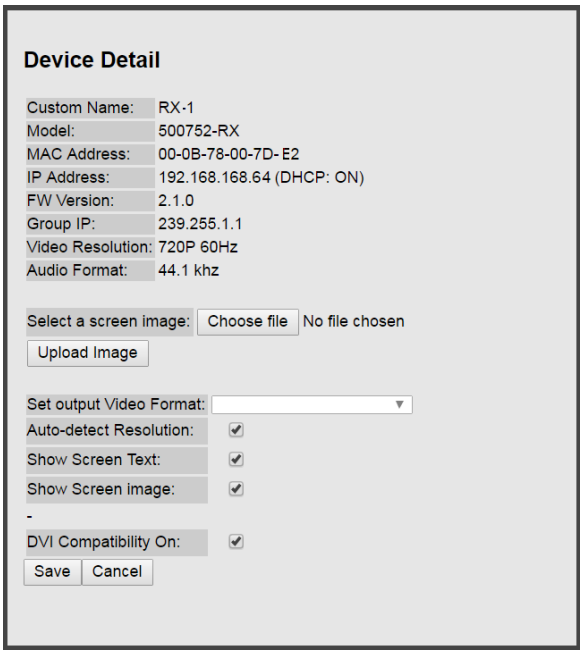


Figure 27: Device Detail Dialog

2. Products Screen - Matrix Tab

The **Matrix** tab of the **Products** screen allows the user to connect any Display to any Source. The user also has the option of using **Presets** to save connection schemes ("Presets"), as well as to edit and delete existing presets (Figure 28).

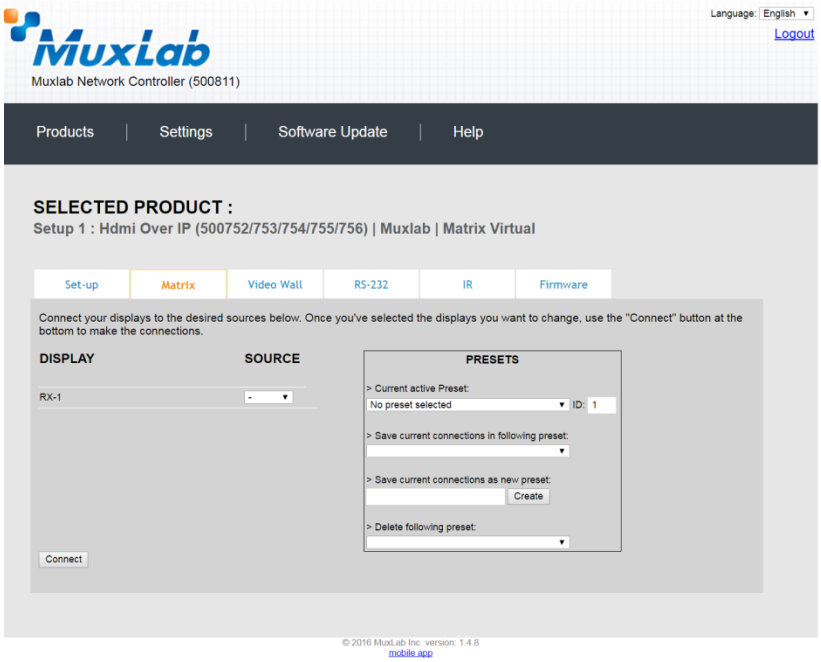


Figure 28: Matrix Tab

To connect a display to a source, the user first clicks on the drop-down list next to the given display (for example "RX-1") and selects which source to connect it to (Figure 29).

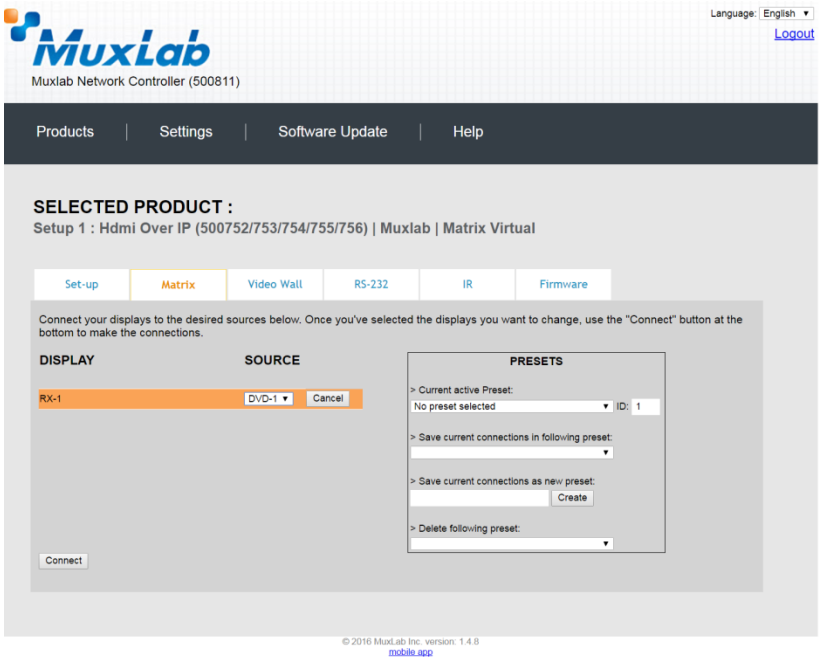


Figure 29: Change Connection

Once the selection is made (the user can change any or all connections between displays and sources), the user clicks on **Connect** to finalize the change. A green SUCCESS tag will appear next to the new or changed connection (Figure 30).

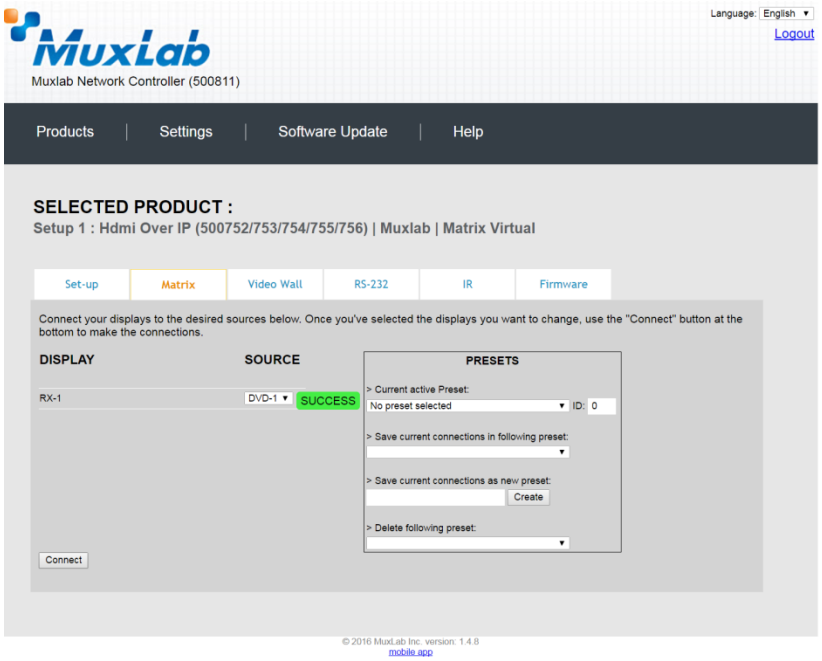


Figure 30: Change Successful

To create a new preset, the user clicks the **> Save current connections as new preset** field (Figure 31) and types a name. This assigned preset name will be linked to the existing connection scheme being shown within the **Matrix** tab.

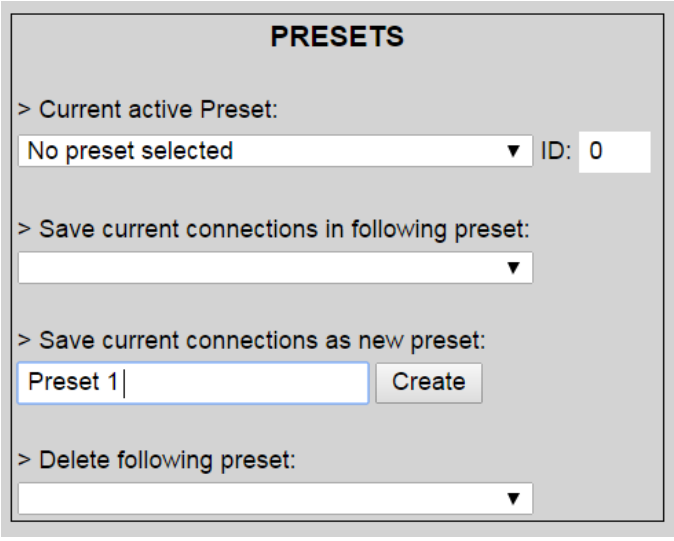


Figure 31: Create New Preset

To save this preset, the user clicks on **Create**. A green SUCCESS tag will appear next to the **> Save current connections as new preset** field and the newly created preset becomes the **Current active Preset** (Figure 32).

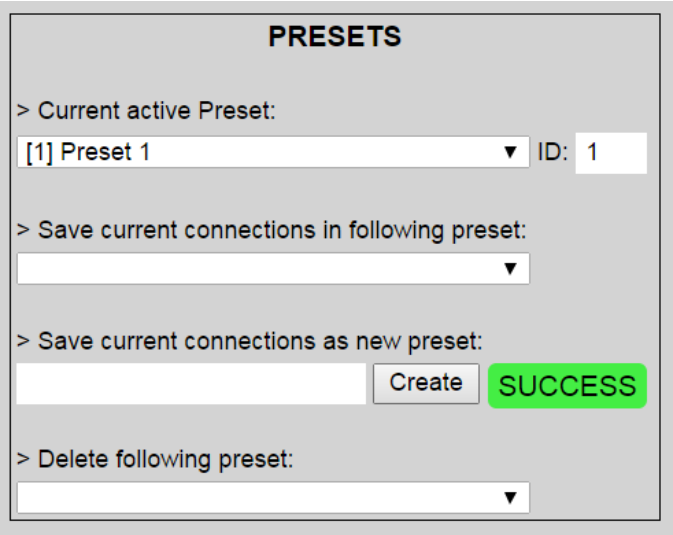


Figure 32: Confirmation of New Preset

To delete a preset, the user clicks the **> Delete following preset** drop-down box and selects a preset name from the list shown (Figure 33).

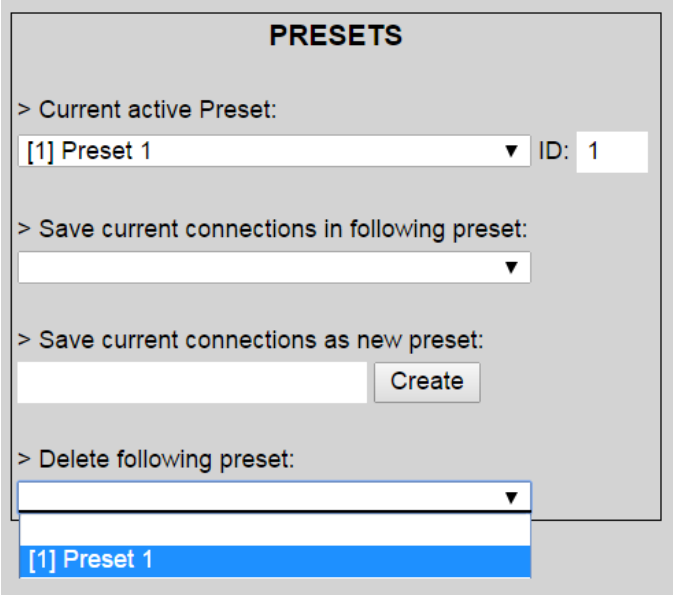


Figure 33: Delete Preset

Once selected, a dialog will appear asking the user to confirm the deletion request (Figure 34).

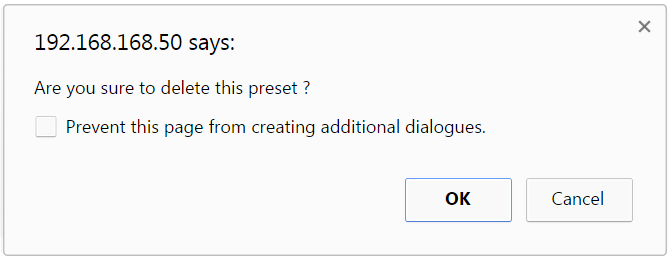


Figure 34: Confirmation of Deleted Preset

Click on **OK**. The preset will be deleted and a green SUCCESS tag will appear next to the **> Delete following preset** field (Figure 35).

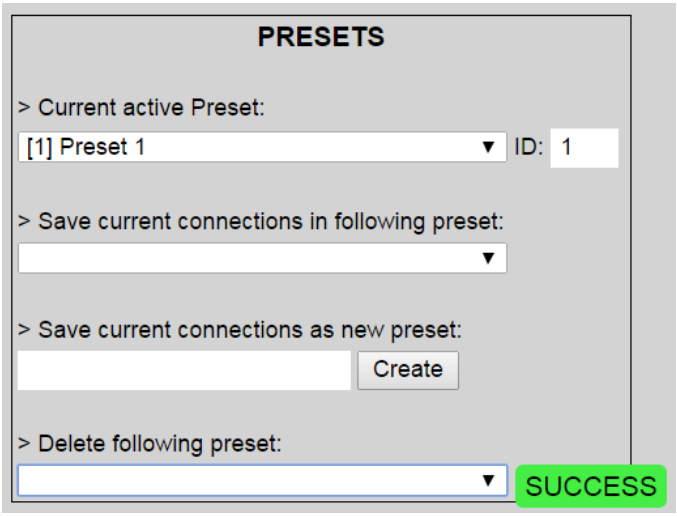


Figure 35: Confirmation of Deleted Preset

To save the current matrix configuration under an existing **Preset** name, click on **> Save current connection in following preset** drop-down box and selects a preset name (Figure 36).

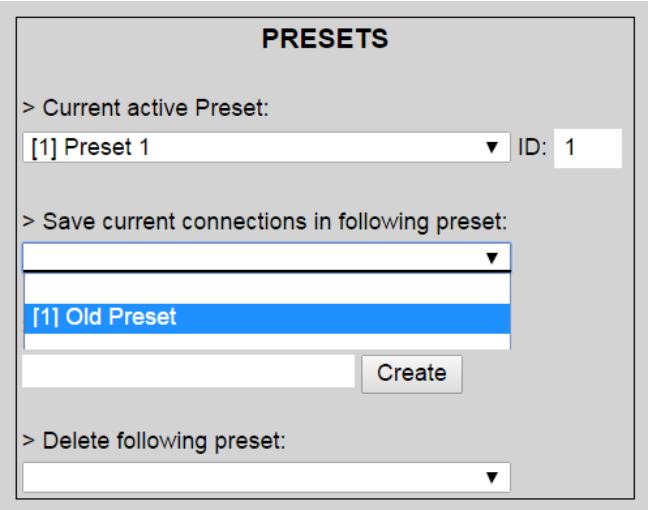


Figure 36: Change Current Active Preset

Once selected, the **Preset** will be saved and a green SUCCESS tag will appear next to the **> Save current connections in following preset** field (Figure 37).

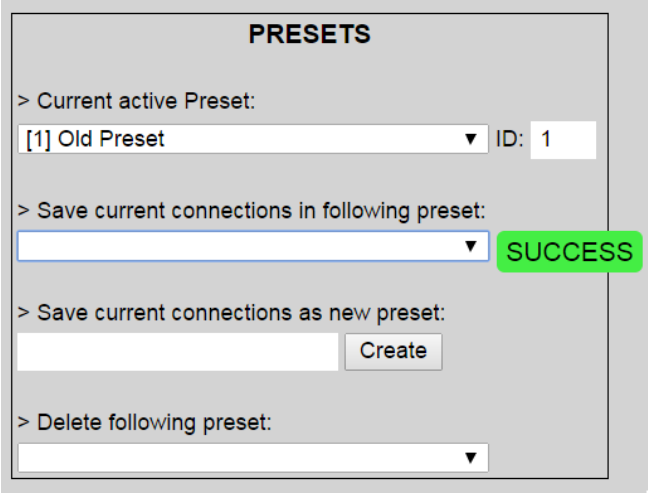


Figure 37: Confirmation of Changed Preset Name

In order to activate an existing **Preset**, select > **Current active Preset**, and select the **Preset** name from the drop-down box and the **Preset** will become active. The active **Preset** will also be displayed in the **Current active Preset** field.

3. Products Screen - Video Wall Tab

MuxLab's Extender 500752 does not support the Video Wall feature. Clicking on this tab will display the following screen (Figure 38).

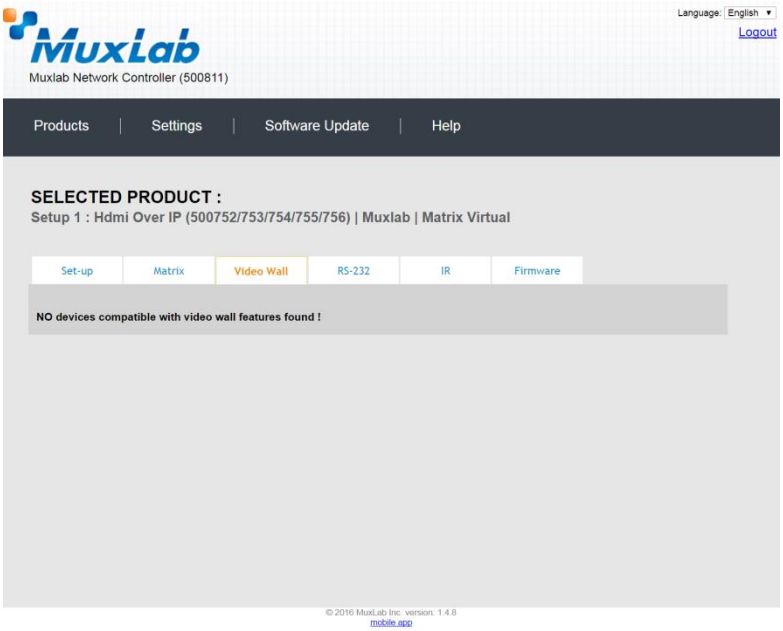


Figure 38: Video Wall Tab

For more information on the Video Wall tab and its features, refer to the section of this manual dealing with MuxLab Extender 500754 and MuxLab Extender 500759.

4. Products Screen - RS-232 Tab

MuxLab's Extender 500752 does not support the RS-232 feature. Clicking on this tab will display the following screen (Figure 39).

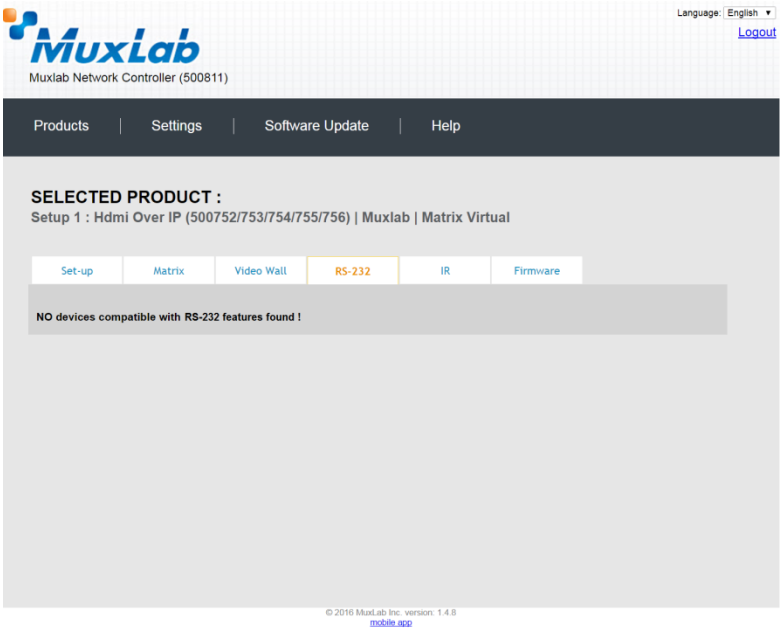


Figure 39: RS-232 Tab

For more information on the RS-232 tab and its features, refer to the section of this manual dealing with MuxLab Extender 500753 and 500754.

5. Products Screen - IR Tab

The **IR** tab of the **Products** screen enables the user to send IR commands to a MuxLab transmitter or receiver IR port (Figure 40) via the Network Controller. IR pass-through mode is also supported using an IR handheld remote as the control source.

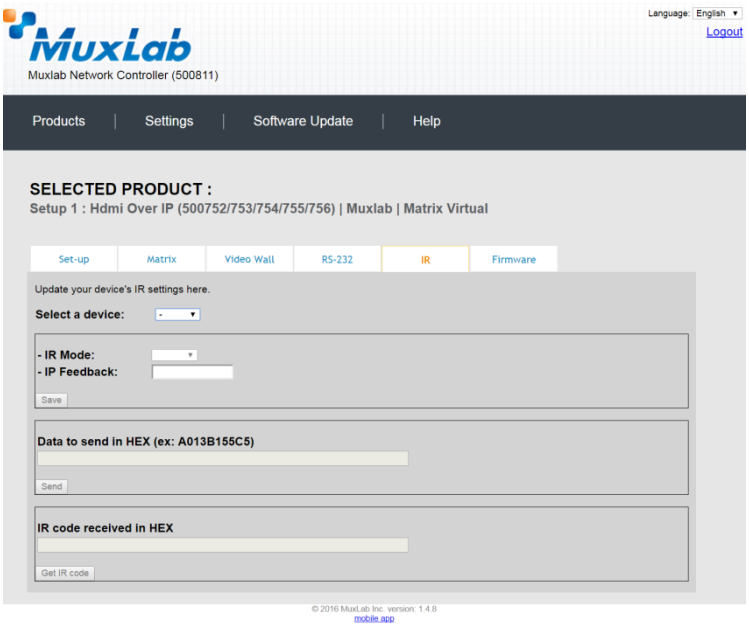


Figure 40: IR Tab

When sending IR commands through the Network Controller, the user first selects the device that the IR commands will be sent to. This is done by clicking on the **Select a device** drop-down list and making a selection (Figure 41).

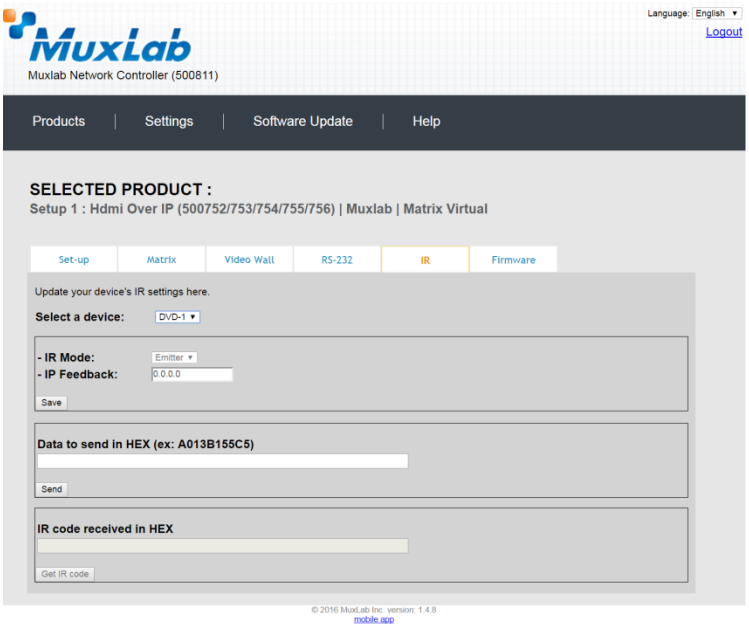


Figure 41: IR Tab – Selecting a Device

Once a device is selected, the **Data to send in HEX** field becomes enabled. In the above example, DVD-1 was chosen as the selected device, meaning that a command sent to DVD-1 will travel from the Network Controller to the Ethernet Switch, then from the Ethernet Switch to the transmitter connected to DVD-1. That transmitter will then send the specified IR data command to DVD-1 via the IR Emitter connected to the transmitter IR out port.

The **IR code received in HEX** field displays the HEX version of an IR command send from a handheld remote to an IR receiver IR In port and attached IR Sensor.

When sending IR commands directly from an IR Source device, such as an IR handheld remote, from 500752 receiver through to a transmitter, the user must set up a pass-through for IR signals to be sent to and from devices. This requires the following step:

The user must tell the 500752 receiver (the device near the IR handheld remote with an attached IR Sensor) the IP address of the 500752 transmitter (where the IR commands are being sent, which has an attached IR Emitter). This is done by first clicking on the **Select a device** drop-down list and selecting the local device from the list, and then inputting the IP address of the far device in the **IP Feedback** field. The user then clicks on **Save**.

6. Products Screen - Firmware Tab

The **Firmware** tab of the Products screen enables the user to update the firmware for MuxLab transmitters and receiver (Figure 42).

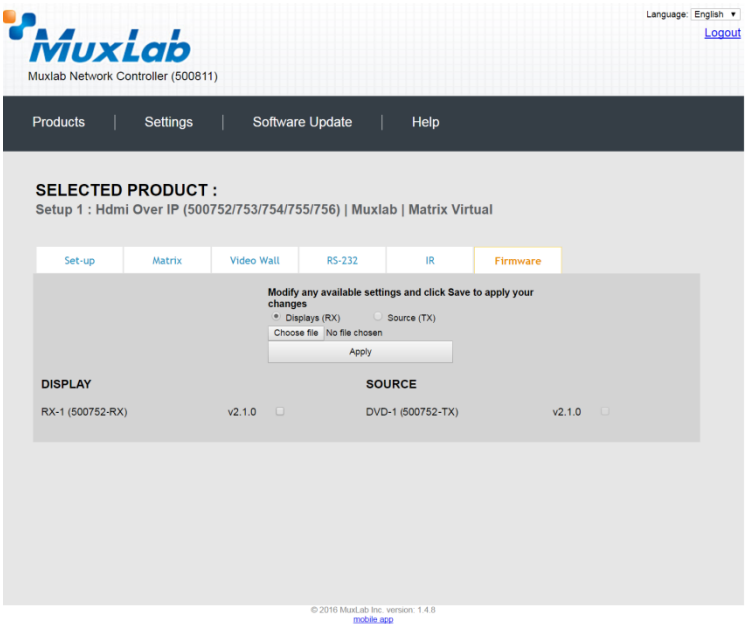


Figure 42: Firmware Tab

The user first selects either **Display (RX)** or **Source (TX)**, then chooses the firmware update file to upload to the given device. Once the file is selected, the user checks the box next to the given device (listed under **DISPLAY** and **SOURCE**) targeted for firmware upgrade, and then clicks **Apply**.

Settings Screen

The **Settings** screen contains two tabs: **Network** and **Administration**.

The **Network** tab (Figure 43) is used to change the IP address of the MuxLab Network Controller (MNC), the network mask, as well as the router IP address. It also allows the user to enable or disable DHCP.

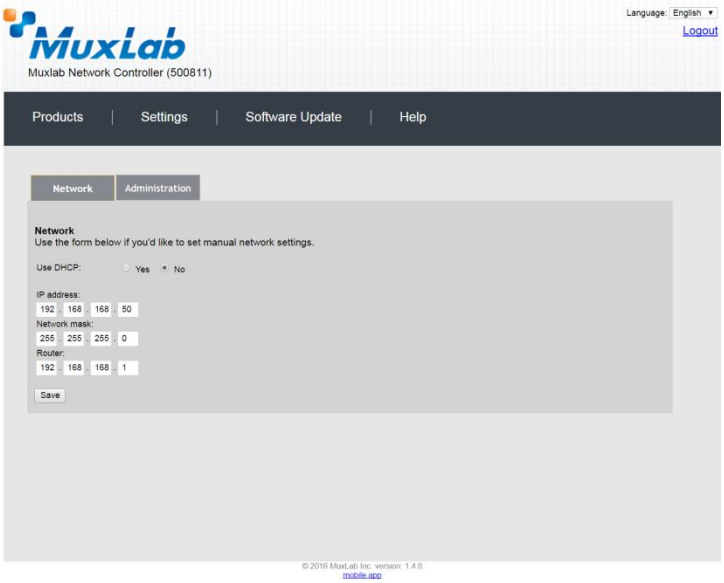


Figure 43: Settings Screen: Network Tab

The **Administration** tab is used to create or delete user accounts, change passwords, restore data, backup data, and retrieve logs (Figure 44).

Figure 44: Settings Screen: Administration Tab

Software Update Screen

The **Software Update** enables the user to update MuxLab Network Controller software (Figure 45). This software is available on MuxLab's website (www.muxlab.com). Download the software to the local PC before performing the update.

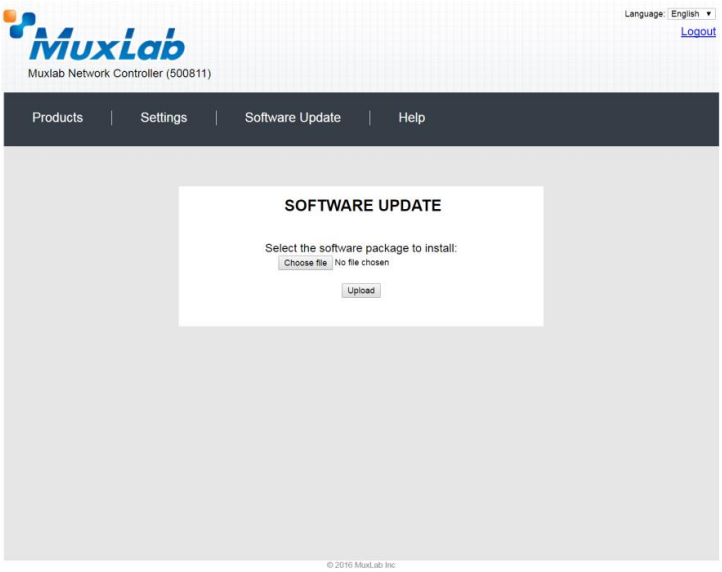


Figure 45: Software Update Screen

Help Screen

The **Help** screen offers quick contact information for customer support and all other inquiries (Figure 46).

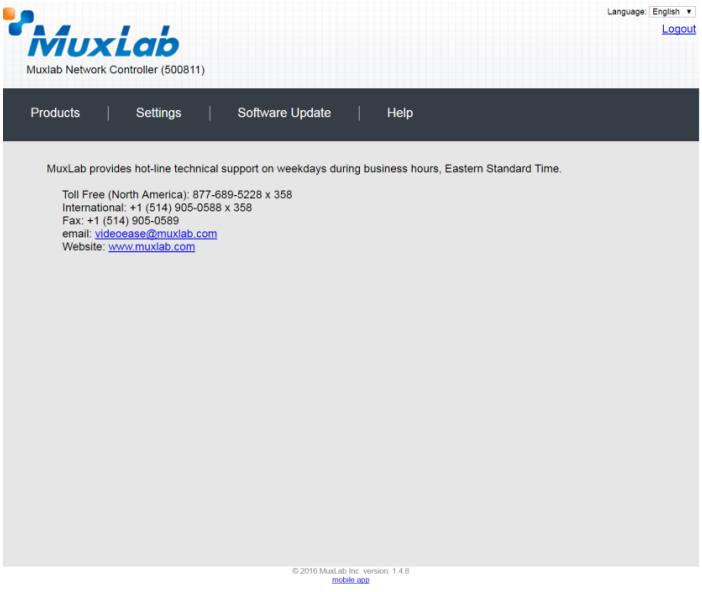


Figure 46: Help Screen

Extender Model 500753

Products Screen

Once the user has logged in, the **Products** screen will appear (Figure 47).

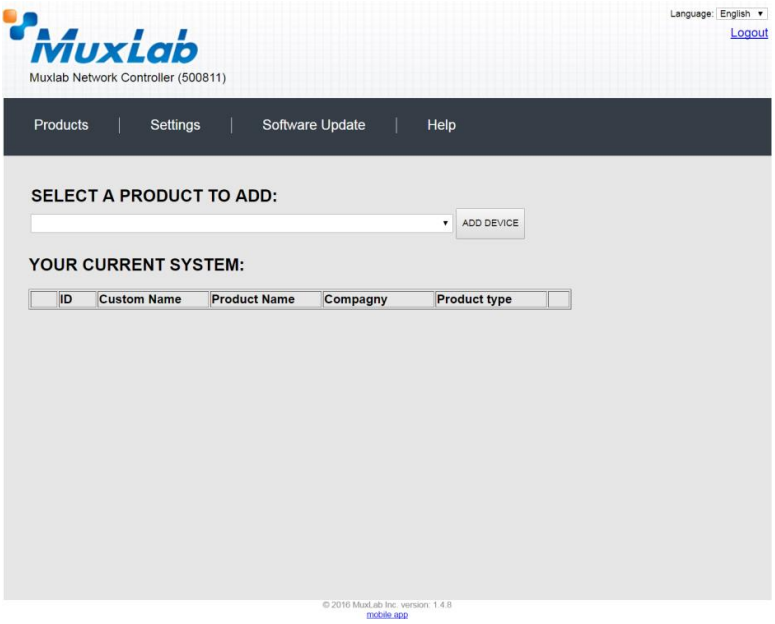


Figure 47: Products Screen – Initial View

In the **SELECT A PRODUCT TO ADD:** drop down box, select **Hdmi Over IP (500752/753/754/755/756)** and then click on **ADD DEVICE** (Figure 48).

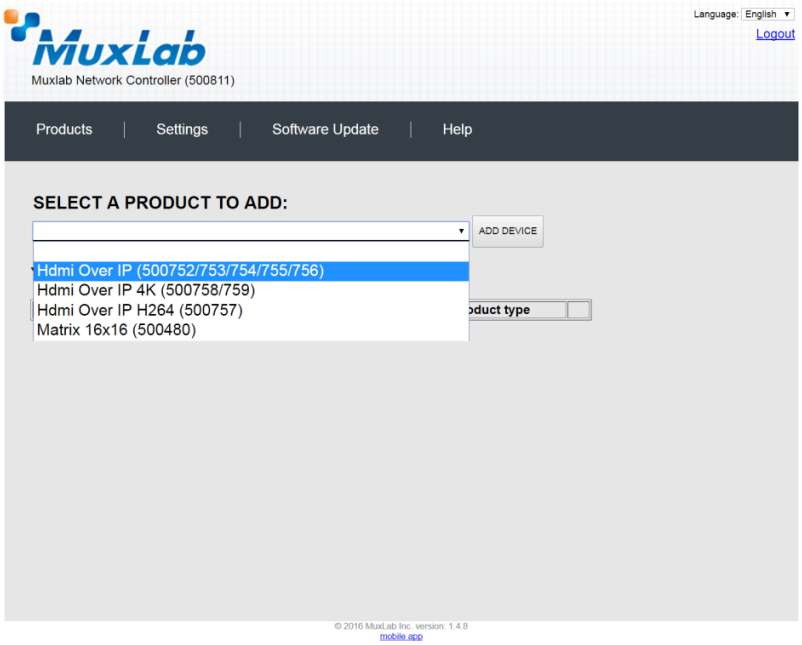


Figure 48: Products Screen – Selecting a Product

A dialog box appears asking the user to provide a custom name for the selected product (Figure 49). The user then types a name in the **Custom Name:** field and clicks on **OK**. Note that if the user decides to click on **CANCEL**, the previous screen appears (Figure 48), without a product being added.

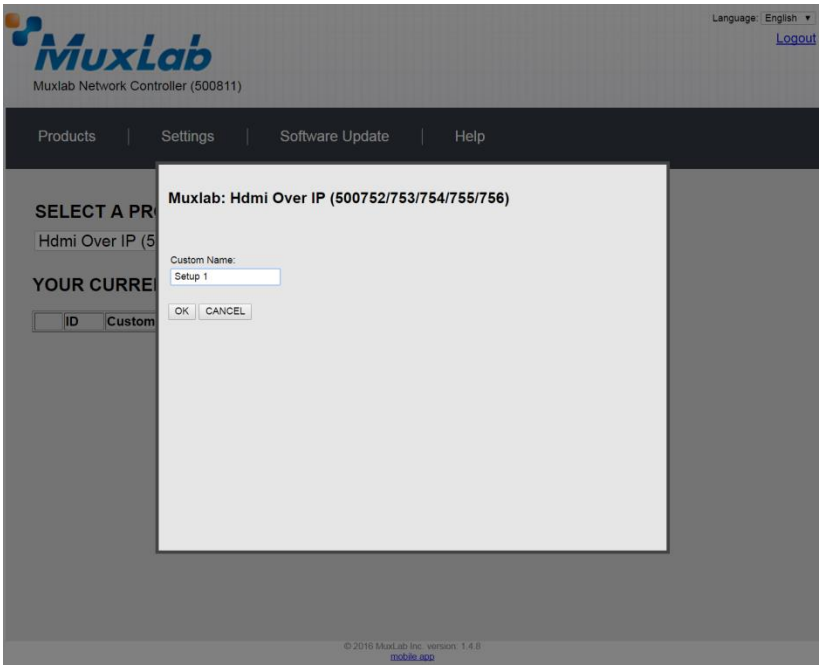


Figure 49: Products Screen – Naming a Product

The custom name has been added to **YOUR CURRENT SYSTEM** (Figure 50).

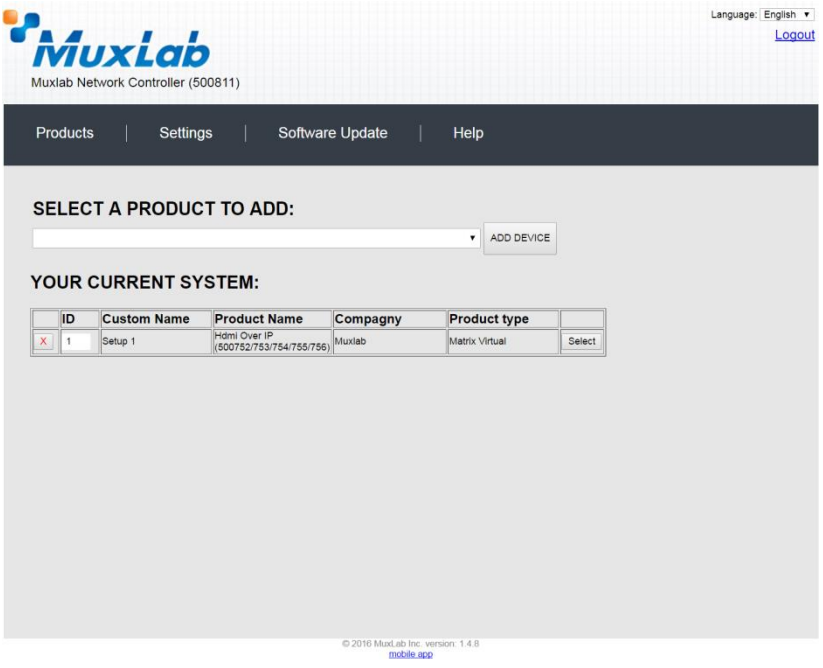


Figure 50: Products Screen – Your Current System Selection

The user can change the ID of each row by modifying the **ID** field. The user can also delete the entire row completely by clicking the X next to it.

To configure a given product, the user clicks on **Select**, which brings up a multi-tabbed screen (Figure 51).

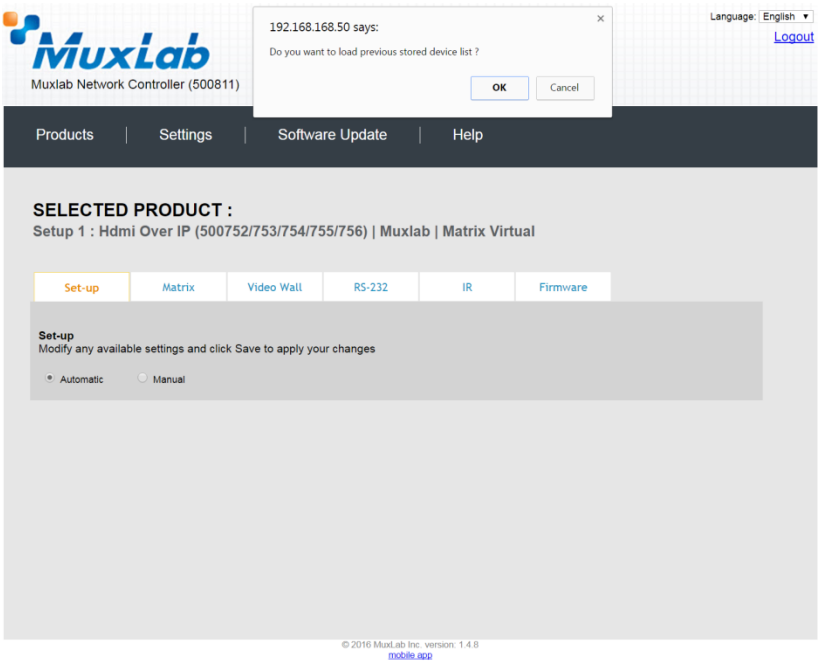


Figure 51: Products Screen – Load Dialog

By default, a dialog appears asking the user to load a previously saved device list (in case such a list has already been stored). This dialog will appear even if no device list has been previously saved.

Six tabs appear within the **Products** screen:

1. Set-up
2. Matrix
3. Video Wall
4. RS-232
5. IR
6. Firmware

1. Products Screen - Set-up Tab

The **Set-up** tab offers the user two options for the type of set-up allowed: **Automatic** or **Manual**.

Automatic means that the software will scan the system for every dip-switch enabled device. The software will then override its manual dip-switch address settings and place these units under software address control. (Automatic is recommended).

Manual means that the software will allow the manual dip-switch address settings of any found device to remain active.

After selecting **Automatic** or **Manual**, click on **Launch discovery** (Figure 52).

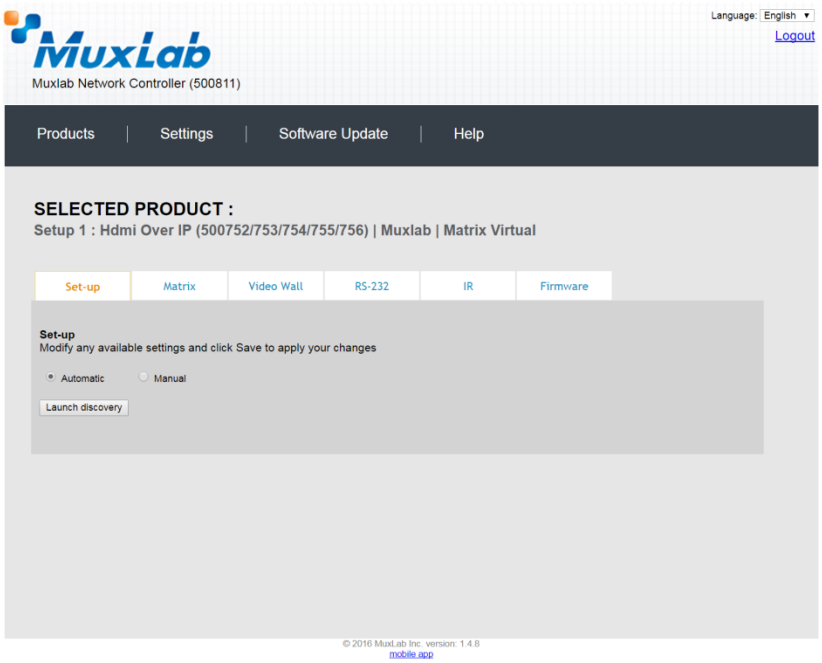


Figure 52: Products Screen – Set-up Tab

The system will scan the network for all source side devices (500753 transmitters) and display side devices (500753 receivers), and will display the scan results in tabular form (Figure 53).

Each 500753 transmitter and receiver can be assigned an arbitrary descriptive name, normally reflecting the end device that it is terminated to. To change the name of any Display (RX) or Source (TX) device, click the **Name** field to edit its contents. Several **Name** fields can be edited before saving changes, as shown in Figure 54 (orange highlighted fields).

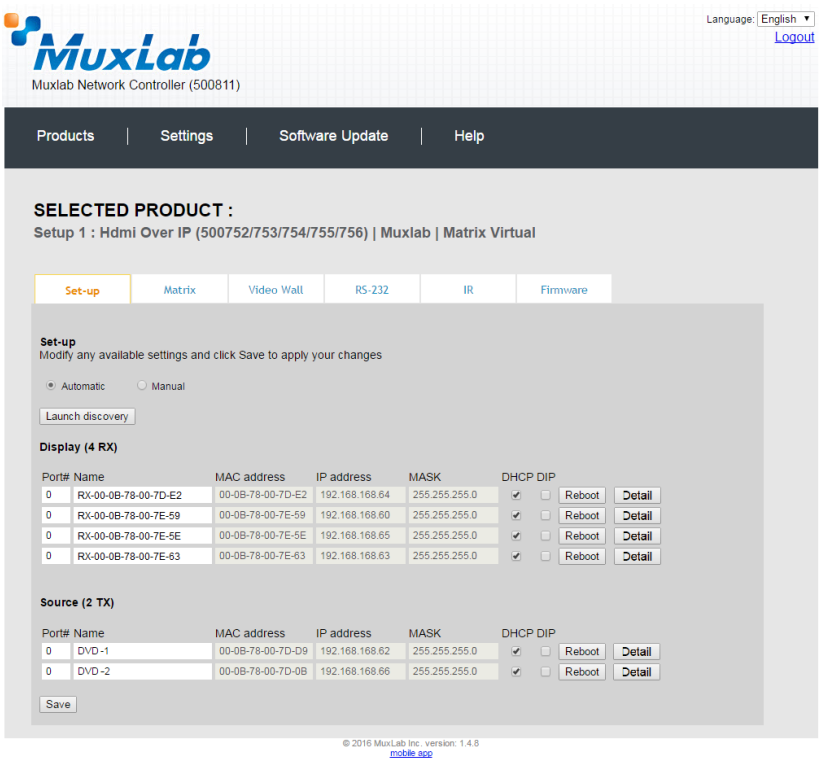


Figure 53: Products Screen – Set-up Tab

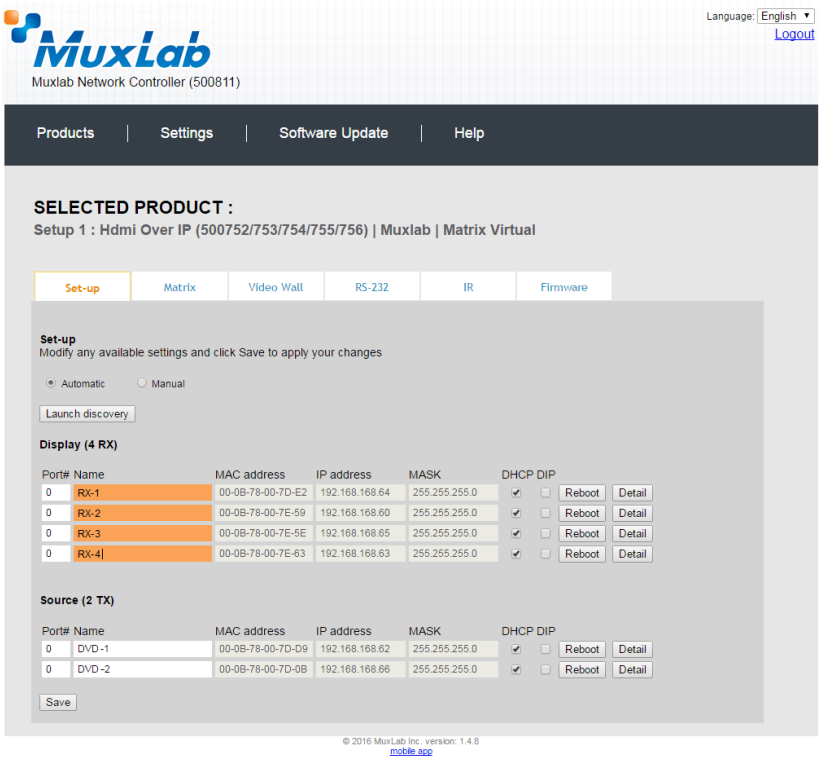


Figure 54: Name Editing

To save all name changes, click on **Save**. A green UPDATED tag will appear next to newly changed names (Figure 55).

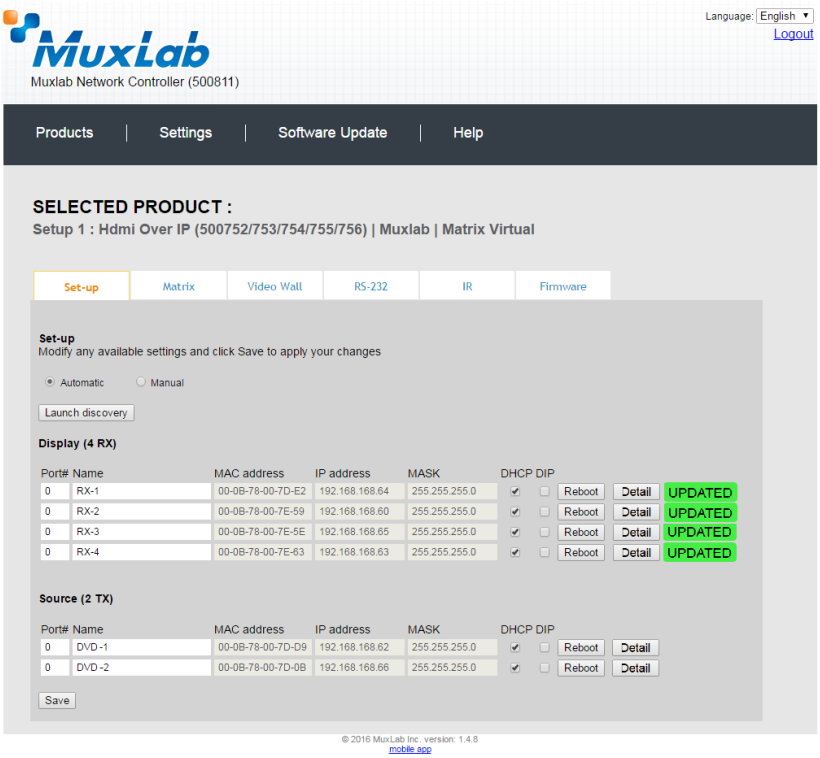


Figure 55: Saving Name Changes

To view and modify component parameters, click on the **Detail** button next to the given component. A dialog appears (Figure 56).

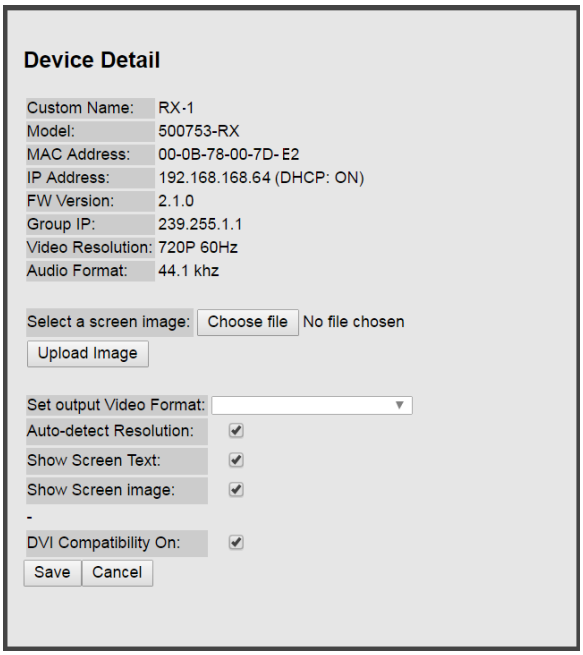


Figure 56: Device Detail Dialog

2. Products Screen - Matrix Tab

The **Matrix** tab of the **Products** screen allows the user to connect any Display to any Source. The user also has the option of using **Presets** to save connection schemes ("Presets"), as well as to edit and delete existing presets (Figure 57).

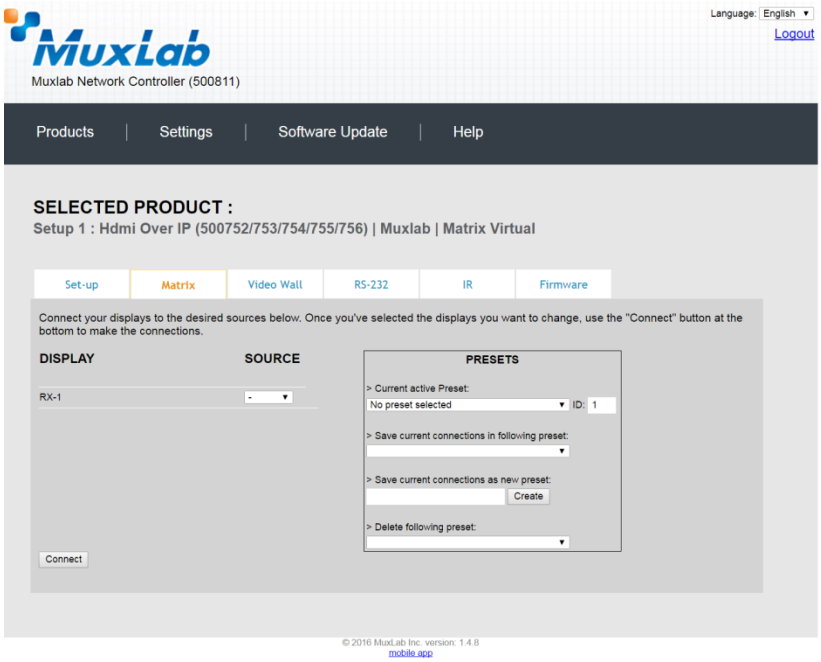


Figure 57: Matrix Tab

To connect a display to a source, the user first clicks on the drop-down list next to the given display (for example "RX-1") and selects which source to connect it to (Figure 58).

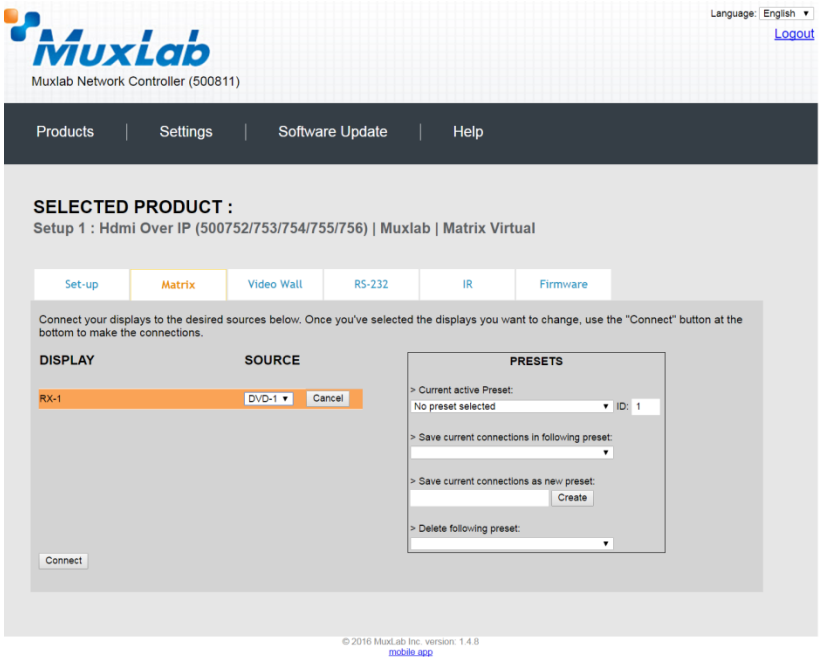


Figure 58: Change Connection

Once the selection is made (the user can change any or all connections between displays and sources), the user clicks on **Connect** to finalize the change. A green SUCCESS tag will appear next to the new or changed connection (Figure 59).

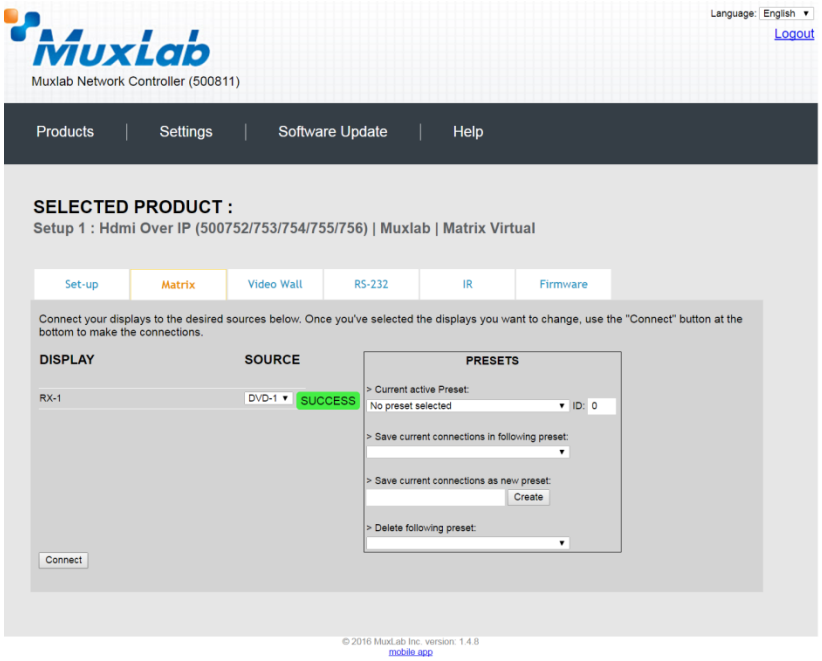


Figure 59: Change Successful

To create a new preset, the user clicks the **> Save current connections as new preset** field (Figure 60) and types a name. This assigned preset name will be linked to the existing connection scheme being shown within the **Matrix** tab.

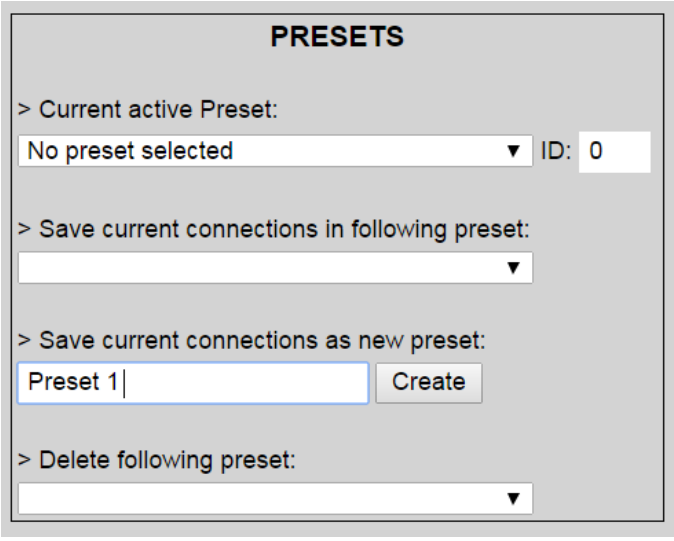


Figure 60: Create New Preset

To save this preset, the user clicks on **Create**. A green SUCCESS tag will appear next to the **> Save current connections as new preset** field and the newly created preset becomes the **Current active Preset** (Figure 61).

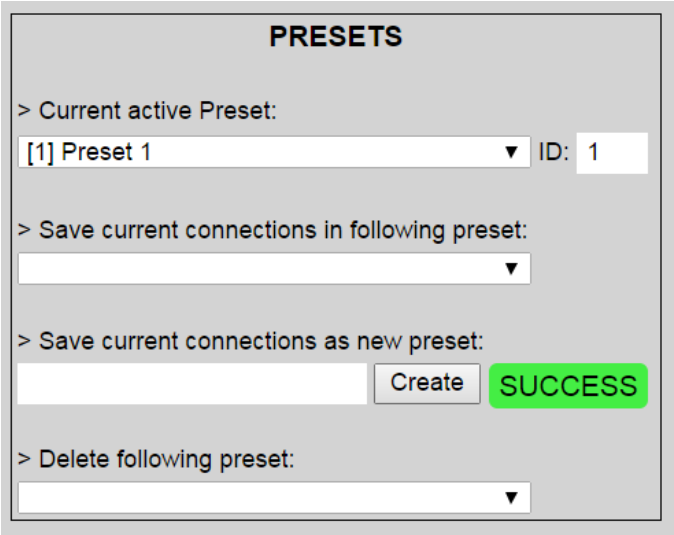


Figure 61: Confirmation of New Preset

To delete a preset, the user clicks the **> Delete following preset** drop-down box and selects a preset name from the list shown (Figure 62).

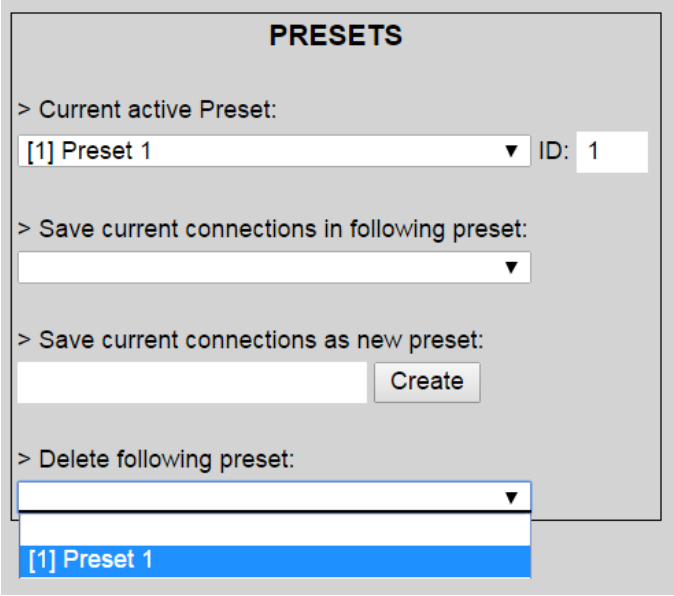


Figure 62: Delete Preset

Once selected, a dialog will appear asking the user to confirm the deletion request (Figure 63).

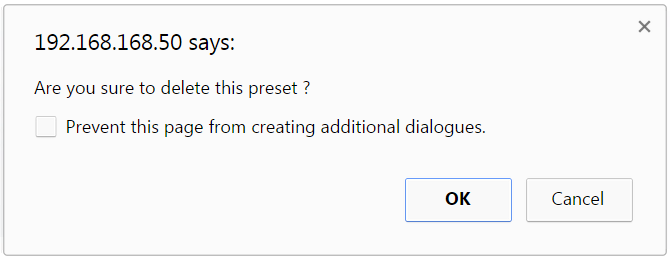


Figure 63: Confirmation of Deleted Preset

Click on **OK**. The preset will be deleted and a green SUCCESS tag will appear next to the **> Delete following preset** field (Figure 64).

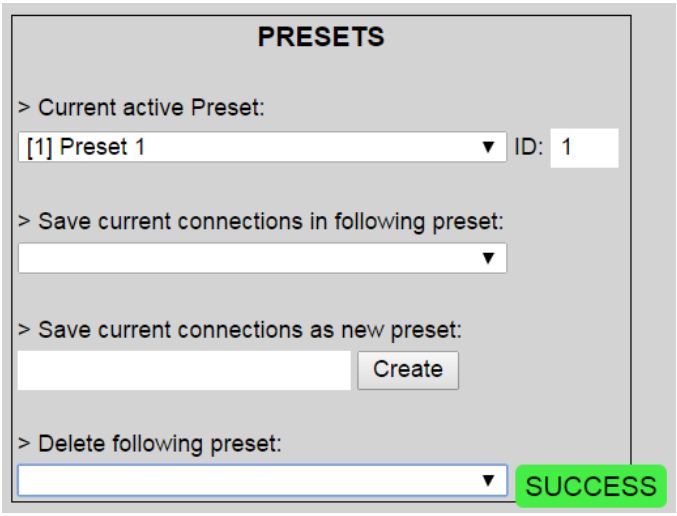


Figure 64: Confirmation of Deleted Preset

To save the current matrix configuration under an existing **Preset** name, click on **> Save current connection in following preset** drop-down box and selects a preset name (Figure 65).

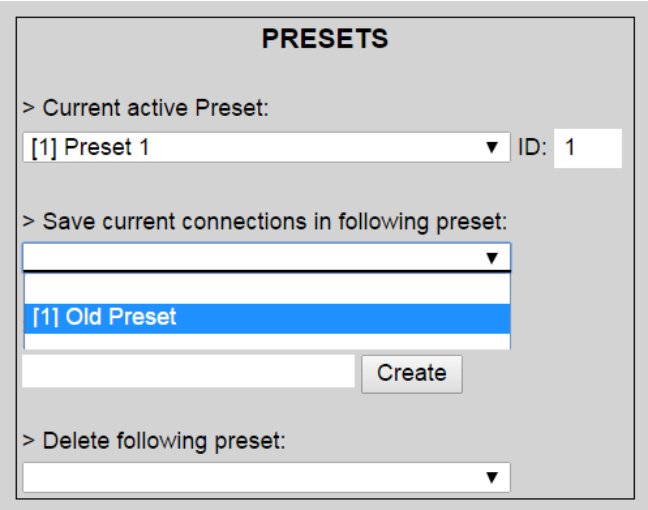


Figure 65: Change Current Active Preset

Once selected, the **Preset** will be saved and a green SUCCESS tag will appear next to the **> Save current connections in following preset** field (Figure 66).

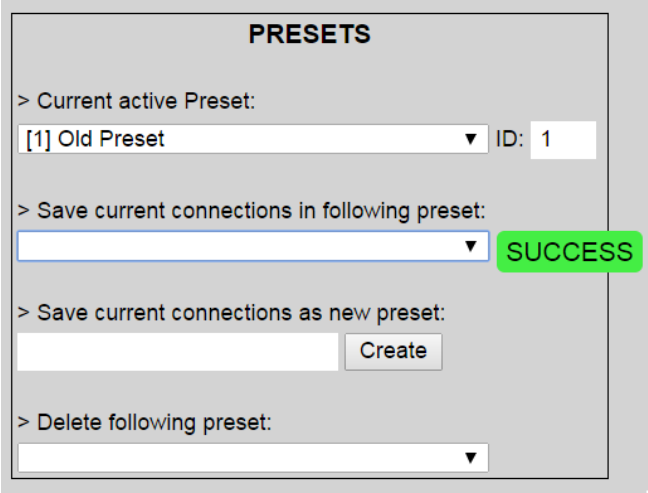


Figure 66: Confirmation of Changed Preset Name

In order to activate an existing **Preset**, select > **Current active Preset**, and select the **Preset** name from the drop-down box and the **Preset** will become active. The active **Preset** will also be displayed in the **Current active Preset** field.

3. Products Screen - Video Wall Tab

MuxLab's Extender 500753 does not support the Video Wall feature. Clicking on this tab will display the following screen (Figure 67).

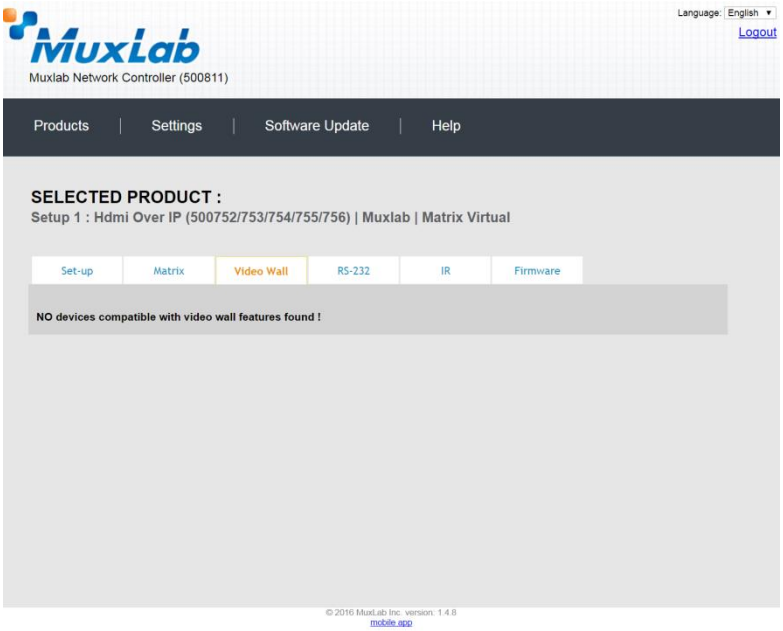


Figure 67: Video Wall Tab

For more information on the Video Wall tab and its features, refer to the section of this manual dealing with MuxLab Extender 500754 and MuxLab Extender 500759.

4. Products Screen - RS-232 Tab

The **RS-232** tab of the **Products** screen enables the user to send RS-232 commands to any MuxLab transmitter or receiver (Figure 68). This is done either through the Network Controller or directly by connecting a PC to the RS-232 port of any transmitter or receiver.

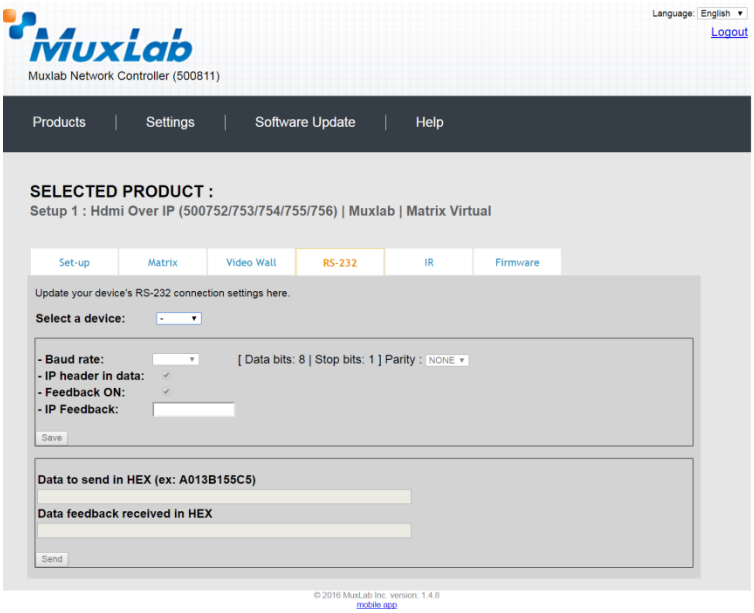


Figure 68: RS-232 Tab

When sending RS-232 commands through the Network Controller, the user first selects the device that the RS-232 commands will be sent to. This is done by clicking on the **Select a device** drop-down list and making a selection (Figure 69). The IP Feedback field should also contain the IP address of the Network Controller.

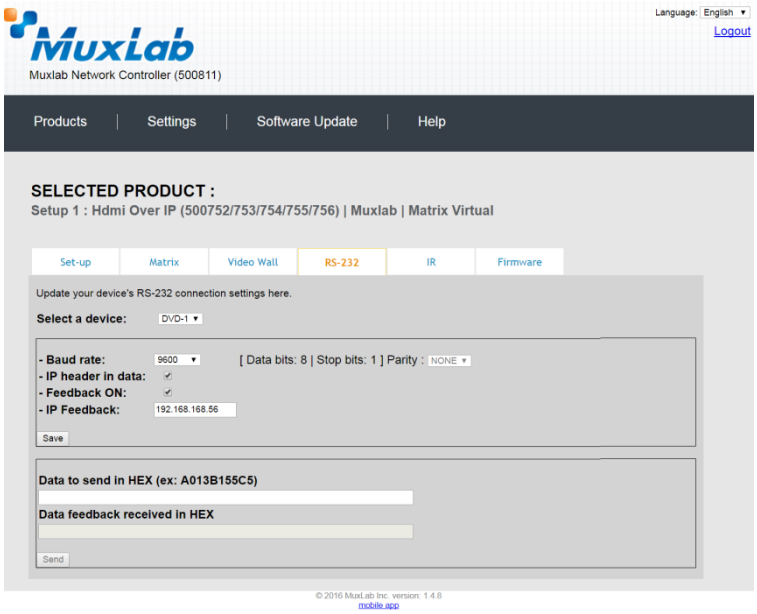


Figure 69: RS-232 Tab - Selecting a Device

Once a device is selected, the **Data to send in HEX** field becomes enabled. In the above example, DVD-1 was chosen as the selected device (but a receiver connected to sink equipment could have also been selected), meaning that a command sent to DVD-1 will travel from the Network Controller to the Ethernet Switch, and from the Ethernet Switch to the transmitter connected to DVD-1. That transmitter will then send the specified data command to DVD-1.

The **Data feedback received in HEX** field displays the HEX version the feedback sent to the Network Controller by DVD-1.

When sending RS-232 commands directly from a PC to any transmitter or receiver, the user must set up a pass-through system for RS-232 signals to be sent to and from devices. This requires two steps:

(1) The user first tells the local device (the device connected directly to the PC) the IP address of the far device (where the RS-232 commands are being sent). This is done by first clicking on the **Select a device** drop-down list and selecting the local device from the list, and then inputting the IP address of the far device in the **IP Feedback** field. The user then clicks on **Save**.

(2) The user then tells the far device the IP address of the local device (if feedback from the far device is required). This is done by first clicking on the **Select a device** drop-down list and selecting the far device from the list, and then inputting the IP address of the near device in the **IP Feedback** field. The user then clicks on **Save**.

5. Products Screen - IR Tab

The **IR** tab of the **Products** screen enables the user to send IR commands to a MuxLab transmitter or receiver IR port (Figure 70) via the Network Controller. IR pass-through mode is also supported using an IR handheld remote as the control source.

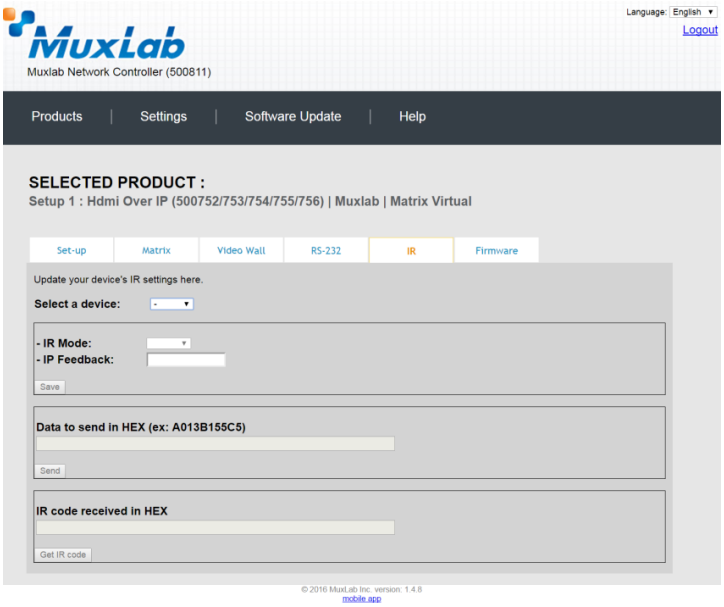


Figure 70: IR Tab

When sending IR commands through the Network Controller, the user first selects the device that the IR commands will be sent to. This is done by clicking on the **Select a device** drop-down list and making a selection (Figure 71).

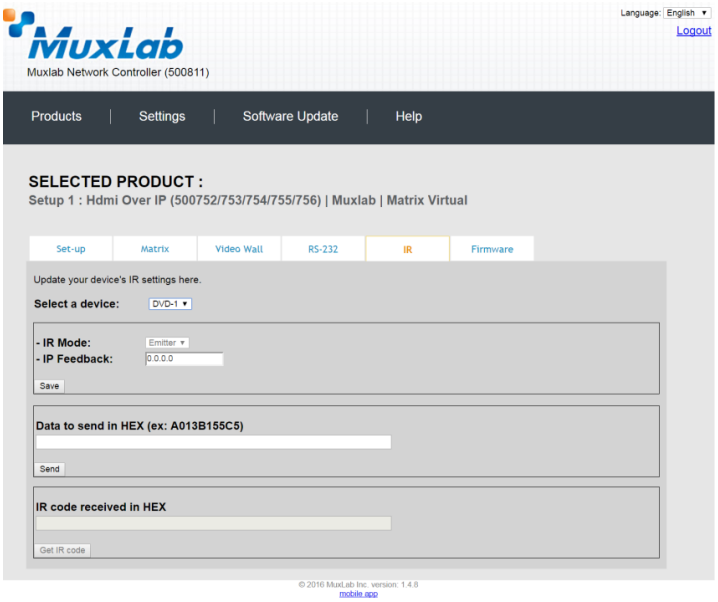


Figure 71: IR Tab – Selecting a Device

Once a device is selected, the **Data to send in HEX** field becomes enabled. In the above example, DVD-1 was chosen as the selected device, meaning that a command sent to DVD-1 will travel from the Network Controller to the Ethernet Switch, then from the Ethernet Switch to the transmitter connected to DVD-1. That transmitter will then send the specified IR data command to DVD-1 via the IR Emitter connected to the transmitter IR out port.

The **IR code received in HEX** field displays the HEX version of an IR command send from a handheld remote to an IR receiver IR In port and attached IR Sensor.

When sending IR commands directly from an IR Source device, such as an IR handheld remote, from 500753 receiver through to a transmitter, the user must set up a pass-through for IR signals to be sent to and from devices. This requires the following step:

The user must tell the 500753 receiver (the device near the IR handheld remote with an attached IR Sensor) the IP address of the 500753 transmitter (where the IR commands are being sent, which has an attached IR Emitter). This is done by first clicking on the **Select a device** drop-down list and selecting the local device from the list, and then inputting the IP address of the far device in the **IP Feedback** field. The user then clicks on **Save**.

6. Products Screen - Firmware Tab

The **Firmware** tab of the Products screen enables the user to update the firmware for MuxLab transmitters and receiver (Figure 72).

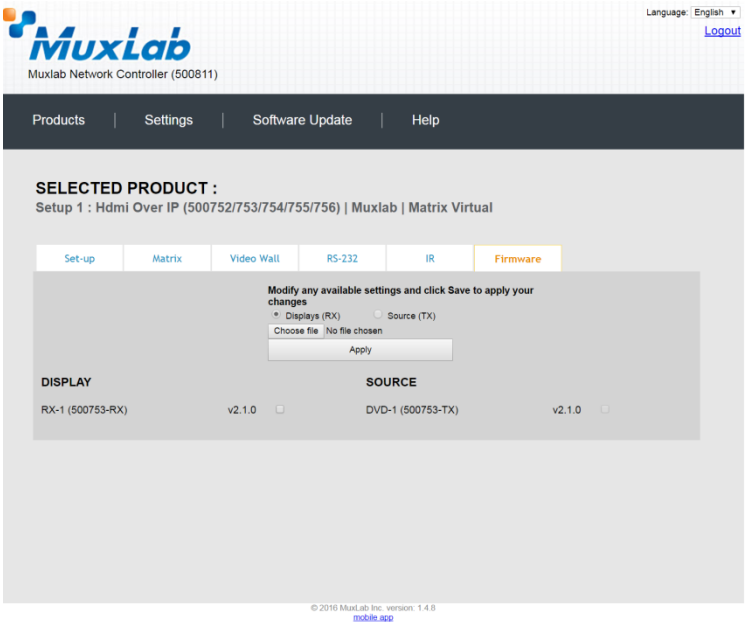


Figure 72: Firmware Tab

The user first selects either **Display (RX)** or **Source (TX)**, then chooses the firmware update file to upload to the given device. Once the file is selected, the user checks the box next to the given device (listed under **DISPLAY** and **SOURCE**) targeted for firmware upgrade, and then clicks **Apply**.

Settings Screen

The **Settings** screen contains two tabs: **Network** and **Administration**.

The **Network** tab (Figure 73) is used to change the IP address of the MuxLab Network Controller, the network mask, as well as the router IP address. It also allows the user to enable or disable DHCP.

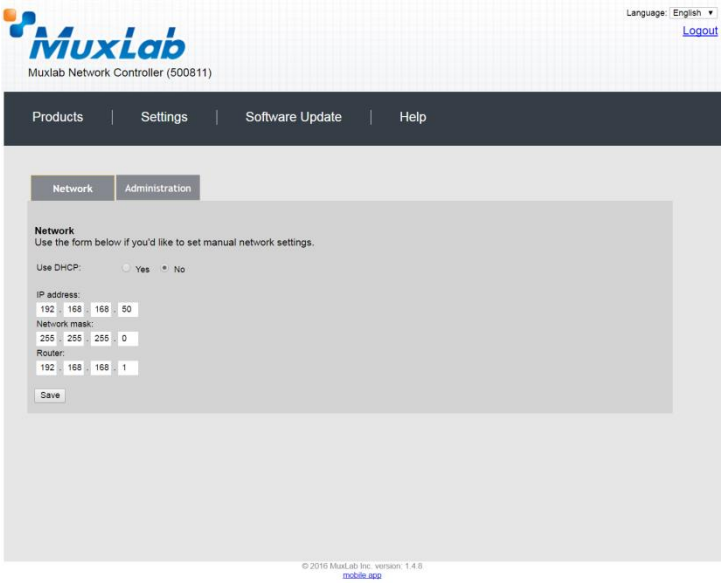


Figure 73: Settings Screen: Network Tab

The **Administration** tab is used to create or delete user accounts, change passwords, restore data, backup data, and retrieve logs (Figure 74).

Figure 74: Settings Screen: Administration Tab

Software Update Screen

The **Software Update** enables the user to update MuxLab Network Controller software (Figure 75). This software is available on MuxLab's website (www.muxlab.com). Download the software to the local PC before performing the update.

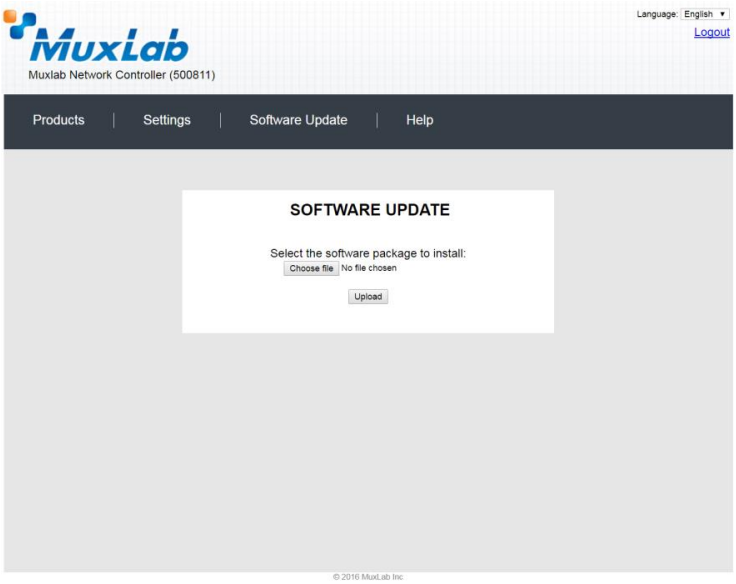


Figure 75: Software Update Screen

Help Screen

The **Help** screen offers quick contact information for customer support and all other inquiries (Figure 76).

Figure 76: Help Screen

Extender Model 500754

Products Screen

Once the user has logged in, the **Products** screen will appear (Figure 77).

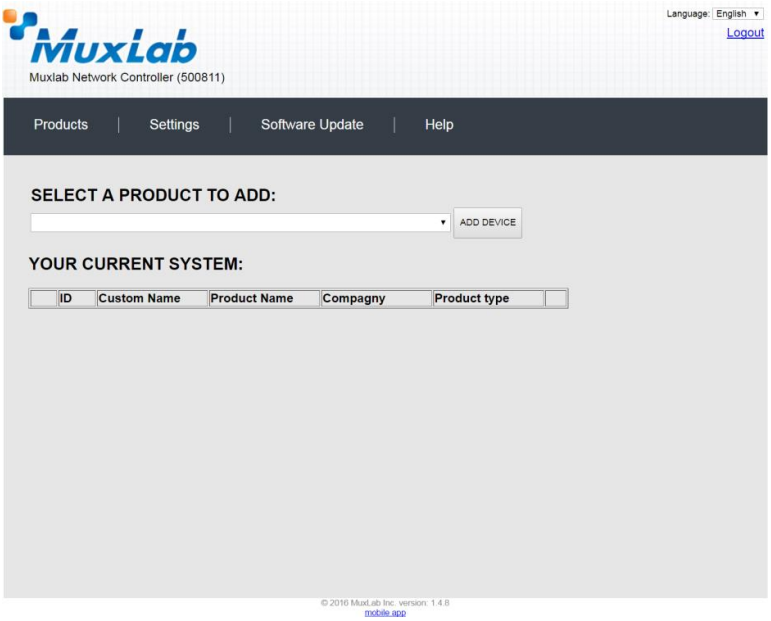


Figure 77: Products Screen – Initial View

In the **SELECT A PRODUCT TO ADD:** drop down box, select **Hdmi Over IP (500752/753/754/755/756)** and then click on **ADD DEVICE** (Figure 78).

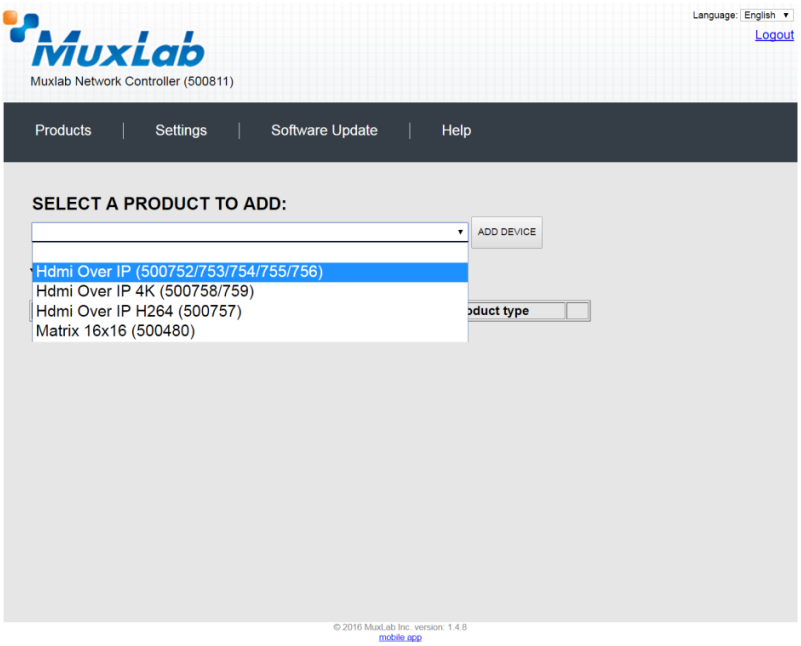


Figure 78: Products Screen – Selecting a Product

A dialog box appears asking the user to provide a custom name for the selected product (Figure 79). The user then types a name in the **Custom Name:** field and clicks on **OK**. Note that if the user decides to click on **CANCEL**, the previous screen appears (Figure 78), without a product being added.

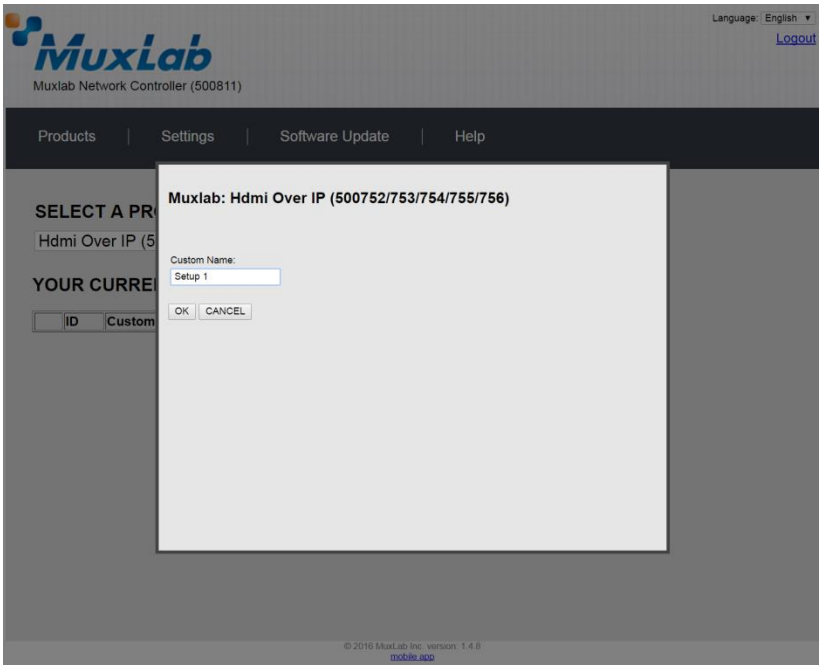


Figure 79: Products Screen – Naming a Product

The custom name has been added to **YOUR CURRENT SYSTEM** (Figure 80).

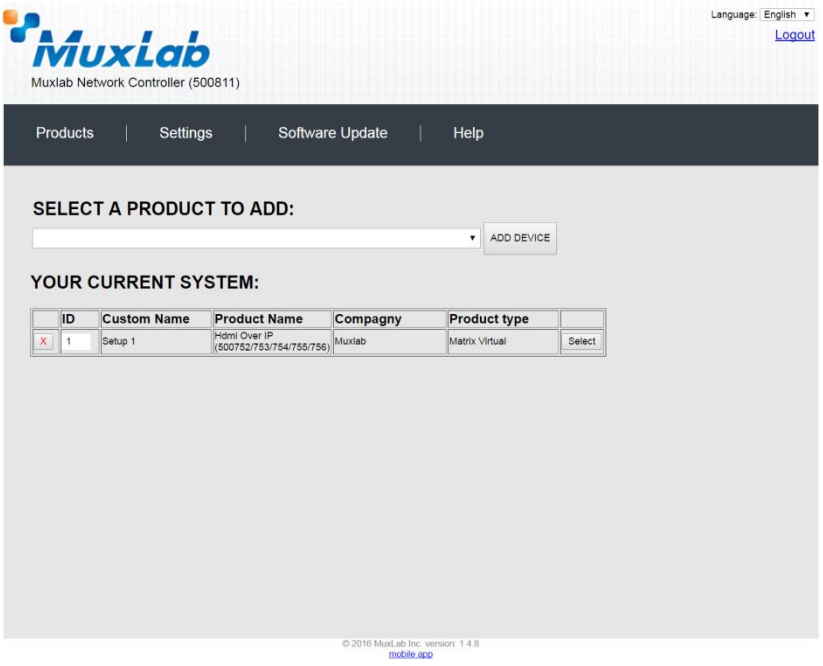


Figure 80: Products Screen – Your Current System Selection

The user can change the ID of each row by modifying the **ID** field. The user can also delete the entire row completely by clicking the X next to it.

To configure a given product, the user clicks on **Select**, which brings up a multi-tabbed screen (Figure 81).

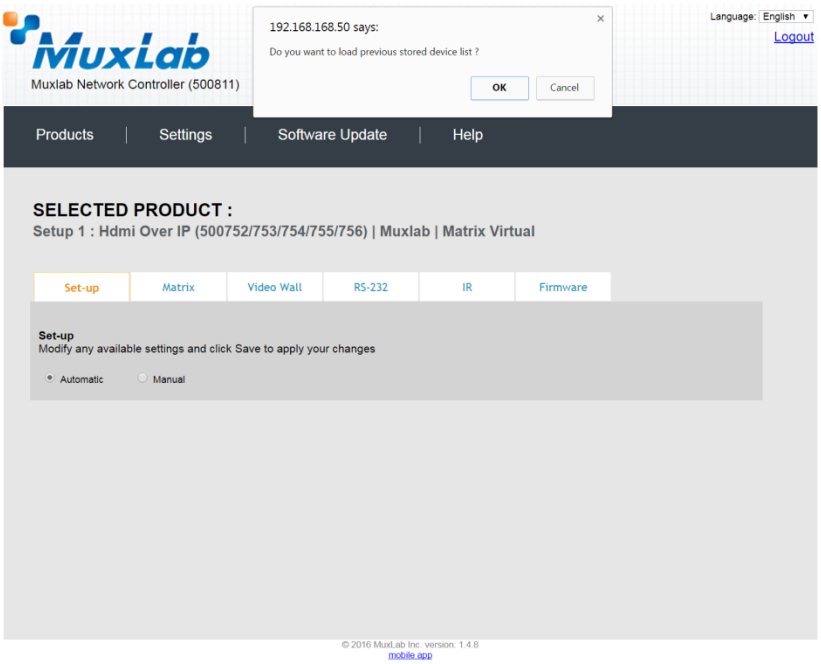


Figure 81: Products Screen – Load Dialog

By default, a dialog appears asking the user to load a previously saved device list (in case such a list has already been stored). This dialog will appear even if no device list has been previously saved.

Six tabs appear within the **Products** screen:

1. Set-up
2. Matrix
3. Video Wall
4. RS-232
5. IR
6. Firmware

1. Products Screen - Set-up Tab

The **Set-up** tab offers the user two options for the type of set-up allowed: **Automatic** or **Manual**.

Automatic means that the software will scan the system for every dip-switch enabled device. The software will then override its manual dip-switch address settings and place these units under software address control. (Automatic is recommended).

Manual means that the software will allow the manual dip-switch address settings of any found device to remain active.

After selecting **Automatic** or **Manual**, click on **Launch discovery** (Figure 82).

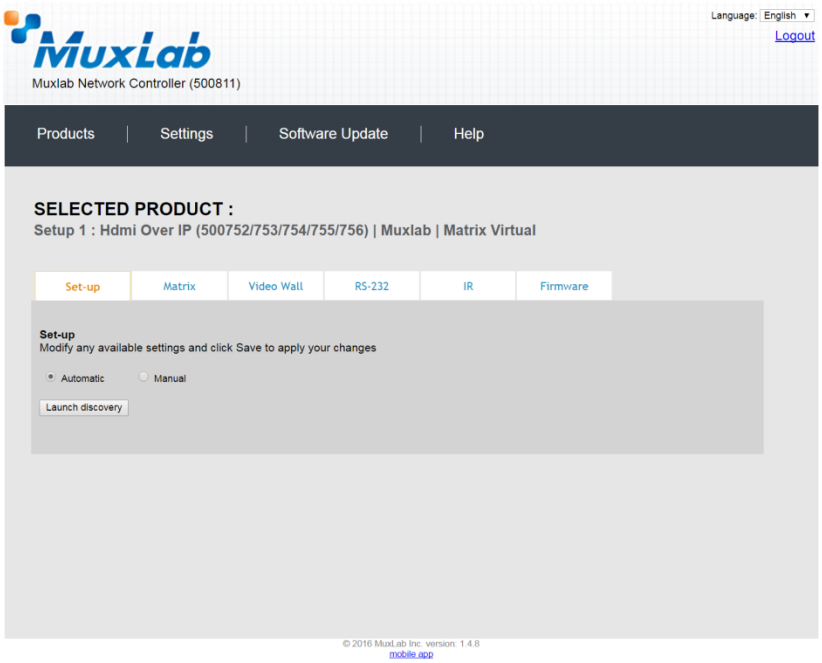


Figure 82: Products Screen – Set-up Tab

The system will scan the network for all source side devices (500754 transmitters) and display side devices (500754 receivers), and will display the scan results in tabular form (Figure 83).

Each 500754 transmitter and receiver can be assigned an arbitrary descriptive name, normally reflecting the end device that it is terminated to. To change the name of any Display (RX) or Source (TX) device, click the **Name** field to edit its contents. Several **Name** fields can be edited before saving changes, as shown in Figure 84 (orange highlighted fields).

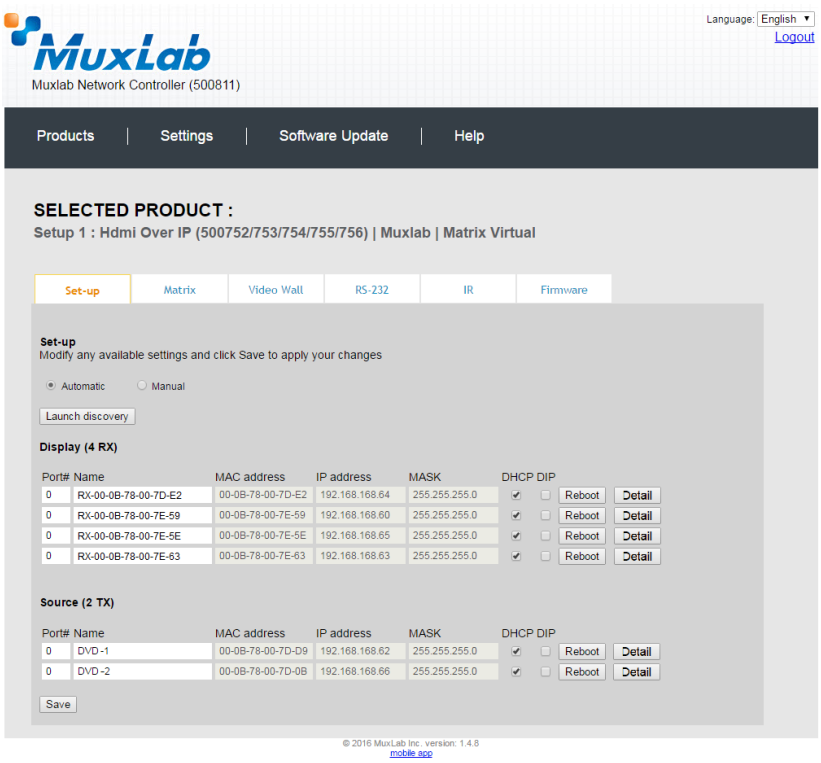


Figure 83: Products Screen – Set-up Tab

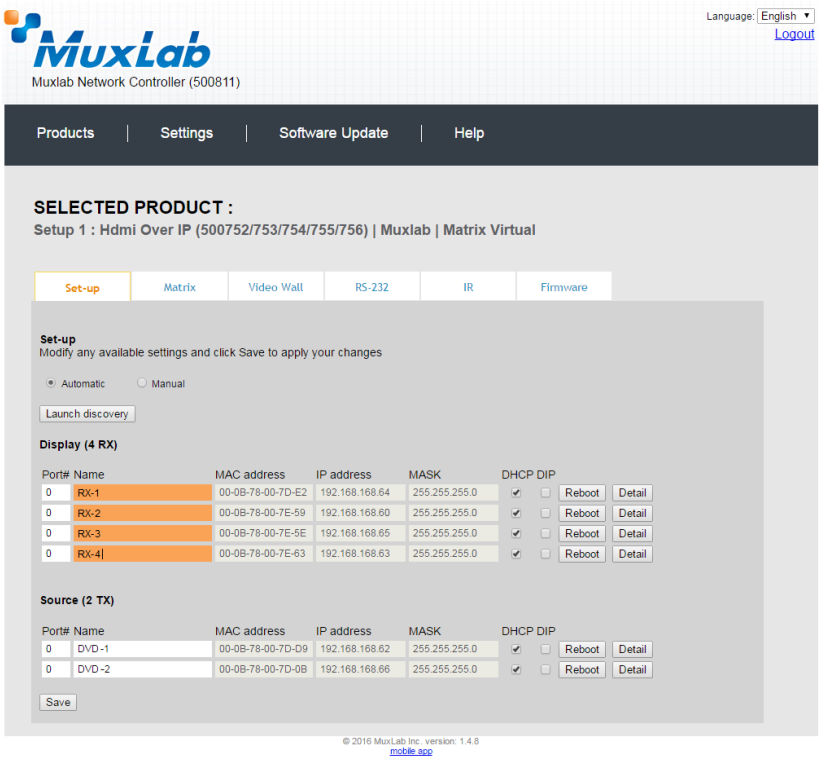


Figure 84: Name Editing

To save all name changes, click on **Save**. A green UPDATED tag will appear next to newly changed names (Figure 85).

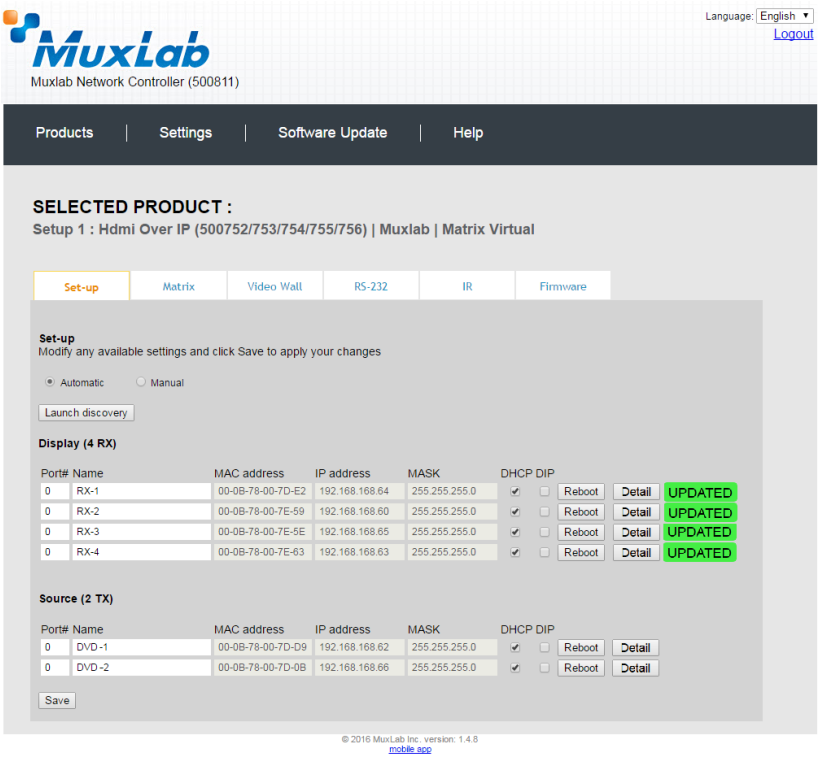


Figure 85: Saving Name Changes

To view and modify component parameters, click on the **Detail** button next to the given component. A dialog appears (Figure 86).

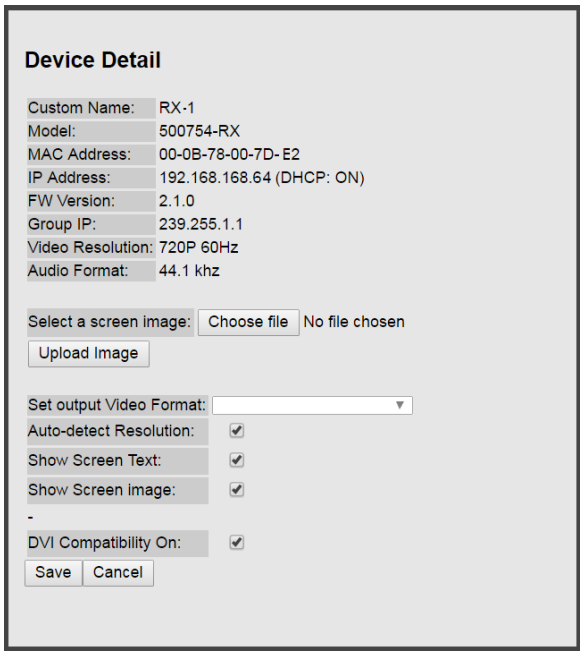


Figure 86: Device Detail Dialog

2. Products Screen - Matrix Tab

The **Matrix** tab of the **Products** screen allows the user to connect any Display to any Source. The user also has the option of using **Presets** to save connection schemes ("Presets"), as well as to edit and delete existing presets (Figure 87).

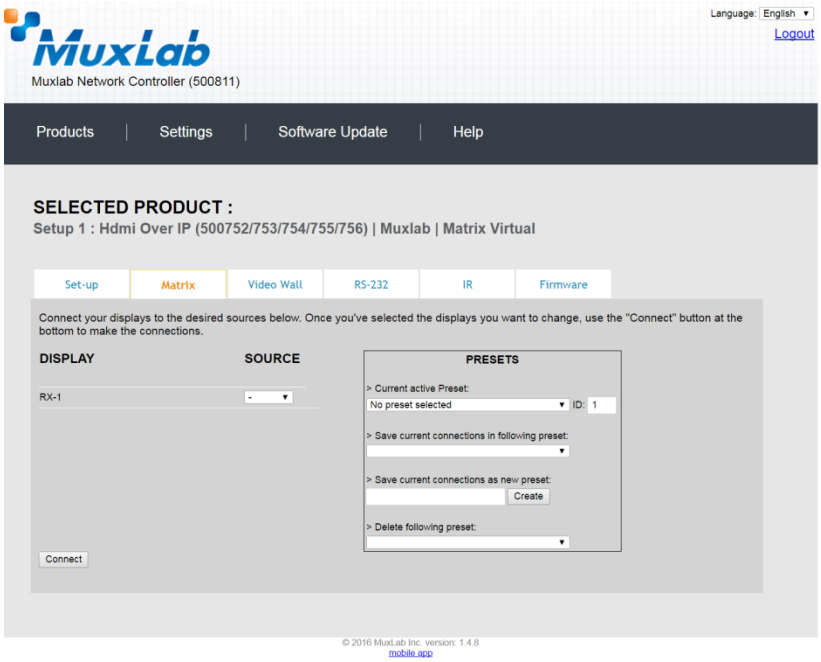


Figure 87: Matrix Tab

To connect a display to a source, the user first clicks on the drop-down list next to the given display (for example "RX-1") and selects which source to connect it to (Figure 88).

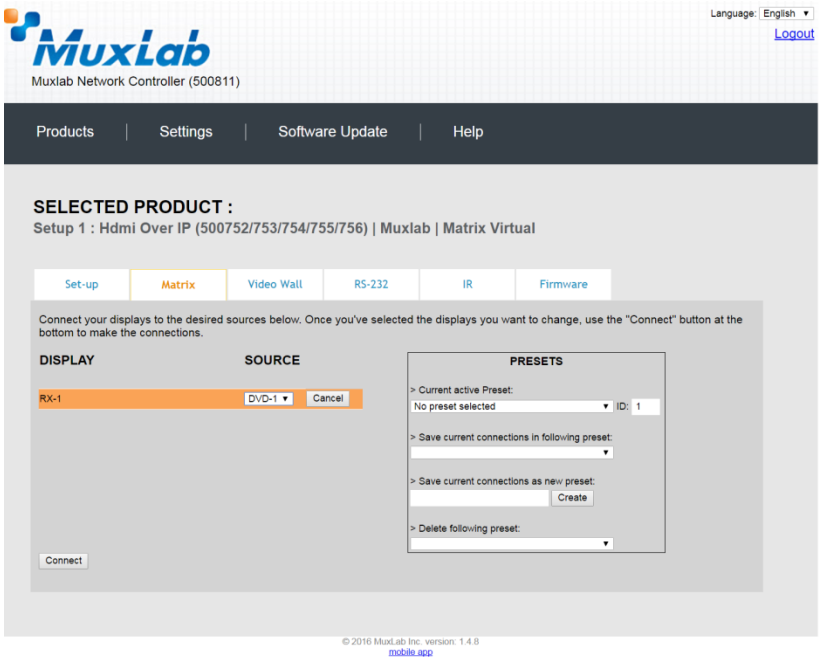


Figure 88: Change Connection

Once the selection is made (the user can change any or all connections between displays and sources), the user clicks on **Connect** to finalize the change. A green SUCCESS tag will appear next to the new or changed connection (Figure 89).

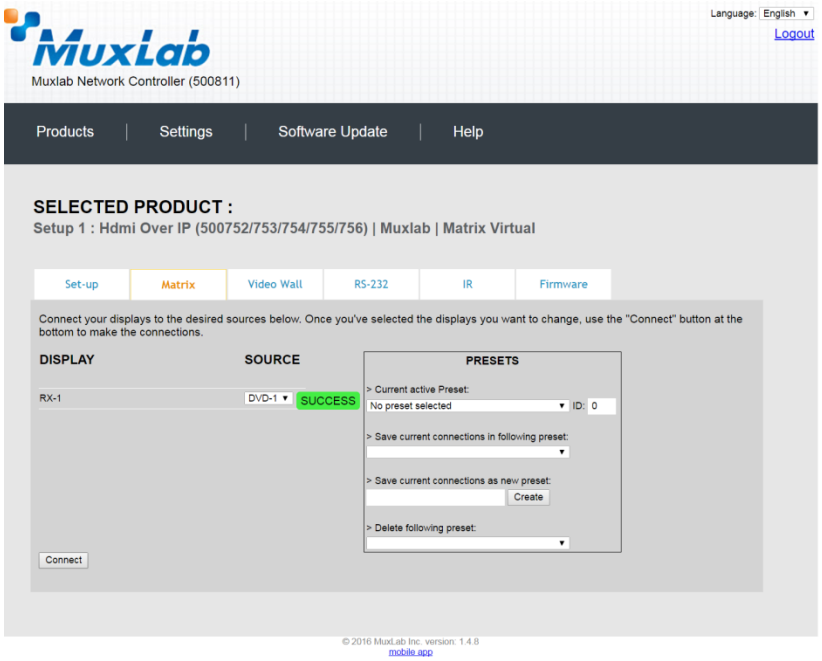


Figure 89: Change Successful

To create a new preset, the user clicks the **> Save current connections as new preset** field (Figure 90) and types a name. This assigned preset name will be linked to the existing connection scheme being shown within the **Matrix** tab.

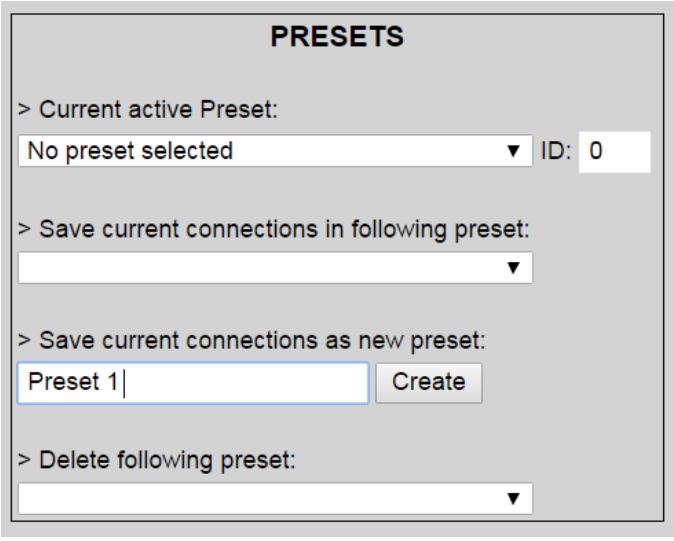


Figure 90: Create New Preset

To save this preset, the user clicks on **Create**. A green SUCCESS tag will appear next to the **> Save current connections as new preset** field and the newly created preset becomes the **Current active Preset** (Figure 91).

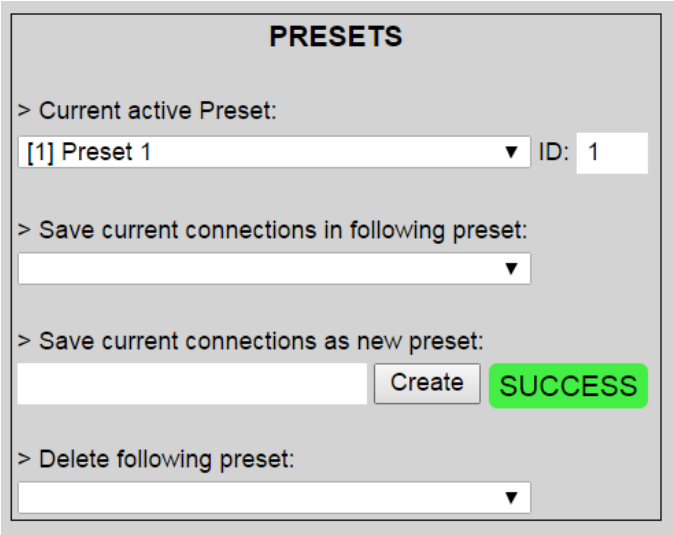


Figure 91: Confirmation of New Preset

To delete a preset, the user clicks the **> Delete following preset** drop-down box and selects a preset name from the list shown (Figure 92).

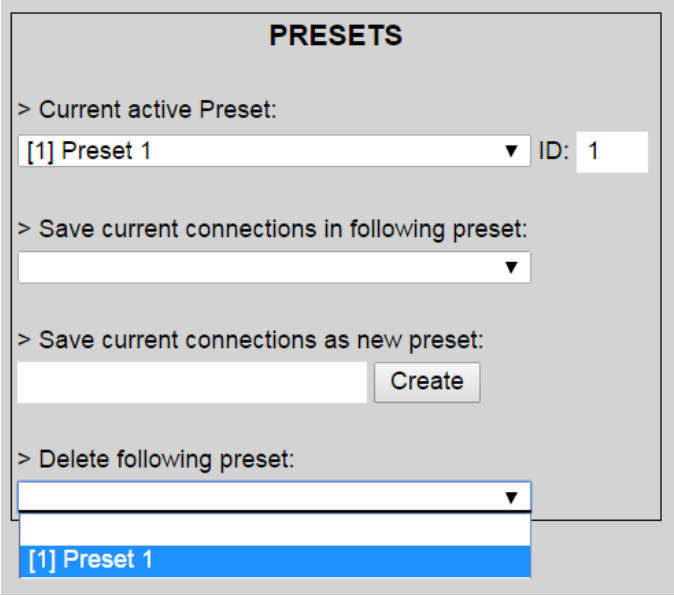


Figure 92: Delete Preset

Once selected, a dialog will appear asking the user to confirm the deletion request (Figure 93).

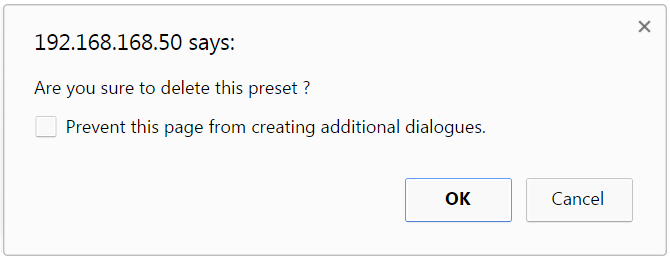


Figure 93: Confirmation of Deleted Preset

Click on **OK**. The preset will be deleted and a green SUCCESS tag will appear next to the **> Delete following preset** field (Figure 94).

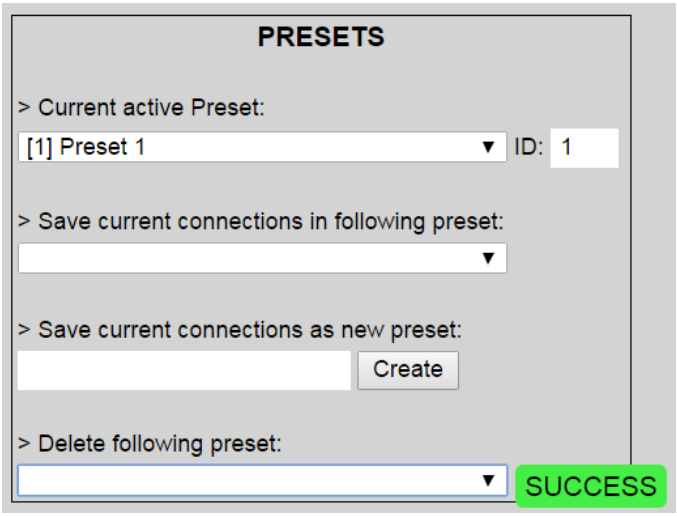


Figure 94: Confirmation of Deleted Preset

To save the current matrix configuration under an existing **Preset** name, click on **> Save current connection in following preset** drop-down box and selects a preset name (Figure 95).

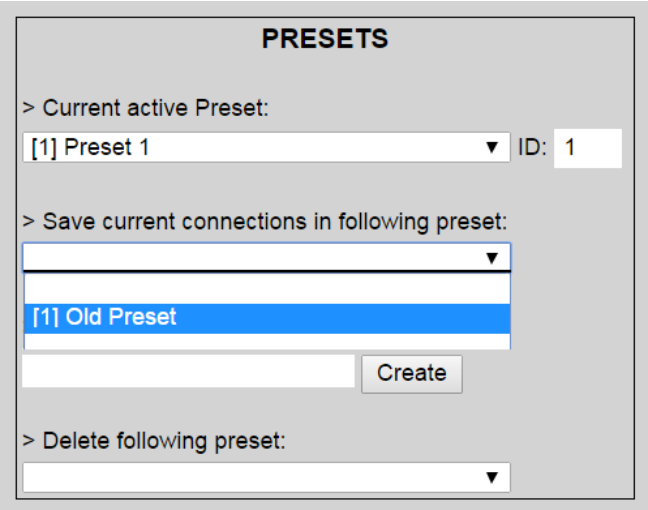


Figure 95: Change Current Active Preset

Once selected, the **Preset** will be saved and a green SUCCESS tag will appear next to the **> Save current connections in following preset** field (Figure 96).

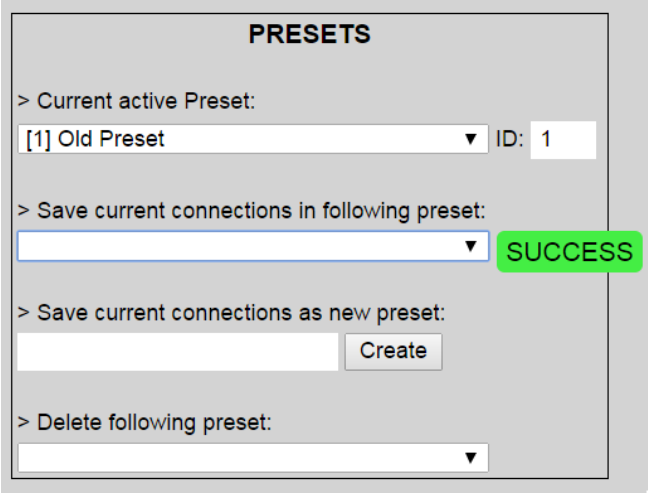


Figure 96: Confirmation of Changed Preset Name

In order to activate an existing **Preset**, select > **Current active Preset**, and select the **Preset** name from the drop-down box and the **Preset** will become active. The active **Preset** will also be displayed in the **Current active Preset** field.

3. Products Screen - Video Wall Tab

The **Video Wall** tab enables the user to configure an NxM video wall consisting of NxM monitors, all of the same size (Figure 97).

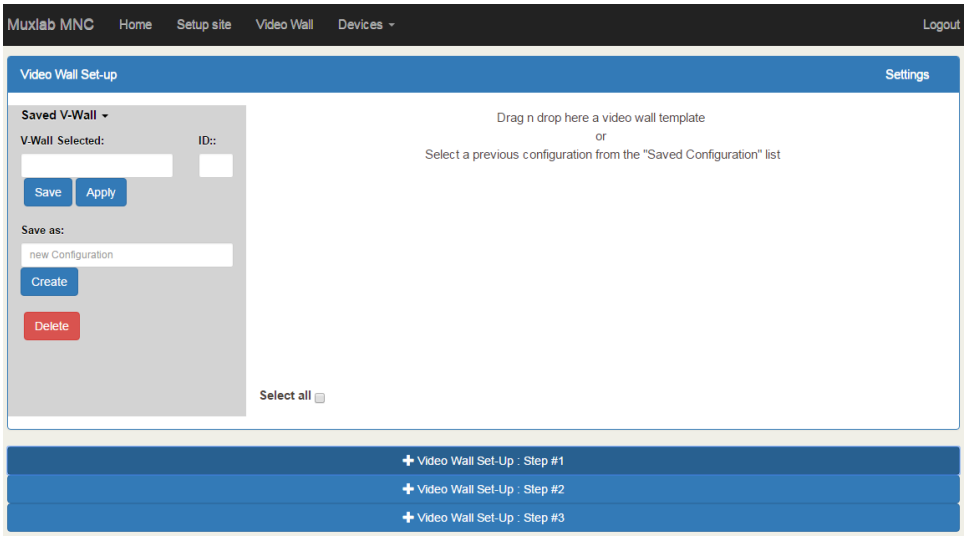


Figure 97: Video Wall Tab

This screen is laid-out in a 3-step pattern, with a display pane that shows the NxM video wall setup:

1. The user clicks on **+Video Wall Set-Up: Step #1**, which expands to provide the user with video wall size options (Figure 98).

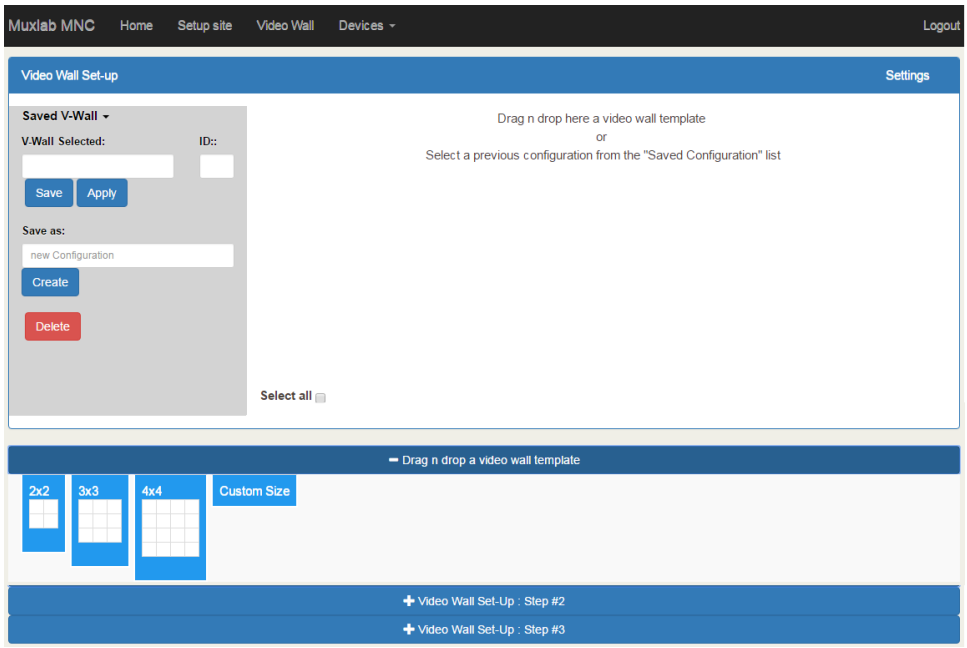


Figure 98: Video Wall Tab

a. By clicking on and dragging any of the NxN preconfigured boxes into the display pane, the user creates a video matrix of the same size. In the example shown in Figure 99, a 2x2 video wall consisting of 4 monitors is created. Custom video wall sizes may also be created.

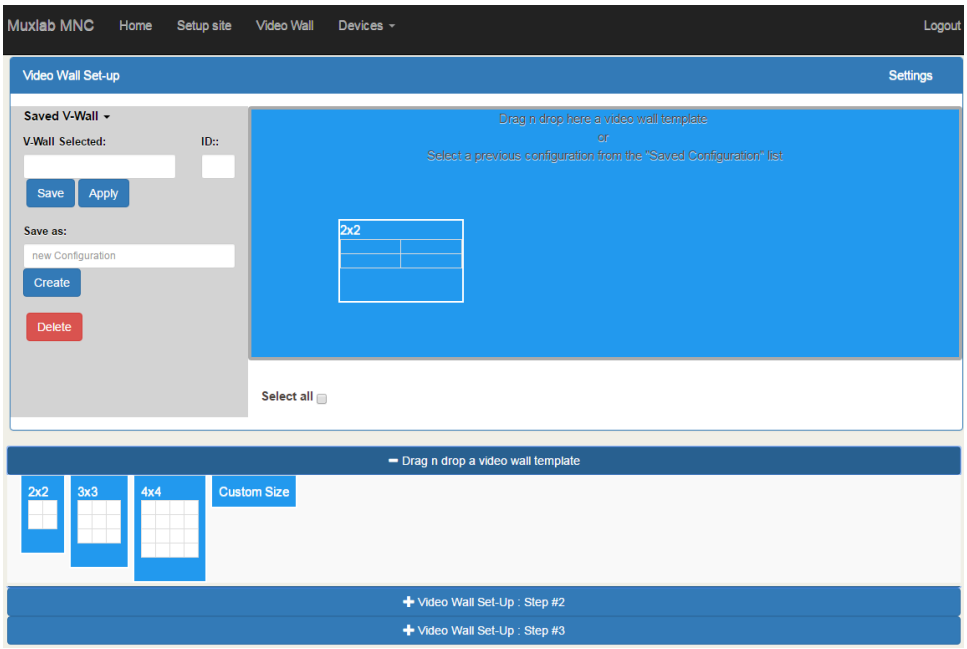


Figure 99: Video Wall Tab – Dragging to Create a 2x2 Video Wall

b. Once dragged into the display pane, the user is asked for display dimensions (Figure 100). Fill-in the requested information.

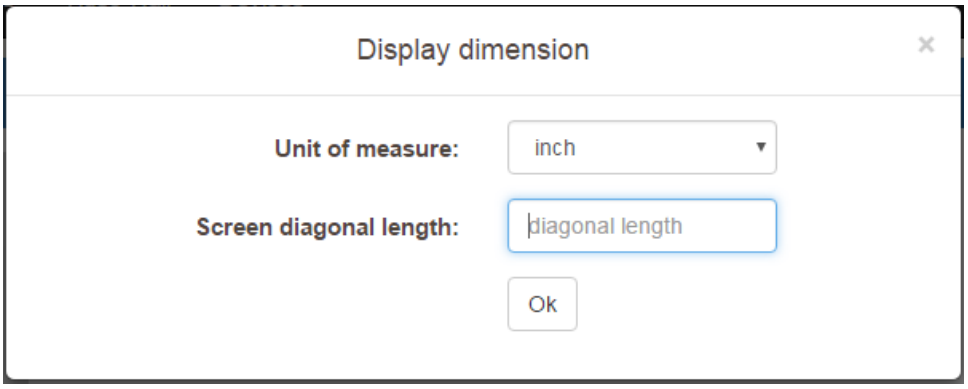


Figure 100: Video Wall Tab – Newly Created 2x2 Video Wall

c. Once created, the display pane shows an empty (unpopulated) video wall consisting of 4 monitors (Figure 101).

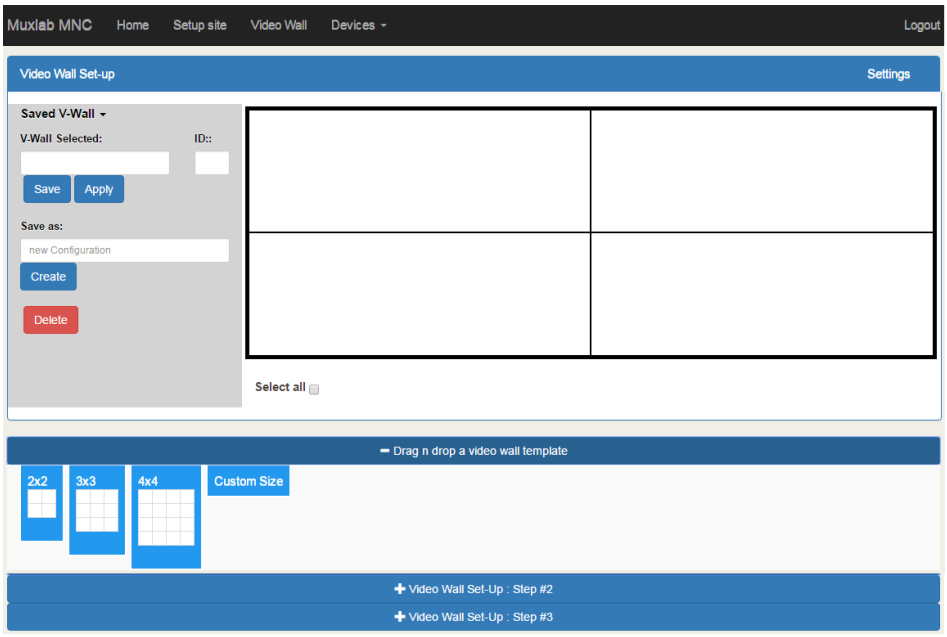


Figure 101: Video Wall Tab – Newly Created 2x2 Video Wall

2. The user clicks on **+Video Wall Set-Up: Step #2**, which expands to provide the user with display mapping options (Figure 102).

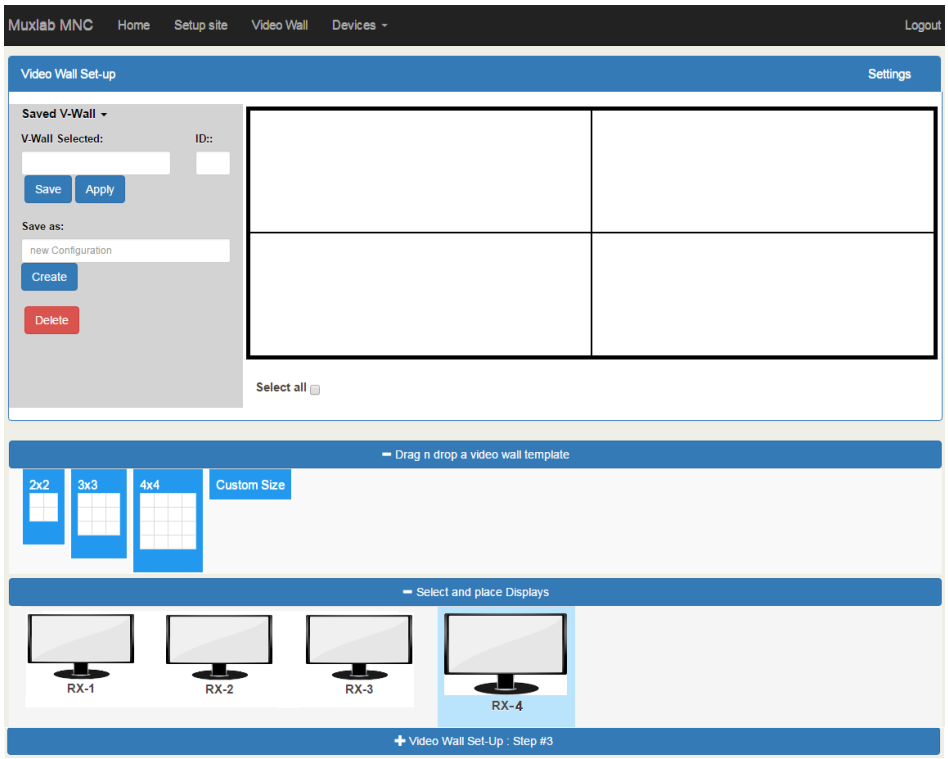


Figure 102: Video Wall Tab – Newly Created 2x2 Video Wall

a. The user clicks on a given display in the lower section of the screen. This highlights the display in a light blue box. (Note that dragging and dropping displays into the display pane is not allowed.)
b. The user clicks on any one of the cells in the display pane.
c. The clicked cell in the display pane is now mapped to the given display.
d. The user must continue mapping the remaining displays to the remaining cells. The display pane then becomes fully display mapped (Figure 103).

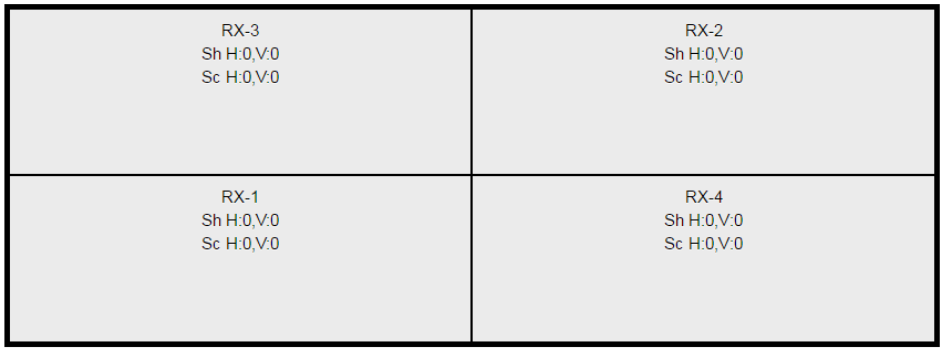


Figure 103: Video Wall Tab – Fully Display Mapped Video Wall

3. The user clicks on **+Video Wall Set-Up: Step #3**, which expands to provide the user with source mapping options (Figure 104).

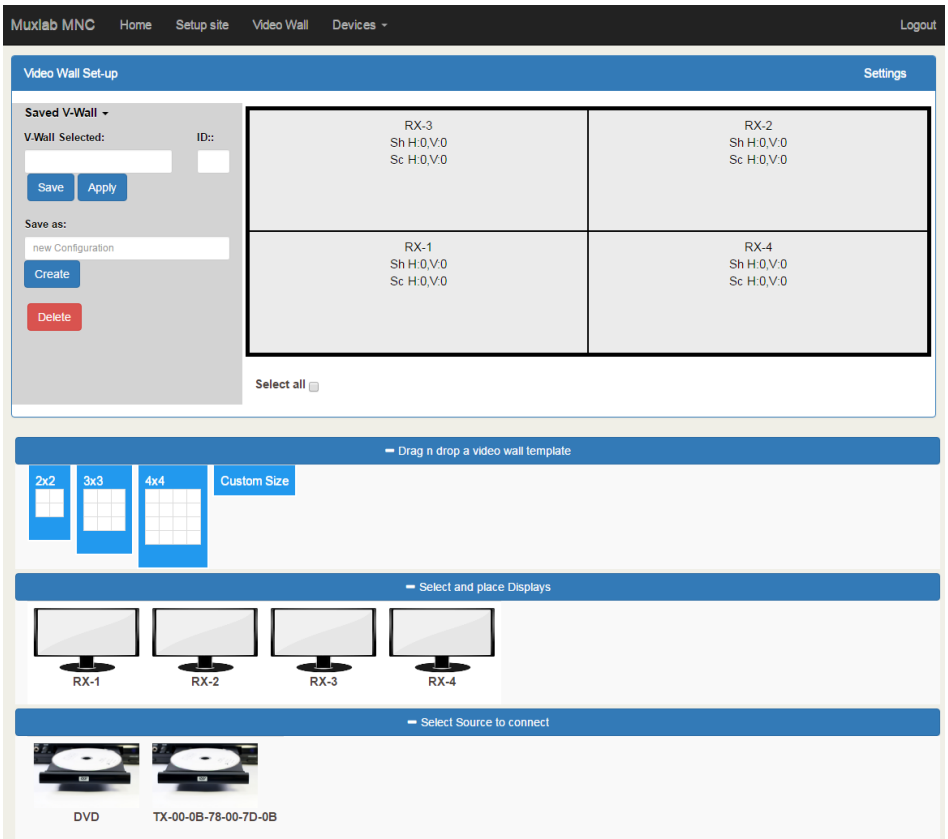


Figure 104: Video Wall Tab – Connecting Sources to Receivers

a. The user clicks on one or more cells in the display pane. Once clicked, the panes will change to blue to indicate that they are now actively selected.
b. The user clicks on any single source shown in the lower part of the screen.
c. The clicked cell(s) in the display pane is (are) now mapped to the given source.
d. The user maps some or all sources to all cells. The display pane then becomes fully source mapped (Figure 105).

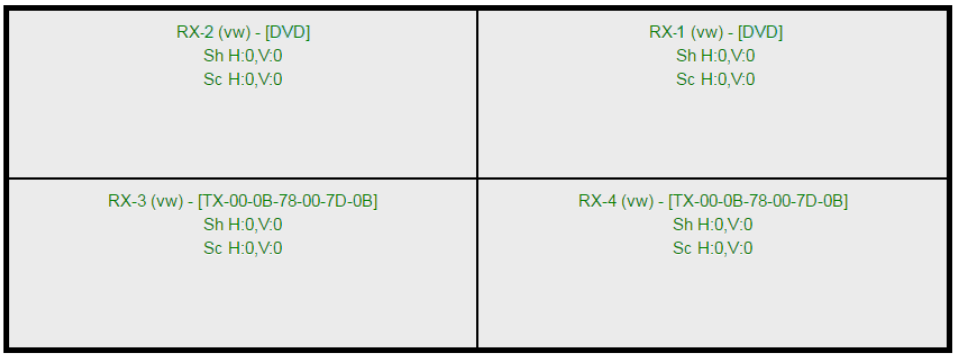


Figure 105: Video Wall Tab – Fully Source Mapped Video Wall

To configure the display size and bezel dimensions of all the displays (assumed to be all equal) comprising the video wall, the user clicks on **Settings** in the top right hand side of the **Video Wall** tab. This brings up the display setting options (Figure 106).

Figure 106: Video Wall Tab – Display Setting Options

Since the video wall consists of only one type of display (all displays are the same), the user only needs to modify the dimensions for only one representative display.

Note that **Unit**, **screen width**, and **screen height** values are derived from the information provided by the user when first creating the video wall (Figure 100). Also, **Bezel top**, **bezel bottom**, **bezel left**, and **bezel right** are all set to 0.1 inch by default, but these values may be changed.

Display settings options also allow the user to scale or shift the image of one or several displays at the same time. The user must first selects the display(s) to be modified in the display plane, and then clicks on any of the eight buttons (Scale/Shift) in the display setting options. Clicking on **Reset** resets any changes made to these eight buttons, but not to **Unit**, **screen width**, **screen height**, or **bezel** values.

The settings of any video wall can be saved as a named configuration by using the options shown in the left hand side of the **Video Wall** tab. Video wall configurations can be named, saved, deleted, or activated.

Note that not all displays in an actual video wall need to be included in a given saved configuration, simply start the three steps mentioned above, but only include the required subset of the displays to define as a given configuration, and save this configuration. For example, if the actual video wall consists of four (4) horizontal displays by four (4) vertical displays (4x4 video wall), a 2x2 configuration can be created consisting of only the upper-left corner four displays. To do so create a 2x2 video wall configuration in Step #1 above, then assign the corresponding four displays in the upper-left corner in Step #2 above, then in Step #3 assign the initial source, and save this configuration. Tip, use a configuration name that is representative of the actual setup, such as "Upper Left 2x2" in this case.

Any saved configuration can be activated and displayed on the video wall with the initial assigned source by simply loading it. Once activated, the initial source can easily be changed by repeating Step #3 above with a different source selected, after which you can either save this change or choose not to save it so the next time this configuration is activated the initial source remains unchanged.

4. Products Screen - RS-232 Tab

The **RS-232** tab of the **Products** screen enables the user to send RS-232 commands to any MuxLab transmitter or receiver (Figure 107). This is done either through the Network Controller or directly by connecting a PC to the RS-232 port of any transmitter or receiver.

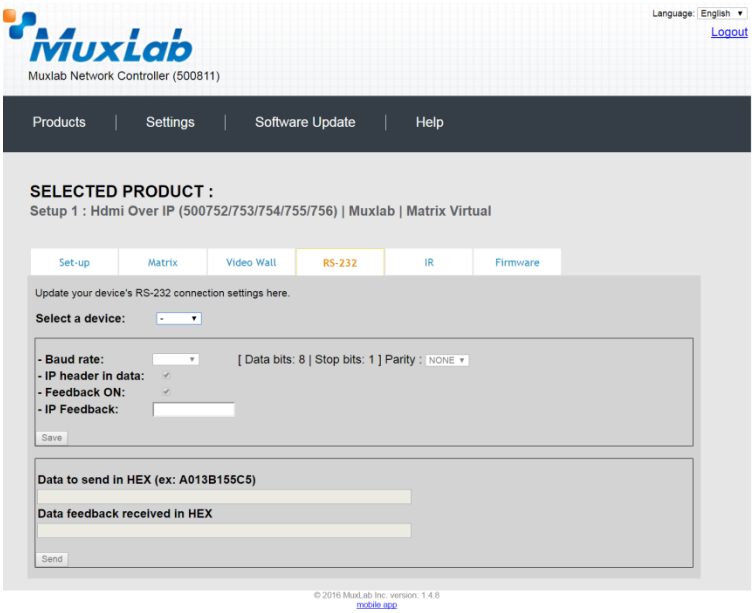


Figure 107: RS-232 Tab

When sending RS-232 commands through the Network Controller, the user first selects the device that the RS-232 commands will be sent to. This is done by clicking on the **Select a device** drop-down list and making a selection (Figure 108). The IP Feedback field should also contain the IP address of the Network Controller.

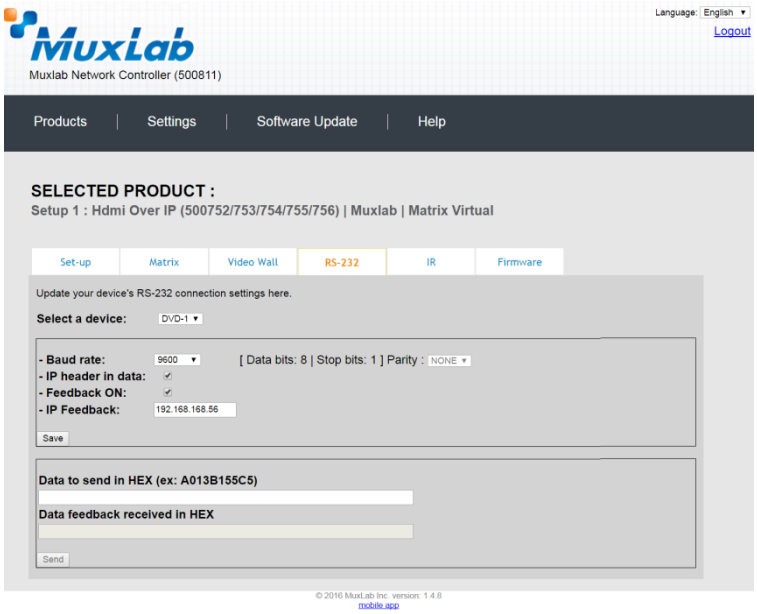


Figure 108: RS-232 Tab - Selecting a Device

Once a device is selected, the **Data to send in HEX** field becomes enabled. In the above example, DVD-1 was chosen as the selected device (but a receiver connected to sink equipment could have also been selected), meaning that a command sent to DVD-1 will travel from the Network Controller to the Ethernet Switch, and from the Ethernet Switch to the transmitter connected to DVD-1. That transmitter will then send the specified data command to DVD-1.

The **Data feedback received in HEX** field displays the HEX version the feedback sent to the Network Controller by DVD-1.

When sending RS-232 commands directly from a PC to any transmitter or receiver, the user must set up a pass-through system for RS-232 signals to be sent to and from devices. This requires two steps:

(1) The user first tells the local device (the device connected directly to the PC) the IP address of the far device (where the RS-232 commands are being sent). This is done by first clicking on the **Select a device** drop-down list and selecting the local device from the list, and then inputting the IP address of the far device in the **IP Feedback** field. The user then clicks on **Save**.

(2) The user then tells the far device the IP address of the local device (if feedback from the far device is required). This is done by first clicking on the **Select a device** drop-down list and selecting the far device from the list, and then inputting the IP address of the near device in the **IP Feedback** field. The user then clicks on **Save**.

5. Products Screen - IR Tab

The **IR** tab of the **Products** screen enables the user to send IR commands to a MuxLab transmitter or receiver IR port (Figure 109) via the Network Controller. IR pass-through mode is also supported using an IR handheld remote as the control source.

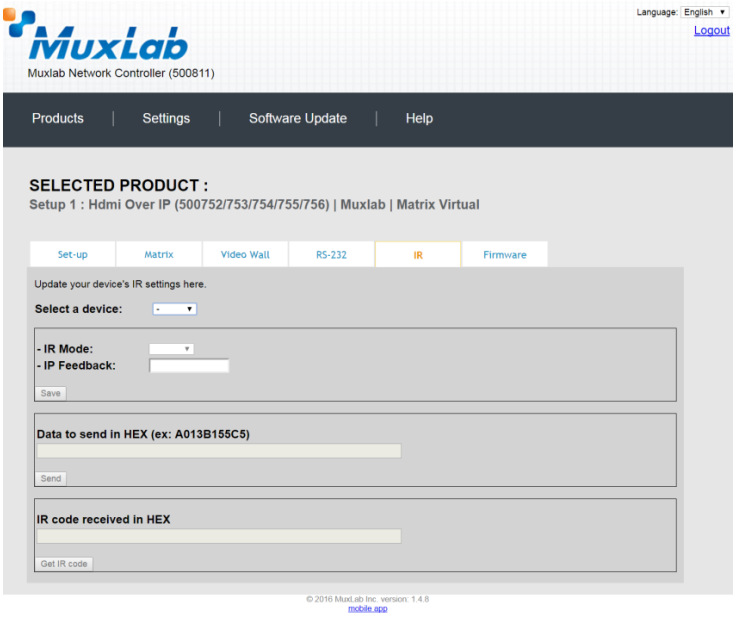


Figure 109: IR Tab

When sending IR commands through the Network Controller, the user first selects the device that the IR commands will be sent to. This is done by clicking on the **Select a device** drop-down list and making a selection (Figure 110).

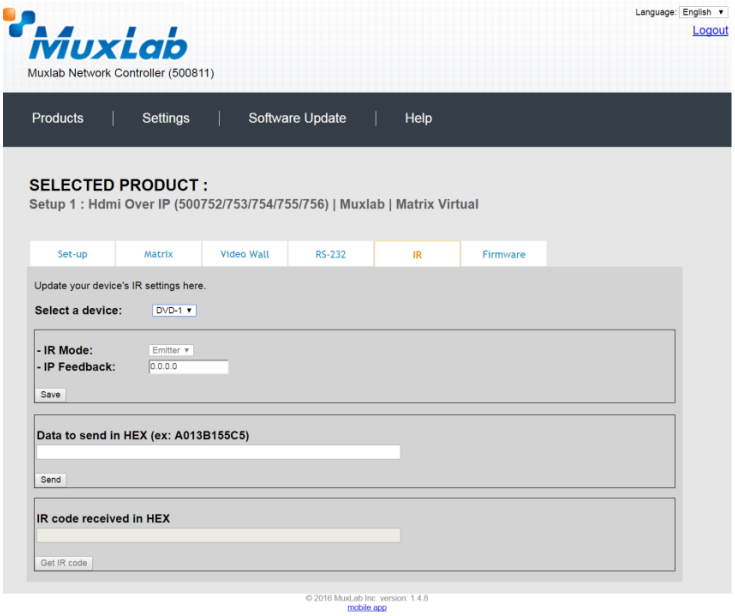


Figure 110: IR Tab – Selecting a Device

Once a device is selected, the **Data to send in HEX** field becomes enabled. In the above example, DVD-1 was chosen as the selected device, meaning that a command sent to DVD-1 will travel from the Network Controller to the Ethernet Switch, then from the Ethernet Switch to the transmitter connected to DVD-1. That transmitter will then send the specified IR data command to DVD-1 via the IR Emitter connected to the transmitter IR out port.

The **IR code received in HEX** field displays the HEX version of an IR command send from a handheld remote to an IR receiver IR In port and attached IR Sensor.

When sending IR commands directly from an IR Source device, such as an IR handheld remote, from 500754 receiver through to a transmitter, the user must set up a pass-through for IR signals to be sent to and from devices. This requires the following step:

The user must tell the 500754 receiver (the device near the IR handheld remote with an attached IR Sensor) the IP address of the 500754 transmitter (where the IR commands are being sent, which has an attached IR Emitter). This is done by first clicking on the **Select a device** drop-down list and selecting the local device from the list, and then inputting the IP address of the far device in the **IP Feedback** field. The user then clicks on **Save**.

6. Products Screen - Firmware Tab

The **Firmware** tab of the Products screen enables the user to update the firmware for MuxLab transmitters and receiver (Figure 111).

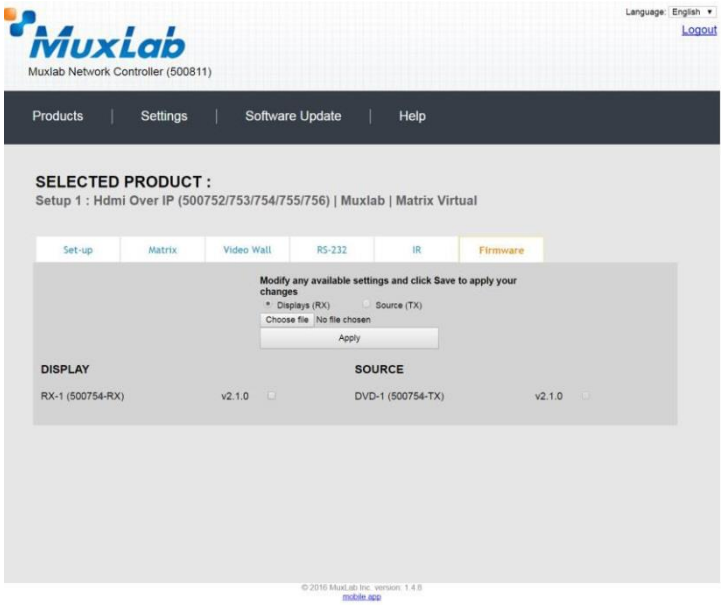


Figure 111: Firmware Tab

The user first selects either **Display (RX)** or **Source (TX)**, then chooses the firmware update file to upload to the given device. Once the file is selected, the user checks the box next to the given device (listed under **DISPLAY** and **SOURCE**) targeted for firmware upgrade, and then clicks **Apply**.

Settings Screen

The **Settings** screen contains two tabs: **Network** and **Administration**.

The **Network** tab (Figure 112) is used to change the IP address of the MuxLab Network Controller, the network mask, as well as the router IP address. It also allows the user to enable or disable DHCP.

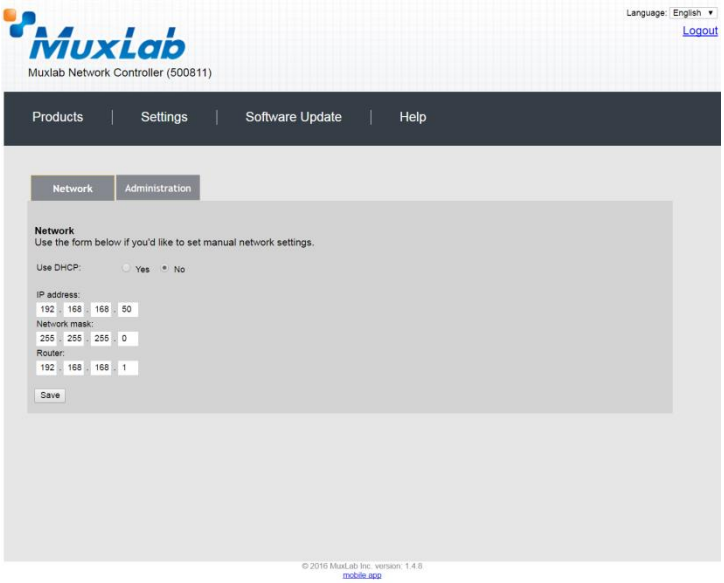


Figure 112: Settings Screen: Network Tab

The **Administration** tab is used to create or delete user accounts, change passwords, restore data, backup data, and retrieve logs (Figure 113).

Figure 113: Settings Screen: Administration Tab

Software Update Screen

The **Software Update** enables the user to update MuxLab Network Controller software (Figure 114). This software is available on MuxLab's website (www.muxlab.com). Download the software to the local PC before performing the update.

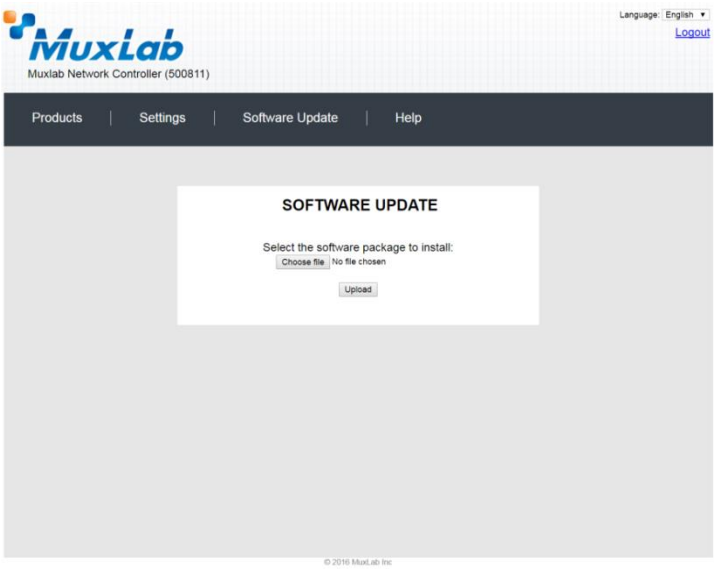


Figure 114: Software Update Screen

Help Screen

The **Help** screen offers quick contact information for customer support and all other inquiries (Figure 115).

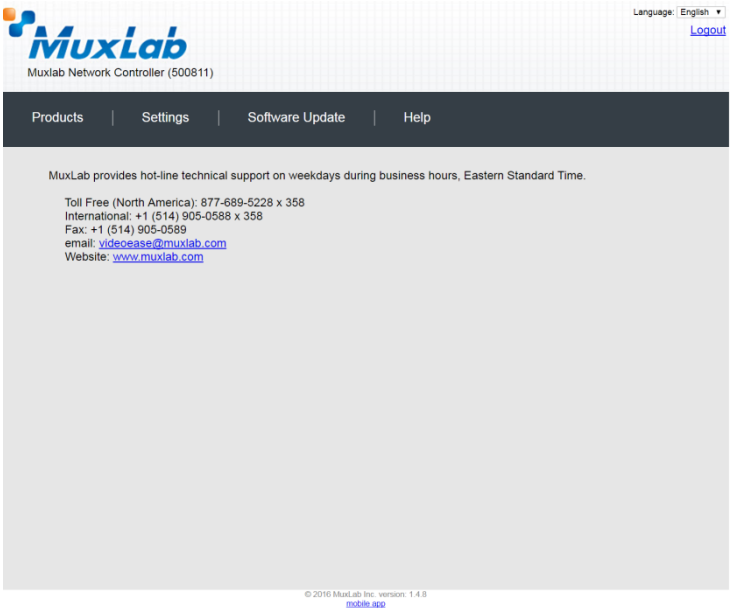


Figure 115: Help Screen

Extender Model 500755

Product Screen

Once the user has logged in, the **Products** screen will appear (Figure 116).

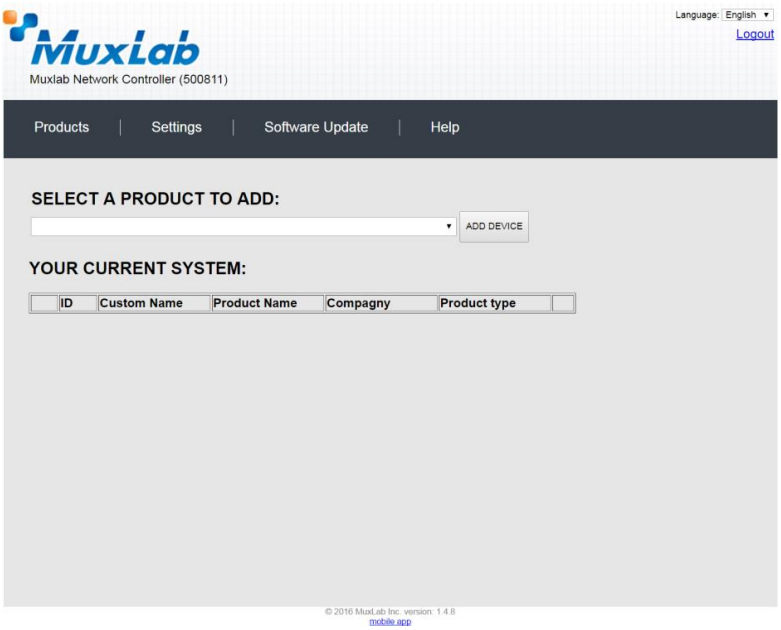


Figure 116: Products Screen – Initial View

In the **SELECT A PRODUCT TO ADD:** drop down box, select **Hdmi Over IP (500752/753/754/755/756)** and then click on **ADD DEVICE** (Figure 117).

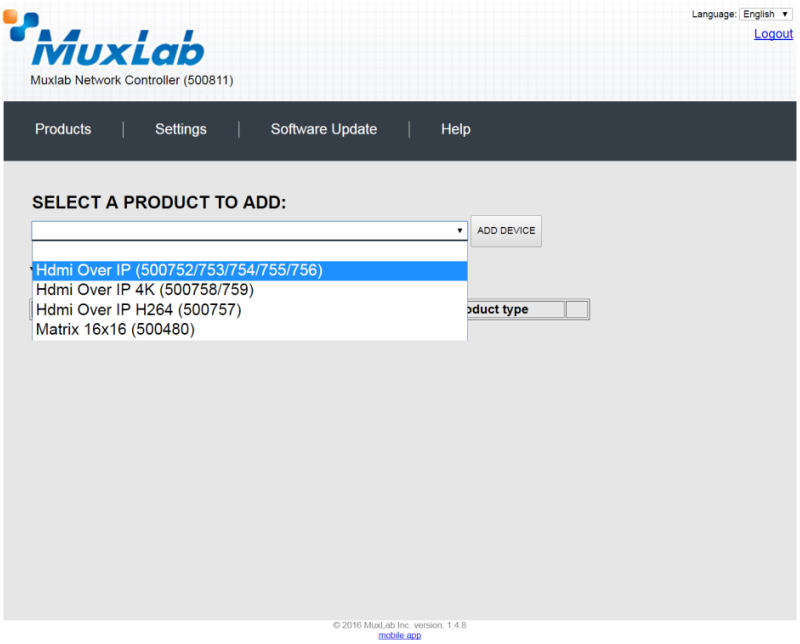


Figure 117: Products Screen – Selecting a Product

A dialog box appears asking the user to provide a custom name for the selected product (Figure 118). The user then types a name in the **Custom Name:** field and clicks on **OK**. Note that if the user decides to click on **CANCEL**, the previous screen appears (Figure 117), without a product being added.

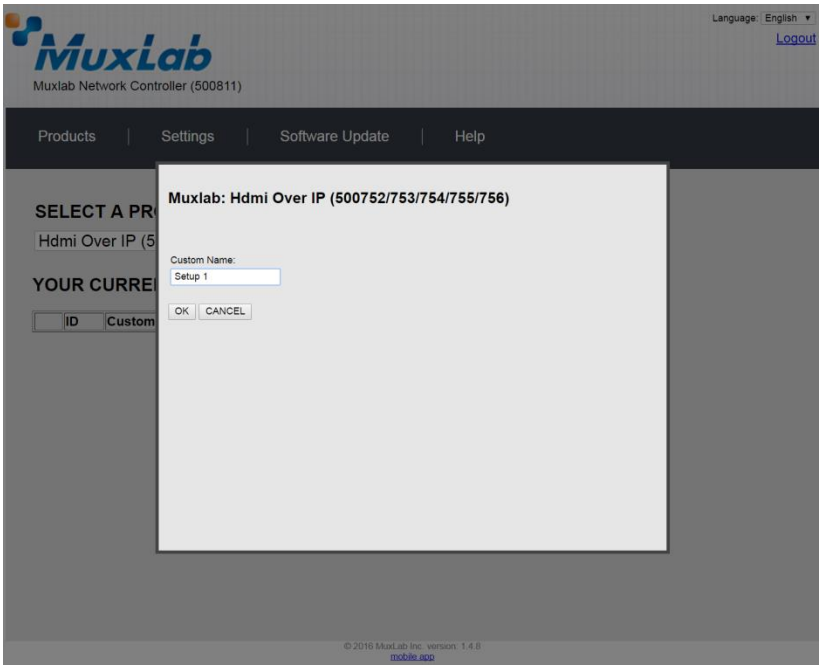


Figure 118: Products Screen – Naming a Product

The custom name has been added to **YOUR CURRENT SYSTEM** (Figure 119).

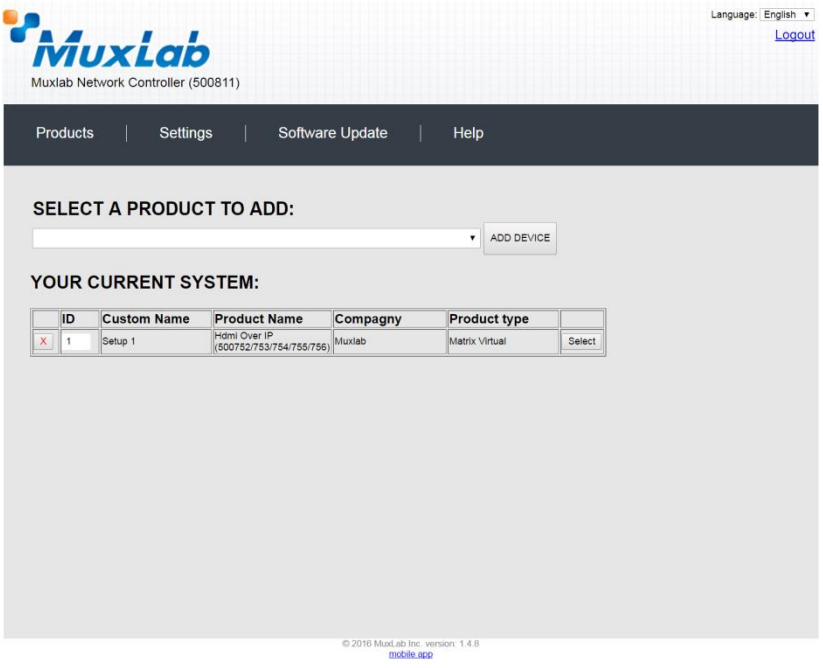


Figure 119: Products Screen – Your Current System Selection

The user can change the ID of each row by modifying the **ID** field. The user can also delete the entire row completely by clicking the X next to it.

To configure a given product, the user clicks on **Select**, which brings up a multi-tabbed screen (Figure 120).

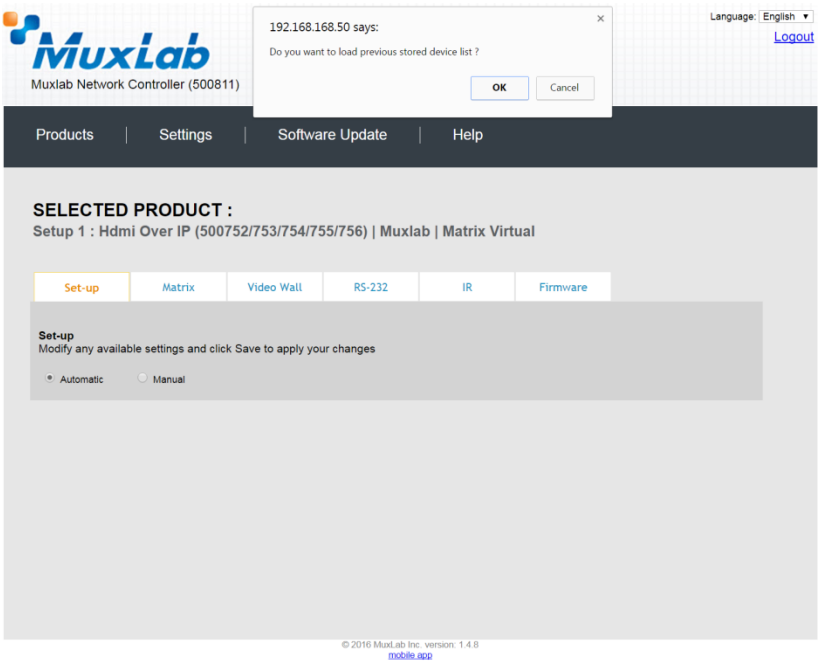


Figure 120: Products Screen – Load Dialog

By default, a dialog appears asking the user to load a previously saved device list (in case such a list has already been stored). This dialog will appear even if no device list has been previously saved.

Six tabs appear within the **Products** screen:

1. Set-up
2. Matrix
3. Video Wall
4. RS-232
5. IR
6. Firmware

1. Products Screen - Set-up Tab

The **Set-up** tab offers the user two options for the type of set-up allowed: **Automatic** or **Manual**.

Automatic means that the software will scan the system for every dip-switch enabled device. The software will then override its manual dip-switch address settings and place these units under software address control. (Automatic is recommended).

Manual means that the software will allow the manual dip-switch address settings of any found device to remain active.

After selecting **Automatic** or **Manual**, click on **Launch discovery** (Figure 121).

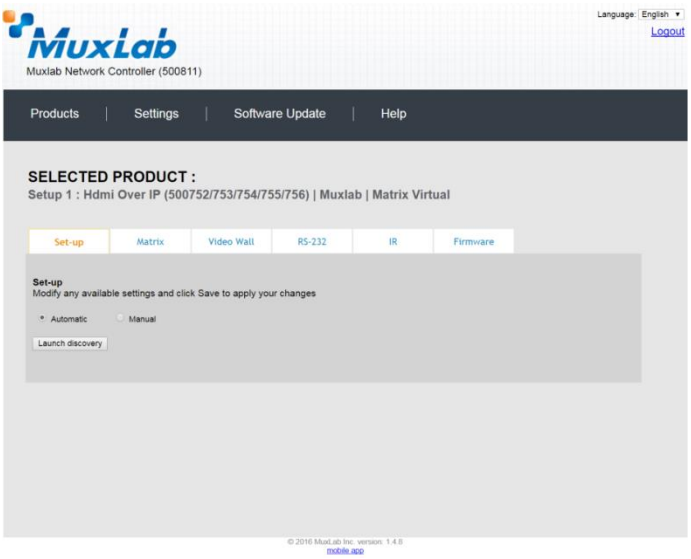


Figure 121: Products Screen – Set-up Tab

Note: The term "Display" is used in this 500755 section to reference the sink side (RX), the actual sink devices are powered speakers or an amplifier.

The system will scan the network for all source side devices (500755 "transmitters") and display side devices (500755 "receivers"), and will display the scan results in tabular form (Figure 122). Note that there is only one type of 500755 Extender, which is a *Transceiver*. Each 500755 Transceiver is configured either as a transmitter or a receiver. This is done by toggling Dip Switch 4 on each Transceiver to either the Tx (transmitter) or Rx (receiver) position.

Each 500755 transmitter/receiver can be assigned an arbitrary descriptive name, normally reflecting the end device that it is terminated to. To change the name of any speaker/amplifier sink (RX) or audio source (TX) device, click the **Name** field to edit its contents. Several **Name** fields can be edited before saving changes, as shown in Figure 123 (orange highlighted fields).

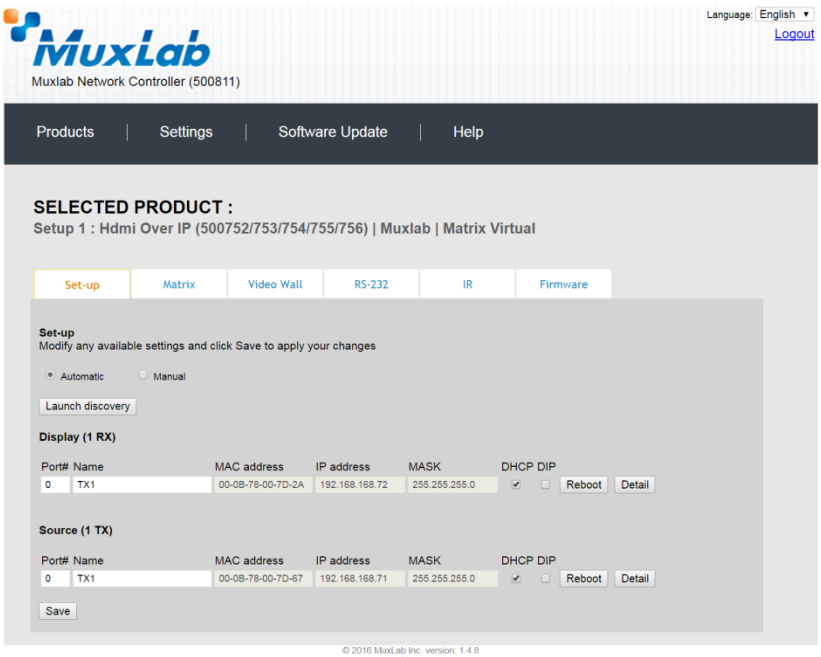


Figure 122: Products Screen – Set-up Tab

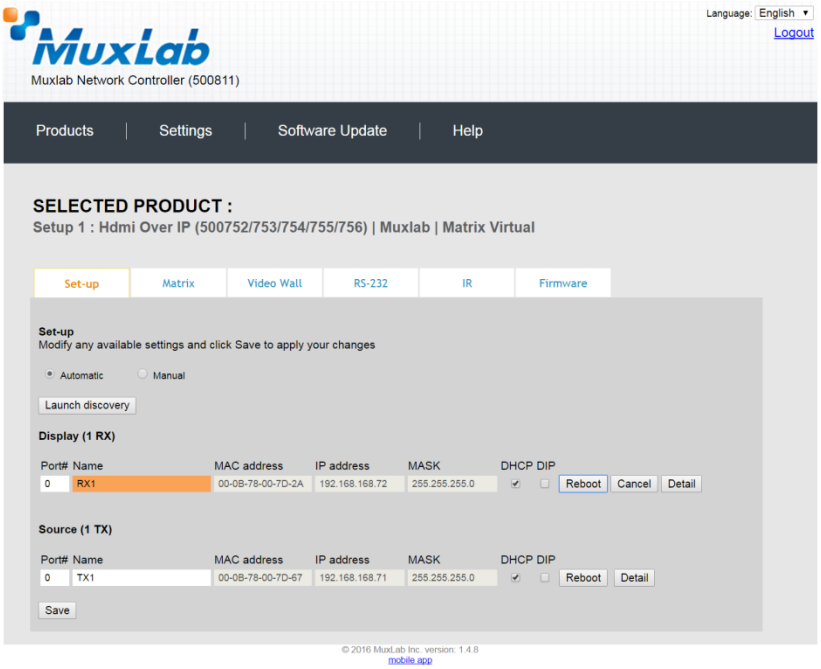


Figure 123: Name Editing

To save all name changes, click on **Save**. A green UPDATED tag will appear next to newly changed names (Figure 124).

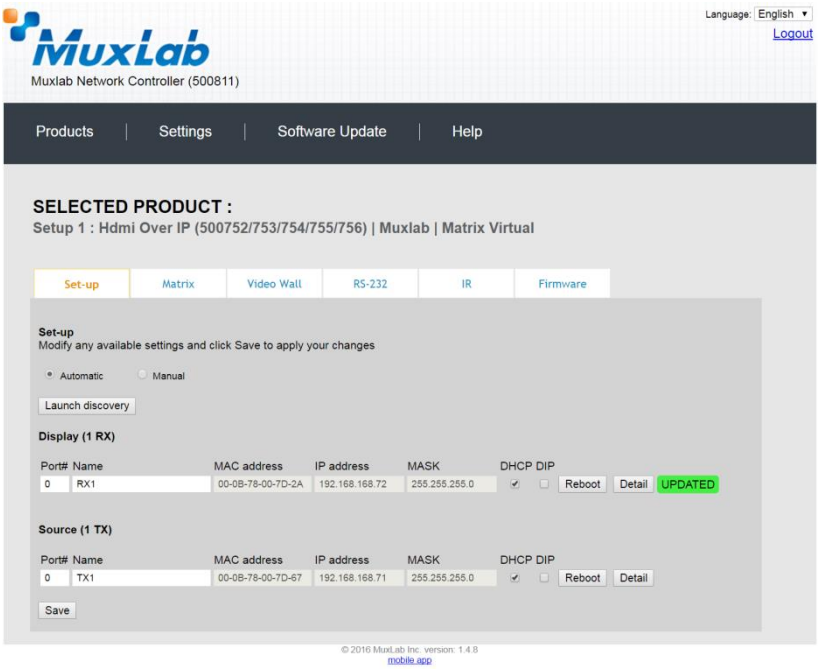


Figure 124: Saving Name Changes

To view and modify component parameters, click on the **Detail** button next to the given component. A dialog appears (Figure 125).

Figure 125: Device Detail Dialog

2. Products Screen - Matrix Tab

The **Matrix** tab of the **Products** screen allows the user to connect any Display (sink device) to any source. The user has the option of using **Presets** to save connection schemes ("Presets"), as well as to edit and delete existing presets (Figure 126).

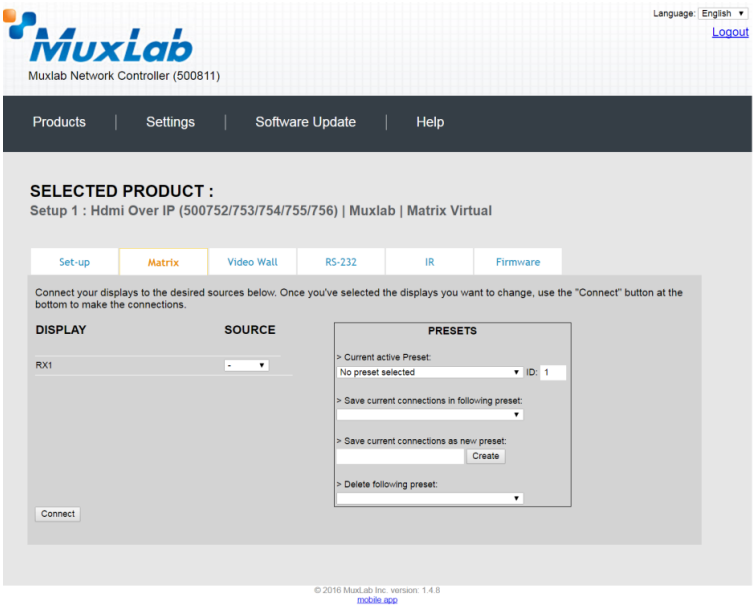


Figure 126: Matrix Tab

To connect a sink to a source, the user first clicks on the drop-down list next to the given sink (for example "RX1") and selects which source to connect it to, such as "Audio 1" (Figure 127).

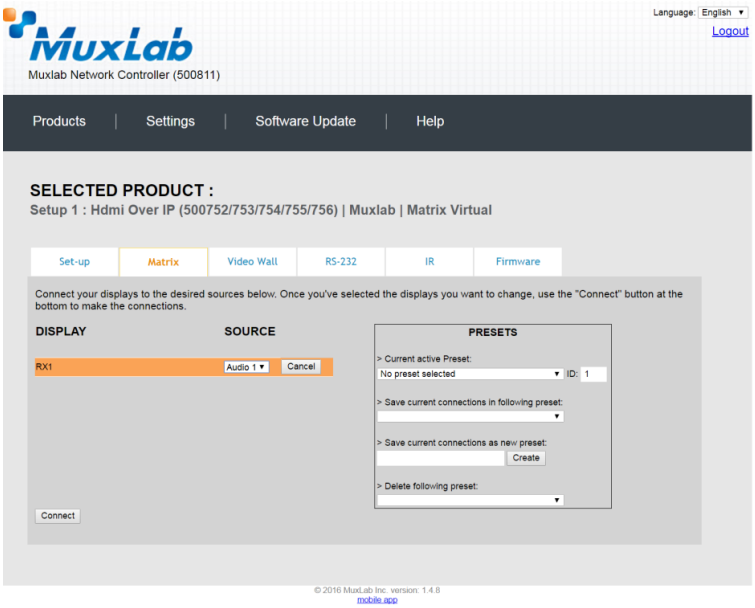


Figure 127: Change Connection

Once the selection is made (the user can change any or all connections between sinks and sources), the user clicks on **Connect** to finalize the change. A green SUCCESS tag will appear next to the new or changed connection (Figure 128).

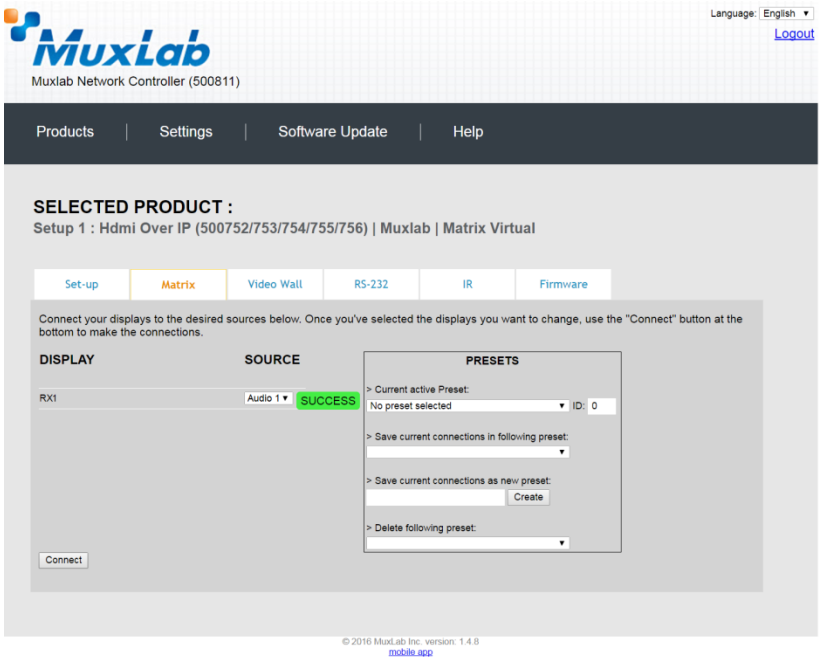


Figure 128: Change Successful

To create a new preset, the user clicks the **> Save current connections as new preset** field (Figure 129) and types a name. This assigned preset name will be linked to the existing connection scheme being shown within the **Matrix** tab.

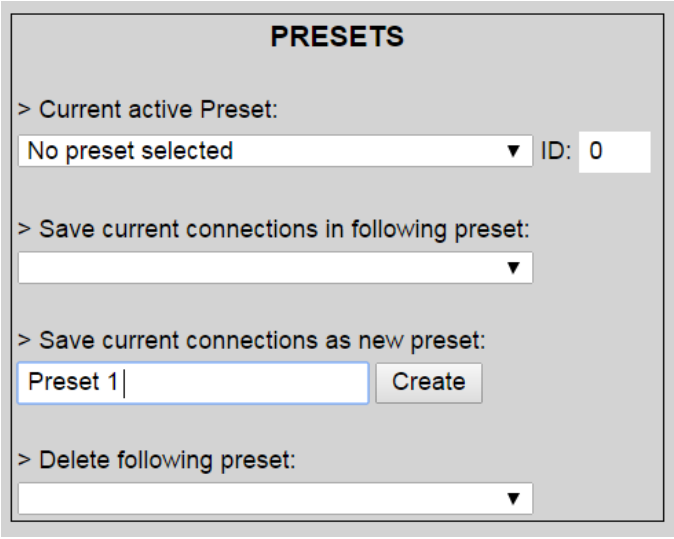


Figure 129: Create New Preset

To save this preset, the user clicks on **Create**. A green SUCCESS tag will appear next to the **> Save current connections as new preset** field and the newly created preset becomes the **Current active Preset** (Figure 130).

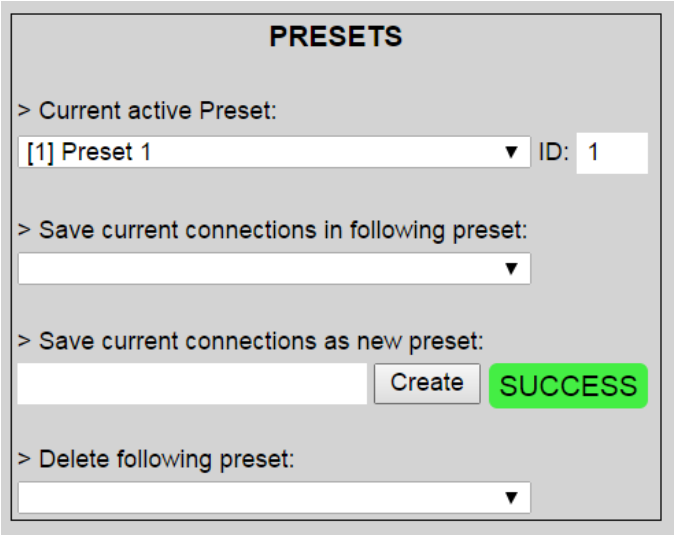


Figure 130: Confirmation of New Preset

To delete a preset, the user clicks the **> Delete following preset** drop-down box and selects a preset name from the list shown (Figure 131).

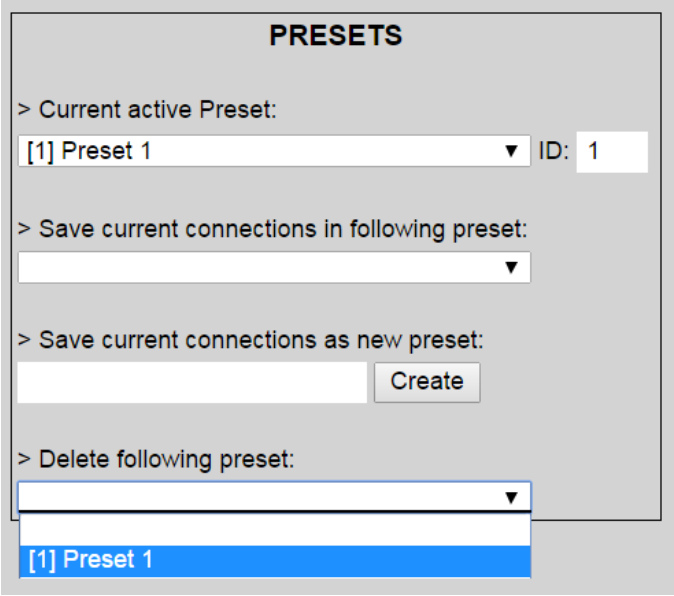


Figure 131: Delete Preset

Once selected, a dialog will appear asking the user to confirm the deletion request (Figure 132).

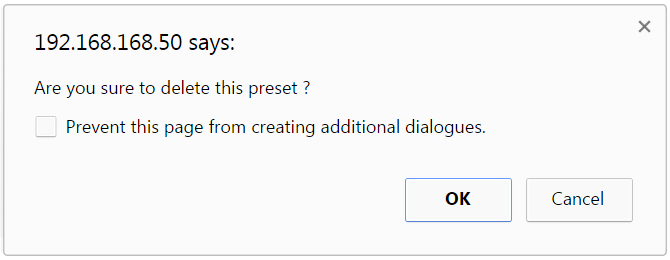


Figure 132: Confirmation of Deleted Preset

Click on **OK**. The preset will be deleted and a green SUCCESS tag will appear next to the **> Delete following preset** field (Figure 133).

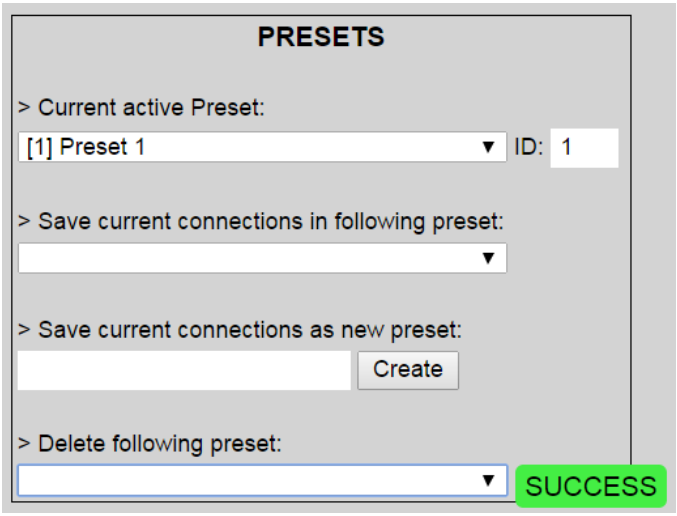


Figure 133: Confirmation of Deleted Preset

To save the current matrix configuration under an existing **Preset** name, click on **> Save current connection in following preset** drop-down box and selects a preset name (Figure 134).

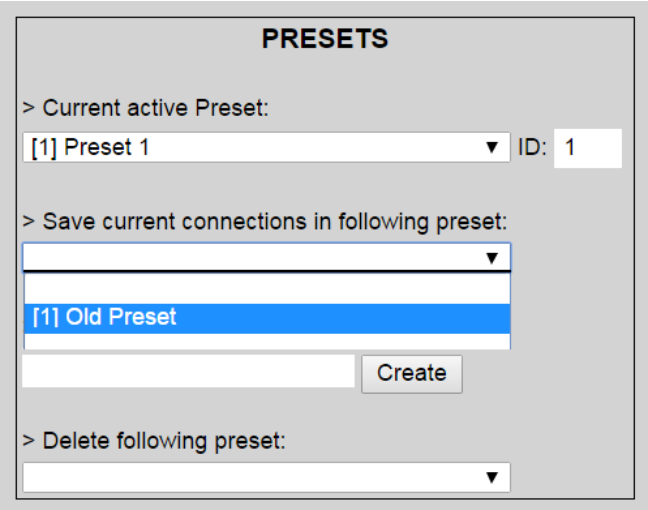


Figure 134: Change Current Active Preset

Once selected, the **Preset** will be saved and a green SUCCESS tag will appear next to the **> Save current connections in following preset** field (Figure 135).

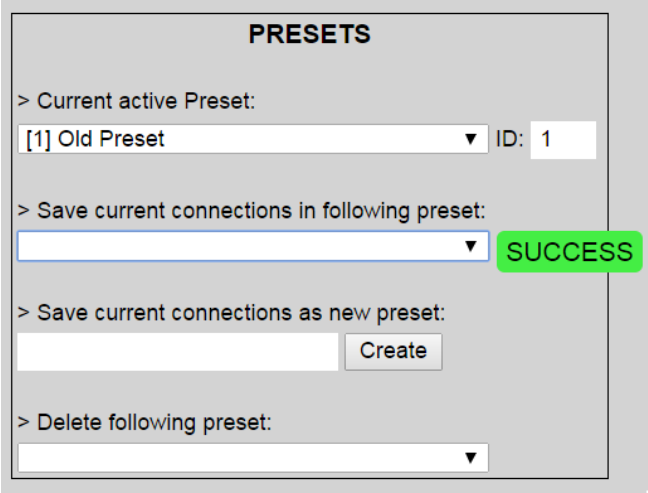


Figure 135: Confirmation of Changed Preset Name

In order to activate an existing **Preset**, select > **Current active Preset**, and select the **Preset** name from the drop-down box and the **Preset** will become active. The active **Preset** will also be displayed in the **Current active Preset** field.

3. Products Screen - Video Wall Tab

MuxLab's Extender 500755 does not support the Video Wall feature. Clicking on this tab will display the following screen (Figure 136).

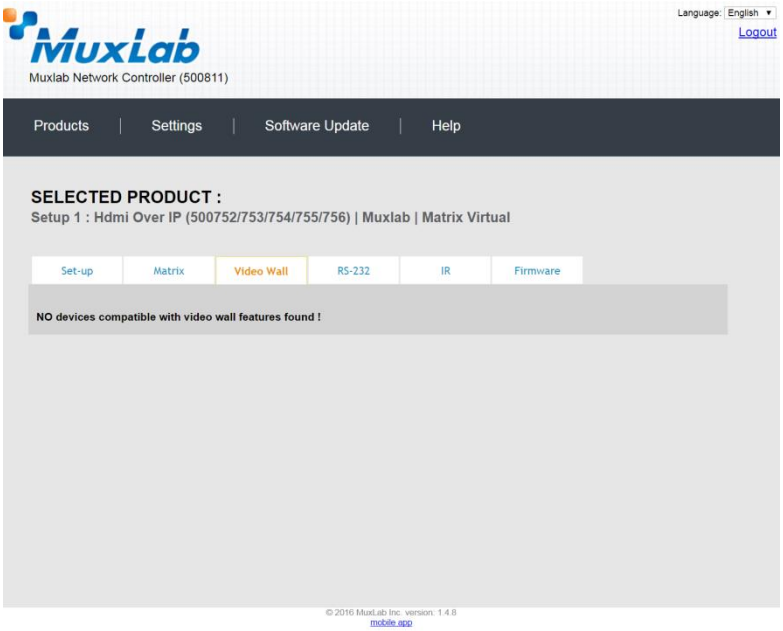


Figure 136: Video Wall Tab

For more information on the Video Wall tab and its features, refer to the section of this manual dealing with MuxLab Extender 500754 and MuxLab Extender 500759.

4. Products Screen - RS-232 Tab

The **RS-232** tab of the **Products** screen enables the user to send RS-232 commands to any MuxLab transceiver (transmitter or receiver) (Figure 137). This is done either through the Network Controller or directly by connecting a PC to the RS-232 port of any transmitter or receiver.

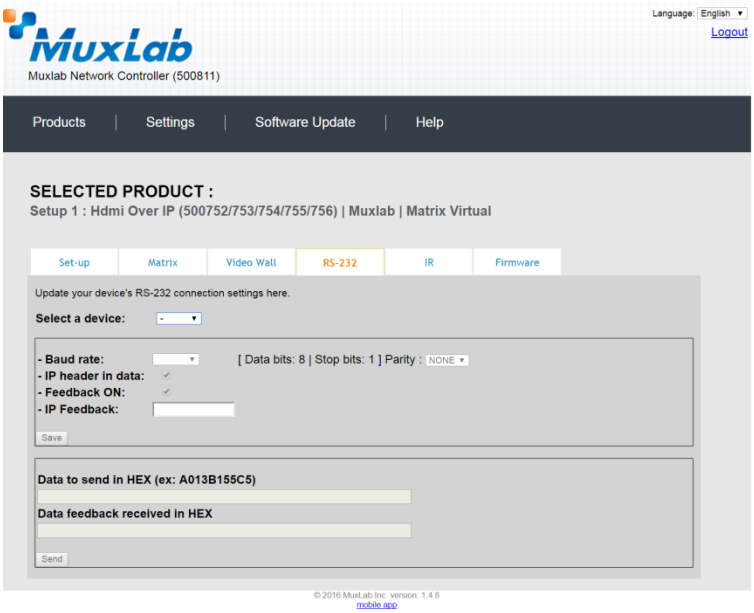


Figure 137: RS-232 Tab

When sending RS-232 commands through the Network Controller, the user first selects the device that the RS-232 commands will be sent to. This is done by clicking on the **Select a device** drop-down list and making a selection (Figure 138). The IP Feedback field should also contain the IP address of the Network Controller.

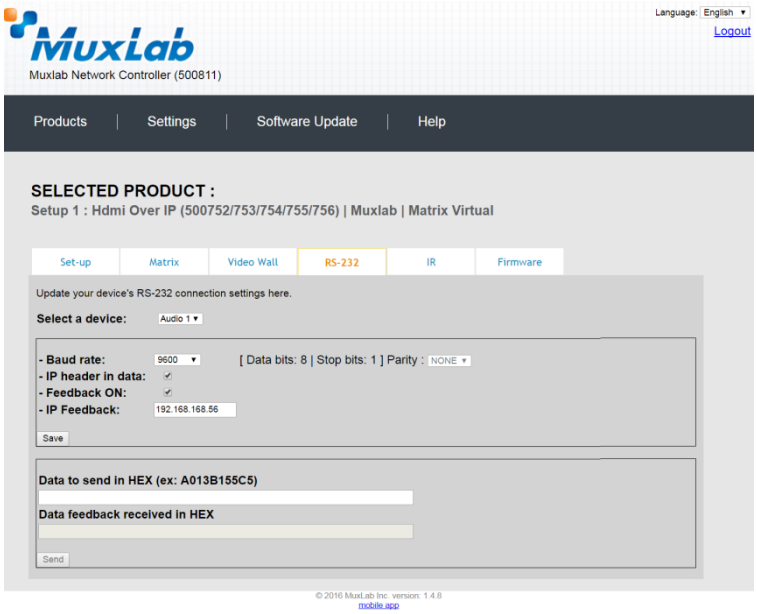


Figure 138: RS-232 Tab - Selecting a Device

Once a device is selected, the **Data to send in HEX** field becomes enabled. In the above example, source "Audio 1" was chosen as the selected device (but a transceiver set as a receiver connected to sink equipment could have also been selected), meaning that a command sent to source "Audio 1" will travel from the Network Controller to the Ethernet Switch, and from the Ethernet Switch to the transceiver (set as a transmitter) connected to the "Audio 1" source. The transceiver (set as a transmitter) will then send the specified data command to source "Audio 1".

The **Data feedback received in HEX** field displays the HEX version the feedback sent to the Network Controller by source "Audio 1".

When sending RS-232 commands directly from a PC to any transceiver (transmitter or receiver), the user must set up a pass-through system for RS-232 signals to be sent to and from devices. This requires two steps:

(1) The user first tells the local device (the device connected directly to the PC) the IP address of the far device (where the RS-232 commands are being sent). This is done by first clicking on the **Select a device** drop-down list and selecting the local device from the list, and then inputting the IP address of the far device in the **IP Feedback** field. The user then clicks on **Save**.

(2) The user then tells the far device the IP address of the local device (if feedback from the far device is required). This is done by first clicking on the **Select a device** drop-down list and selecting the far device from the list, and then inputting the IP address of the near device in the **IP Feedback** field. The user then clicks on **Save**.

5. Products Screen - IR Tab

The **IR** tab of the **Products** screen enables the user to send IR commands to a MuxLab transceiver (transmitter or receiver) IR port (Figure 139) via the Network Controller. IR pass-through mode is also supported using an IR handheld remote as the control source.

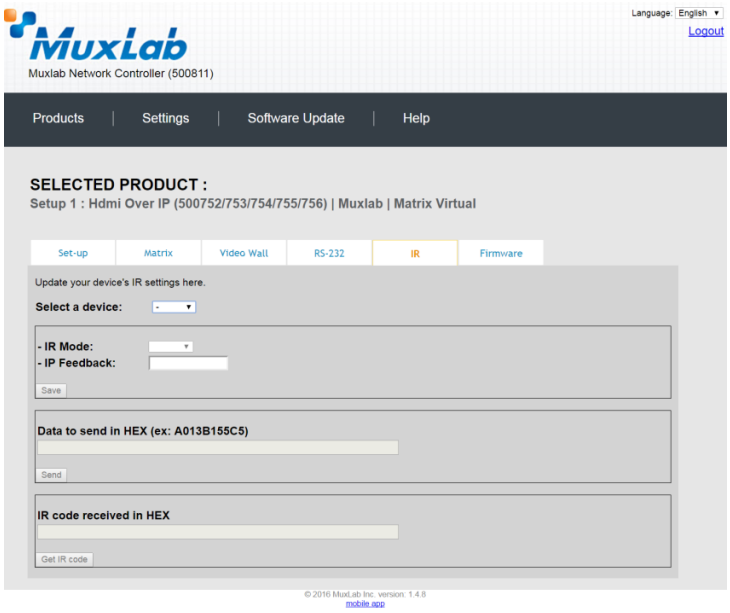


Figure 139: IR Tab

When sending IR commands through the Network Controller, the user first selects the device that the IR commands will be sent to. This is done by clicking on the **Select a device** drop-down list and making a selection (Figure 140).

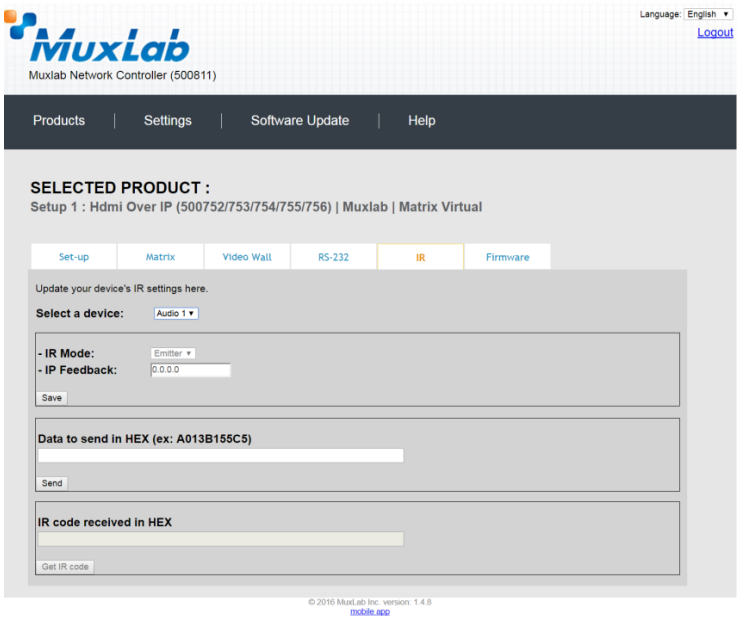


Figure 140: IR Tab – Selecting a Device

The 500755 transceiver can be configured as a transmitter or receiver and supports a bi-directional IR port. The below example is for transmitting IR from the sink side (display/powered speaker-amplifier side) to the source side, but the 500755 can be configured to transmit IR from the source to the sink side as well.

Once a device is selected, the **Data to send in HEX** field becomes enabled. In the above example, source "Audio 1" was chosen as the selected device, meaning that a command sent to source "Audio 1" will travel from the Network Controller to the Ethernet Switch, then from the Ethernet Switch to the transceiver (set as a transmitter) connected to source "Audio 1". The transceiver (set as a transmitter) will then send the specified IR data command to source "Audio 1" via the IR Emitter connected to the transceiver (set as a transmitter) IR out port.

The **IR code received in HEX** field displays the HEX version of an IR command send from a handheld remote to an IR transceiver (set as a receiver) IR In port and attached IR Sensor.

When sending IR commands directly from an IR Source device, such as an IR handheld remote, from 500755 transceiver (set as a receiver) through to a transceiver (set as a transmitter), the user must set up a pass-through for IR signals to be sent to and from devices. This requires the following step:

> The user must tell the 500755 transceiver (set as a receiver, and being the device near the IR handheld remote with an attached IR Sensor) the IP address of the 500755 transceiver (set as a transmitter, and where the IR commands are being sent, which has an attached IR Emitter). This is done by first clicking on the **Select a device** drop-down list and selecting the local device from the list, and then inputting the IP address of the far device in the **IP Feedback** field. The user then clicks on **Save**.

6. Products Screen - Firmware Tab

The **Firmware** tab of the Products screen enables the user to update the firmware for MuxLab transmitters and receiver (Figure 141).

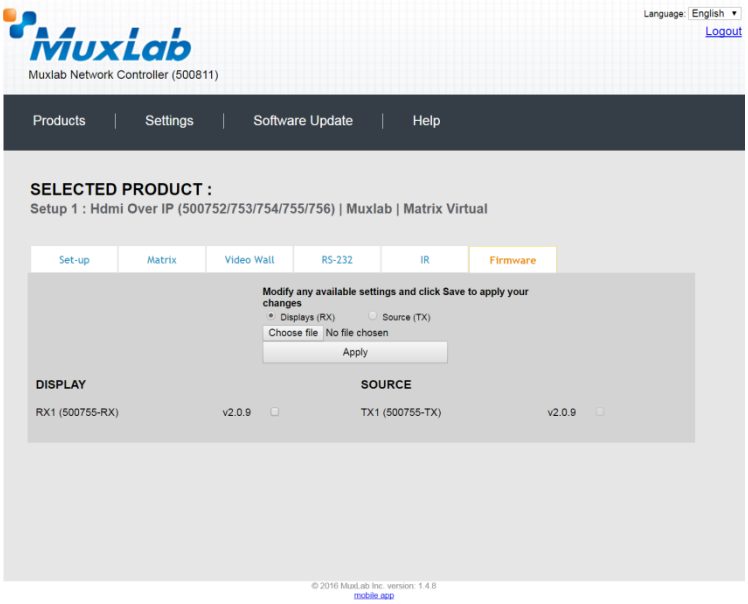


Figure 141: Firmware Tab

The user first selects either **Display (RX)** which is the sink unit (connected to powered speakers or an amplifier), or **Source (TX)**, then chooses the firmware update file to upload to the given device. Once the file is selected, the user checks the box next to the given device (listed under **DISPLAY** and **SOURCE**) targeted for firmware upgrade, and then clicks **Apply**.

Settings Screen

The **Settings** screen contains two tabs: **Network** and **Administration**.

The **Network** tab (Figure 142) is used to change the IP address of the MuxLab Network Controller, the network mask, as well as the router IP address. It also allows the user to enable or disable DHCP.

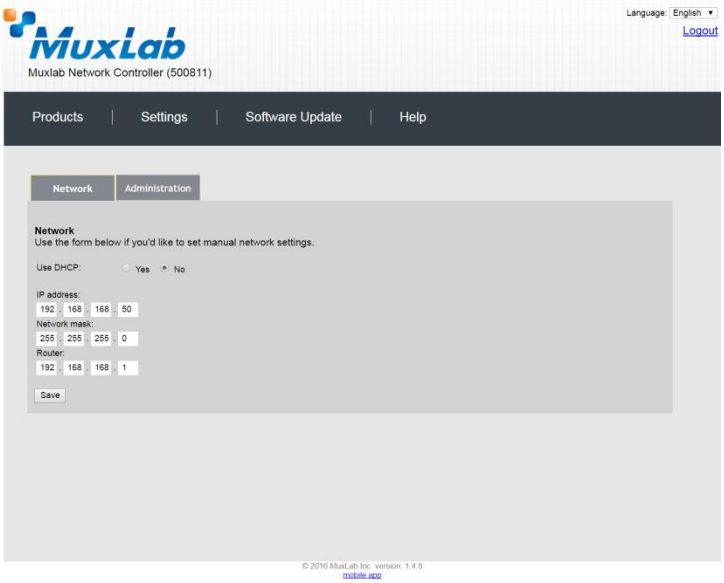


Figure 142: Settings Screen: Network Tab

The **Administration** tab is used to create or delete user accounts, change passwords, restore data, backup data, and retrieve logs (Figure 143).

Figure 143: Settings Screen: Administration Tab

Software Update Screen

The **Software Update** enables the user to update MuxLab Network Controller software (Figure 144). This software is available on MuxLab's website (www.muxlab.com). Download the software to the local PC before performing the update.

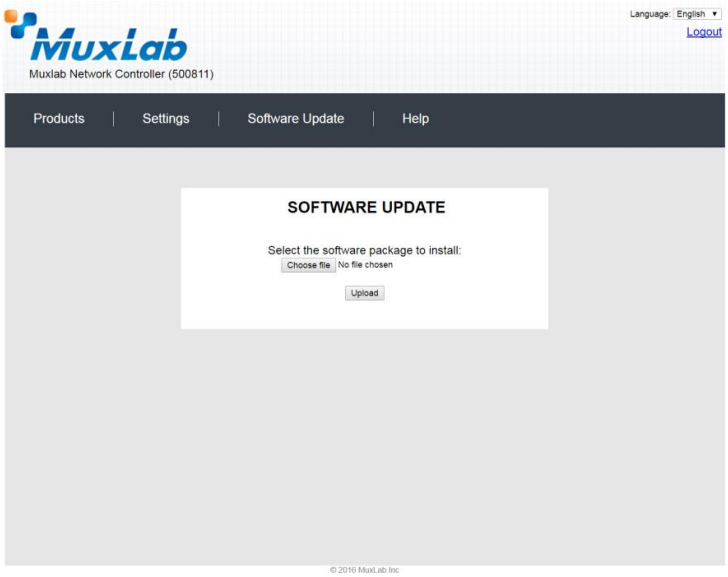


Figure 144: Software Update Screen

Help Screen

The **Help** screen offers quick contact information for customer support and all other inquiries (Figure 145).

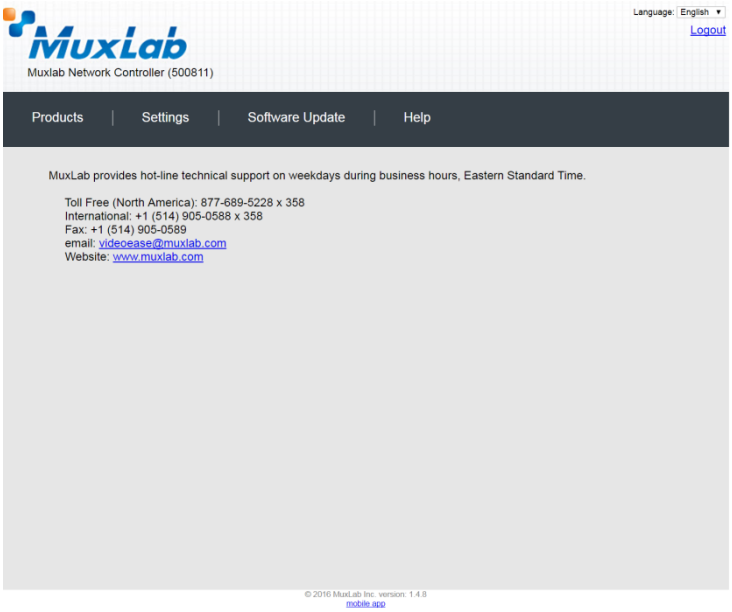


Figure 145: Help Screen

Extender Model 500756

Product Screen

Once the user has logged in, the **Products** screen will appear (Figure 146).

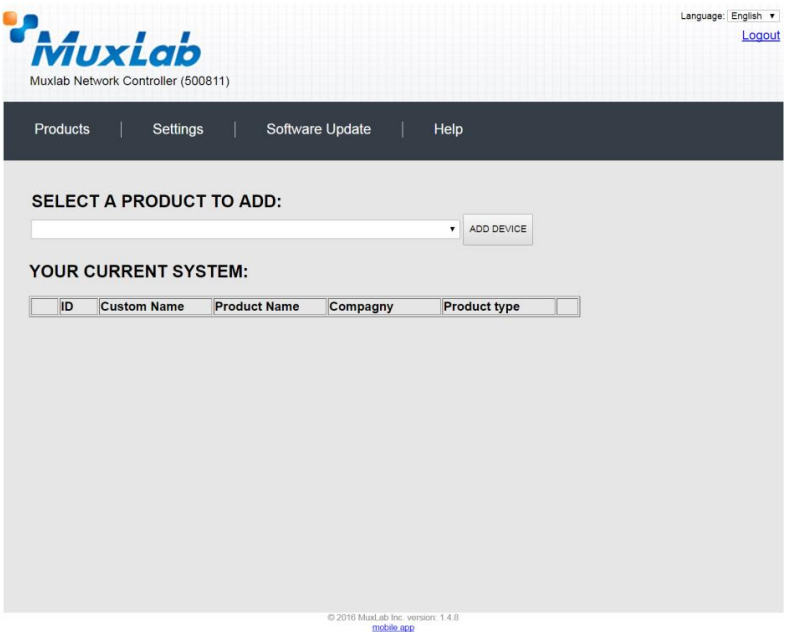


Figure 146: Products Screen – Initial View

In the **SELECT A PRODUCT TO ADD:** drop down box, select **Hdmi Over IP (500752/753/754/755/756)** and then click on **ADD DEVICE** (Figure 147).

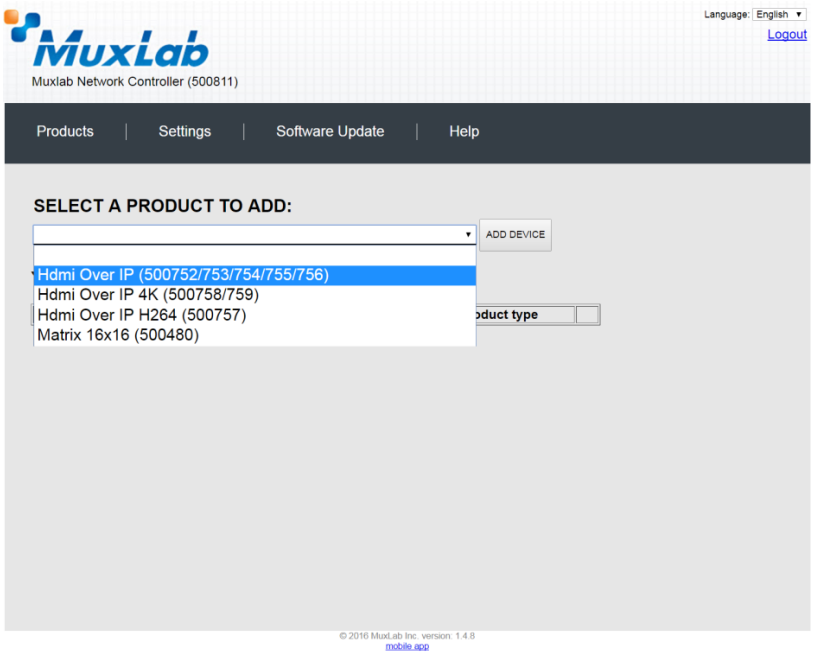


Figure 147: Products Screen – Selecting a Product

A dialog box appears asking the user to provide a custom name for the selected product (Figure 148). The user then types a name in the **Custom Name:** field and clicks on **OK**. Note that if the user decides to click on **CANCEL**, the previous screen appears (Figure 147), without a product being added.

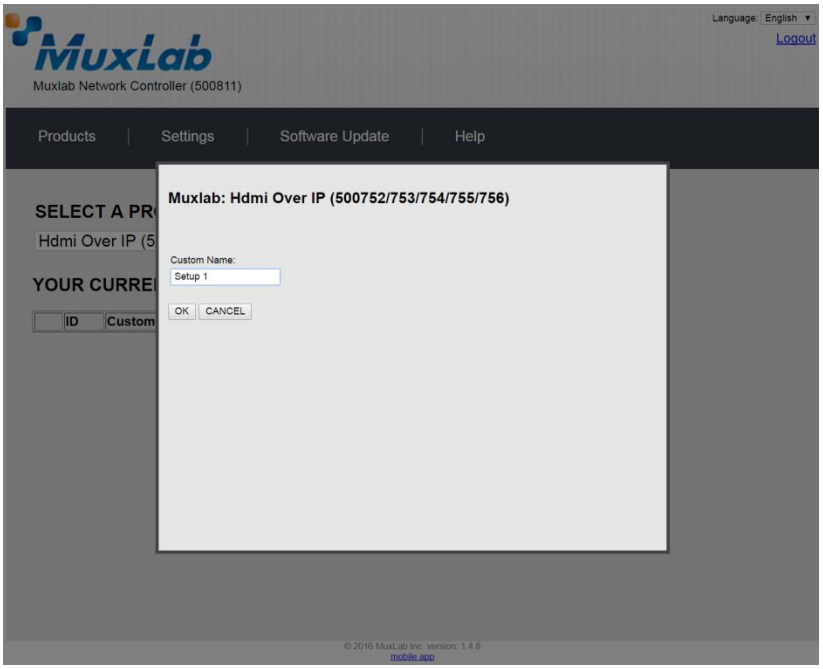


Figure 148: Products Screen – Naming a Product

The custom name has been added to **YOUR CURRENT SYSTEM** (Figure 149).

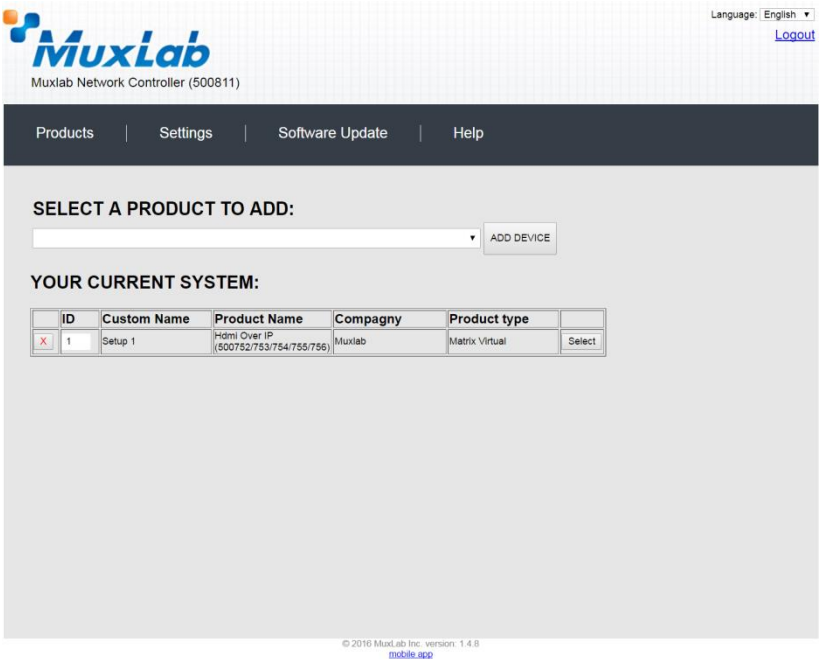


Figure 149: Products Screen – Your Current System Selection

The user can change the ID of each row by modifying the **ID** field. The user can also delete the entire row completely by clicking the X next to it.

To configure a given product, the user clicks on **Select**, which brings up a multi-tabbed screen (Figure 150).

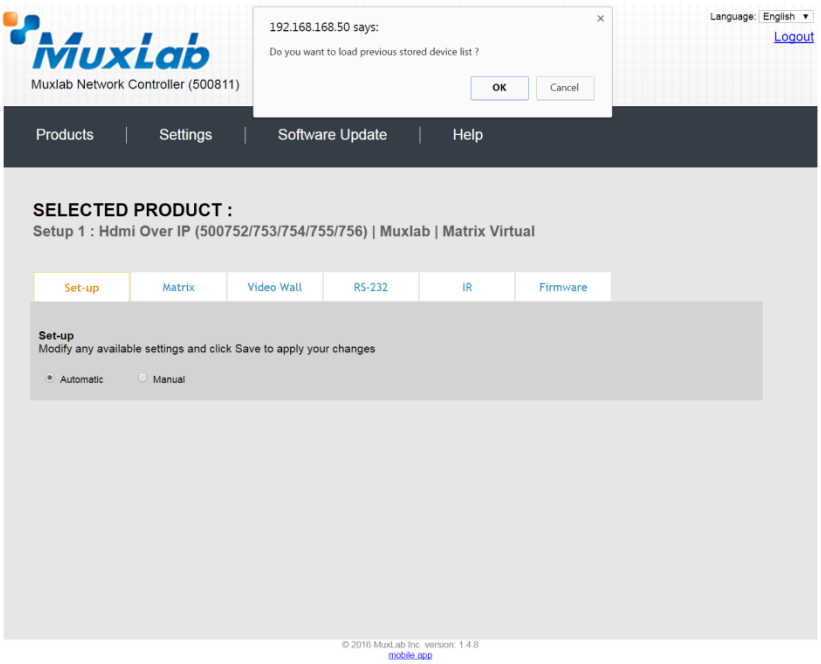


Figure 150: Products Screen – Load Dialog

By default, a dialog appears asking the user to load a previously saved device list (in case such a list has already been stored). This dialog will appear even if no device list has been previously saved.

Six tabs appear within the **Products** screen:

1. Set-up
2. Matrix
3. Video Wall
4. RS-232
5. IR
6. Firmware

1. Products Screen - Set-up Tab

The **Set-up** tab offers the user two options for the type of set-up allowed: **Automatic** or **Manual**.

Automatic means that the software will scan the system for every dip-switch enabled device. The software will then override its manual dip-switch address settings and place these units under software address control. (Automatic is recommended).

Manual means that the software will allow the manual dip-switch address settings of any found device to remain active.

After selecting **Automatic** or **Manual**, click on **Launch discovery** (Figure 151).

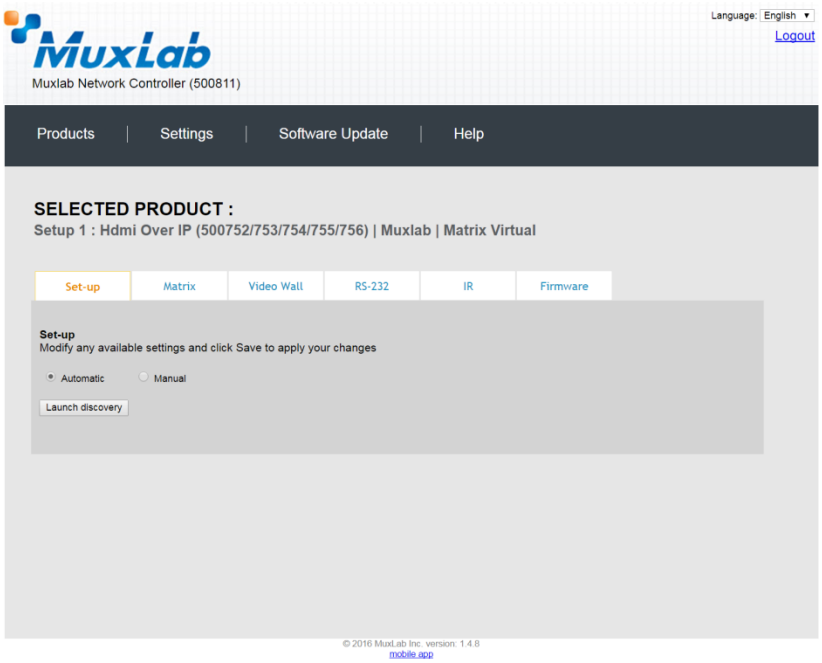


Figure 151: Products Screen – Set-up Tab

The system will scan the network for all source side devices (500756 transmitters) and display side devices (500756 receivers), and will display the scan results in tabular form (Figure 152).

Each 500756 transmitter and receiver can be assigned an arbitrary descriptive name, normally reflecting the end device that it is terminated to. To change the name of any Display (RX) or Source (TX) device, click the **Name** field to edit its contents. Several **Name** fields can be edited before saving changes, as shown in Figure 153 (orange highlighted fields).

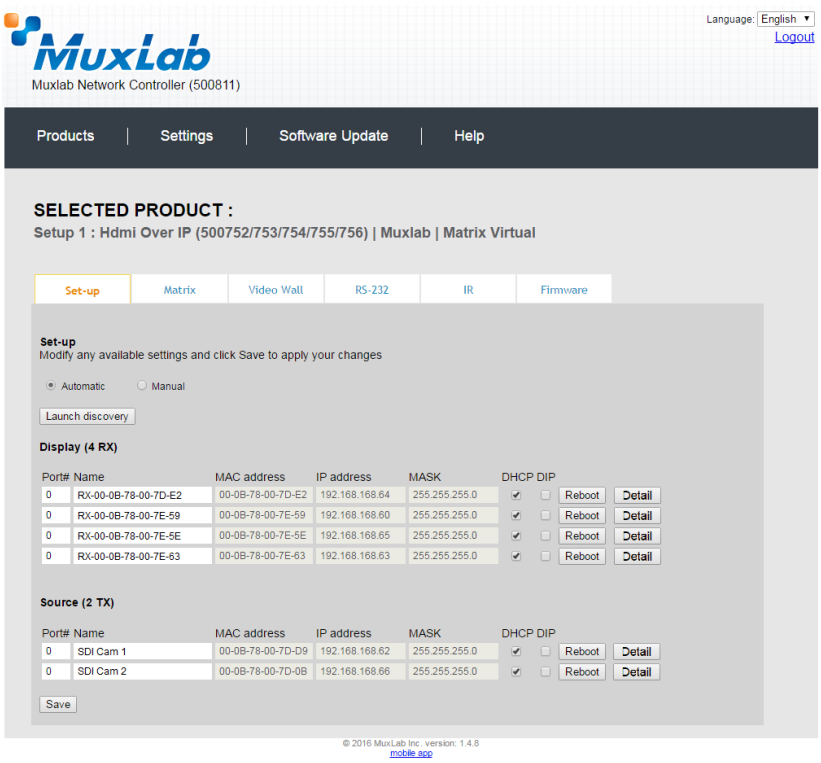


Figure 152: Products Screen – Set-up Tab

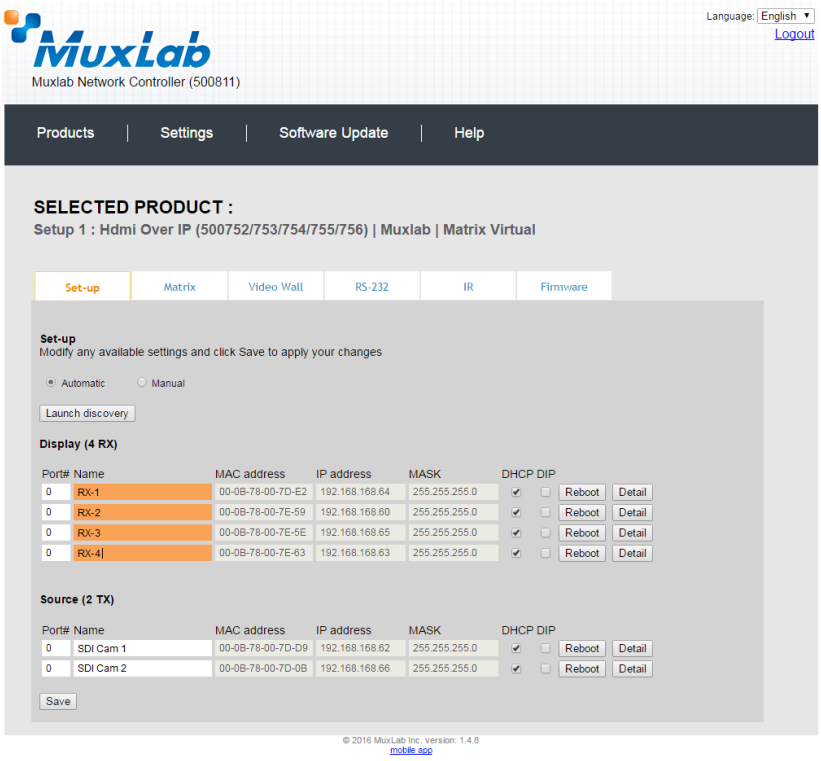


Figure 153: Name Editing

To save all name changes, click on **Save**. A green UPDATED tag will appear next to newly changed names (Figure 154).

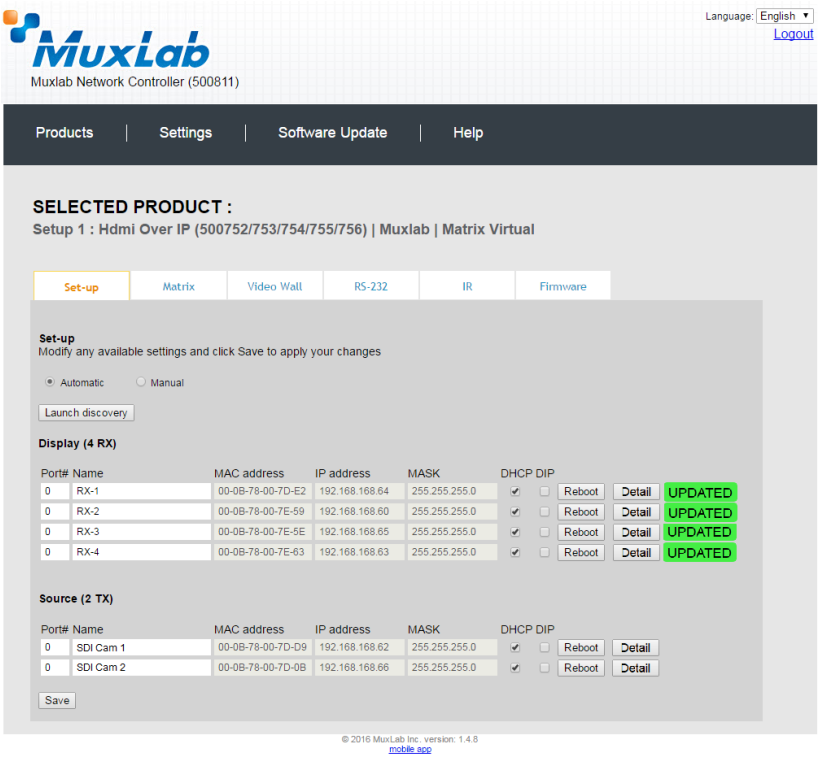


Figure 154: Saving Name Changes

To view and modify component parameters, click on the **Detail** button next to the given component. A dialog appears (Figure 155).

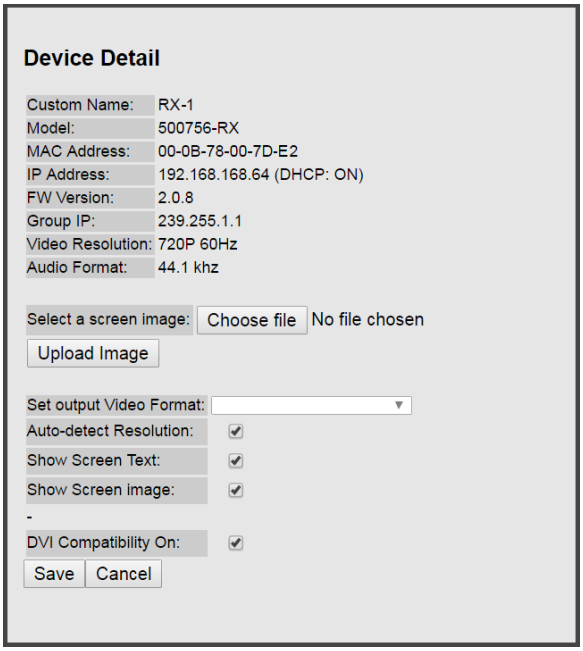


Figure 155: Device Detail Dialog

2. Products Screen - Matrix Tab

The **Matrix** tab of the **Products** screen allows the user to connect any Display to any Source. The user also has the option of using **Presets** to save connection schemes ("Presets"), as well as to edit and delete existing presets (Figure 156).

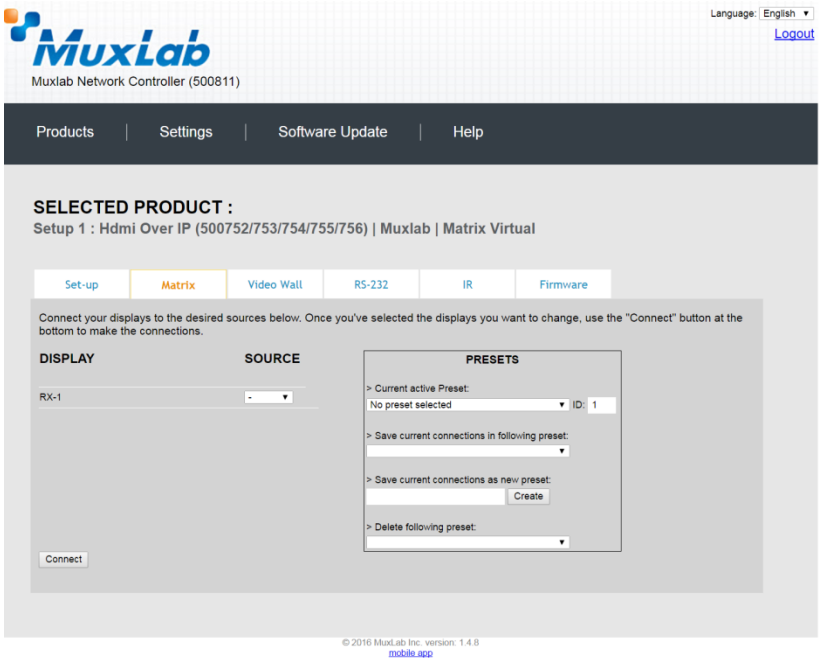


Figure 156: Matrix Tab

To connect a display to a source, the user first clicks on the drop-down list next to the given display (for example "RX-1") and selects which source to connect it to (Figure 157).

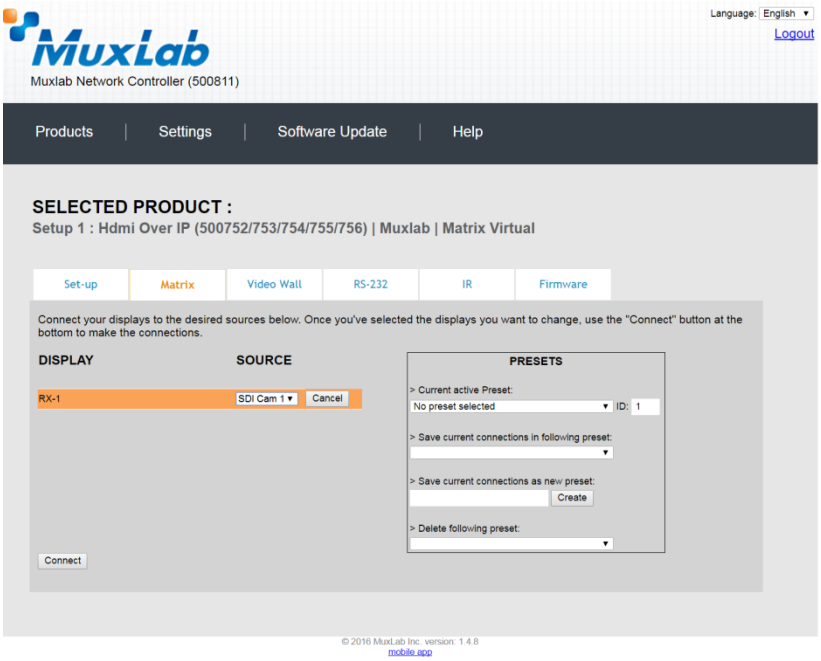


Figure 157: Change Connection

Once the selection is made (the user can change any or all connections between displays and sources), the user clicks on **Connect** to finalize the change. A green SUCCESS tag will appear next to the new or changed connection (Figure 158).

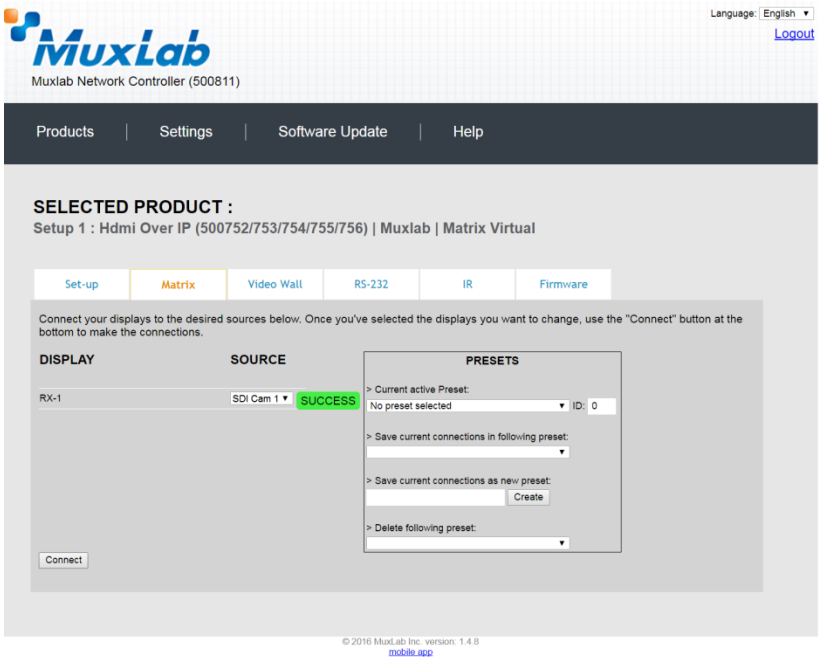


Figure 158: Change Successful

To create a new preset, the user clicks the **> Save current connections as new preset** field (Figure 159) and types a name. This assigned preset name will be linked to the existing connection scheme being shown within the **Matrix** tab.

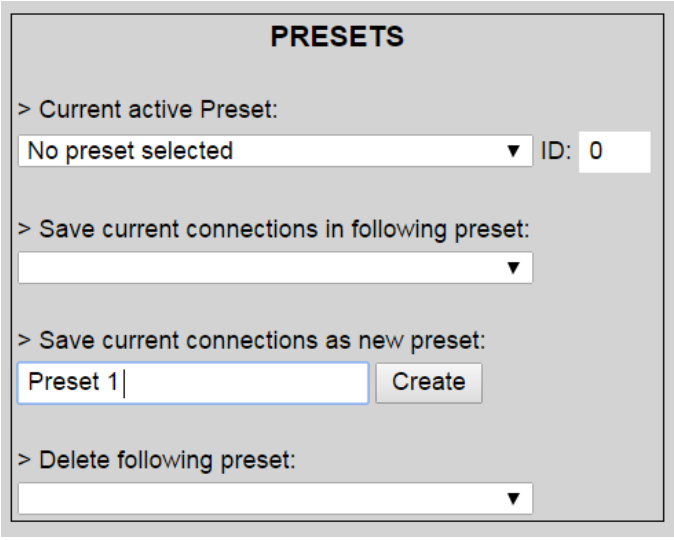


Figure 159: Create New Preset

To save this preset, the user clicks on **Create**. A green SUCCESS tag will appear next to the **> Save current connections as new preset** field and the newly created preset becomes the **Current active Preset** (Figure 160).

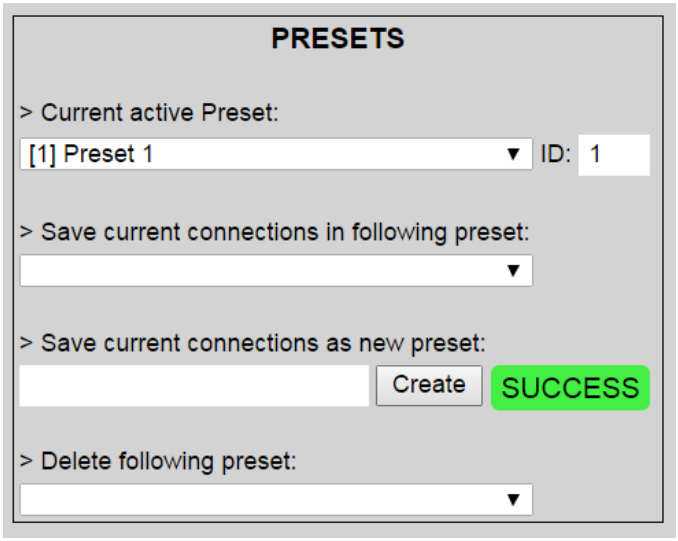


Figure 160: Confirmation of New Preset

To delete a preset, the user clicks the **> Delete following preset** drop-down box and selects a preset name from the list shown (Figure 161).

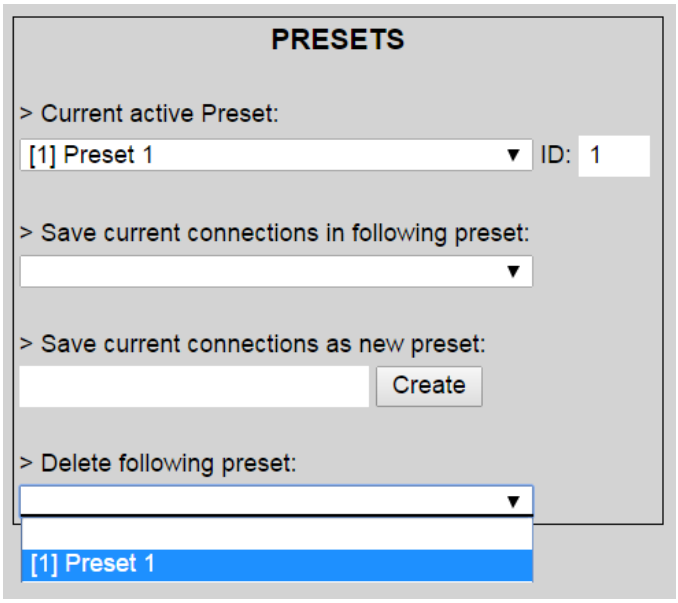


Figure 161: Delete Preset

Once selected, a dialog will appear asking the user to confirm the deletion request (Figure 162).

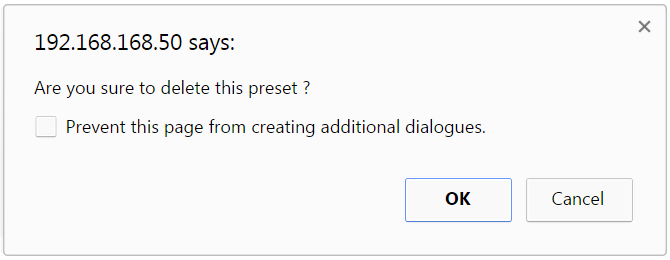


Figure 162: Confirmation of Deleted Preset

Click on **OK**. The preset will be deleted and a green SUCCESS tag will appear next to the **> Delete following preset** field (Figure 163).

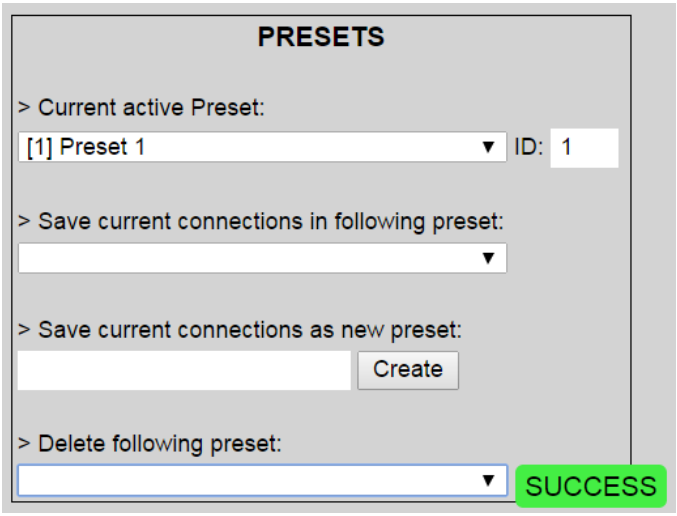


Figure 163: Confirmation of Deleted Preset

To save the current matrix configuration under an existing **Preset** name, click on **> Save current connection in following preset** drop-down box and selects a preset name (Figure 164).

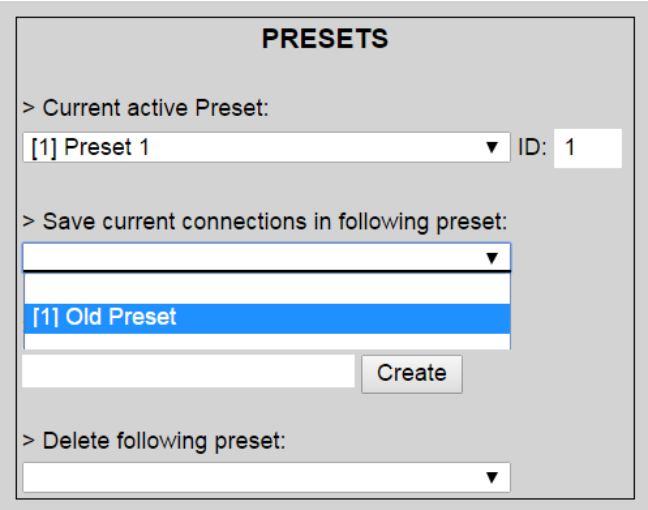


Figure 164: Change Current Active Preset

Once selected, the **Preset** will be saved and a green SUCCESS tag will appear next to the **> Save current connections in following preset** field (Figure 165).

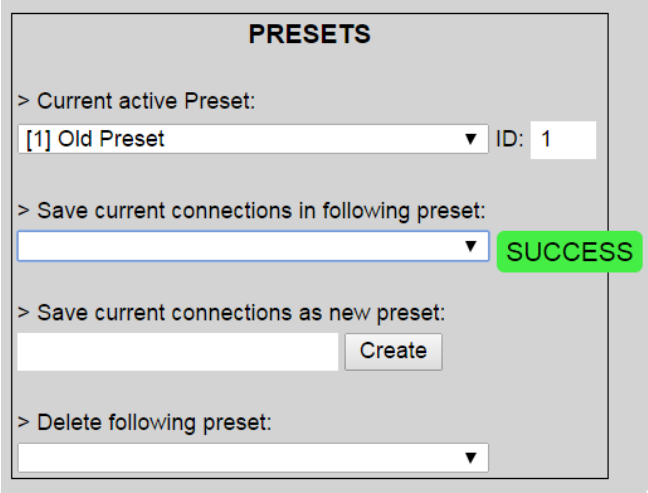


Figure 165: Confirmation of Changed Preset Name

In order to activate an existing **Preset**, select > **Current active Preset**, and select the **Preset** name from the drop-down box and the **Preset** will become active. The active **Preset** will also be displayed in the **Current active Preset** field.

3. Products Screen - Video Wall Tab

MuxLab's Extender 500756 does not support the Video Wall feature. Clicking on this tab will display the following screen (Figure 166).

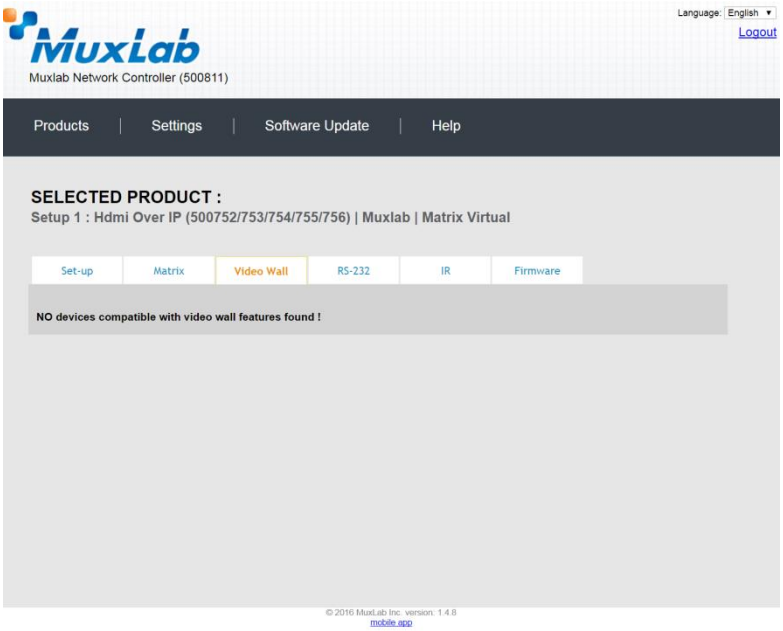


Figure 166: Video Wall Tab

For more information on the Video Wall tab and its features, refer to the section of this manual dealing with MuxLab Extender 500754 and MuxLab Extender 500759.

4. Products Screen - RS-232 Tab

The **RS-232** tab of the **Products** screen enables the user to send RS-232 commands to any MuxLab transmitter or receiver (Figure 167). This is done either through the Network Controller or directly by connecting a PC to the RS-232 port of any transmitter or receiver.

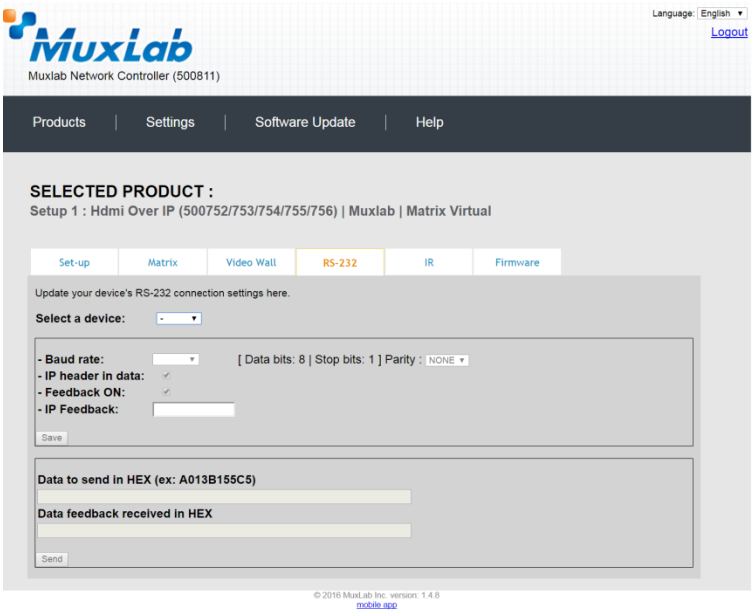


Figure 167: RS-232 Tab

When sending RS-232 commands through the Network Controller, the user first selects the device that the RS-232 commands will be sent to. This is done by clicking on the **Select a device** drop-down list and making a selection (Figure 168). The IP Feedback field should also contain the IP address of the Network Controller.

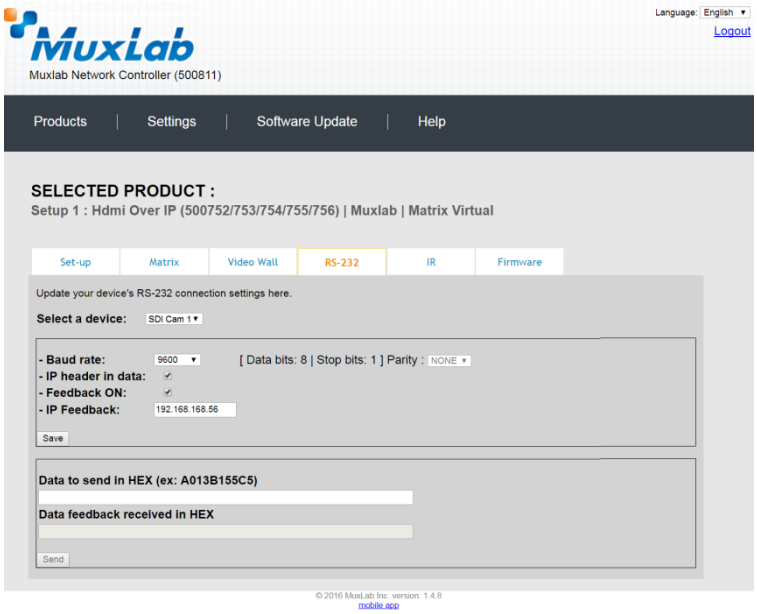


Figure 168: RS-232 Tab - Selecting a Device

Once a device is selected, the **Data to send in HEX** field becomes enabled. In the above example, SDI Cam 1 was chosen as the selected device (but a receiver connected to sink equipment could have also been selected), meaning that a command sent to SDI Cam 1will travel from the Network Controller to the Ethernet Switch, and from the Ethernet Switch to the transmitter connected to SDI Cam 1. That transmitter will then send the specified data command to SDI Cam 1.

The **Data feedback received in HEX** field displays the HEX version the feedback sent to the Network Controller by SDI Cam 1.

When sending RS-232 commands directly from a PC to any transmitter or receiver, the user must set up a pass-through system for RS-232 signals to be sent to and from devices. This requires two steps:

(1) The user first tells the local device (the device connected directly to the PC) the IP address of the far device (where the RS-232 commands are being sent). This is done by first clicking on the **Select a device** drop-down list and selecting the local device from the list, and then inputting the IP address of the far device in the **IP Feedback** field. The user then clicks on **Save**.

(2) The user then tells the far device the IP address of the local device (if feedback from the far device is required). This is done by first clicking on the **Select a device** drop-down list and selecting the far device from the list, and then inputting the IP address of the near device in the **IP Feedback** field. The user then clicks on **Save**.

5. Products Screen - IR Tab

The **IR** tab of the **Products** screen enables the user to send IR commands to a MuxLab transmitter or receiver IR port (Figure 169) via the Network Controller. IR pass-through mode is also supported using an IR handheld remote as the control source.

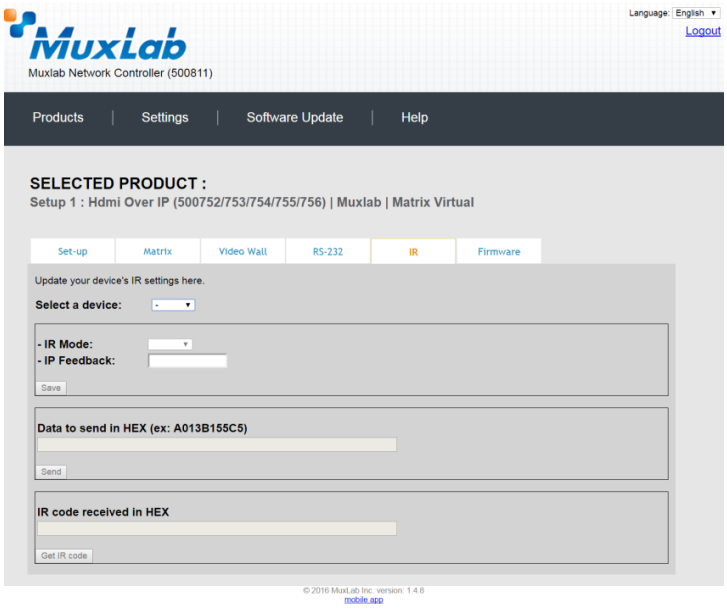


Figure 169: IR Tab

When sending IR commands through the Network Controller, the user first selects the device that the IR commands will be sent to. This is done by clicking on the **Select a device** drop-down list and making a selection (Figure 170).

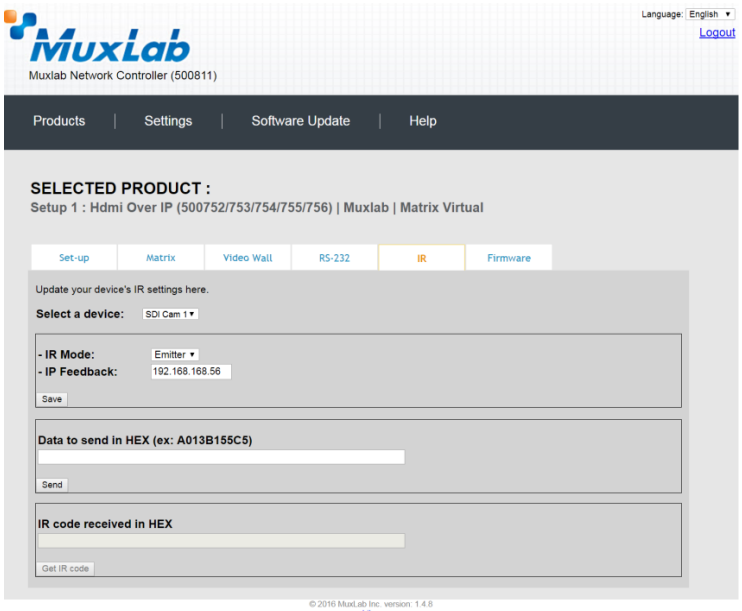


Figure 170: IR Tab – Selecting a Device

The 500756 supports a bi-directional IR port. The below example is for transmitting IR from the sink side (display side) to the source side, but the 500756 can be configured to transmit IR from the source to the sink side as well.

Once a device is selected, the **Data to send in HEX** field becomes enabled. In the above example, SDI Cam 1 was chosen as the selected device, meaning that a command sent to SDI Cam 1 will travel from the Network Controller to the Ethernet Switch, then from the Ethernet Switch to the transmitter connected to SDI Cam 1. That transmitter will then send the specified IR data command to SDI Cam 1 via the IR Emitter connected to the transmitter IR out port.

The **IR code received in HEX** field displays the HEX version of an IR command send from a handheld remote to an IR receiver IR In port and attached IR Sensor.

When sending IR commands directly from an IR Source device, such as an IR handheld remote, from 500756 receiver through to a transmitter, the user must set up a pass-through for IR signals to be sent to and from devices. This requires the following step:

The user must tell the 500756 receiver (being the device near the IR handheld remote with an attached IR Sensor) the IP address of the 500756 transmitter (where the IR commands are being sent, which has an attached IR Emitter). This is done by first clicking on the **Select a device** drop-down list and selecting the local device from the list, and then inputting the IP address of the far device in the **IP Feedback** field. The user then clicks on **Save**.

6. Products Screen - Firmware Tab

The **Firmware** tab of the Products screen enables the user to update the firmware for MuxLab transmitters and receiver (Figure 171).

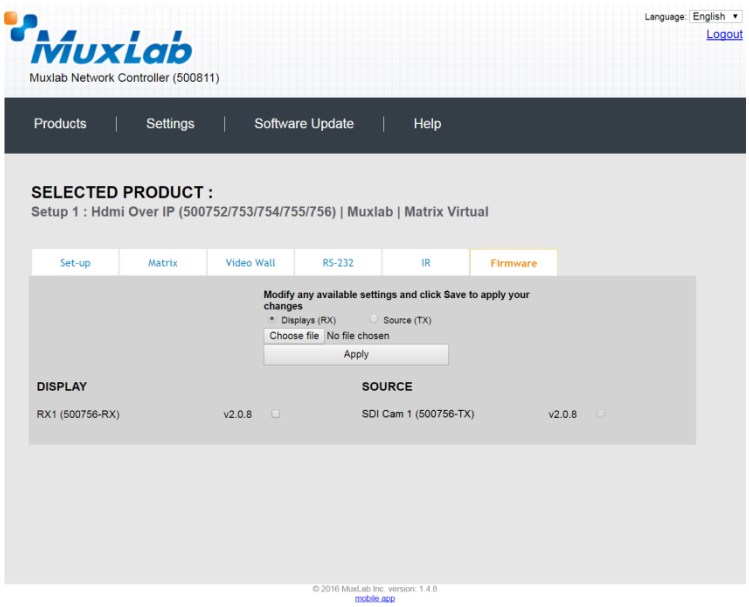


Figure 171: Firmware Tab

The user first selects either **Display (RX)** or **Source (TX)**, then chooses the firmware update file to upload to the given device. Once the file is selected, the user checks the box next to the given device (listed under **DISPLAY** and **SOURCE**) targeted for firmware upgrade, and then clicks **Apply**.

Settings Screen

The **Settings** screen contains two tabs: **Network** and **Administration**.

The **Network** tab (Figure 172) is used to change the IP address of the MuxLab Network Controller, the network mask, as well as the router IP address. It also allows the user to enable or disable DHCP.

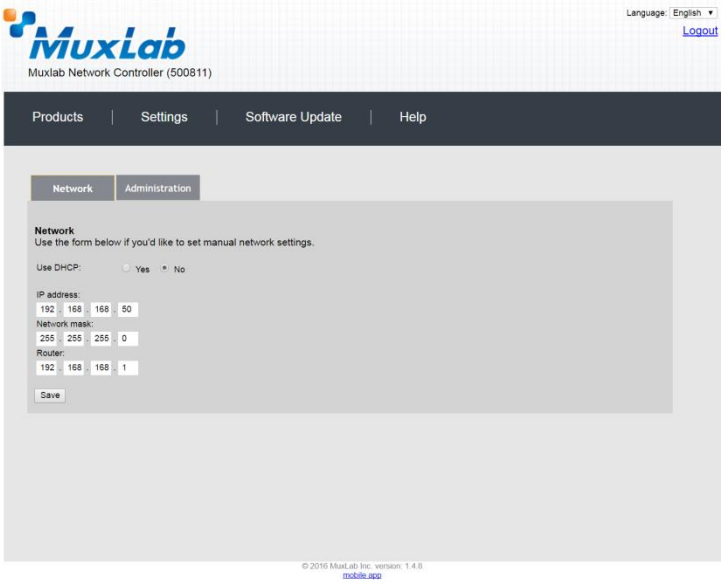


Figure 172: Settings Screen: Network Tab

The **Administration** tab is used to create or delete user accounts, change passwords, restore data, backup data, and retrieve logs (Figure 173).

Figure 173: Settings Screen: Administration Tab

Software Update Screen

The **Software Update** enables the user to update MuxLab Network Controller software (Figure 174). This software is available on MuxLab's website (www.muxlab.com). Download the software to the local PC before performing the update.

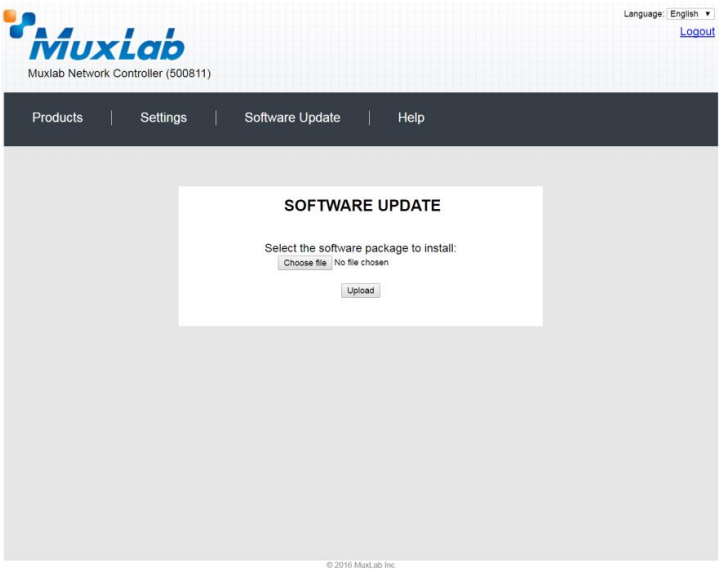


Figure 174: Software Update Screen

Help Screen

The **Help** screen offers quick contact information for customer support and all other inquiries (Figure 175).

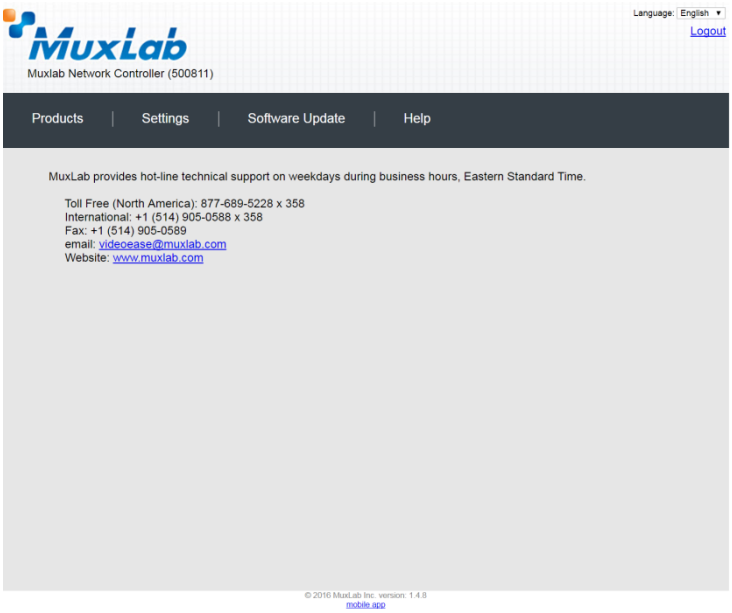


Figure 175: Help Screen

Extender Model 500757

Products Screen

Once the user has logged in, the **Products** screen will appear (Figure 176).

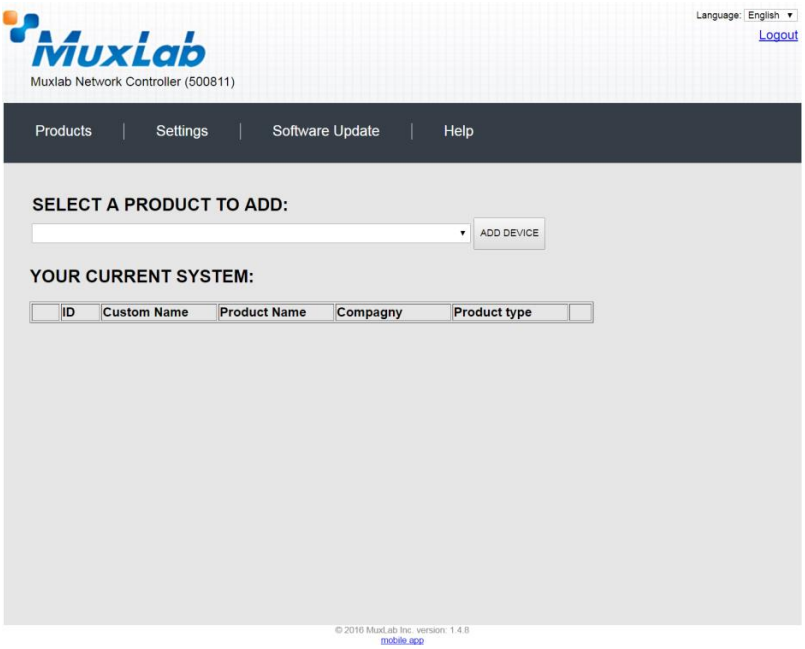


Figure 176: Products Screen – Initial View

In the **SELECT A PRODUCT TO ADD:** drop down box, select **Hdmi Over IP H264 (500757)** and then click on **ADD DEVICE** (Figure 177).

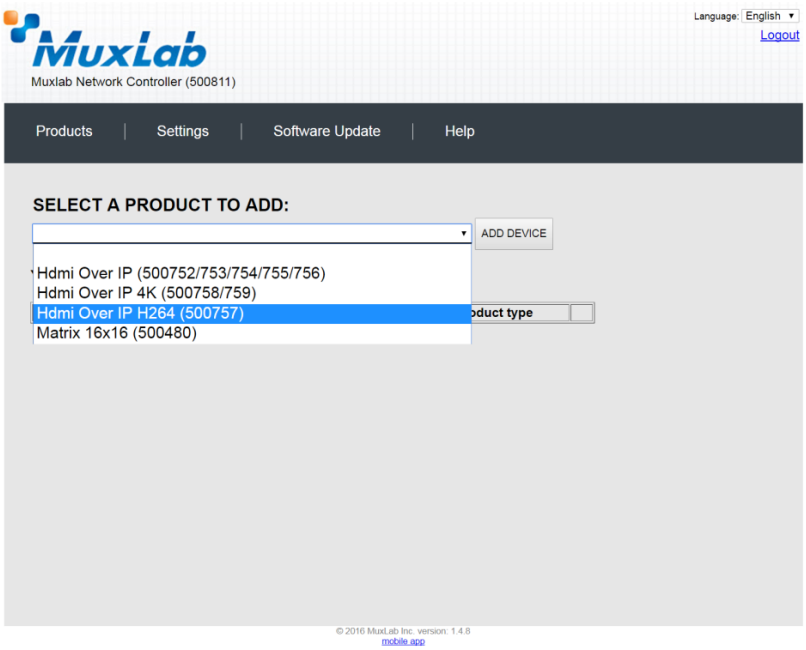


Figure 177: Products Screen – Selecting a Product

A dialog box appears asking the user to provide a custom name for the selected product (Figure 178). The user then types a name in the **Custom Name:** field and clicks on **OK**. Note that if the user decides to click on **CANCEL**, the previous screen appears (Figure 177), without a product being added.

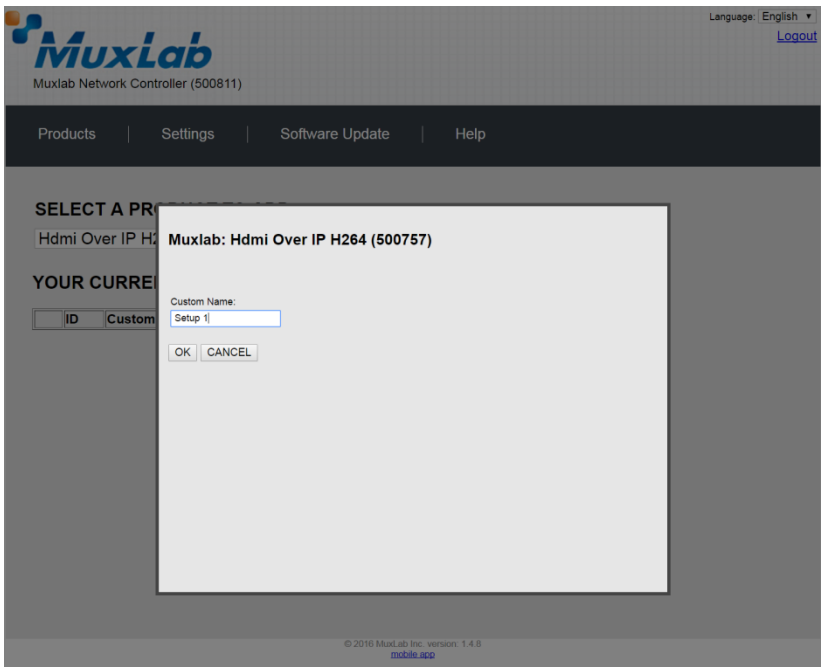


Figure 178: Products Screen – Naming a Product

The custom name has been added to **YOUR CURRENT SYSTEM** (Figure 179).

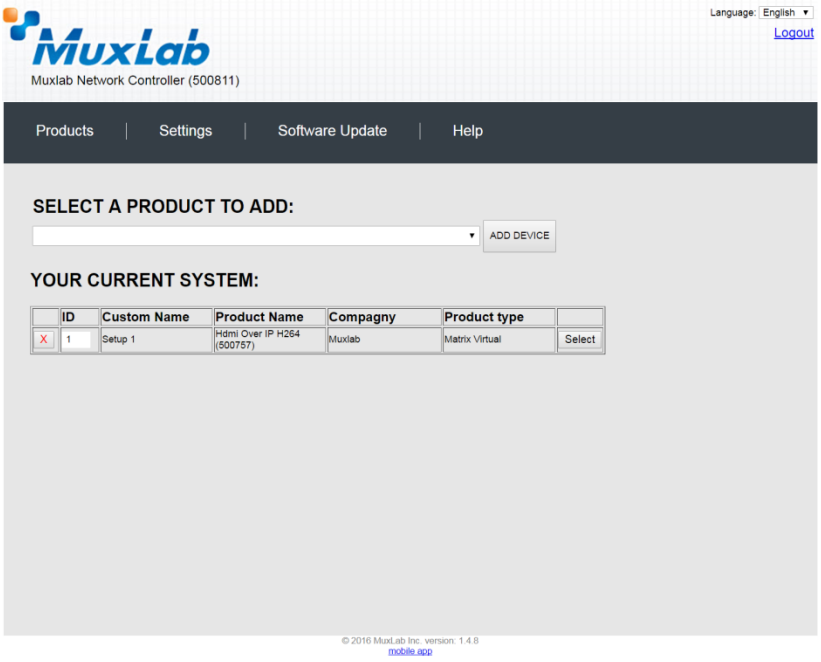


Figure 179: Products Screen – Your Current System Selection

The user can change the ID of each row by modifying the **ID** field. The user can also delete the entire row completely by clicking the X next to it.

To configure a given product, the user clicks on **Select**, which brings up a multi-tabbed screen (Figure 180).

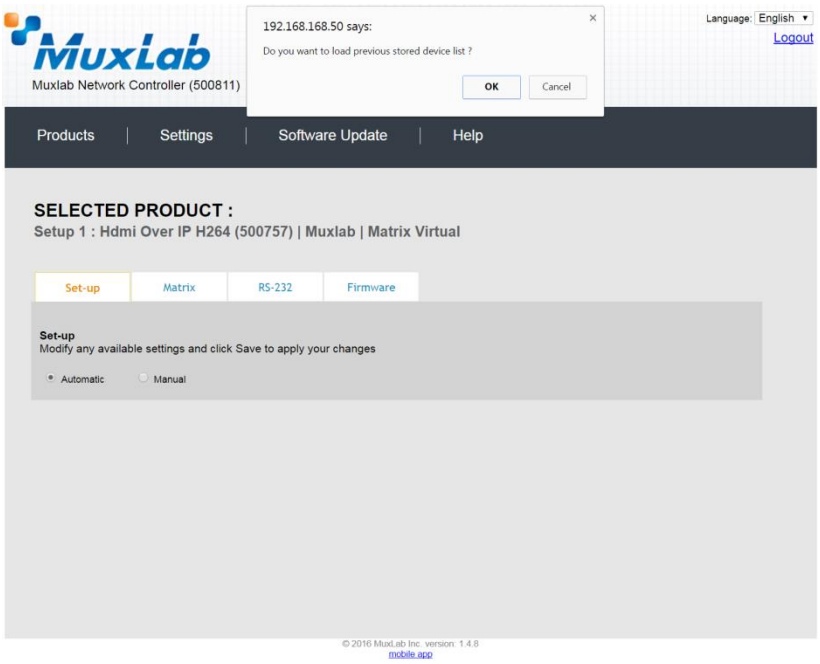


Figure 180: Products Screen – Load Dialog

By default, a dialog appears asking the user to load a previously saved device list (in case such a list has already been stored). This dialog will appear even if no device list has been previously saved.

Four tabs appear within the **Products** screen:

1. Set-up
2. Matrix
3. RS-232
4. Firmware

1. Products Screen - Set-up Tab

The **Set-up** tab offers the user two options for the type of set-up allowed: **Automatic** or **Manual**.

> **Automatic** means that the software will scan the system for every dip-switch enabled device. The software will then override its manual dip-switch address settings and place these units under software address control. (Automatic is recommended).
>
> **Manual** means that the software will allow the manual dip-switch address settings of any found device to remain active.

After selecting **Automatic** or **Manual**, click on **Launch discovery** (Figure 181).

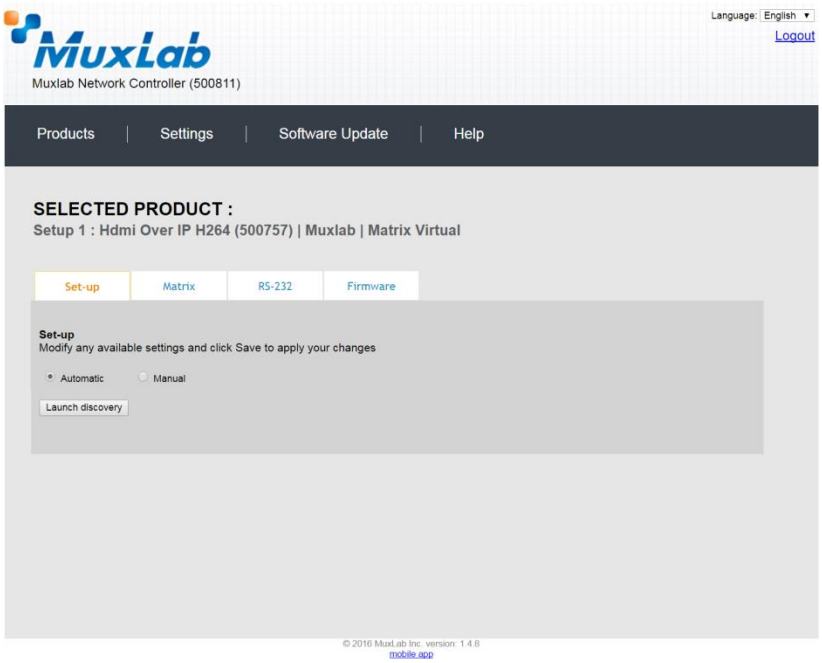


Figure 181: Products Screen – Set-up Tab

The system will scan the network for all source side devices (500757 transmitters) and display side devices (500757 receivers), and will display the scan results in tabular form (Figure 182).

Each 500757 transmitter and receiver can be assigned an arbitrary descriptive name, normally reflecting the end device that it is terminated to. To change the name of any Display (RX) or Source (TX) device, click the **Name** field to edit its contents. Several **Name** fields can be edited before saving changes, as shown in Figure 183 (orange highlighted fields).

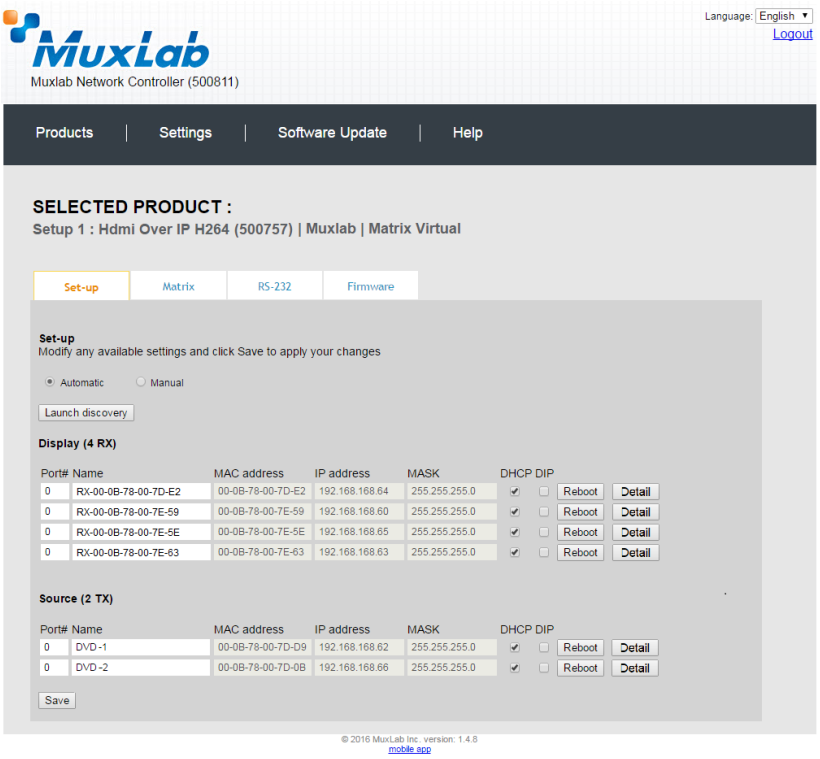


Figure 182: Products Screen – Set-up Tab

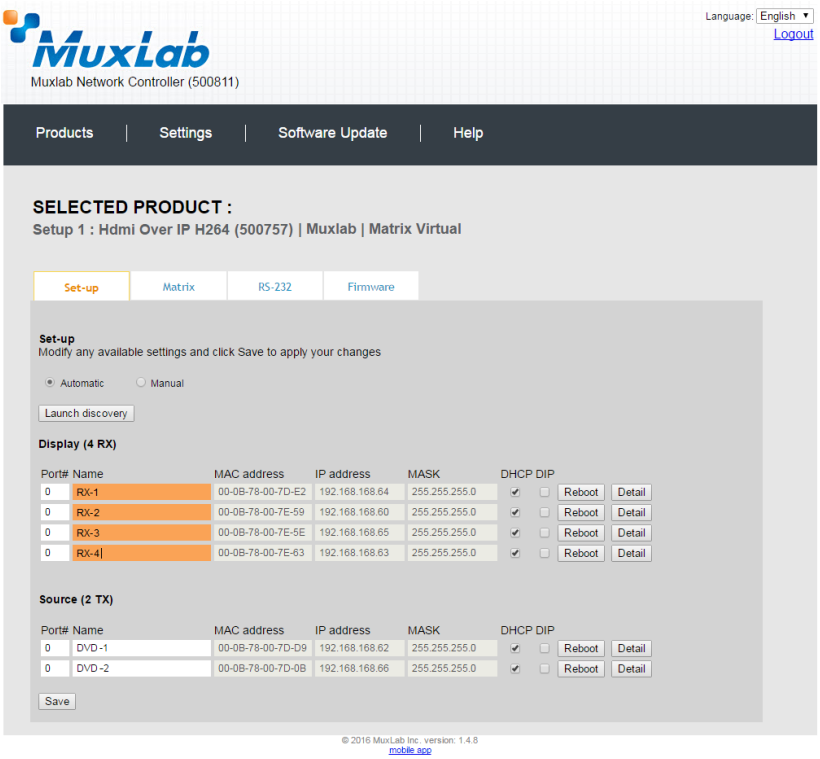


Figure 183: Name Editing

To save all name changes, click on **Save**. A green UPDATED tag will appear next to newly changed names (Figure 184).

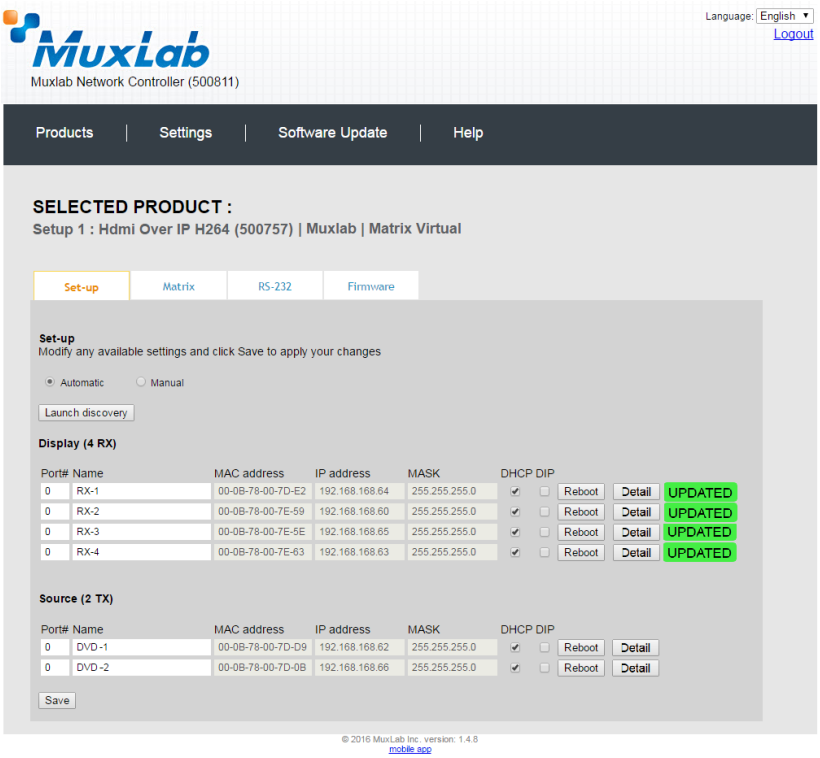


Figure 184: Saving Name Changes

To view and modify component parameters, click on the **Detail** button next to the given component. A dialog appears (Figure 185).

Figure 185: Device Detail Dialog

2. Products Screen - Matrix Tab

The **Matrix** tab of the **Products** screen allows the user to connect any Display to any Source. The user also has the option of using **Presets** to save connection schemes ("Presets"), as well as to edit and delete existing presets (Figure 186).

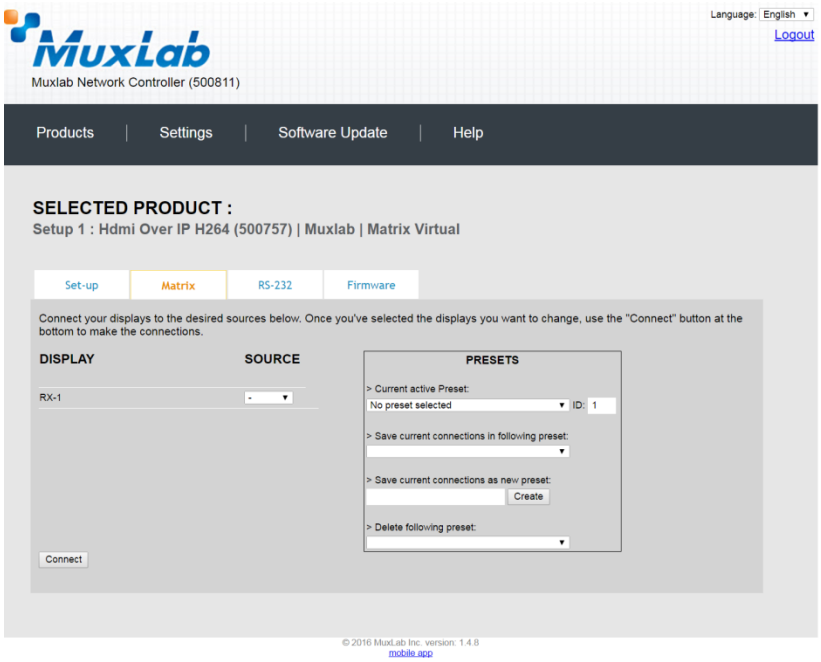


Figure 186: Matrix Tab

To connect a display to a source, the user first clicks on the drop-down list next to the given display (for example "RX-1") and selects which source to connect it to (Figure 187).

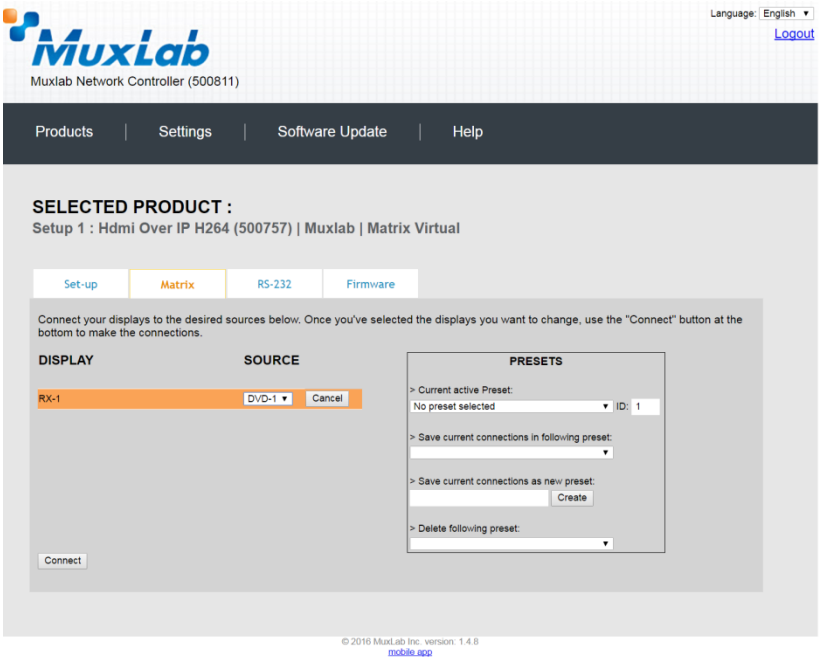


Figure 187: Change Connection

Once the selection is made (the user can change any or all connections between displays and sources), the user clicks on **Connect** to finalize the change. A green SUCCESS tag will appear next to the new or changed connection (Figure 188).

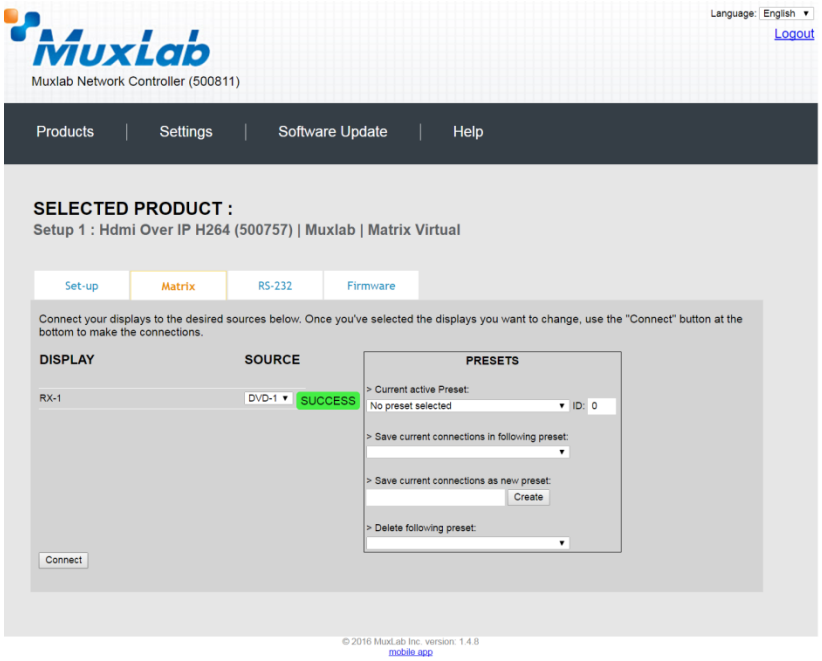


Figure 188: Change Successful

To create a new preset, the user clicks the **> Save current connections as new preset** field (Figure 189) and types a name. This assigned preset name will be linked to the existing connection scheme being shown within the **Matrix** tab.

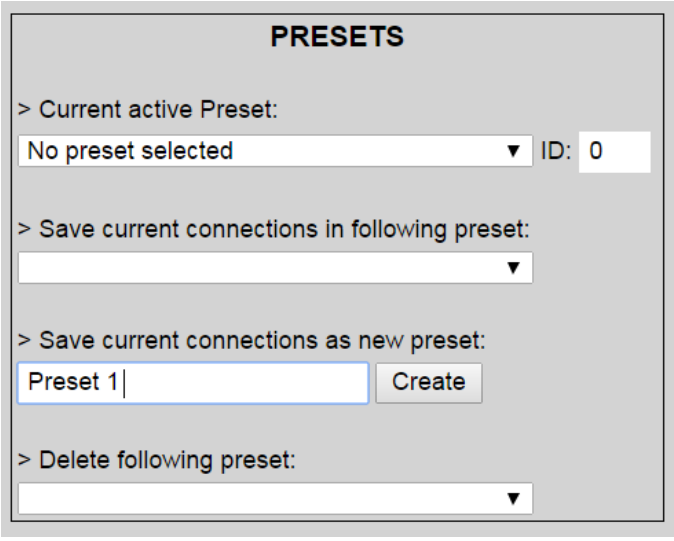


Figure 189: Create New Preset

To save this preset, the user clicks on **Create**. A green SUCCESS tag will appear next to the **> Save current connections as new preset** field and the newly created preset becomes the **Current active Preset** (Figure 190).

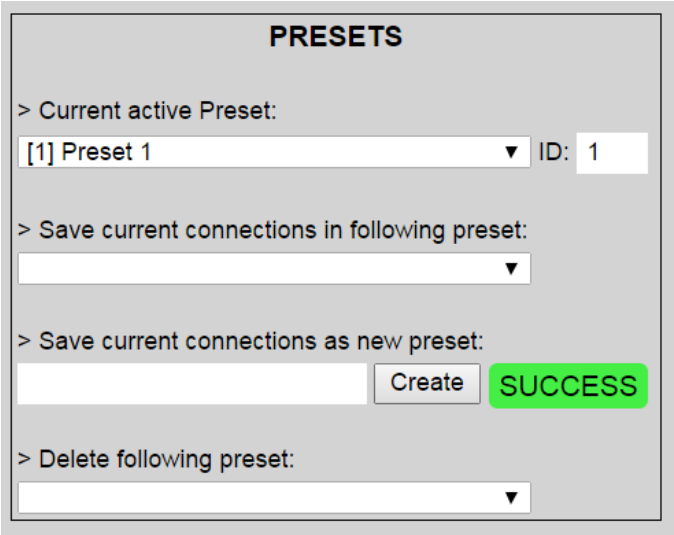


Figure 190: Confirmation of New Preset

To delete a preset, the user clicks the **> Delete following preset** drop-down box and selects a preset name from the list shown (Figure 191).

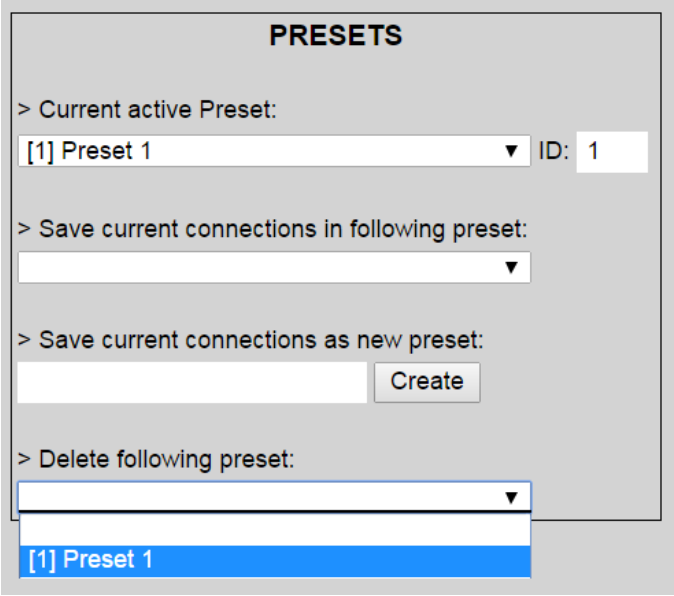


Figure 191: Delete Preset

Once selected, a dialog will appear asking the user to confirm the deletion request (Figure 192).

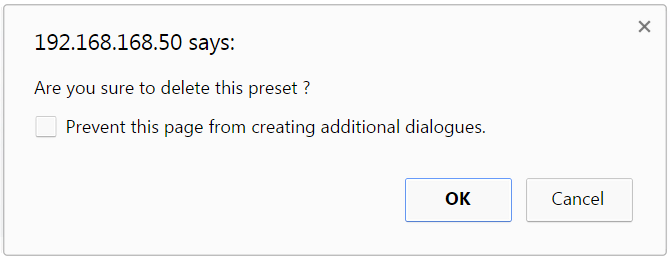


Figure 192: Confirmation of Deleted Preset

Click on **OK**. The preset will be deleted and a green SUCCESS tag will appear next to the **> Delete following preset** field (Figure 193).

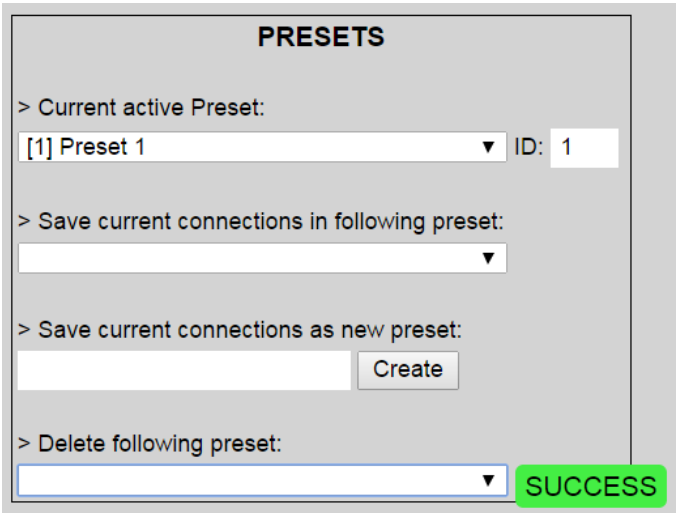


Figure 193: Confirmation of Deleted Preset

To save the current matrix configuration under an existing **Preset** name, click on **> Save current connection in following preset** drop-down box and selects a preset name (Figure 194).

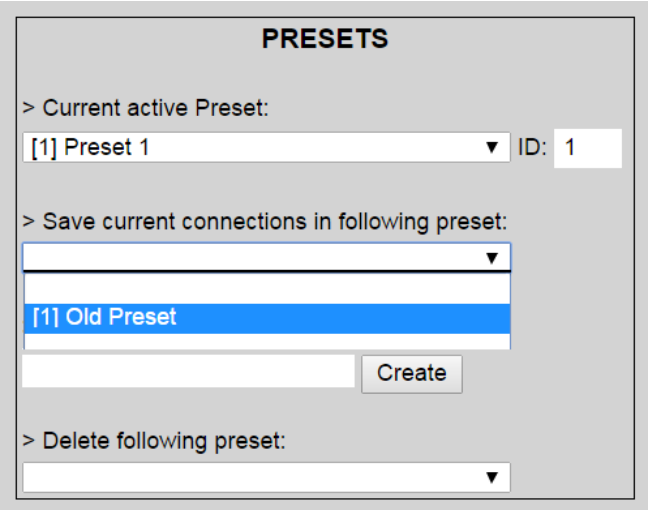


Figure 194: Change Current Active Preset

Once selected, the **Preset** will be saved and a green SUCCESS tag will appear next to the **> Save current connections in following preset** field (Figure 195).

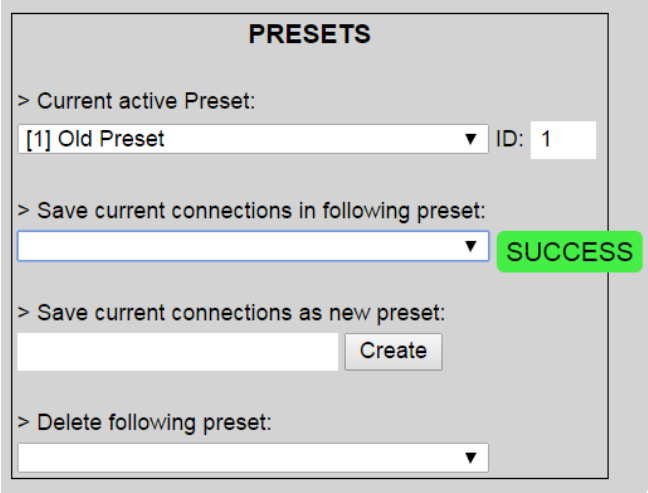


Figure 195: Confirmation of Changed Preset Name

In order to activate an existing **Preset**, select > **Current active Preset**, and select the **Preset** name from the drop-down box and the **Preset** will become active. The active **Preset** will also be displayed in the **Current active Preset** field.

3. Products Screen - RS-232 Tab

The **RS-232** tab of the **Products** screen enables the user to send RS-232 commands to any MuxLab transmitter or receiver (Figure 196). This is done either through the Network Controller or directly by connecting a PC to the RS-232 port of any transmitter or receiver.

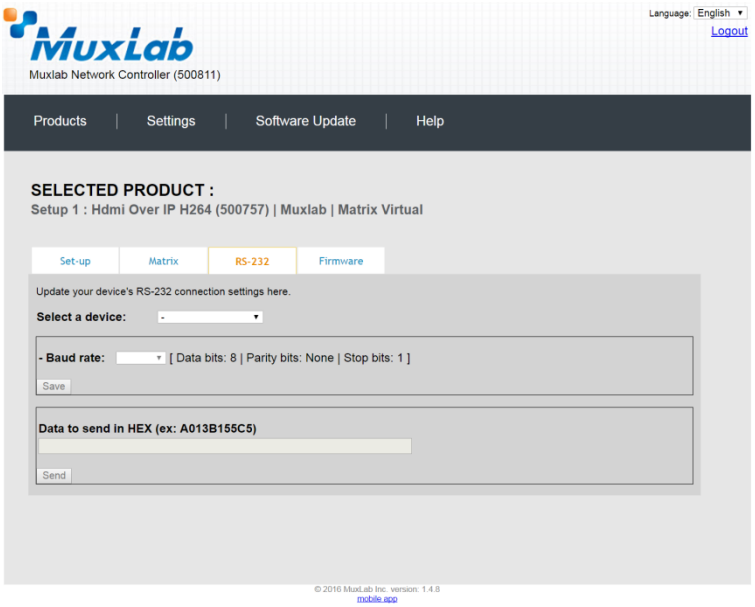


Figure 196: RS-232 Tab

When sending RS-232 commands through the Network Controller, the user first selects the device that the RS-232 commands will be sent to. This is done by clicking on the **Select a device** drop-down list and making a selection (Figure 197).

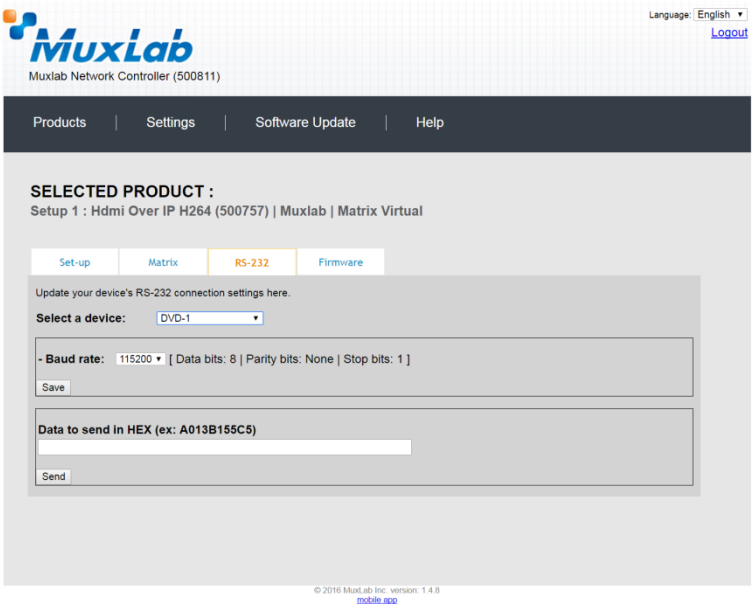


Figure 197: RS-232 Tab - Selecting a Device

Once a device is selected, the **Data to send in HEX** field becomes enabled. In the above example, DVD-1 was chosen as the selected device (but a receiver connected to sink equipment could have also been selected), meaning that a command sent to DVD-1 will travel from the Network Controller to the Ethernet Switch, and from the Ethernet Switch to the transmitter connected to DVD-1. That transmitter will then send the specified data command to DVD-1.

Note that no RS232 feedback is sent to the Network Controller when sending an RS232 command originating from the Network Controller in the direction of the transmitter (to DVD-1).

When sending RS-232 commands directly from a PC to any transmitter or receiver, in pass-through mode, this is automatically accomplished by the existing connection between the transmitter and receiver. As such this connection must exist for pass-through to operate.

IR Pass-through

Special note concerning IR pass-through. This functions in the same manner as RS232 pass-through above, but is limited in one direction, from receiver to transmitter to control source end devices. Thus a connection between transmitter and receiver, automatically establishes an IR pass-through from the receiver to the transmitter.

Note that IR commands sent from the Network Controller is not supported on the 500757.

4. Products Screen - Firmware Tab

The **Firmware** tab of the Products screen enables the user to update the firmware for MuxLab transmitters and receiver (Figure 198).

Figure 198: Firmware Tab

The user first selects either **Display (RX)** or **Source (TX)**, then chooses the firmware update file to upload to the given device. Once the file is selected, the user checks the box next to the given device (listed under **DISPLAY** and **SOURCE**) targeted for firmware upgrade, and then clicks **Apply**.

Settings Screen

The **Settings** screen contains two tabs: **Network** and **Administration**.

The **Network** tab (Figure 199) is used to change the IP address of the MuxLab Network Controller, the network mask, as well as the router IP address. It also allows the user to enable or disable DHCP.

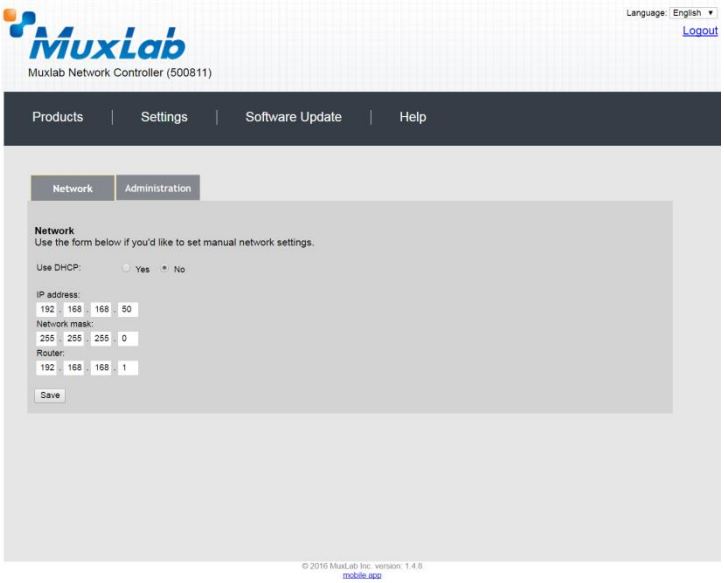


Figure 199: Settings Screen: Network Tab

The **Administration** tab is used to create or delete user accounts, change passwords, restore data, backup data, and retrieve logs (Figure 200).

Figure 200: Settings Screen: Administration Tab

Software Update Screen

The **Software Update** enables the user to update MuxLab Network Controller software (Figure 201). This software is available on MuxLab's website (www.muxlab.com). Download the software to the local PC before performing the update.

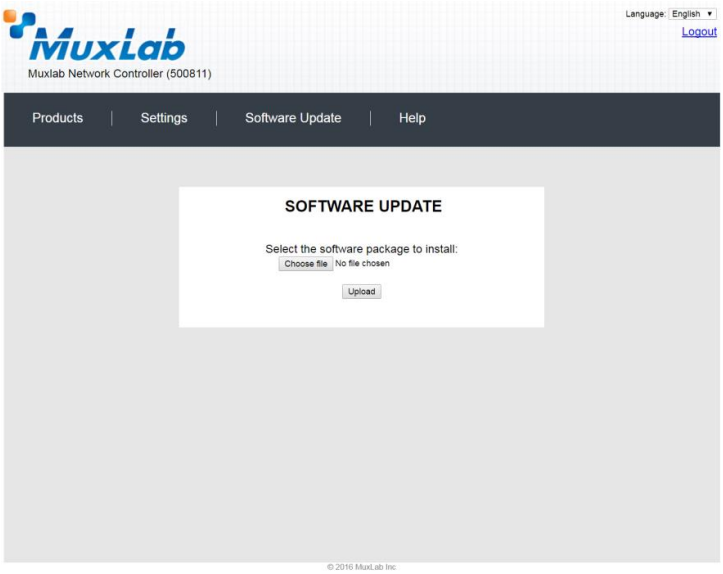


Figure 201: Software Update Screen

Help Screen

The **Help** screen offers quick contact information for customer support and all other inquiries (Figure 202).

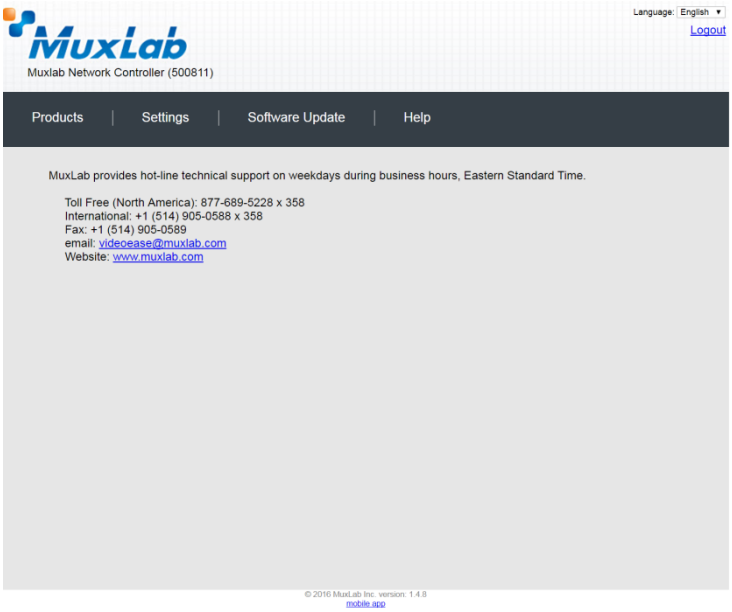


Figure 202: Help Screen

Extender Model 500758

Products Screen

Once the user has logged in, the **Products** screen will appear (Figure 203).

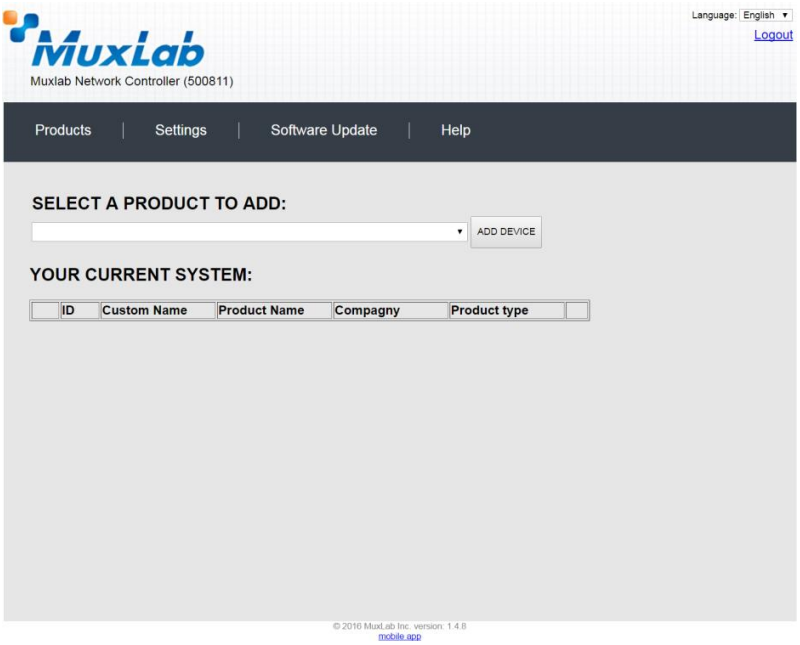


Figure 203: Products Screen – Initial View

In the **SELECT A PRODUCT TO ADD:** drop down box, select **Hdmi Over IP 4K (500758/759)** and then click on **ADD DEVICE** (Figure 204).

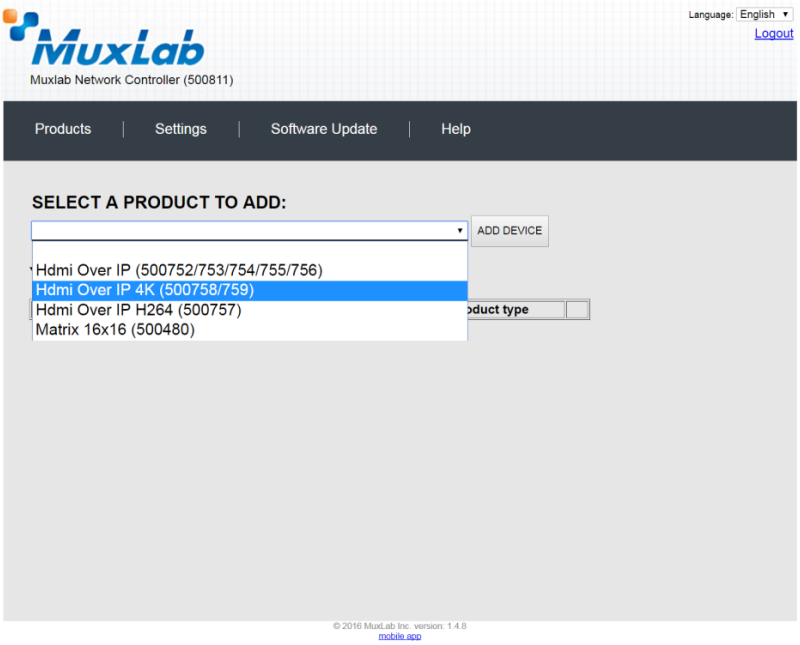


Figure 204: Products Screen – Selecting a Product

A dialog box appears asking the user to provide a custom name for the selected product (Figure 205). The user then types a name in the **Custom Name:** field and clicks on **OK**. Note that if the user decides to click on **CANCEL**, the previous screen appears (Figure 204), without a product being added.

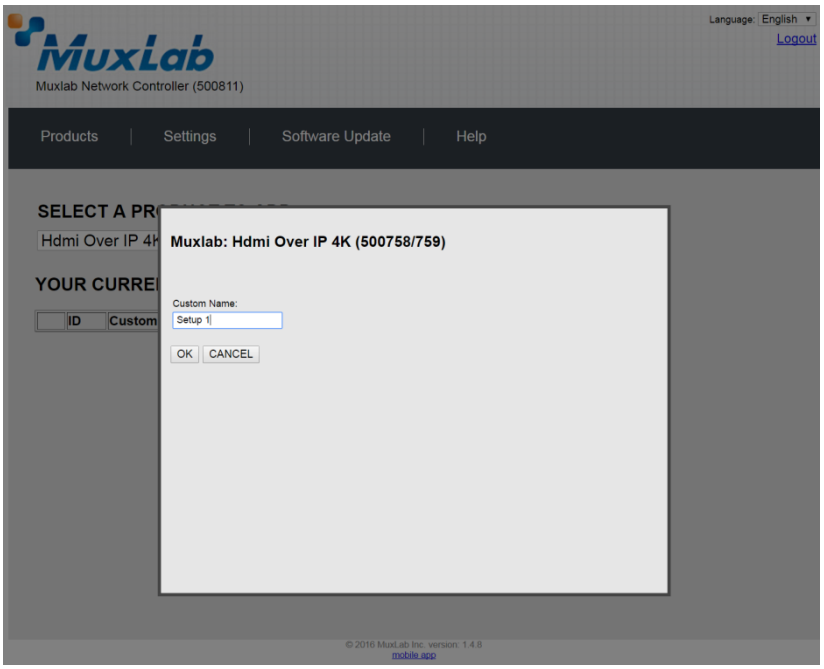


Figure 205: Products Screen – Naming a Product

The custom name has been added to **YOUR CURRENT SYSTEM** (Figure 206).

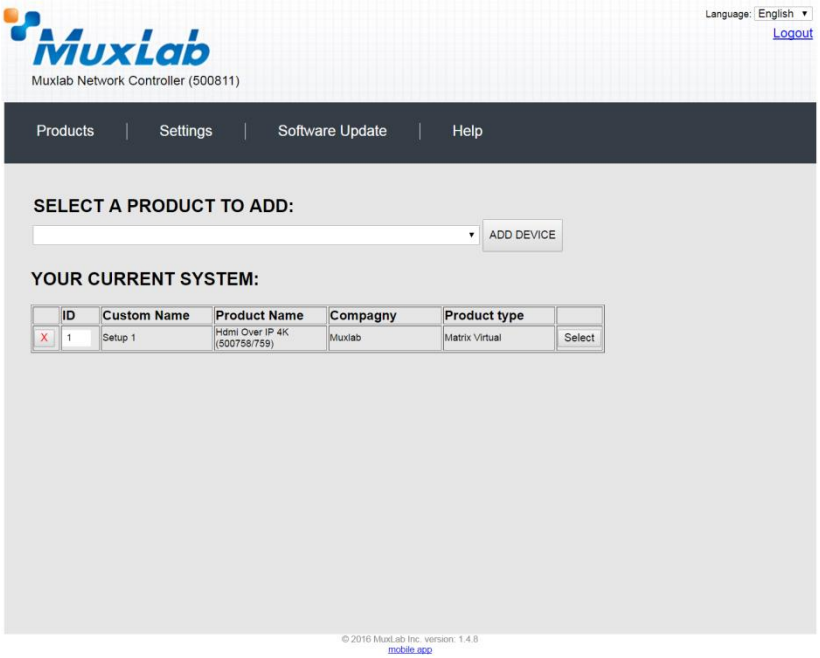


Figure 206: Products Screen – Your Current System Selection

The user can change the ID of each row by modifying the **ID** field. The user can also delete the entire row completely by clicking the X next to it.

To configure a given product, the user clicks on **Select**, which brings up a multi-tabbed screen (Figure 207).

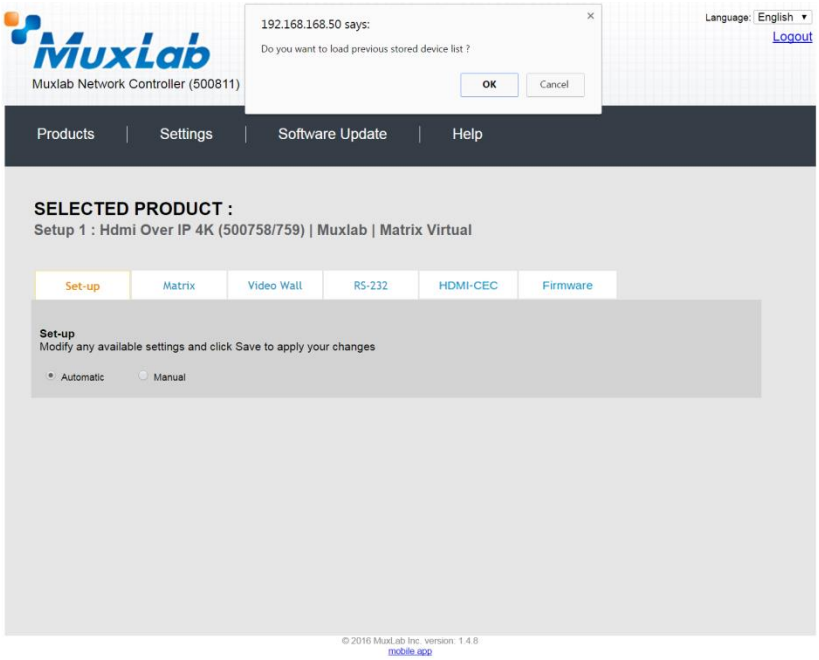


Figure 207: Products Screen – Load Dialog

By default, a dialog appears asking the user to load a previously saved device list (in case such a list has already been stored). This dialog will appear even if no device list has been previously saved.

Five tabs appear within the **Products** screen:

1. Set-up
2. Matrix
3. Video Wall
4. RS-232
5. HDMI CEC
6. Firmware

1. Products Screen - Set-up Tab

The **Set-up** tab offers the user two options for the type of set-up allowed: **Automatic** or **Manual**.

Automatic means that the software will scan the system for every dip-switch enabled device. The software will then override its manual dip-switch address settings and place these units under software address control. (Automatic is recommended).

Manual means that the software will allow the manual dip-switch address settings of any found device to remain active.

After selecting **Automatic** or **Manual**, click on **Launch discovery** (Figure 208).

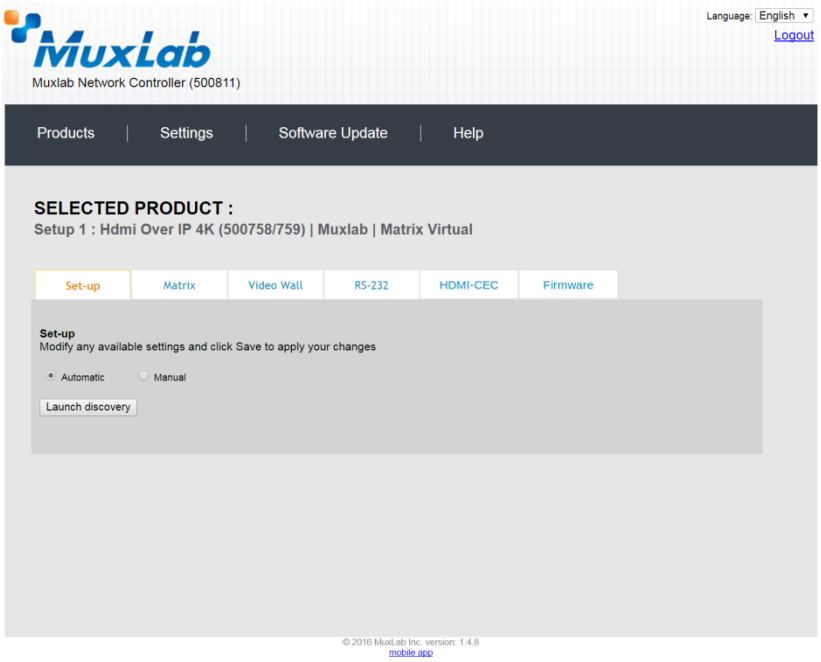


Figure 208: Products Screen – Set-up Tab

The system will scan the network for all source side devices (500758 transmitters) and display side devices (500758 receivers), and will display the scan results in tabular form (Figure 209).

Each 500758 transmitter and receiver can be assigned an arbitrary descriptive name, normally reflecting the end device that it is terminated to. To change the name of any Display (RX) or Source (TX) device, click the **Name** field to edit its contents. Several **Name** fields can be edited before saving changes, as shown in Figure 210 (orange highlighted fields).

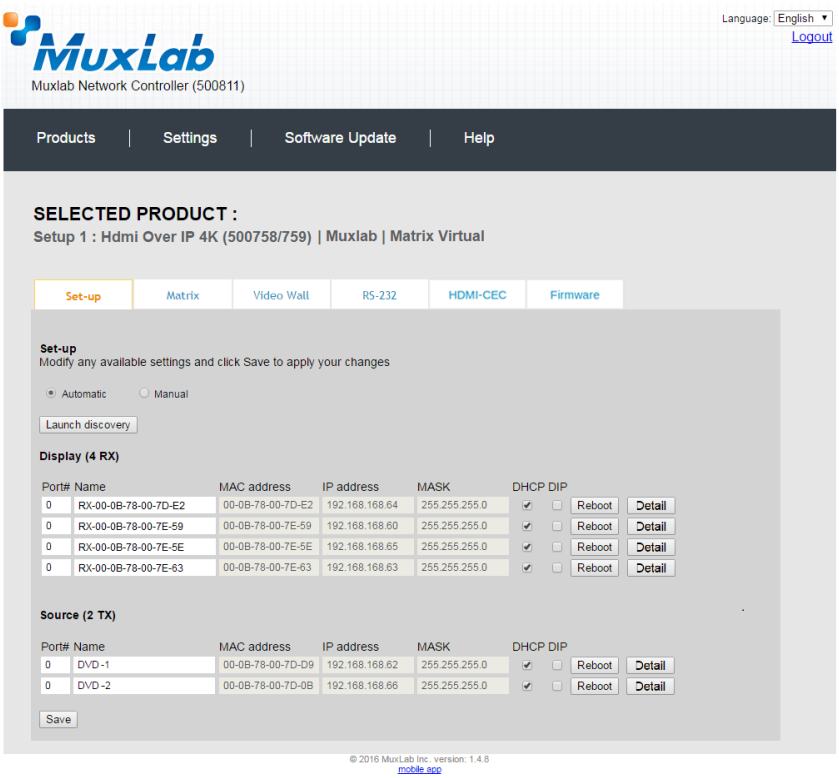


Figure 209: Products Screen – Set-up Tab

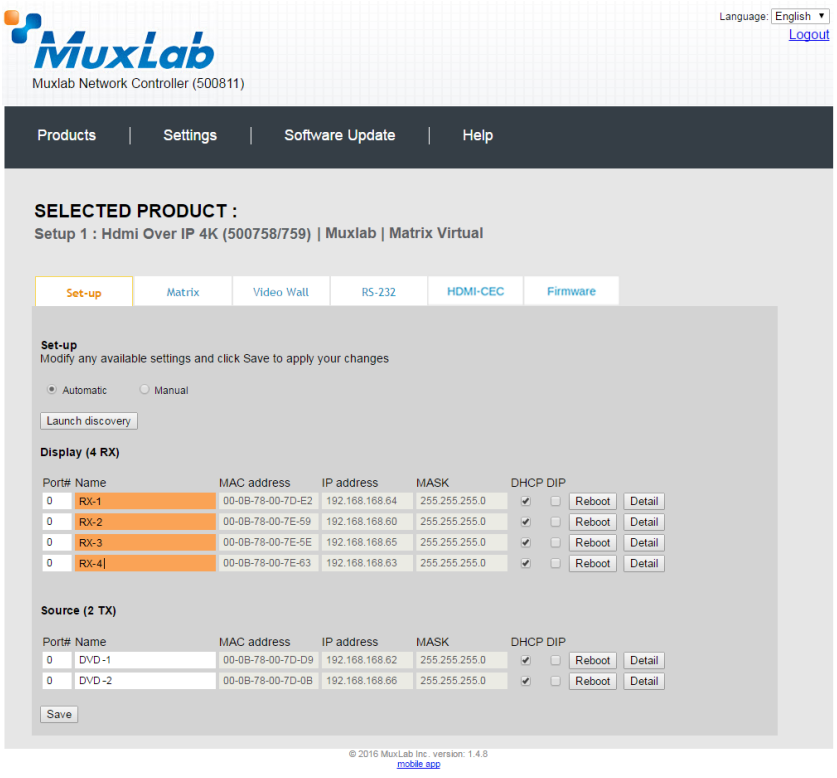


Figure 210: Name Editing

To save all name changes, click on **Save**. A green UPDATED tag will appear next to newly changed names (Figure 211).

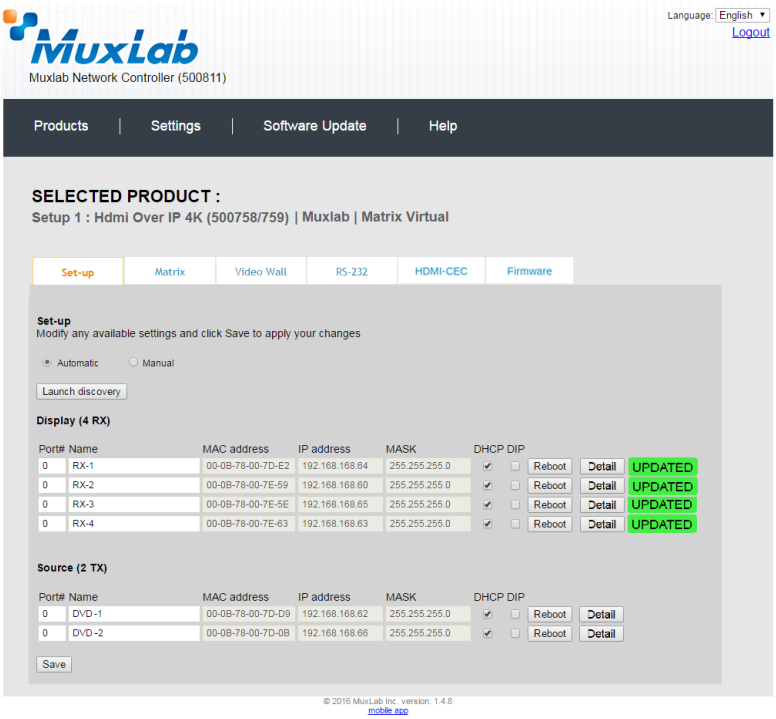


Figure 211: Saving Name Changes

To view and modify component parameters, click on the **Detail** button next to the given component. A dialog appears (Figure 212). You can set the output video format and DHCP format, enable or disable auto-detect resolution and HDR.

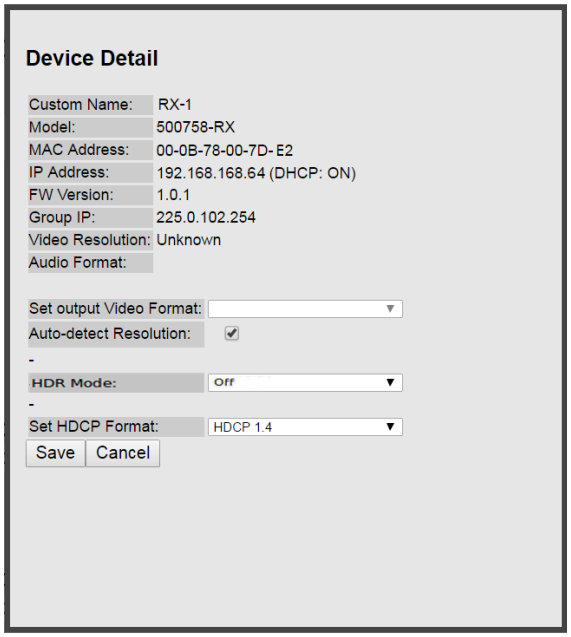


Figure 212: Device Detail Dialog

2. Products Screen - Matrix Tab

The **Matrix** tab of the **Products** screen allows the user to connect any Display to any Source. The user also has the option of using **Presets** to save connection schemes ("Presets"), as well as to edit and delete existing presets (Figure 213).

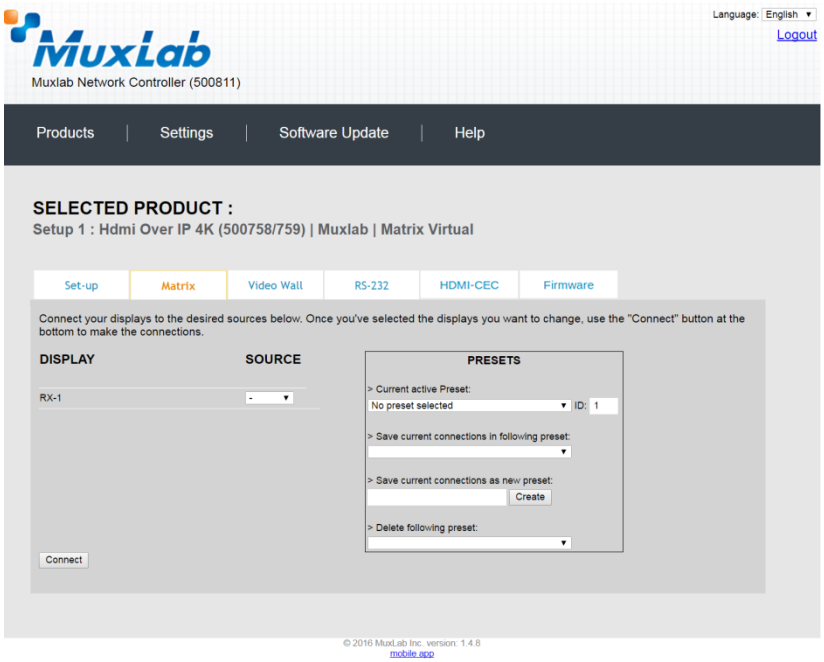


Figure 213: Matrix Tab

To connect a display to a source, the user first clicks on the drop-down list next to the given display (for example "RX-1") and selects which source to connect it to (Figure 214).

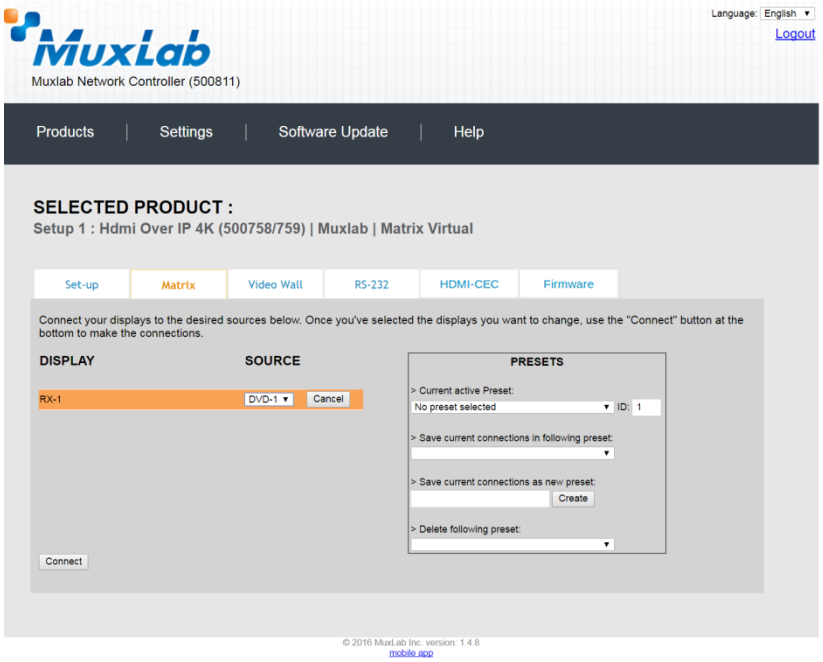


Figure 214: Change Connection

Once the selection is made (the user can change any or all connections between displays and sources), the user clicks on **Connect** to finalize the change. A green SUCCESS tag will appear next to the new or changed connection (Figure 215).

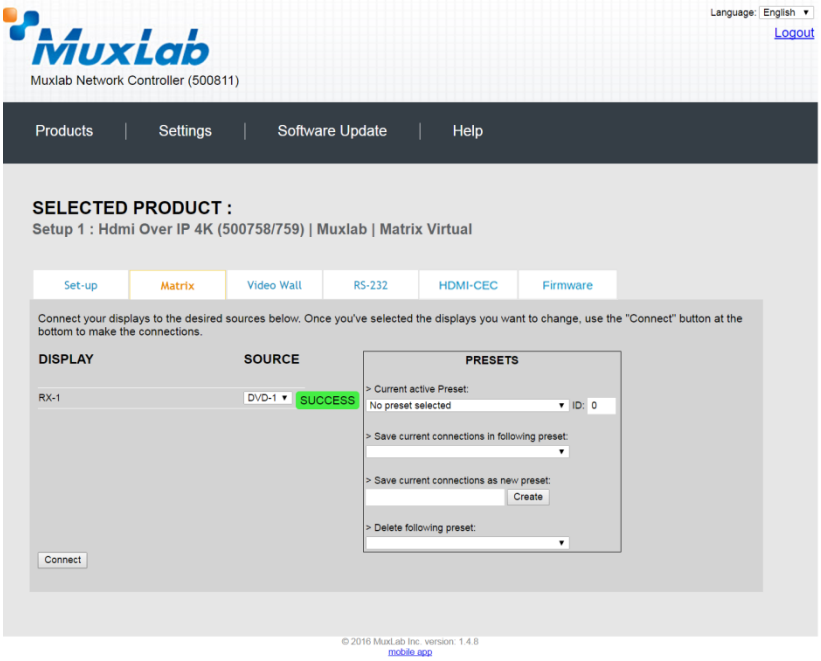


Figure 215: Change Successful

To create a new preset, the user clicks the **> Save current connections as new preset** field (Figure 216) and types a name. This assigned preset name will be linked to the existing connection scheme being shown within the **Matrix** tab.

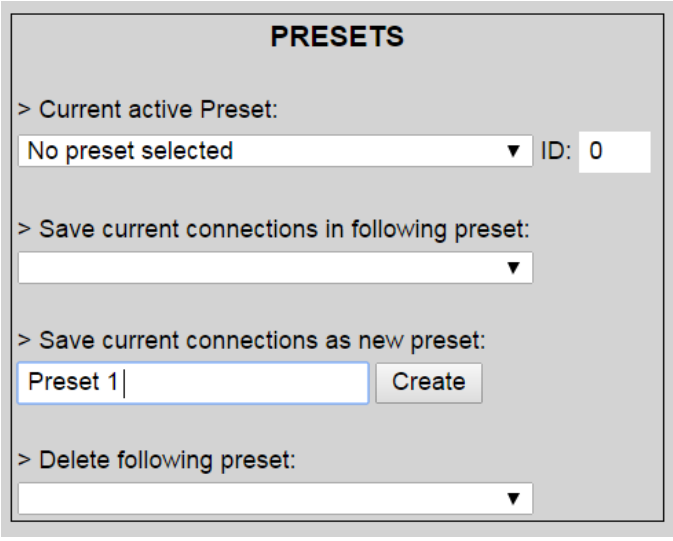


Figure 216: Create New Preset

To save this preset, the user clicks on **Create**. A green SUCCESS tag will appear next to the **> Save current connections as new preset** field and the newly created preset becomes the **Current active Preset** (Figure 217).

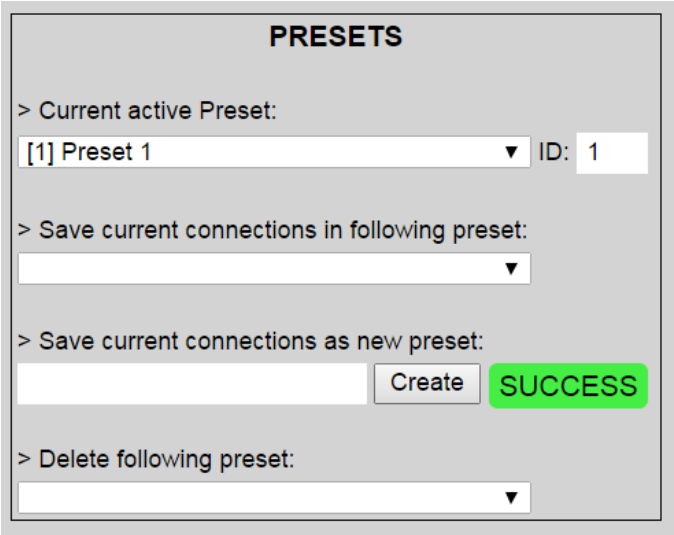


Figure 217: Confirmation of New Preset

To delete a preset, the user clicks the **> Delete following preset** drop-down box and selects a preset name from the list shown (Figure 218).

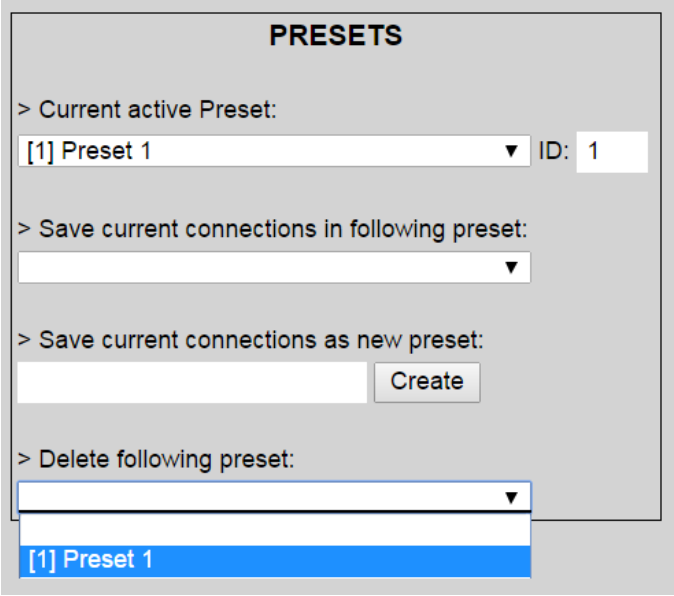


Figure 218: Delete Preset

Once selected, a dialog will appear asking the user to confirm the deletion request (Figure 219).

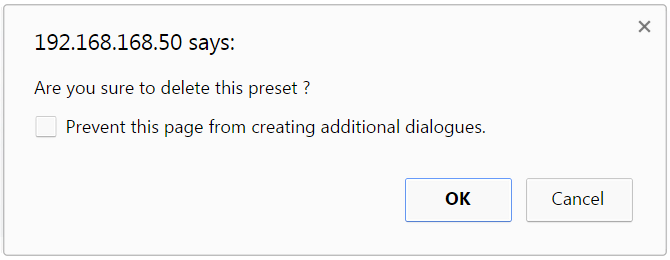


Figure 219: Confirmation of Deleted Preset

Click on **OK**. The preset will be deleted and a green SUCCESS tag will appear next to the **> Delete following preset** field (Figure 220).

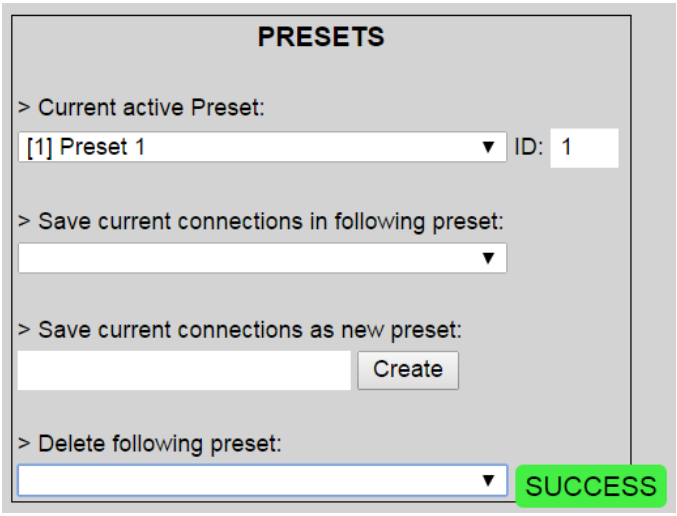


Figure 220: Confirmation of Deleted Preset

To save the current matrix configuration under an existing **Preset** name, click on **> Save current connection in following preset** drop-down box and selects a preset name (Figure 221).

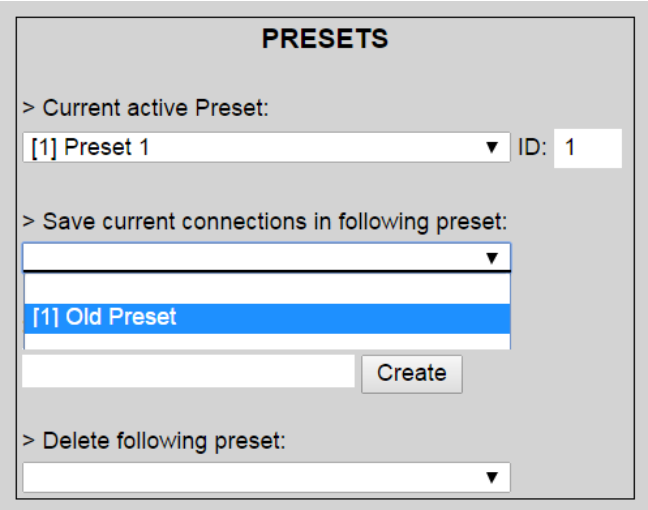


Figure 221: Change Current Active Preset

Once selected, the **Preset** will be saved and a green SUCCESS tag will appear next to the **> Save current connections in following preset** field (Figure 222).

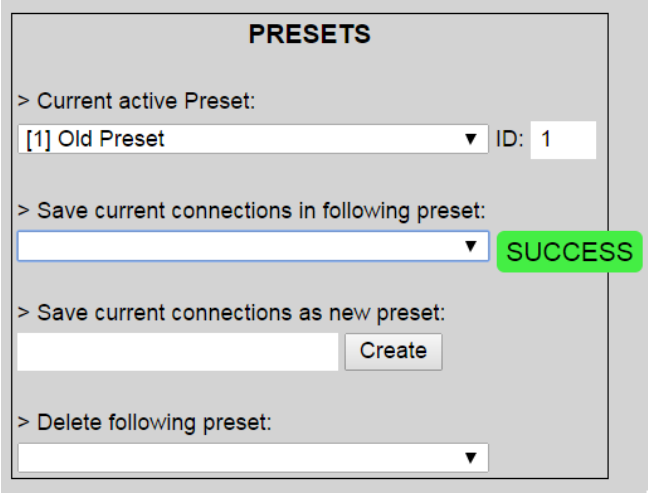


Figure 222: Confirmation of Changed Preset Name

In order to activate an existing **Preset**, select > **Current active Preset**, and select the **Preset** name from the drop-down box and the **Preset** will become active. The active **Preset** will also be displayed in the **Current active Preset** field.

3. Products Screen - Video Wall Tab

MuxLab's Extender 500758 does not support the Video Wall feature. Clicking on this tab will display the following screen (Figure 223).

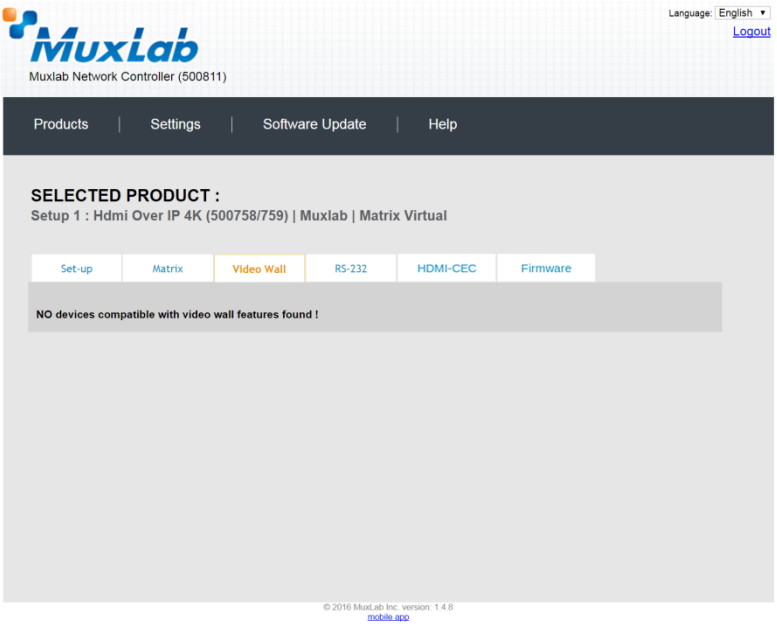


Figure 223: Video Wall Tab

For more information on the Video Wall tab and its features, refer to the section of this manual dealing with MuxLab Extender 500754 and MuxLab Extender 500759.

4. Products Screen - RS-232 Tab

The **RS-232** tab of the **Products** screen enables the user to send RS-232 commands to any MuxLab transmitter or receiver (Figure 224). This is done either through the Network Controller or directly by connecting a PC to the RS-232 port of any transmitter or receiver.

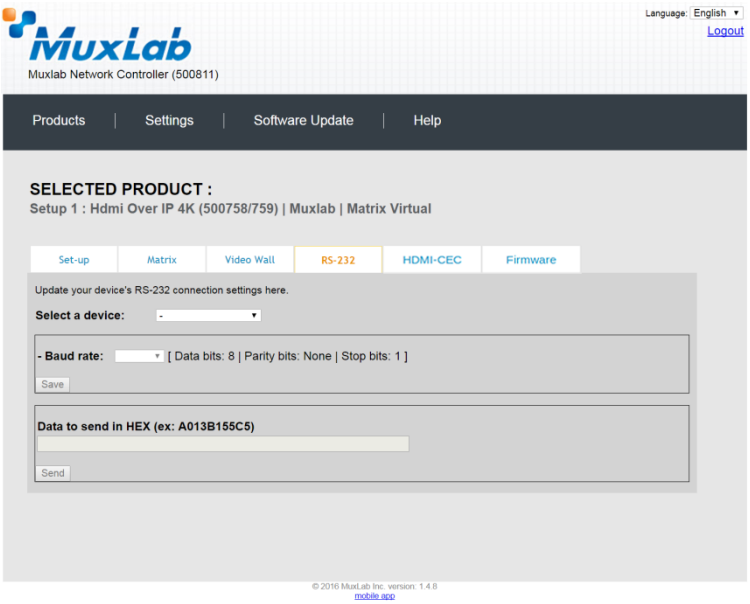


Figure 224: RS-232 Tab

When sending RS-232 commands through the Network Controller, the user first selects the device that the RS-232 commands will be sent to. This is done by clicking on the **Select a device** drop-down list and making a selection (Figure 225).

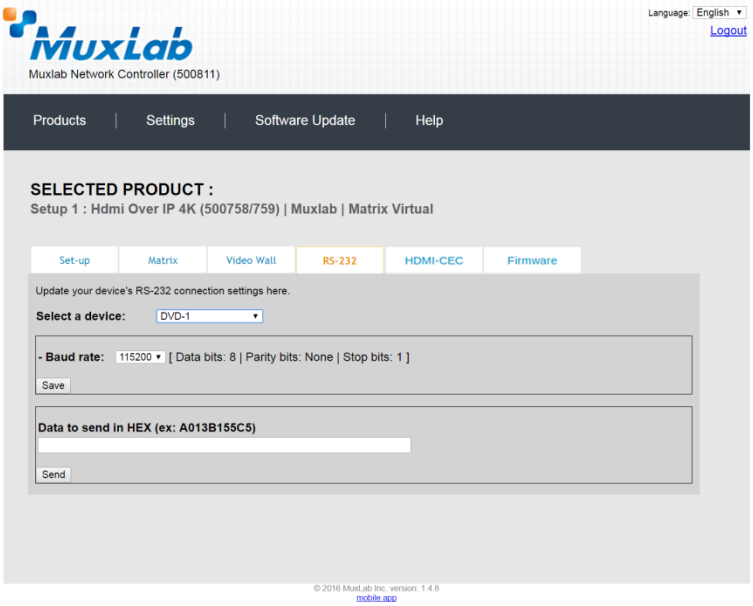


Figure 225: RS-232 Tab - Selecting a Device

Once a device is selected, the **Data to send in HEX** field becomes enabled. In the above example, DVD-1 was chosen as the selected device (but a receiver connected to sink equipment could have also been selected), meaning that a command sent to DVD-1 will travel from the Network Controller to the Ethernet Switch, and from the Ethernet Switch to the transmitter connected to DVD-1. That transmitter will then send the specified data command to DVD-1.

Note that no RS232 feedback is sent to the Network Controller when sending an RS232 command originating from the Network Controller in the direction of the transmitter (to DVD-1).

When sending RS-232 commands directly from a PC to any transmitter or receiver, in pass-through mode, this is automatically accomplished by the existing connection between the transmitter and receiver. As such this connection must exist for pass-through to operate.

IR Pass-through

Special note concerning IR pass-through. This functions in the same manner as RS232 pass-through above, but is limited in one direction, from receiver to transmitter to control source end devices. Thus a connection between transmitter and receiver, automatically establishes an IR pass-through from the receiver to the transmitter.

Note that IR commands sent from the Network Controller is not supported on the 500758.

5. Products Screen – HDMI CEC Tab

The **HDMI CEC** tab of the Products screen enables the user to support CEC commands including Standby, Power ON, Volume Up, Volume Down, & Mute (Figure 226).

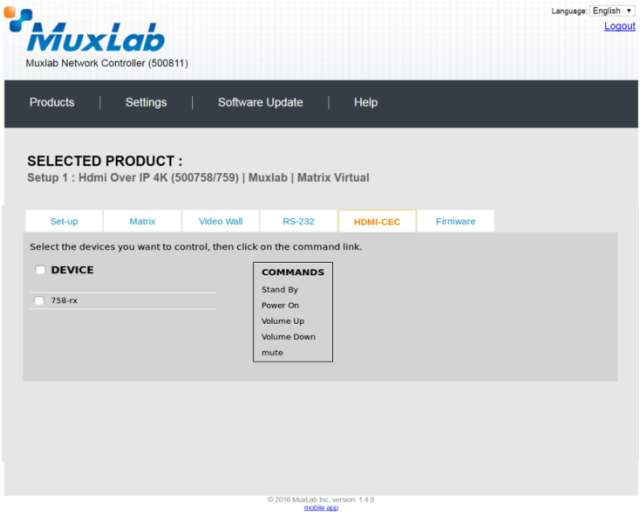


Figure 226: HDMI CEC Tab

6. Products Screen - Firmware Tab

The **Firmware** tab of the Products screen enables the user to update the firmware for MuxLab transmitters and receiver (Figure 227).

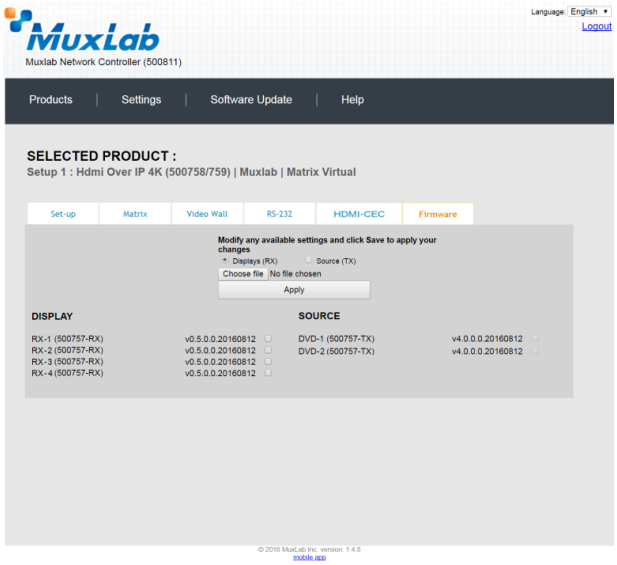


Figure 227: Firmware Tab

The user first selects either **Display (RX)** or **Source (TX)**, then chooses the firmware update file to upload to the given device. Once the file is selected, the user checks the box next to the given device (listed under **DISPLAY** and **SOURCE**) targeted for firmware upgrade, and then clicks **Apply**.

Settings Screen

The **Settings** screen contains two tabs: **Network** and **Administration**.

The **Network** tab (Figure 228) is used to change the IP address of the MuxLab Network Controller, the network mask, as well as the router IP address. It also allows the user to enable or disable DHCP.

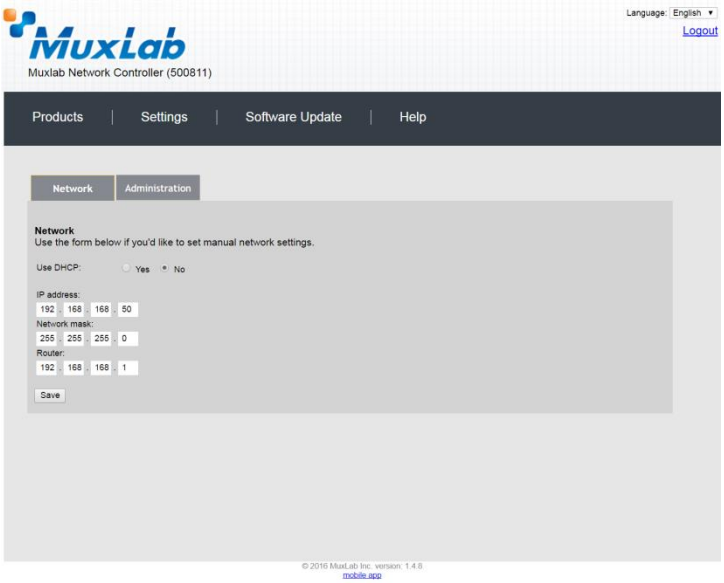


Figure 228: Settings Screen: Network Tab

The **Administration** tab is used to create or delete user accounts, change passwords, restore data, backup data, and retrieve logs (Figure 229).

Figure 229: Settings Screen: Administration Tab

Software Update Screen

The **Software Update** enables the user to update MuxLab Network Controller software (Figure 230). This software is available on MuxLab's website (www.muxlab.com). Download the software to the local PC before performing the update.

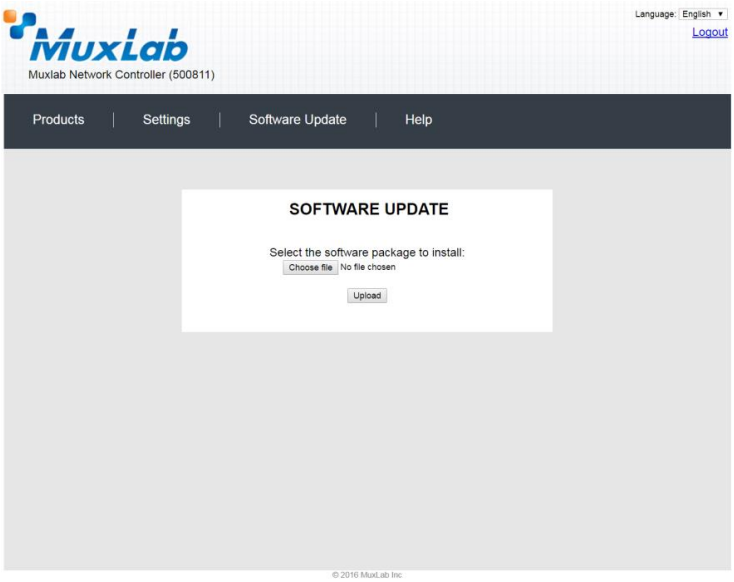


Figure 230: Software Update Screen

Help Screen

The **Help** screen offers quick contact information for customer support and all other inquiries (Figure 231).

Figure 231: Help Screen

Extender Model 500759

Products Screen

Once the user has logged in, the **Products** screen will appear (Figure 232).

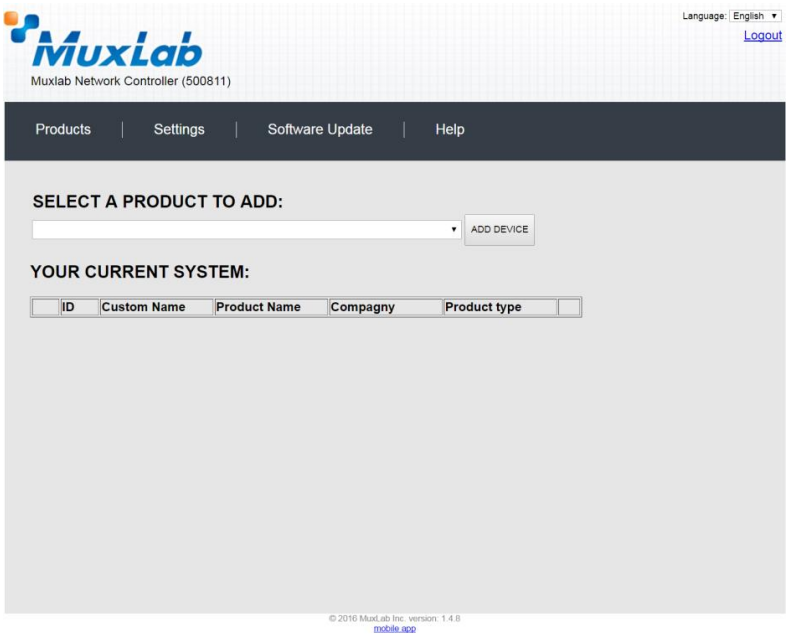


Figure 232: Products Screen – Initial View

In the **SELECT A PRODUCT TO ADD:** drop down box, select **Hdmi Over IP 4K (500758/759)** and then click on **ADD DEVICE** (Figure 233).

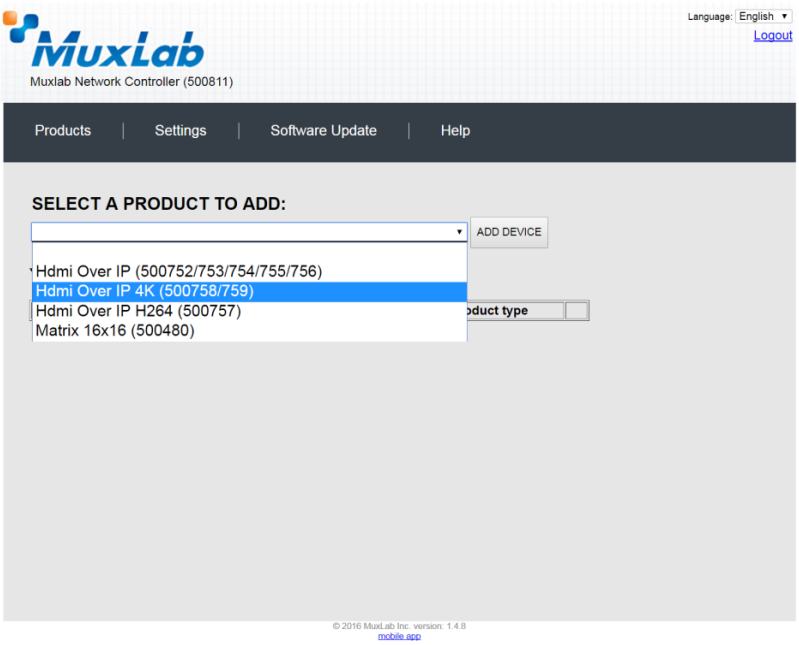


Figure 233: Products Screen – Selecting a Product

A dialog box appears asking the user to provide a custom name for the selected product (Figure 234). The user then types a name in the **Custom Name:** field and clicks on **OK**. Note that if the user decides to click on **CANCEL**, the previous screen appears (Figure 233), without a product being added.

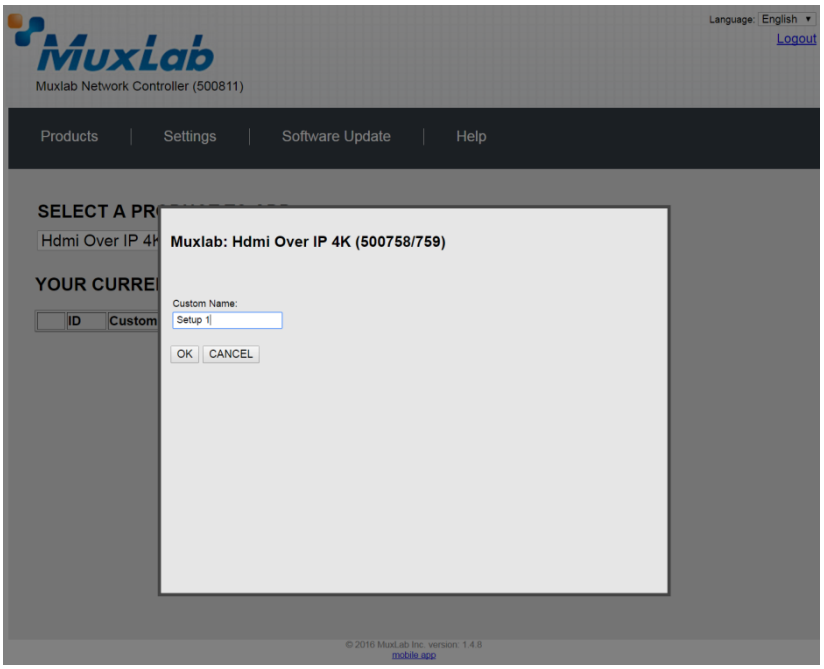


Figure 234: Products Screen – Naming a Product

The custom name has been added to **YOUR CURRENT SYSTEM** (Figure 235).

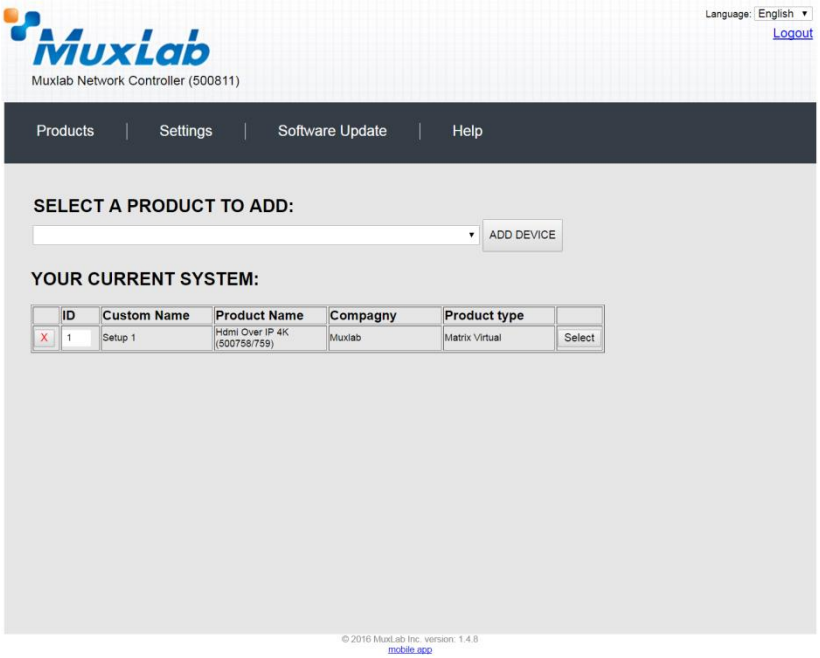


Figure 235: Products Screen – Your Current System Selection

The user can change the ID of each row by modifying the **ID** field. The user can also delete the entire row completely by clicking the X next to it.

To configure a given product, the user clicks on **Select**, which brings up a multi-tabbed screen (Figure 236).

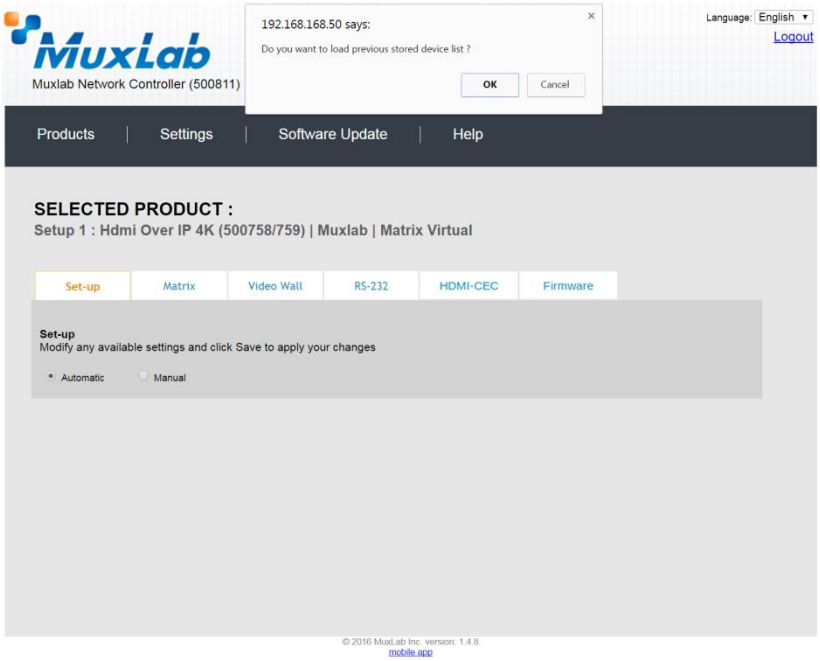


Figure 236: Products Screen – Load Dialog

By default, a dialog appears asking the user to load a previously saved device list (in case such a list has already been stored). This dialog will appear even if no device list has been previously saved.

Five tabs appear within the **Products** screen:

1. Set-up
2. Matrix
3. Video Wall
4. RS-232
5. HDMI CEC
6. Firmware

1. Products Screen - Set-up Tab

The **Set-up** tab offers the user two options for the type of set-up allowed: **Automatic** or **Manual**.

Automatic means that the software will scan the system for every dip-switch enabled device. The software will then override its manual dip-switch address settings and place these units under software address control. (Automatic is recommended).

Manual means that the software will allow the manual dip-switch address settings of any found device to remain active.

After selecting **Automatic** or **Manual**, click on **Launch discovery** (Figure 237).

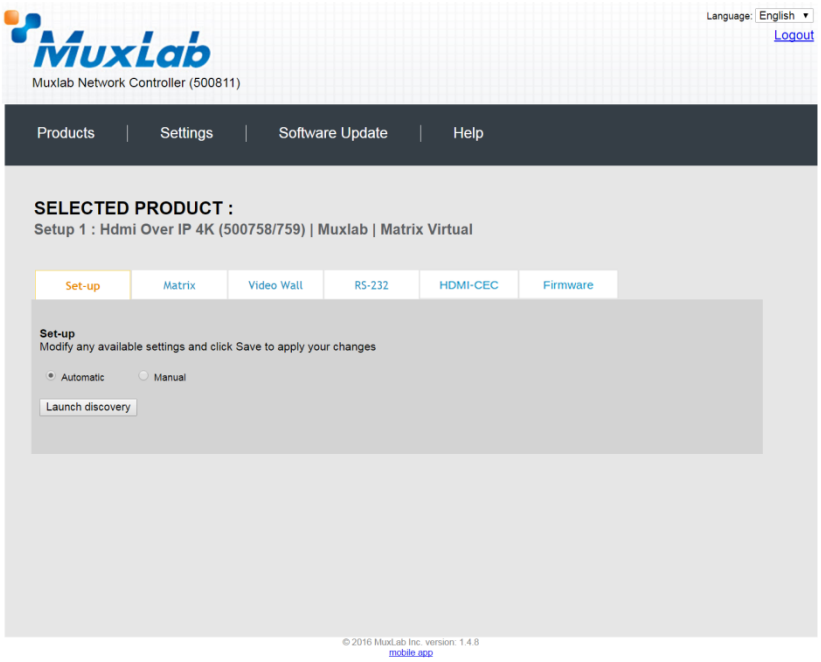


Figure 237: Products Screen – Set-up Tab

The system will scan the network for all source side devices (500759 transmitters) and display side devices (500759 receivers), and will display the scan results in tabular form (Figure 238).

Each 500759 transmitter and receiver can be assigned an arbitrary descriptive name, normally reflecting the end device that it is terminated to. To change the name of any Display (RX) or Source (TX) device, click the **Name** field to edit its contents. Several **Name** fields can be edited before saving changes, as shown in Figure 239 (orange highlighted fields).

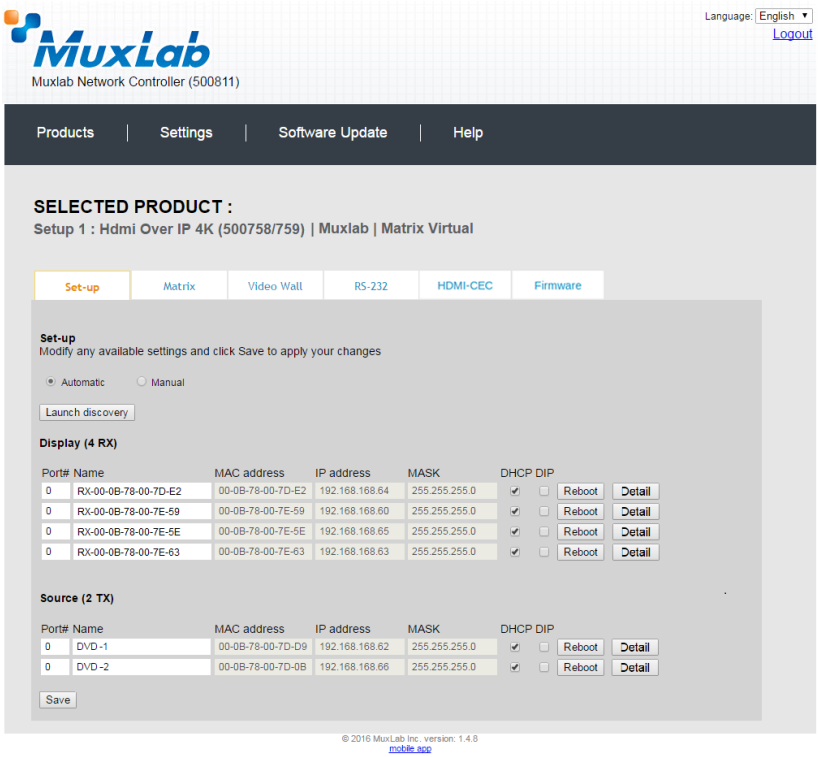


Figure 238: Products Screen – Set-up Tab

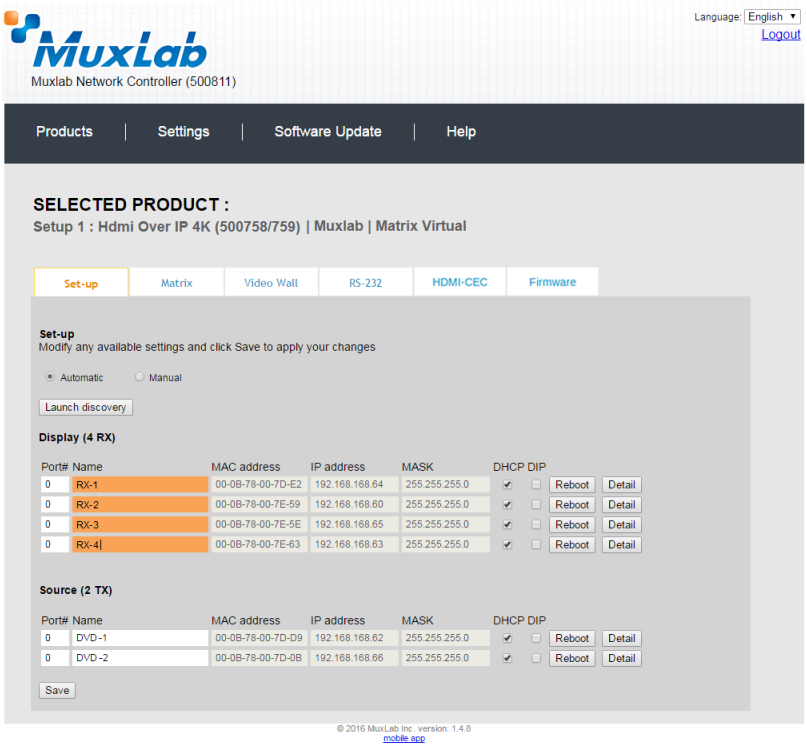


Figure 239: Name Editing

To save all name changes, click on **Save**. A green UPDATED tag will appear next to newly changed names (Figure 240).

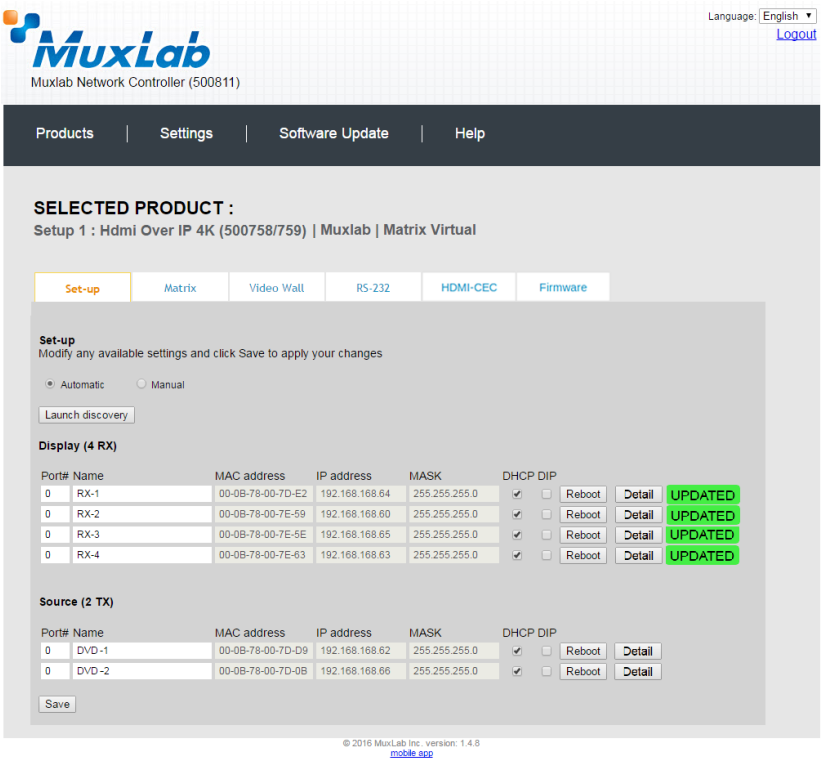


Figure 240: Saving Name Changes

To view and modify component parameters, click on the **Detail** button next to the given component. A dialog appears (Figure 241).

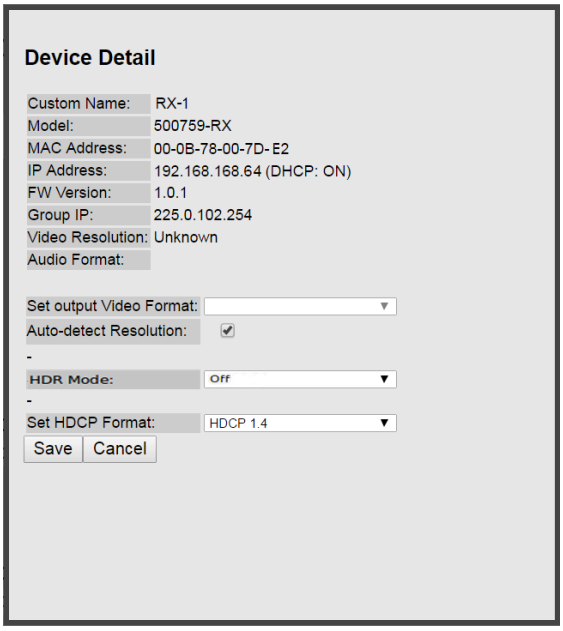


Figure 241: Device Detail Dialog

2. Products Screen - Matrix Tab

The **Matrix** tab of the **Products** screen allows the user to connect any Display to any Source. The user also has the option of using **Presets** to save connection schemes ("Presets"), as well as to edit and delete existing presets (Figure 242).

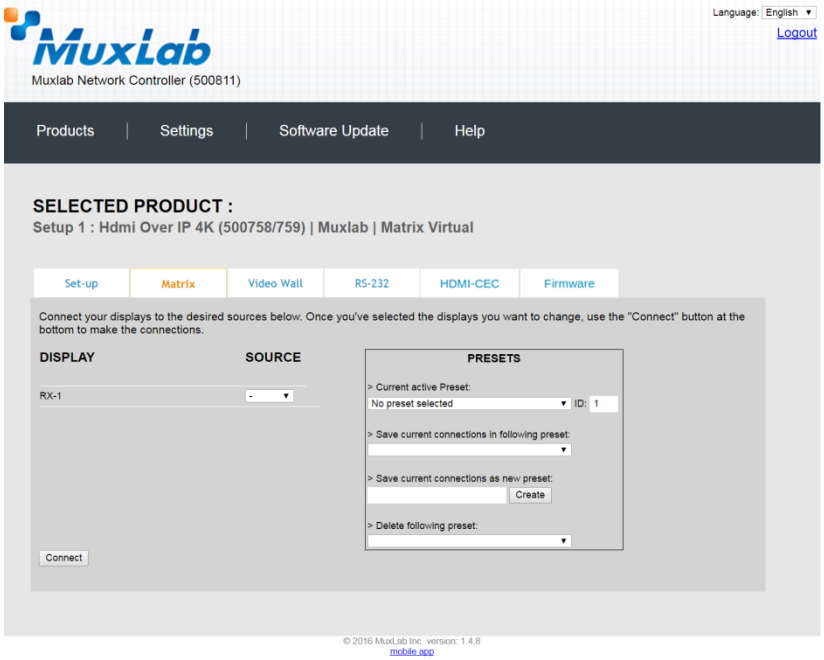


Figure 242: Matrix Tab

To connect a display to a source, the user first clicks on the drop-down list next to the given display (for example "RX-1") and selects which source to connect it to (Figure 243).

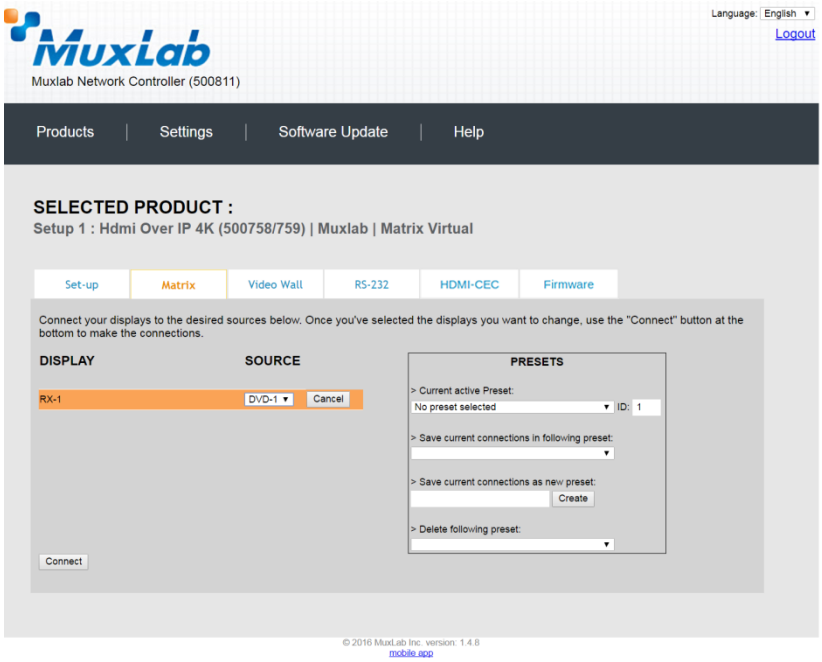


Figure 243: Change Connection

Once the selection is made (the user can change any or all connections between displays and sources), the user clicks on **Connect** to finalize the change. A green SUCCESS tag will appear next to the new or changed connection (Figure 244).

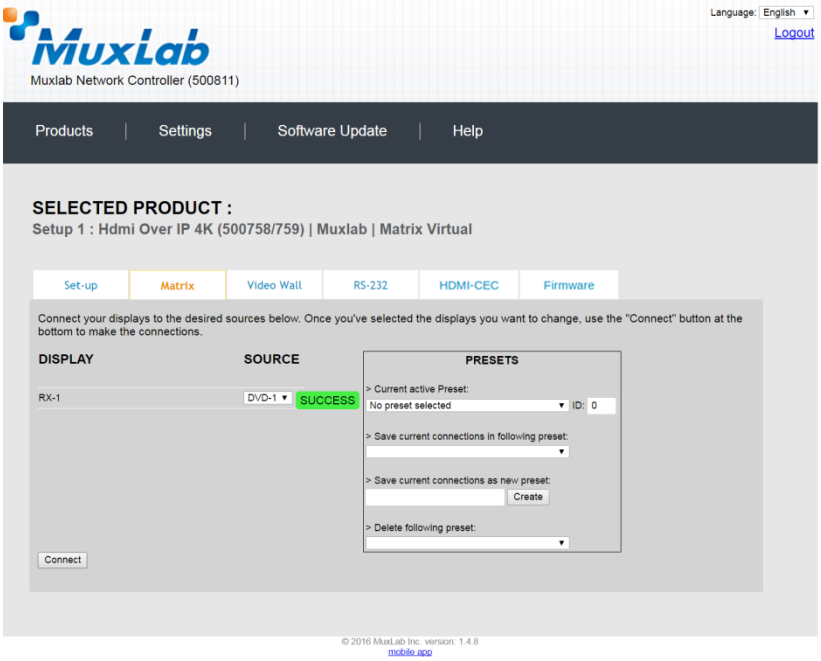


Figure 244: Change Successful

To create a new preset, the user clicks the **> Save current connections as new preset** field (Figure 245) and types a name. This assigned preset name will be linked to the existing connection scheme being shown within the **Matrix** tab.

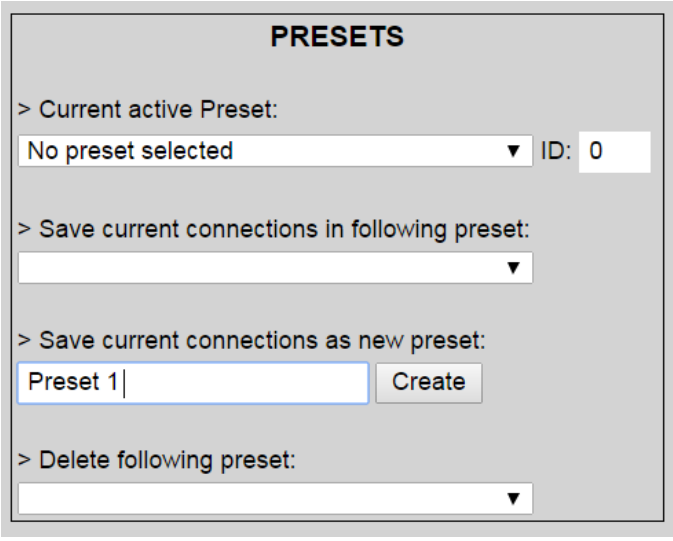


Figure 245: Create New Preset

To save this preset, the user clicks on **Create**. A green SUCCESS tag will appear next to the **> Save current connections as new preset** field and the newly created preset becomes the **Current active Preset** (Figure 246).

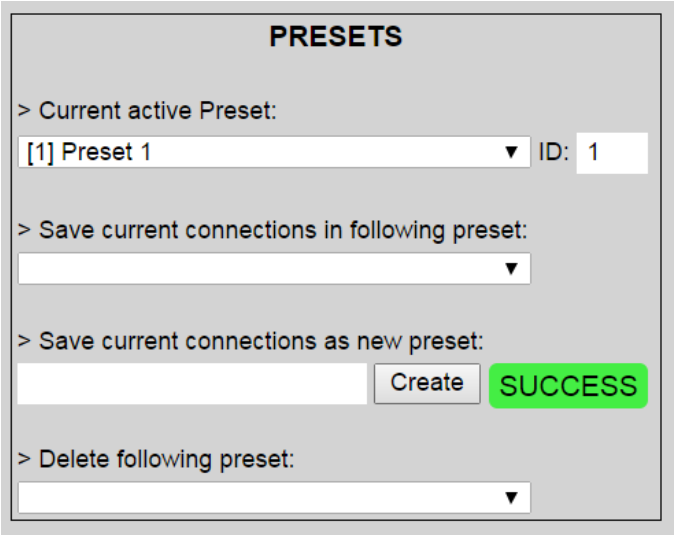


Figure 246: Confirmation of New Preset

To delete a preset, the user clicks the **> Delete following preset** drop-down box and selects a preset name from the list shown (Figure 247).

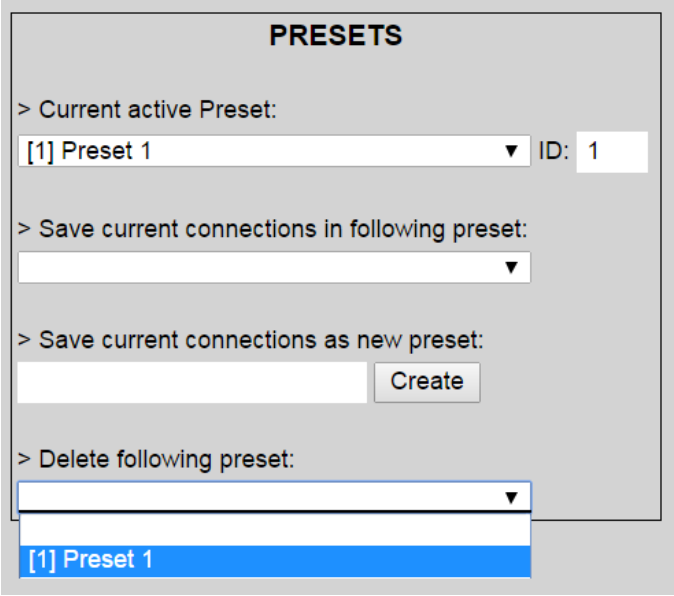


Figure 247: Delete Preset

Once selected, a dialog will appear asking the user to confirm the deletion request (Figure 248).

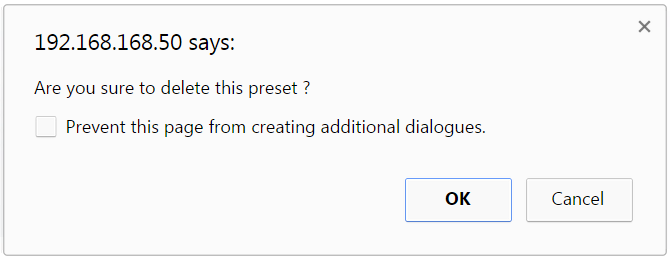


Figure 248: Confirmation of Deleted Preset

Click on **OK**. The preset will be deleted and a green SUCCESS tag will appear next to the **> Delete following preset** field (Figure 249).

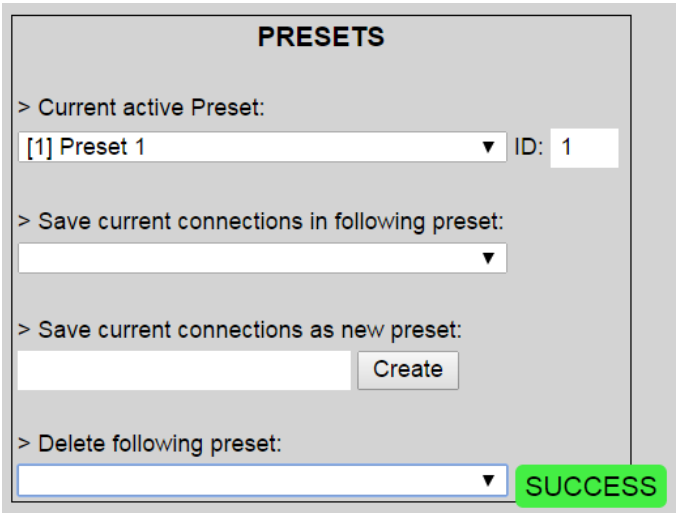


Figure 249: Confirmation of Deleted Preset

To save the current matrix configuration under an existing **Preset** name, click on **> Save current connection in following preset** drop-down box and selects a preset name (Figure 250).

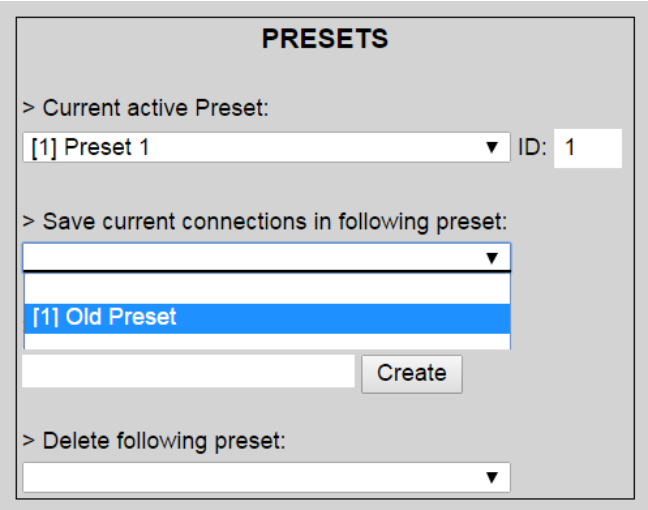


Figure 250: Change Current Active Preset

Once selected, the **Preset** will be saved and a green SUCCESS tag will appear next to the **> Save current connections in following preset** field (Figure 251).

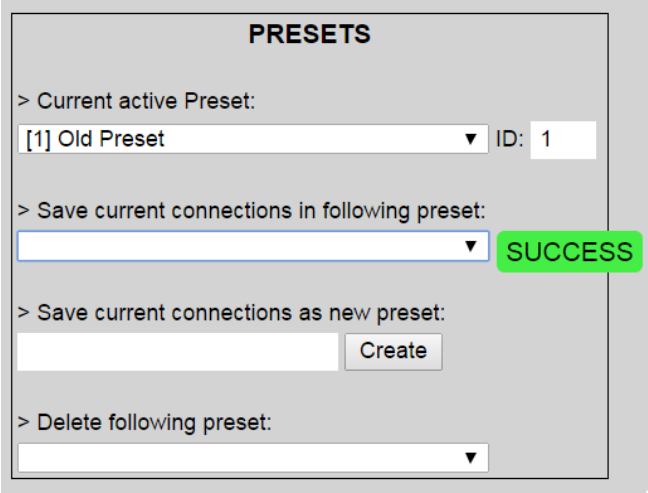


Figure 251: Confirmation of Changed Preset Name

In order to activate an existing **Preset**, select > **Current active Preset**, and select the **Preset** name from the drop-down box and the **Preset** will become active. The active **Preset** will also be displayed in the **Current active Preset** field.

3. Products Screen - Video Wall Tab

The **Video Wall** tab enables the user to configure an NxM video wall consisting of NxM monitors, all of the same size (Figure 252).

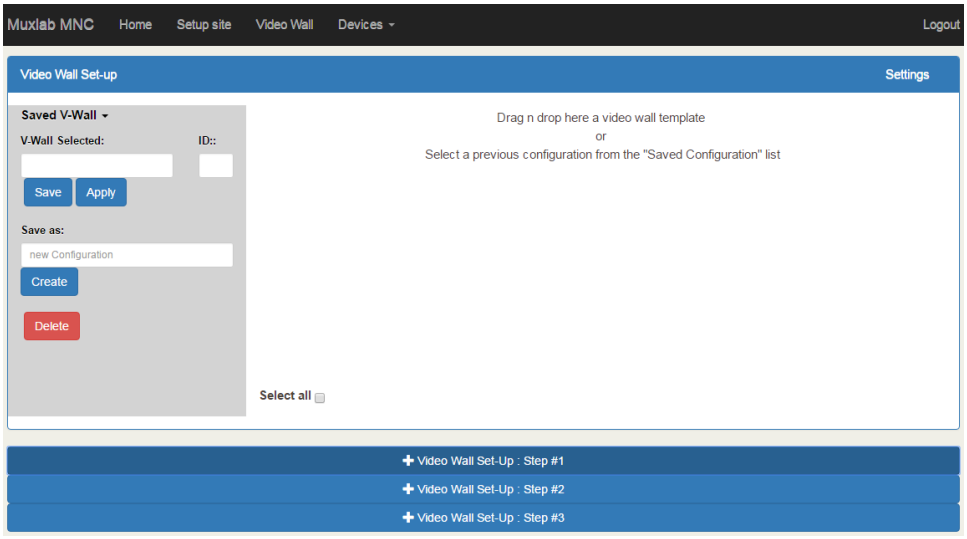


Figure 252: Video Wall Tab

This screen is laid-out in a 3-step pattern, with a display pane that shows the NxM video wall setup:

1. The user clicks on **+Video Wall Set-Up: Step #1**, which expands to provide the user with video wall size options (Figure 253).

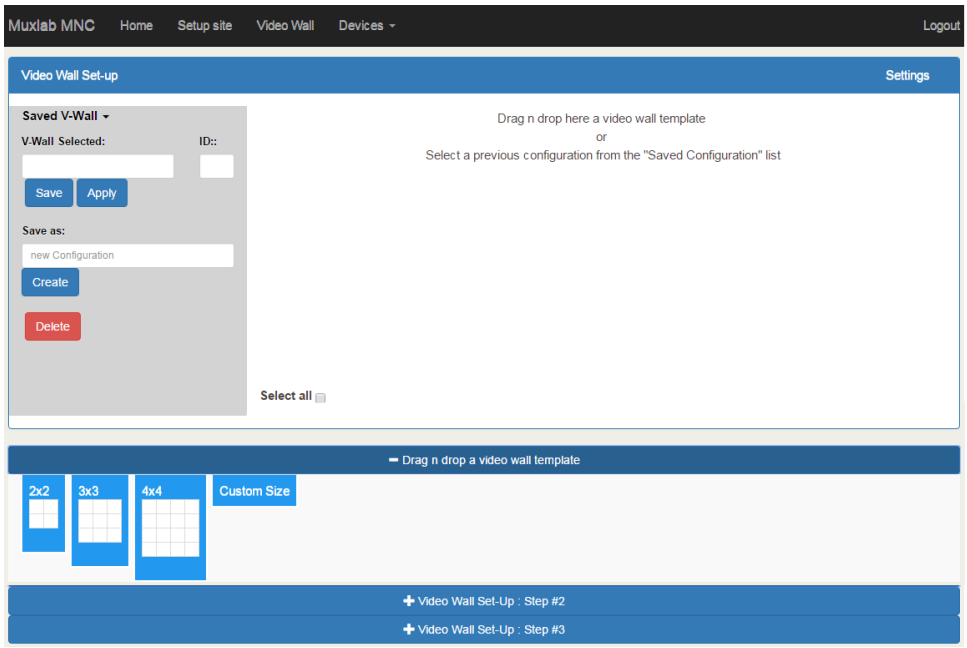


Figure 253: Video Wall Tab

a. By clicking on and dragging any of the NxN preconfigured boxes into the display pane, the user creates a video matrix of the same size. In the example shown in Figure 254, a 2x2 video wall consisting of 4 monitors is created. Custom video wall sizes may also be created.

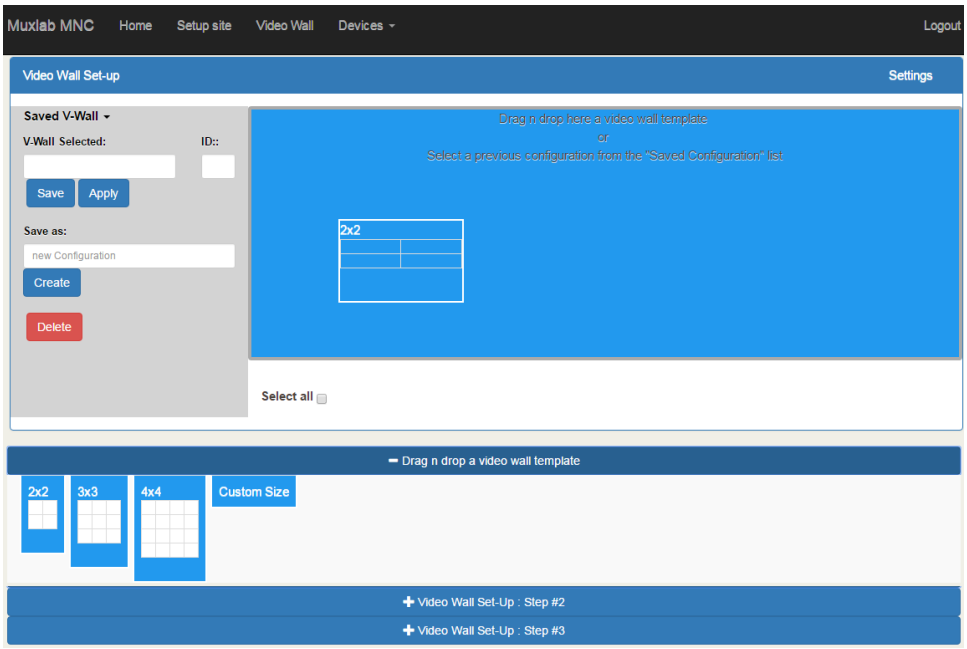


Figure 254: Video Wall Tab – Dragging to Create a 2x2 Video Wall

b. Once dragged into the display pane, the user is asked for display dimensions (Figure 255).

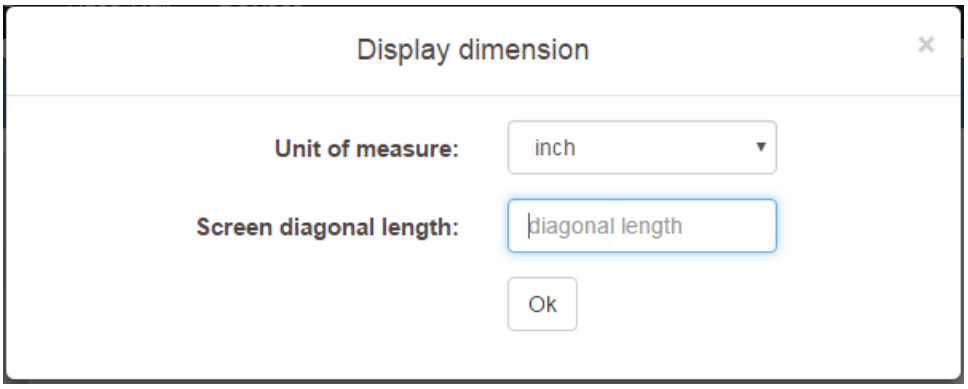


Figure 255: Video Wall Tab – Newly Created 2x2 Video Wall

c. Once created, the display pane shows an empty (unpopulated) video wall consisting of 4 monitors (Figure 256).

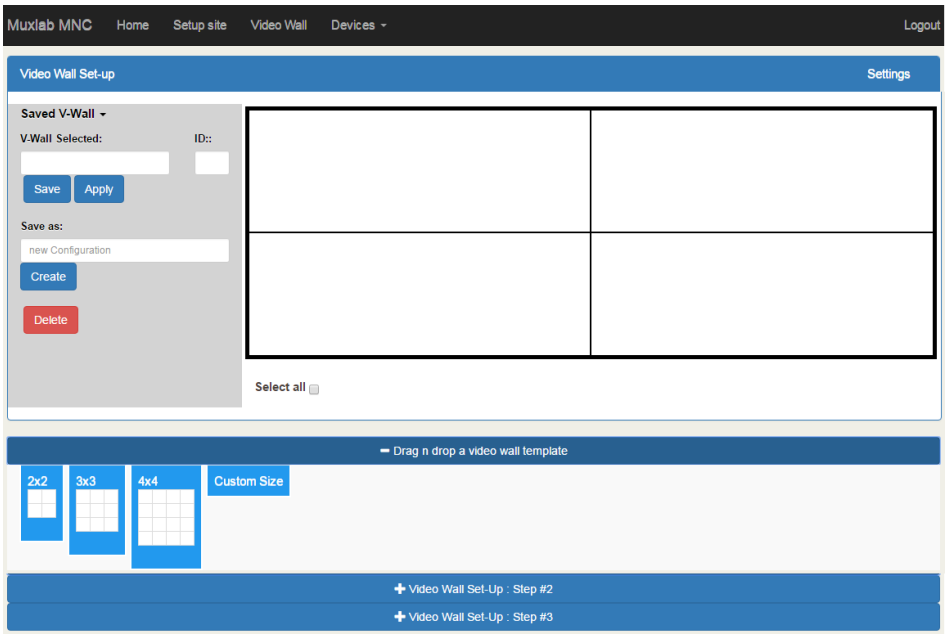


Figure 256: Video Wall Tab – Newly Created 2x2 Video Wall

2. The user clicks on **+Video Wall Set-Up: Step #2**, which expands to provide the user with display mapping options (Figure 257).

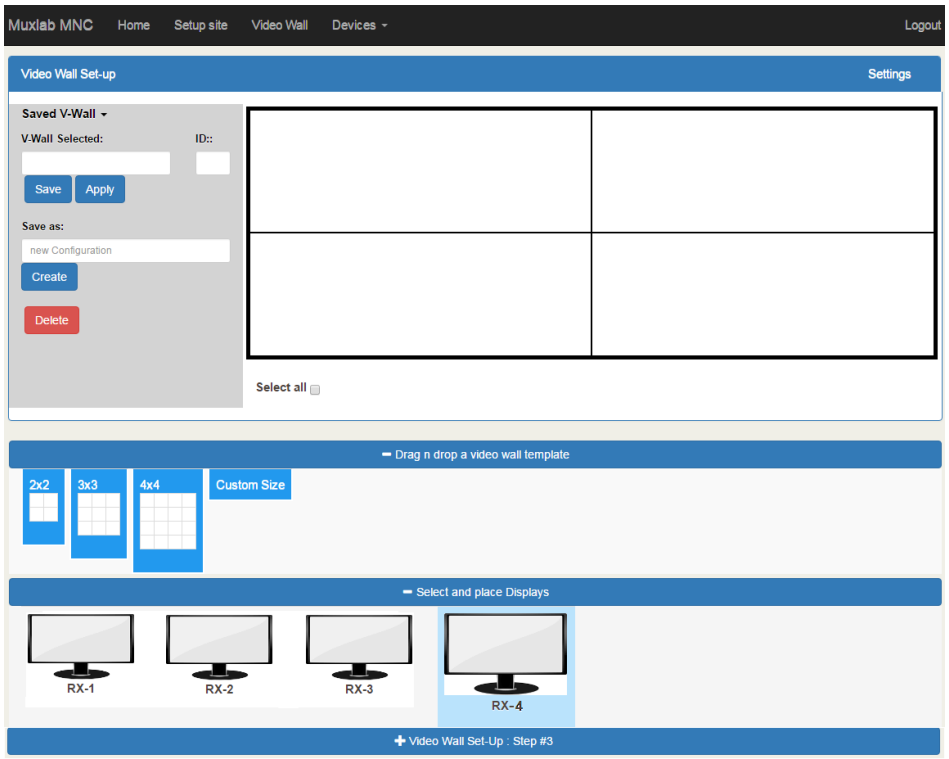


Figure 257: Video Wall Tab – Newly Created 2x2 Video Wall

a. The user clicks on a given display in the lower section of the screen. This highlights the display in a light blue box. (Note that dragging and dropping displays into the display pane is not allowed.)
b. The user clicks on any one of the cells in the display pane.
c. The clicked cell in the display pane is now mapped to the given display.
d. The user must continue mapping the remaining displays to the remaining cells. The display pane then becomes fully display mapped (Figure 258).

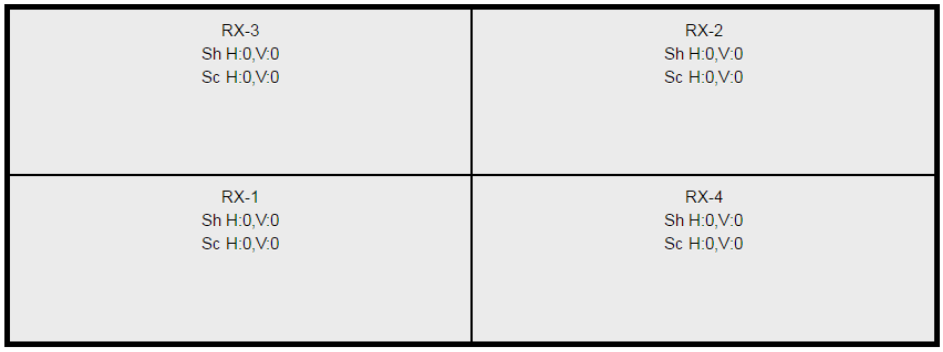


Figure 258: Video Wall Tab – Fully Display Mapped Video Wall

3. The user clicks on **+Video Wall Set-Up: Step #3**, which expands to provide the user with source mapping options (Figure 259).

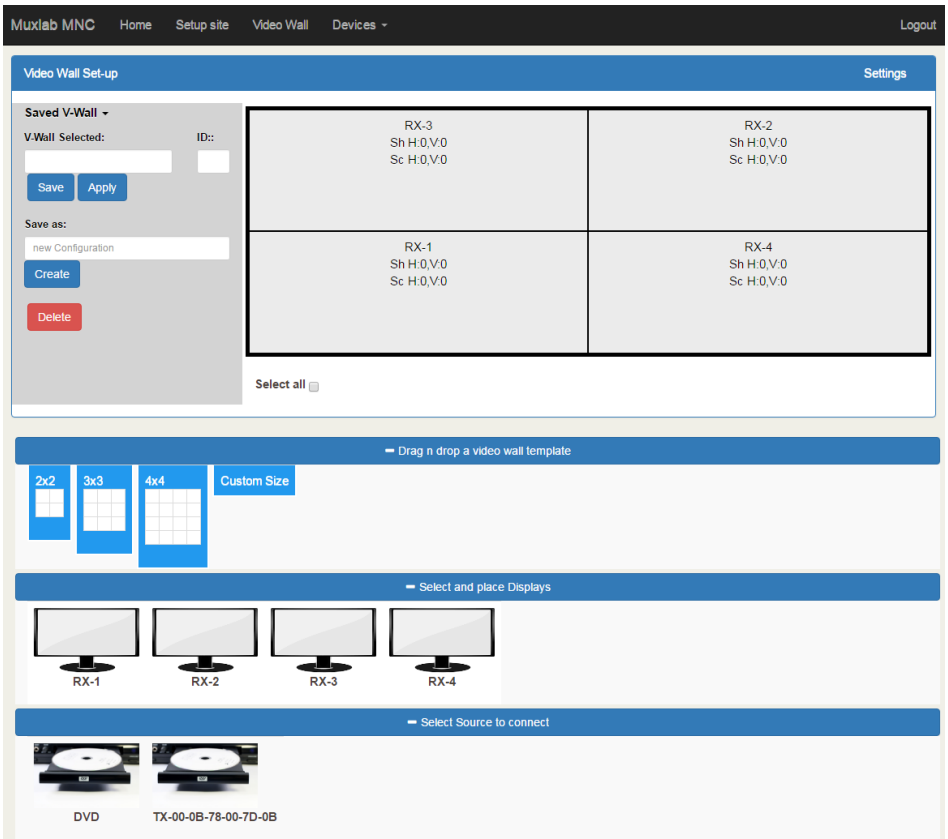


Figure 259: Video Wall Tab – Connecting Sources to Receivers

a. The user clicks on one or more cells in the display pane. Once clicked, the panes will change to blue to indicate that they are now actively selected.
b. The user clicks on any single source shown in the lower part of the screen.
c. The clicked cell(s) in the display pane is (are) now mapped to the given source.
d. The user maps some or all sources to all cells. The display pane then becomes fully source mapped (Figure 260).

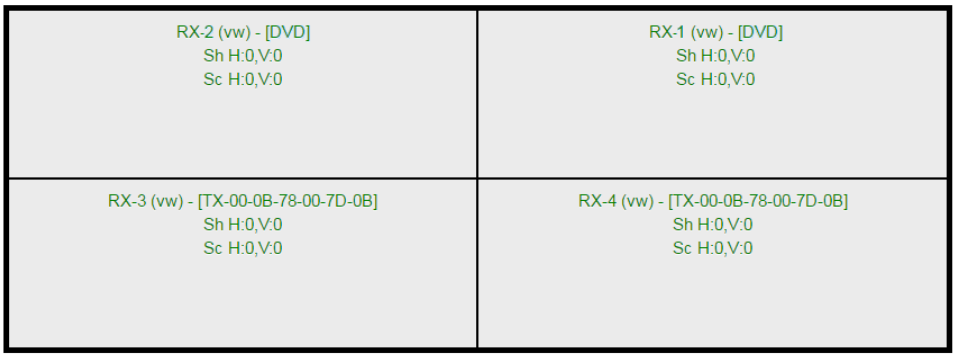


Figure 260: Video Wall Tab – Fully Source Mapped Video Wall

To configure the display size and bezel dimensions of all the displays (assumed to be all equal) comprising the video wall, the user clicks on **Settings** in the top right hand side of the **Video Wall** tab. This brings up the display setting options (Figure 261).

Figure 261: Video Wall Tab – Display Setting Options

Since the video wall consists of only one type of display (all displays are the same), the user only needs to modify the dimensions for only one representative display.

Note that **Unit**, **screen width**, and **screen height** values are derived from the information provided by the user when first creating the video wall (Figure 255). Also, **Bezel top**, **bezel bottom**, **bezel left**, and **bezel right** are all set to 0.1 inch by default, but these values may be changed.

Display settings options also allow the user to scale or shift the image of one or several displays at the same time. The user must first selects the display(s) to be modified in the display plane, and then clicks on any of the eight buttons (Scale/Shift) in the display setting options. Clicking on **Reset** resets any changes made to these eight buttons, not to **Unit**, **screen width**, **screen height**, or **bezel** values.

The settings of any video wall can be saved as a named configuration by using the options shown in the left hand side of the **Video Wall** tab. Video wall configurations can be named, saved, deleted, or activated.

Note that not all displays in an actual video wall need to be included in a given saved configuration, simply start the three steps mentioned above, but only include the required subset of the displays to define as a given configuration, and save this configuration. For example, if the actual video wall consists of four (4) horizontal displays by four (4) vertical displays (4x4 video wall), a 2x2 configuration can be created consisting of only the upper-left corner four displays. To do so create a 2x2 video wall configuration in Step #1 above, then assign the corresponding four displays in the upper-left corner in Step #2 above, then in Step #3 assign the initial source, and save this configuration. Tip, use a configuration name that is representative of the actual setup, such as "Upper Left 2x2" in this case.

Any saved configuration can be activated and displayed on the video wall with the initial assigned source by simply loading it. Once activated, the initial source can easily be changed by repeating Step #3 above with a different source selected, after which you can either save this change or choose not to save it so the next time this configuration is activated the initial source remains unchanged.

4. Products Screen - RS-232 Tab

The **RS-232** tab of the **Products** screen enables the user to send RS-232 commands to any MuxLab transmitter or receiver (Figure 262). This is done either through the Network Controller or directly by connecting a PC to the RS-232 port of any transmitter or receiver.

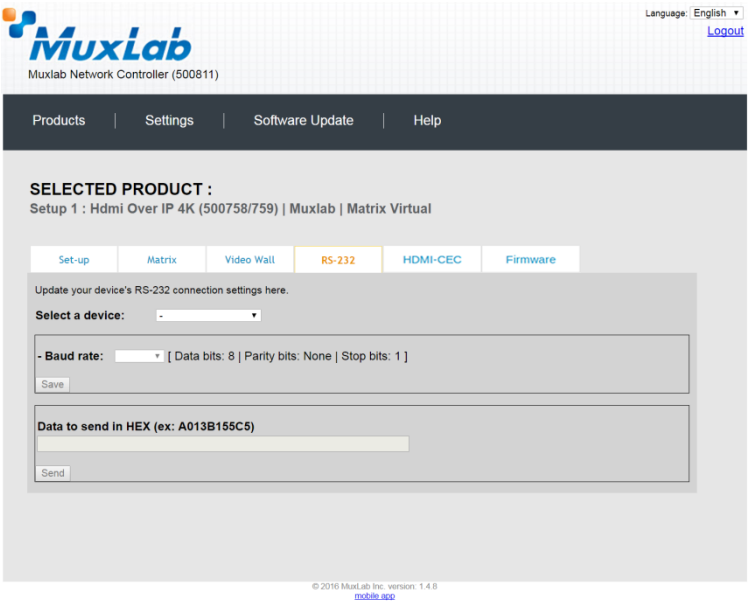


Figure 262: RS-232 Tab

When sending RS-232 commands through the Network Controller, the user first selects the device that the RS-232 commands will be sent to. This is done by clicking on the **Select a device** drop-down list and making a selection (Figure 263).

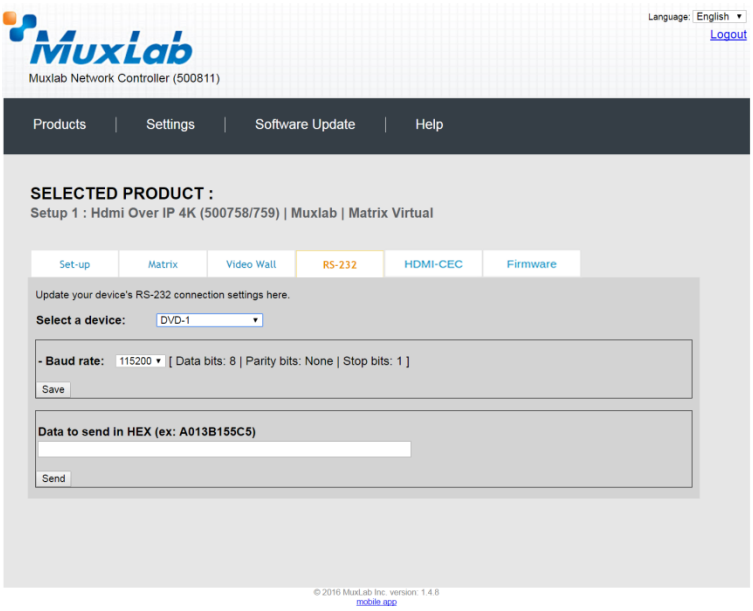


Figure 263: RS-232 Tab - Selecting a Device

Once a device is selected, the **Data to send in HEX** field becomes enabled. In the above example, DVD-1 was chosen as the selected device (but a receiver connected to sink equipment could have also been selected), meaning that a command sent to DVD-1 will travel from the Network Controller to the Ethernet Switch, and from the Ethernet Switch to the transmitter connected to DVD-1. That transmitter will then send the specified data command to DVD-1.

Note that no RS232 feedback is sent to the Network Controller when sending an RS232 command originating from the Network Controller in the direction of the transmitter (to DVD-1).

When sending RS-232 commands directly from a PC to any transmitter or receiver, in pass-through mode, this is automatically accomplished by the existing connection between the transmitter and receiver. As such this connection must exist for pass-through to operate.

IR Pass-through

Special note concerning IR pass-through. This functions in the same manner as RS232 pass-through above, but is limited in one direction, from receiver to transmitter to control source end devices. Thus a connection between transmitter and receiver, automatically establishes an IR pass-through from the receiver to the transmitter.

Note that IR commands sent from the Network Controller is not supported on the 500759.

5. Products Screen – HDMI CEC Tab

The **HDMI CEC** tab of the Products screen enables the user to support CEC commands including Standby, Power ON, Volume Up, Volume Down and Mute (Figure 264).

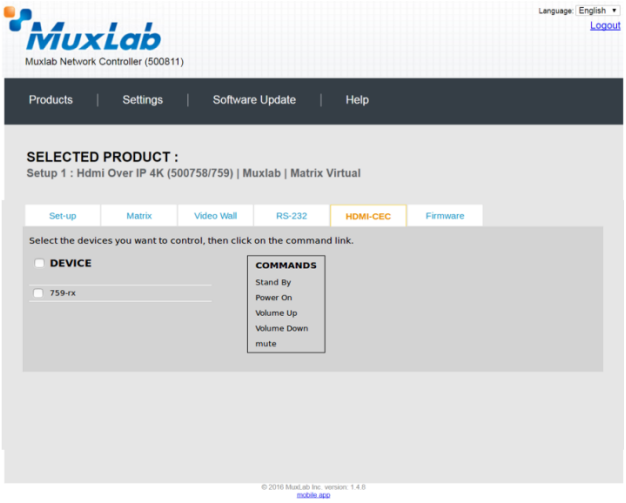


Figure 264: HDMI CEC Tab

6. Products Screen - Firmware Tab

The **Firmware** tab of the Products screen enables the user to update the firmware for MuxLab transmitters and receiver (Figure 265).

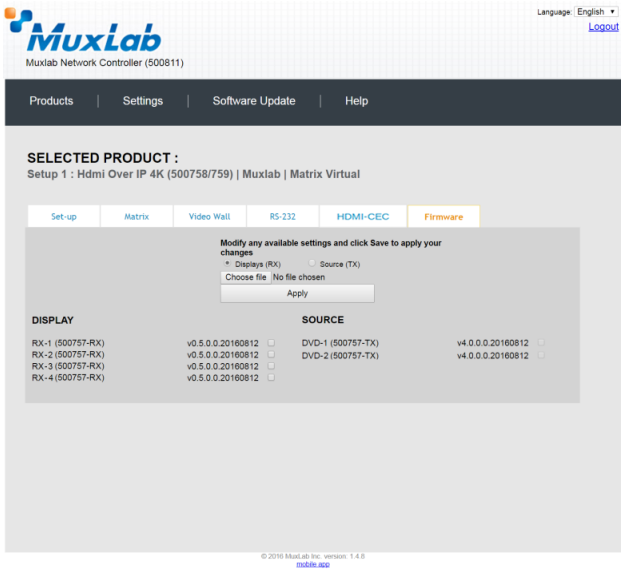


Figure 265: Firmware Tab

The user first selects either **Display (RX)** or **Source (TX)**, then chooses the firmware update file to upload to the given device. Once the file is selected, the user checks the box next to the given device (listed under **DISPLAY** and **SOURCE**) targeted for firmware upgrade, and then clicks **Apply**.

Settings Screen

The **Settings** screen contains two tabs: **Network** and **Administration**.

The **Network** tab (Figure 266) is used to change the IP address of the MuxLab Network Controller, the network mask, as well as the router IP address. It also allows the user to enable or disable DHCP.

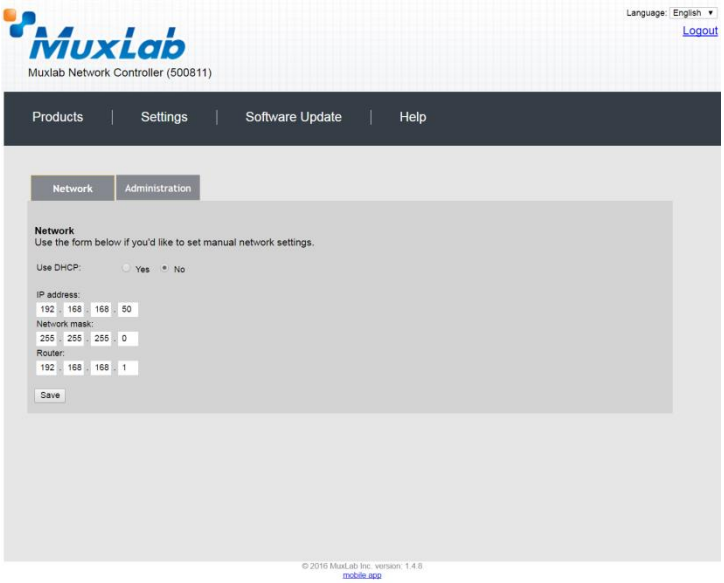


Figure 266: Settings Screen: Network Tab

The **Administration** tab is used to create or delete user accounts, change passwords, restore data, backup data, and retrieve logs (Figure 267).

Figure 267: Settings Screen: Administration Tab

Software Update Screen

The **Software Update** enables the user to update MuxLab Network Controller software (Figure 268). This software is available on MuxLab's website (www.muxlab.com). Download the software to the local PC before performing the update.

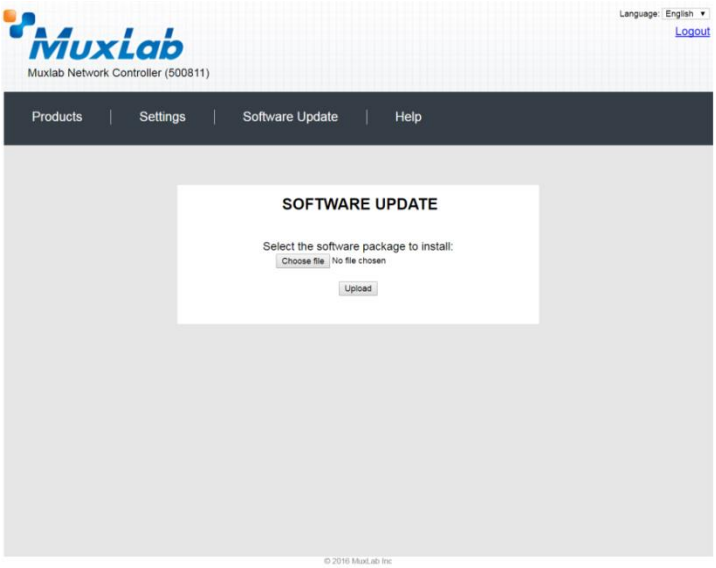


Figure 268: Software Update Screen

Help Screen

The **Help** screen offers quick contact information for customer support and all other inquiries (Figure 269).

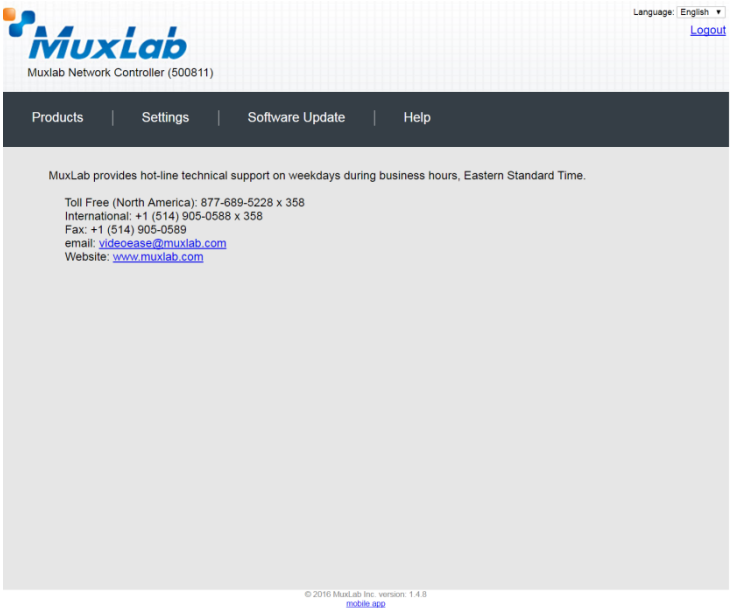


Figure 269: Help Screen

Extender Model 500755-AMP

Product Screen

Once the user has logged in, the **Products** screen will appear (Figure 270).

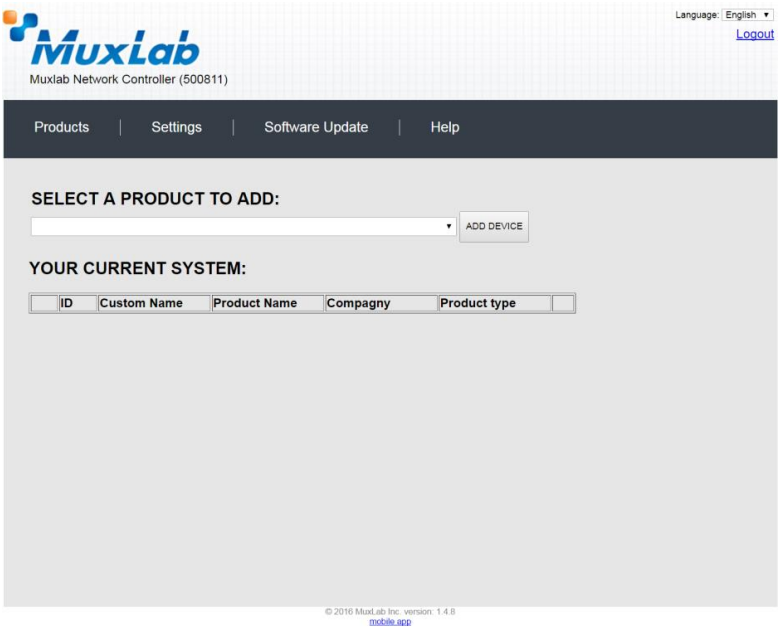


Figure 270: Products Screen – Initial View

In the **SELECT A PRODUCT TO ADD:** drop down box, select **Hdmi Over IP (500752/753/754/755/756)** and then click on **ADD DEVICE** (Figure 271).

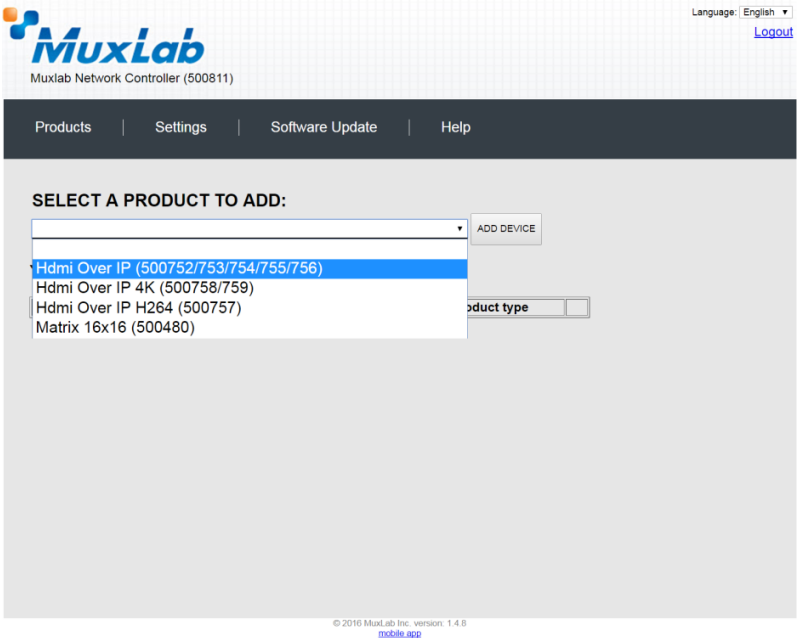


Figure 271: Products Screen – Selecting a Product

A dialog box appears asking the user to provide a custom name for the selected product (Figure 272). The user then types a name in the **Custom Name:** field and clicks on **OK**. Note that if the user decides to click on **CANCEL**, the previous screen appears (Figure 271), without a product being added.

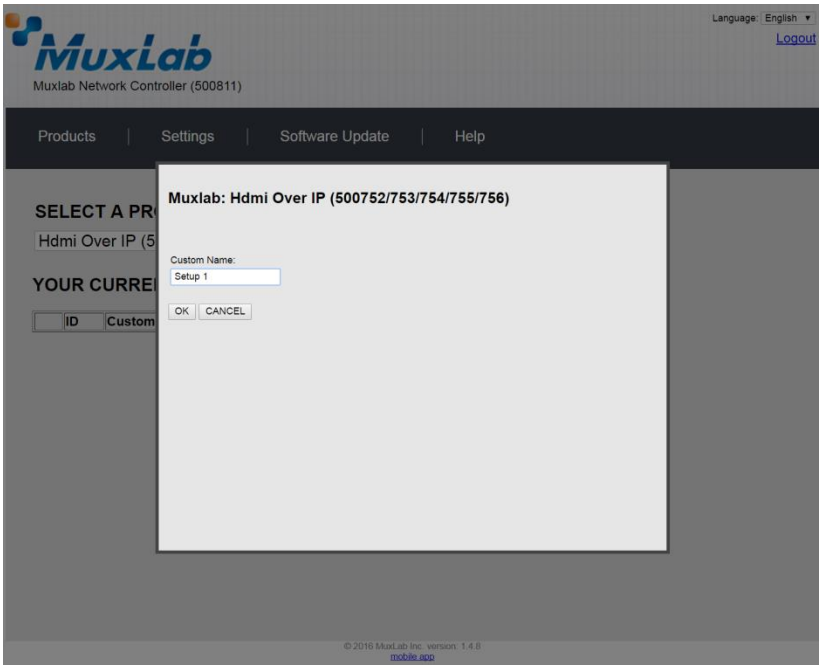


Figure 272: Products Screen – Naming a Product

The custom name has been added to **YOUR CURRENT SYSTEM** (Figure 273).

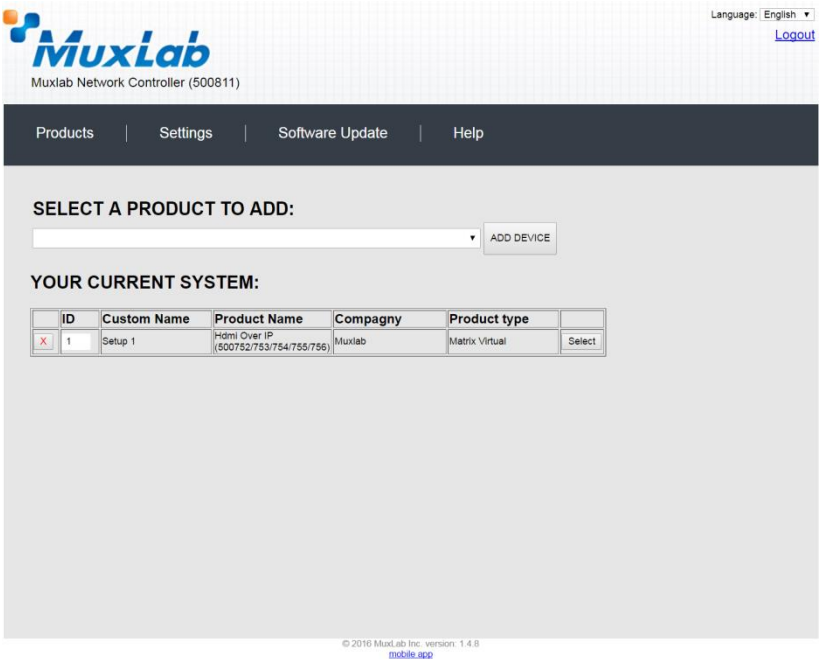


Figure 273: Products Screen – Your Current System Selection

The user can change the ID of each row by modifying the **ID** field. The user can also delete the entire row completely by clicking the X next to it.

To configure a given product, the user clicks on **Select**, which brings up a multi-tabbed screen (Figure 274).

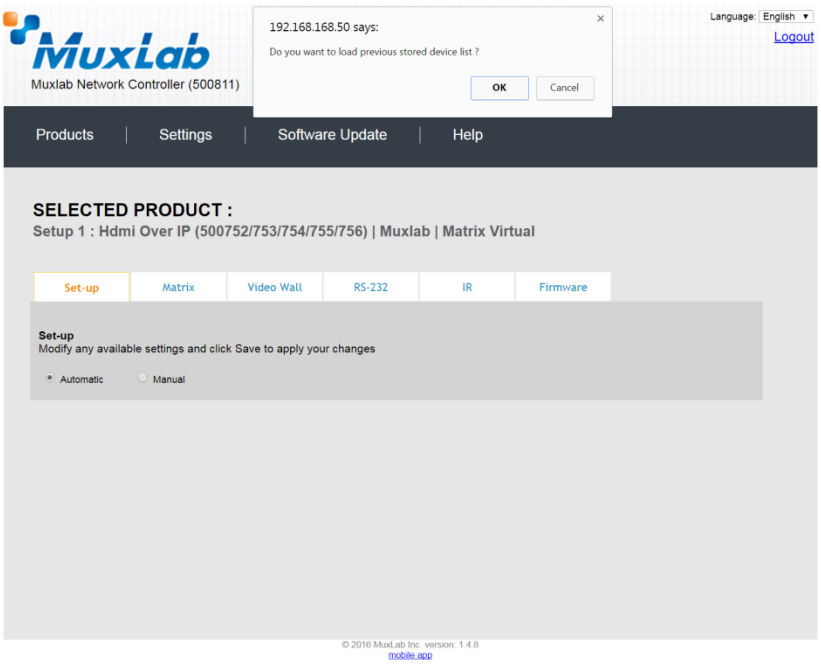


Figure 274: Products Screen – Load Dialog

By default, a dialog appears asking the user to load a previously saved device list (in case such a list has already been stored). This dialog will appear even if no device list has been previously saved.

Six tabs appear within the **Products** screen:

1. Set-up
2. Matrix
3. Video Wall
4. RS-232
5. IR
6. Firmware

1. Products Screen - Set-up Tab

The **Set-up** tab offers the user two options for the type of set-up allowed: **Automatic** or **Manual**.

Automatic means that the software will scan the system for every dip-switch enabled device. The software will then override its manual dip-switch address settings and place these units under software address control. (Automatic is recommended).

Manual means that the software will allow the manual dip-switch address settings of any found device to remain active.

After selecting **Automatic** or **Manual**, click on **Launch discovery** (Figure 275).

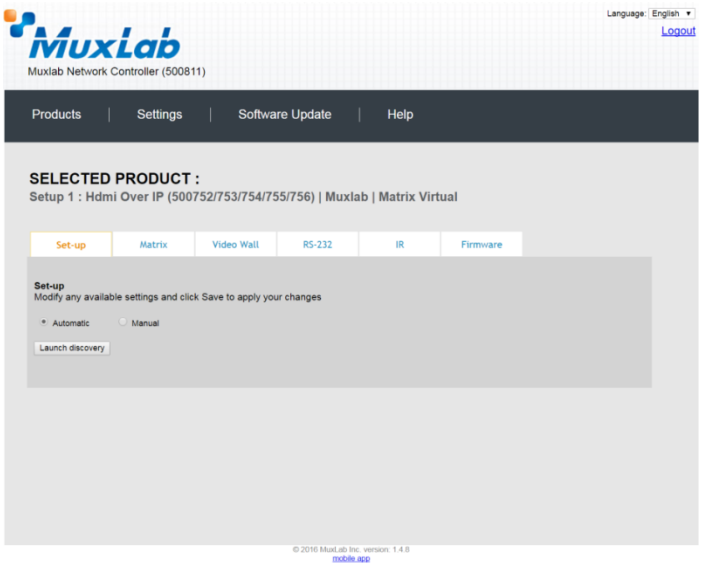


Figure 275: Products Screen – Set-up Tab

Note: The term "Display" is used in this 500755-AMP section to reference the sink side (RX), the actual sink devices are speakers.

The system will scan the network for all source side devices (500755-AMP "transmitters") and display side devices (500755-AMP "receivers"), and will display the scan results in tabular form (Figure 276). Note that the 500755-AMP consists of a transmitter and receiver unit (supporting a 50W per channel amplifier), whereby one transmitter can connect with multiple receivers supporting a one-to-many architecture for a distributed system. One or more sources (via transmitters) can easily be distributed to multiple zoned locations with speakers (via receivers).

Each 500755-AMP transmitter and receiver can be assigned an arbitrary descriptive name, normally reflecting the end device that it is terminated to. To change the name of any speaker sink (RX) or audio source (TX) device, click the **Name** field to edit its contents. Several **Name** fields can be edited before saving changes, as shown in Figure 277 (orange highlighted fields).

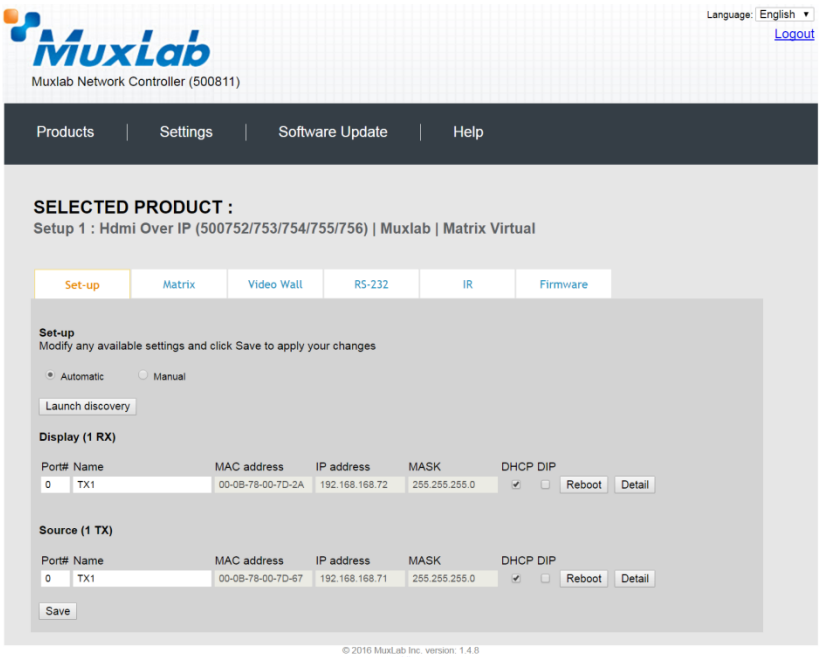


Figure 276: Products Screen – Set-up Tab

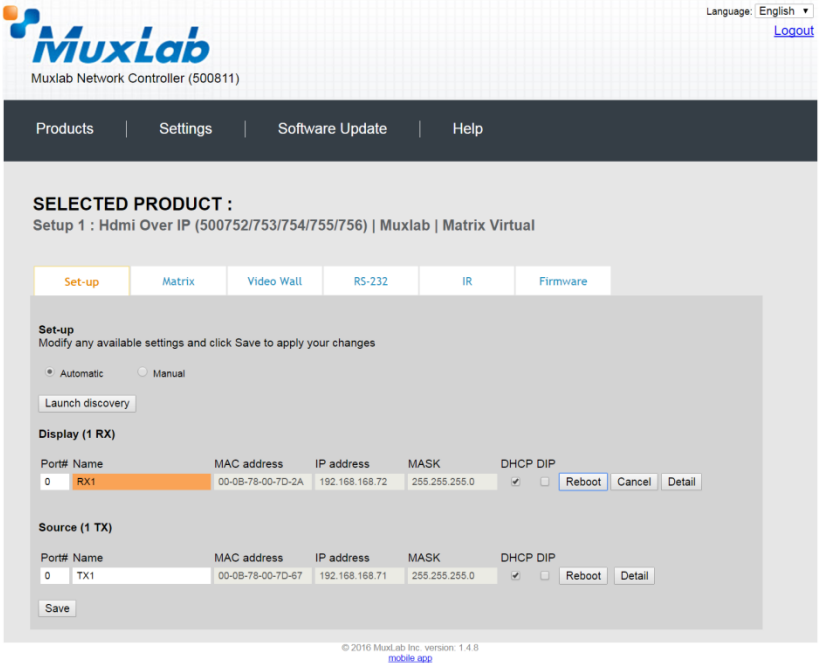


Figure 277: Name Editing

To save all name changes, click on **Save**. A green UPDATED tag will appear next to newly changed names (Figure 278).

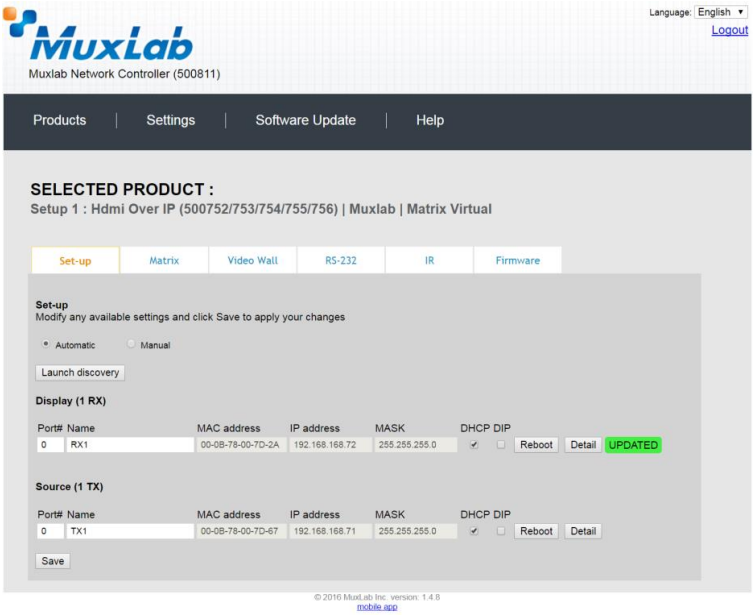


Figure 278: Saving Name Changes

To view and modify component parameters, click on the **Detail** button next to the given component. A dialog appears (Figure 279). This allows for control of TX settings for volume/volume attenuation (if mic is detected)/bass/treble/mic gain/mic bass/mic treble/mic auto detect level, and for selection of input port 1 or 2/mic type. It also allows for control of RX settings for volume/bass/treble within each zone.

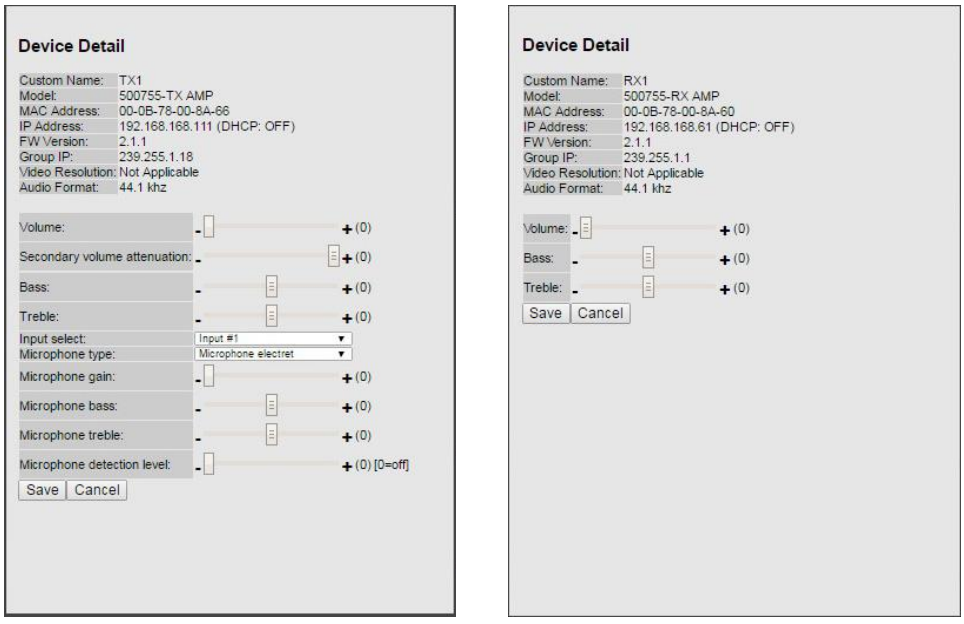


Figure 279: Device Detail Dialog for TX and RX

2. Products Screen - Matrix Tab

The **Matrix** tab of the **Products** screen allows the user to connect any Display (sink device) to any source. The user has the option of using **Presets** to save connection schemes ("Presets"), as well as to edit and delete existing presets (Figure 280).

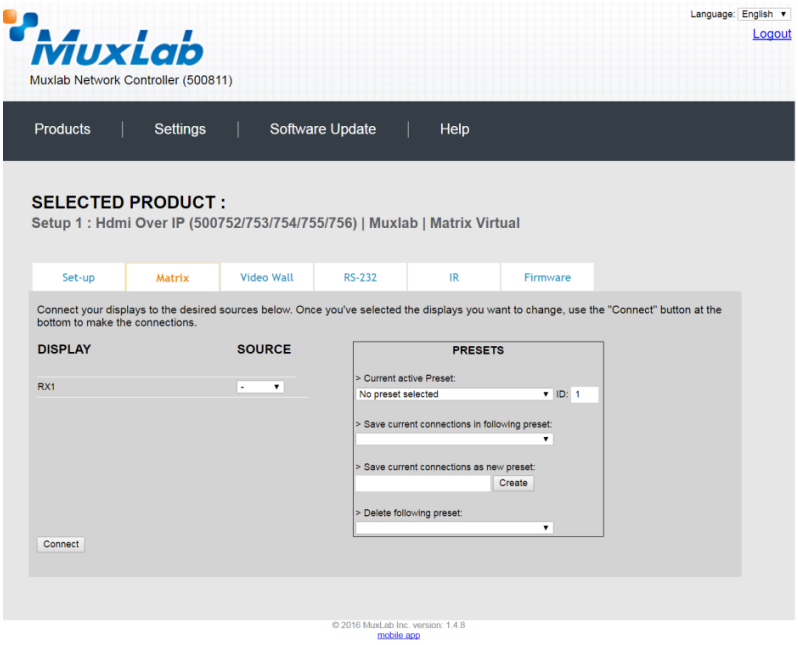


Figure 280: Matrix Tab

To connect a sink to a source, the user first clicks on the drop-down list next to the given sink (for example "RX1") and selects which source to connect it to (Figure 281).

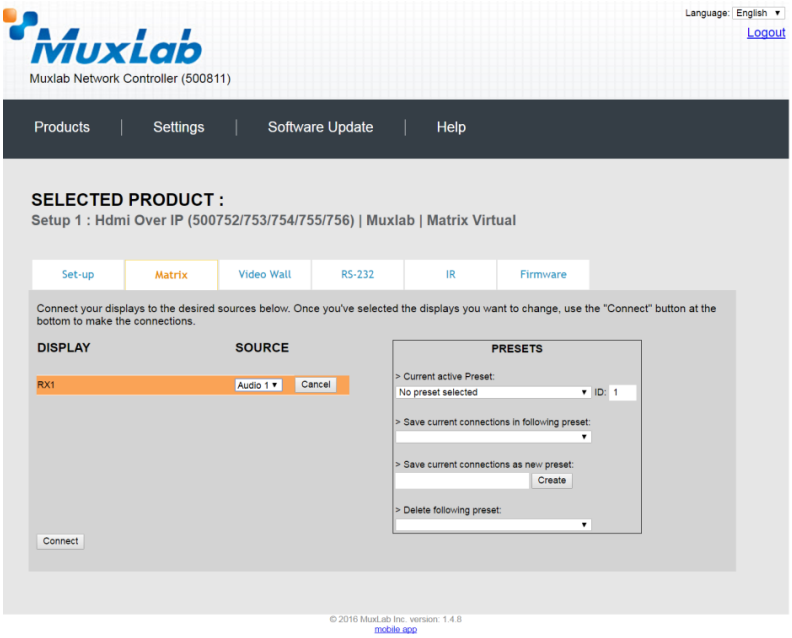


Figure 281: Change Connection

Once the selection is made (the user can change any or all connections between sinks and sources), the user clicks on **Connect** to finalize the change. A green SUCCESS tag will appear next to the new or changed connection (Figure 282).

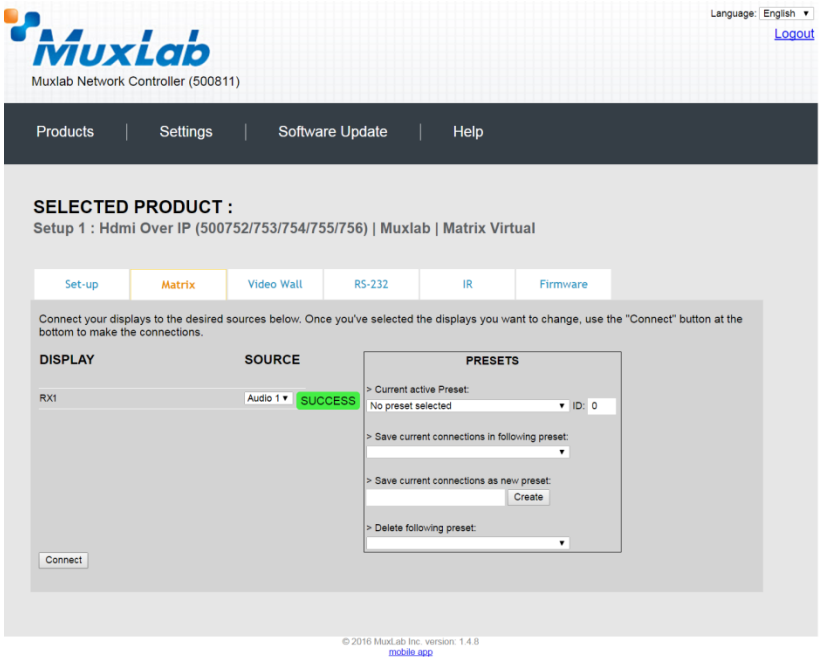


Figure 282: Change Successful

To create a new preset, the user clicks the **> Save current connections as new preset** field (Figure 283) and types a name. This assigned preset name will be linked to the existing connection scheme being shown within the **Matrix** tab.

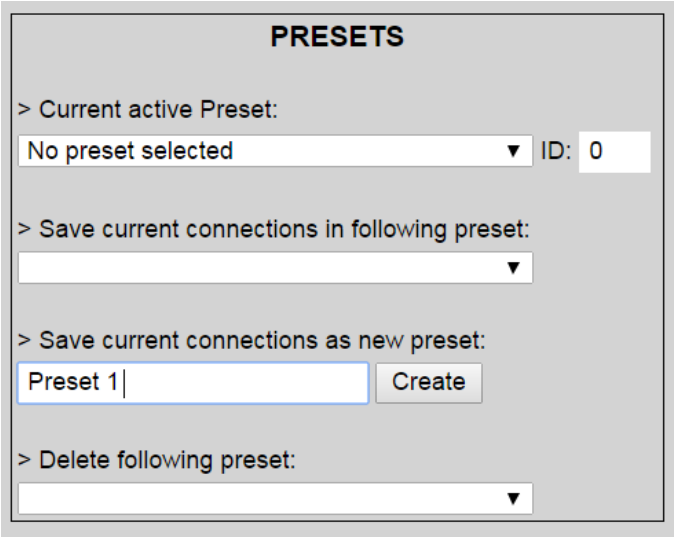


Figure 283: Create New Preset

To save this preset, the user clicks on **Create**. A green SUCCESS tag will appear next to the **> Save current connections as new preset** field and the newly created preset becomes the **Current active Preset** (Figure 284).

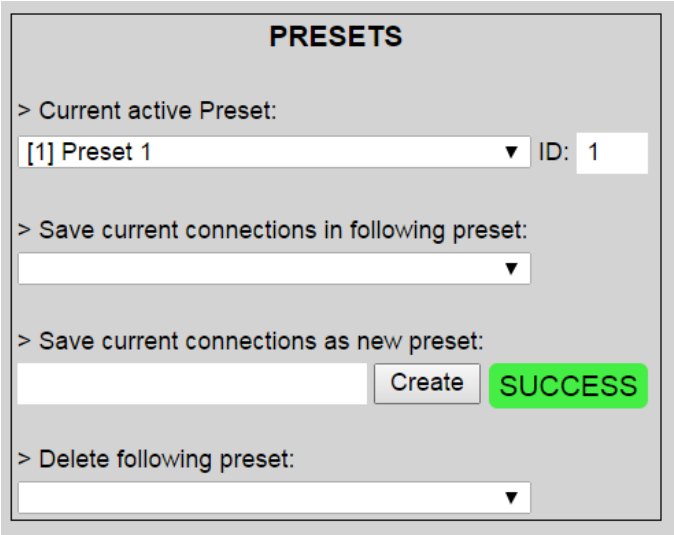


Figure 284: Confirmation of New Preset

To delete a preset, the user clicks the **> Delete following preset** drop-down box and selects a preset name from the list shown (Figure 285).

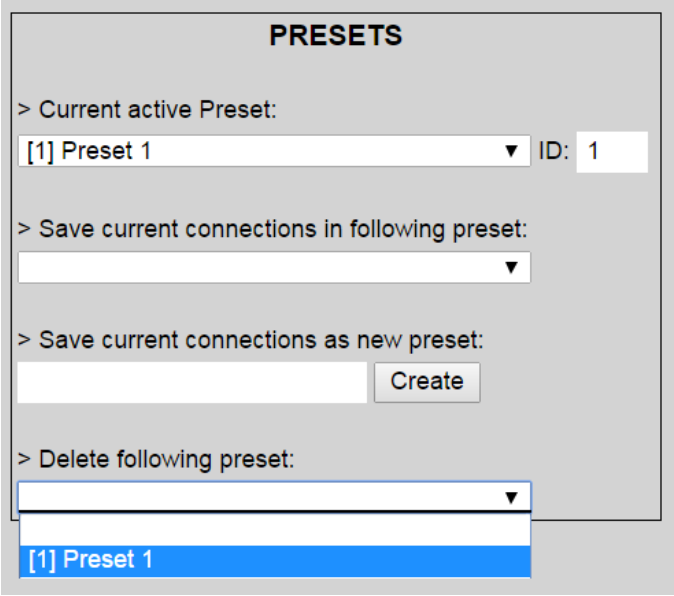


Figure 285: Delete Preset

Once selected, a dialog will appear asking the user to confirm the deletion request (Figure 286).

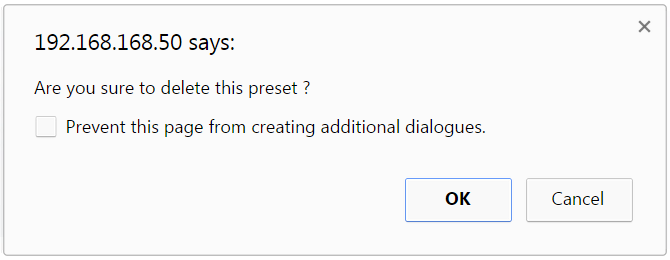


Figure 286: Confirmation of Deleted Preset

Click on **OK**. The preset will be deleted and a green SUCCESS tag will appear next to the **> Delete following preset** field (Figure 287).

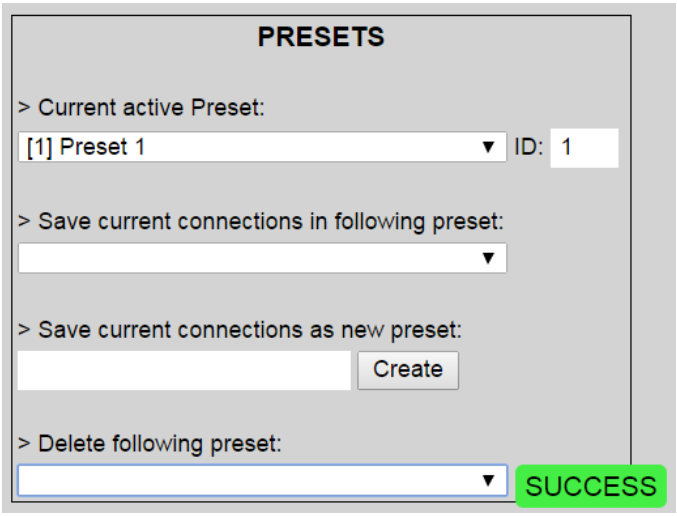


Figure 287: Confirmation of Deleted Preset

To save the current matrix configuration under an existing **Preset** name, click on **> Save current connection in following preset** drop-down box and selects a preset name (Figure 288).

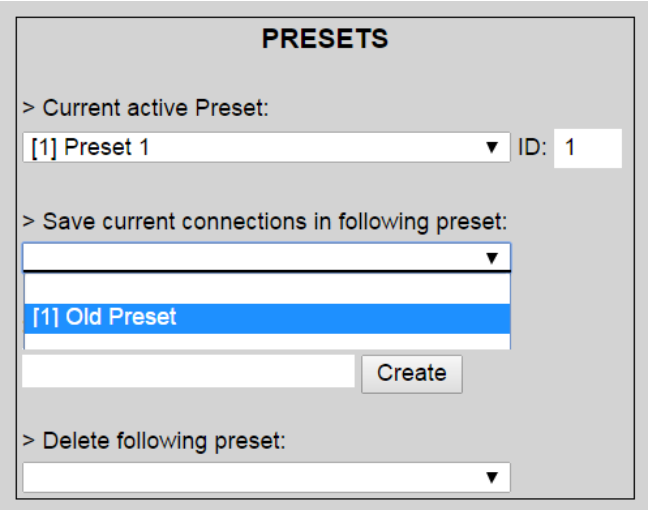


Figure 288: Change Current Active Preset

Once selected, the **Preset** will be saved and a green SUCCESS tag will appear next to the **> Save current connections in following preset** field (Figure 289).

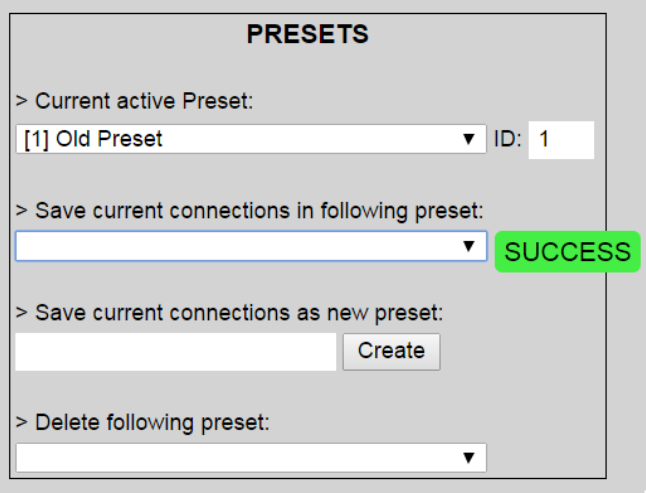


Figure 289: Confirmation of Changed Preset Name

In order to activate an existing **Preset**, select > **Current active Preset**, and select the **Preset** name from the drop-down box and the **Preset** will become active. The active **Preset** will also be displayed in the **Current active Preset** field.

3. Products Screen - Video Wall Tab

MuxLab's Extender 500755-AMP does not support the Video Wall feature. Clicking on this tab will display the following screen (Figure 290).

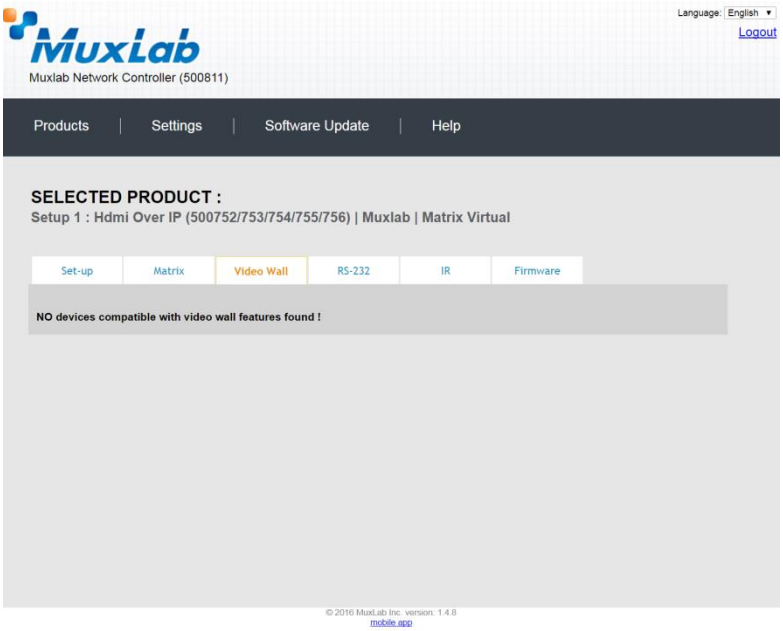


Figure 290: Video Wall Tab

For more information on the Video Wall tab and its features, refer to the section of this manual dealing with MuxLab Extender 500754 and MuxLab Extender 500759.

4. Products Screen - RS-232 Tab

The **RS-232** tab of the **Products** screen enables the user to send RS-232 commands to any MuxLab transmitter or receiver (Figure 291). This is done either through the Network Controller or directly by connecting a PC to the RS-232 port of any transmitter or receiver.

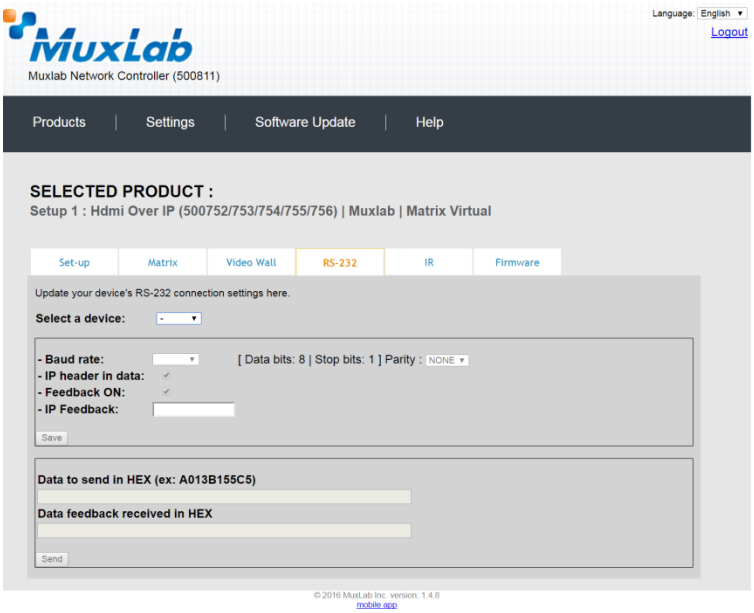


Figure 291: RS-232 Tab

When sending RS-232 commands through the Network Controller, the user first selects the device that the RS-232 commands will be sent to. This is done by clicking on the **Select a device** drop-down list and making a selection (Figure 292). The IP Feedback field should also contain the IP address of the Network Controller.

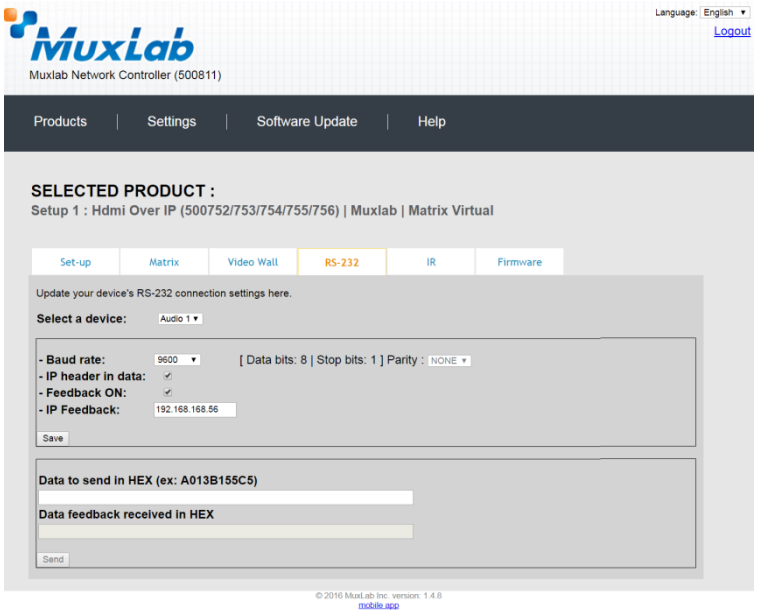


Figure 292: RS-232 Tab - Selecting a Device

Once a device is selected, the **Data to send in HEX** field becomes enabled. In the above example, source "Audio 1" connected to the transmitter was chosen as the selected device (but a receiver connected to sink equipment could have also been selected), meaning that a command sent to source "Audio 1" will travel from the Network Controller to the Ethernet Switch, and from the Ethernet Switch to the transmitter connected to source "Audio 1". The transmitter will then send the specified data command to source "Audio 1".

The **Data feedback received in HEX** field displays the HEX version the feedback sent to the Network Controller by source "Audio 1".

When sending RS-232 commands directly from a PC to any transmitter or receiver, the user must set up a pass-through system for RS-232 signals to be sent to and from devices. This requires two steps:

(3) The user first tells the local device (the device connected directly to the PC) the IP address of the far device (where the RS-232 commands are being sent). This is done by first clicking on the **Select a device** drop-down list and selecting the local device from the list, and then inputting the IP address of the far device in the **IP Feedback** field. The user then clicks on **Save**.

(4) The user then tells the far device the IP address of the local device (if feedback from the far device is required). This is done by first clicking on the **Select a device** drop-down list and selecting the far device from the list, and then inputting the IP address of the near device in the **IP Feedback** field. The user then clicks on **Save**.

5. Products Screen - IR Tab

The **IR** tab of the **Products** screen enables the user to send IR commands to a MuxLab transmitter or receiver IR port (Figure 293) via the Network Controller. IR pass-through mode is also supported using an IR handheld remote as the control source.

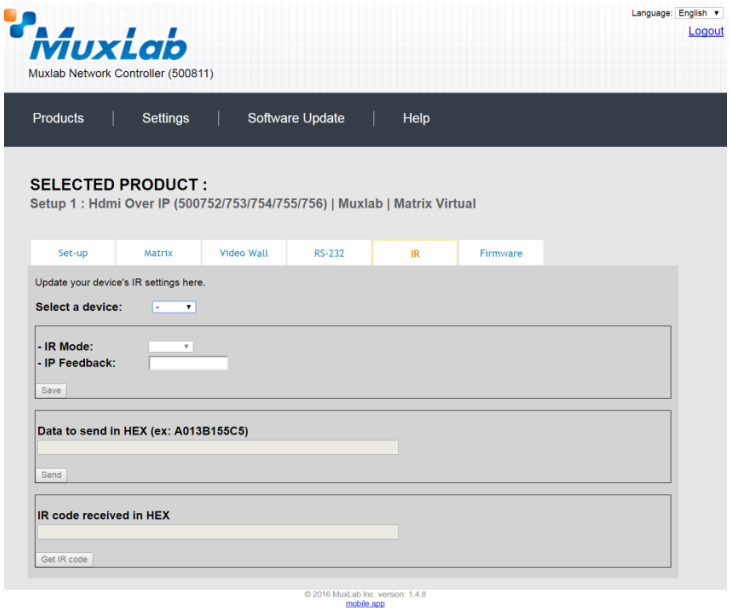


Figure 293: IR Tab

When sending IR commands through the Network Controller, the user first selects the device that the IR commands will be sent to. This is done by clicking on the **Select a device** drop-down list and making a selection (Figure 294).

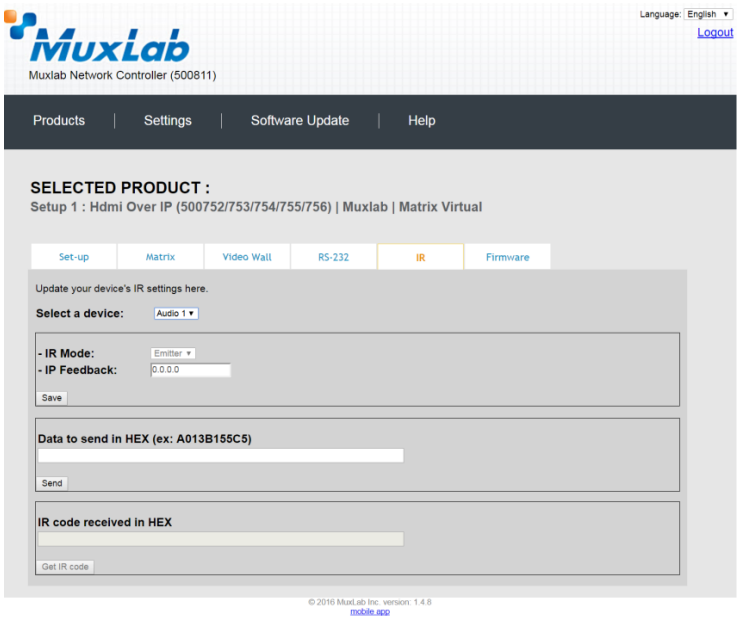


Figure 294: IR Tab – Selecting a Device

The 500755-AMP supports a bi-directional IR port. The below example is for transmitting IR from the sink side (display/speaker side) to the source side, but the 500755-AMP can be configured to transmit IR from the source to the sink side as well.

Once a device is selected, the **Data to send in HEX** field becomes enabled. In the above example, source "Audio 1" was chosen as the selected device, meaning that a command sent to source "Audio 1" will travel from the Network Controller to the Ethernet Switch, then from the Ethernet Switch to the transmitter connected to source "Audio 1". The transmitter will then send the specified IR data command to source "Audio 1" via the IR Emitter connected to the transmitter IR out port.

The **IR code received in HEX** field displays the HEX version of an IR command send from a handheld remote to an IR receiver IR In port and attached IR Sensor.

When sending IR commands directly from an IR Source device, such as an IR handheld remote, from 500755-AMP receiver through to a transmitter, the user must set up a pass-through for IR signals to be sent to and from devices. This requires the following step:

The user must tell the 500755-AMP receiver (being the device near the IR handheld remote with an attached IR Sensor) the IP address of the 500755-AMP transmitter (where the IR commands are being sent, which has an attached IR Emitter). This is done by first clicking on the **Select a device** drop-down list and selecting the local device from the list, and then inputting the IP address of the far device in the **IP Feedback** field. The user then clicks on **Save**.

6. Products Screen - Firmware Tab

The **Firmware** tab of the Products screen enables the user to update the firmware for MuxLab transmitters and receiver (Figure 295).

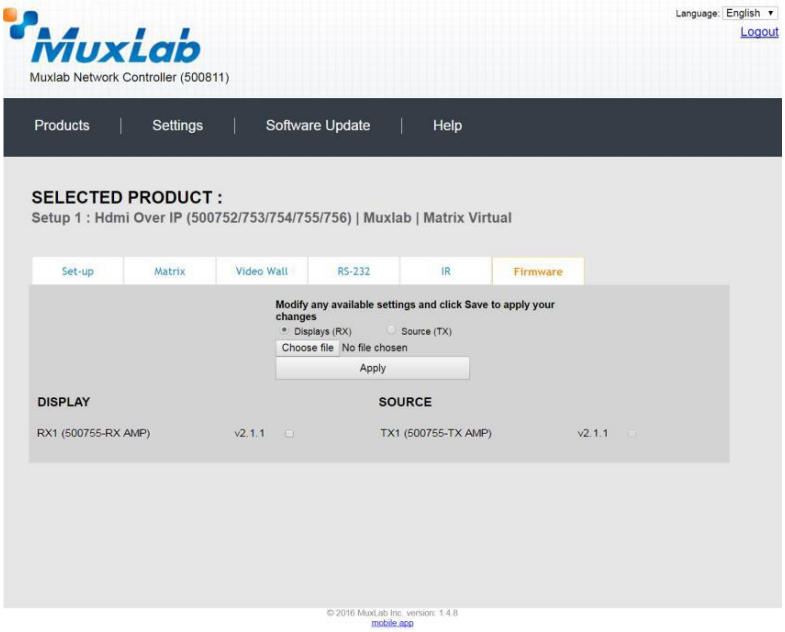


Figure 295: Firmware Tab

The user first selects either **Display (RX)** which is the sink unit (connected to speakers), or **Source (TX)**, then chooses the firmware update file to upload to the given device. Once the file is selected, the user checks the box next to the given device (listed under **DISPLAY** and **SOURCE**) targeted for firmware upgrade, and then clicks **Apply**.

Settings Screen

The **Settings** screen contains two tabs: **Network** and **Administration**.

The **Network** tab (Figure 296) is used to change the IP address of the MuxLab Network Controller, the network mask, as well as the router IP address. It also allows the user to enable or disable DHCP.

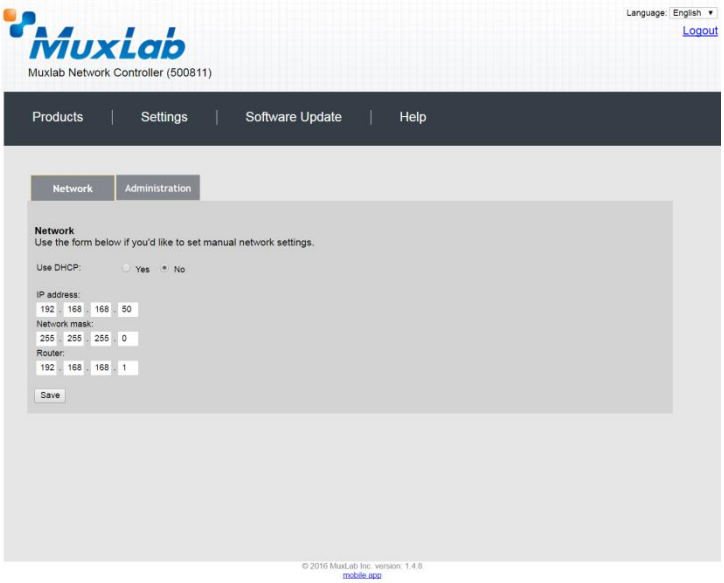


Figure 296: Settings Screen: Network Tab

The **Administration** tab is used to create or delete user accounts, change passwords, restore data, backup data, and retrieve logs (Figure 297).

Figure 297: Settings Screen: Administration Tab

Software Update Screen

The **Software Update** enables the user to update MuxLab Network Controller software (Figure 298). This software is available on MuxLab's website (www.muxlab.com). Download the software to the local PC before performing the update.

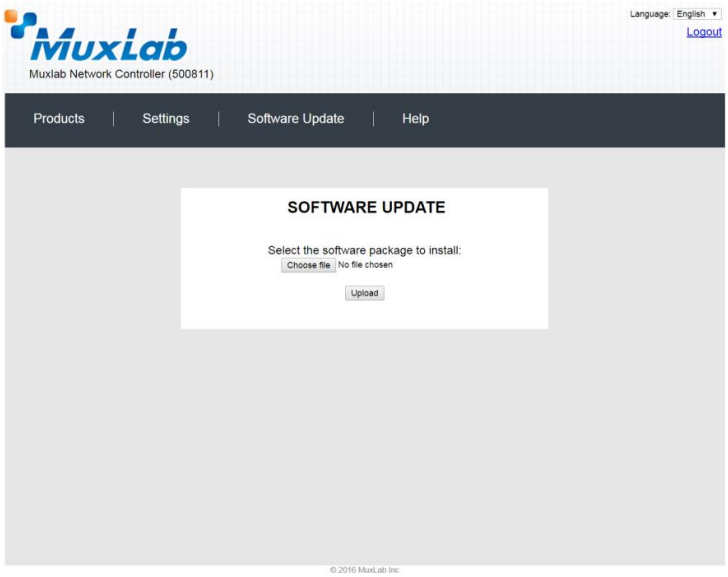


Figure 298: Software Update Screen

Help Screen

The **Help** screen offers quick contact information for customer support and all other inquiries (Figure 299).

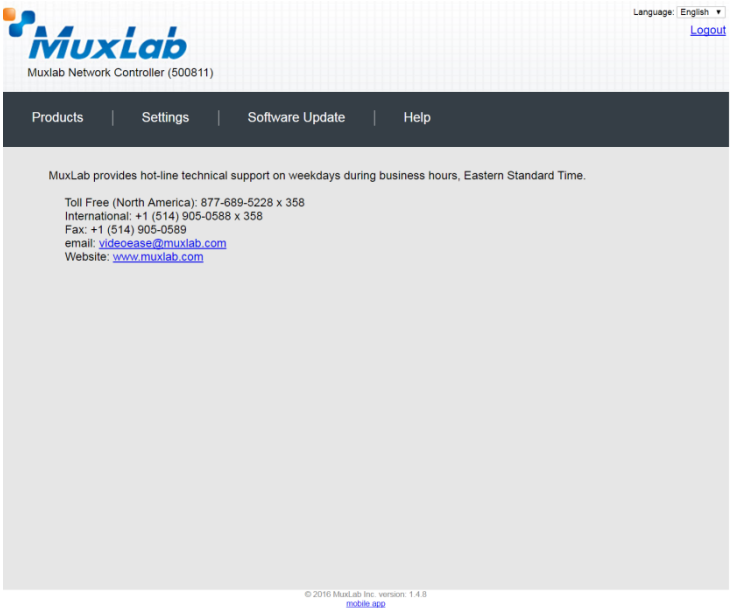


Figure 299: Help Screen

Extender Model 500762

Products Screen

Once the user has logged in, the **Products** screen will appear (Figure 300).

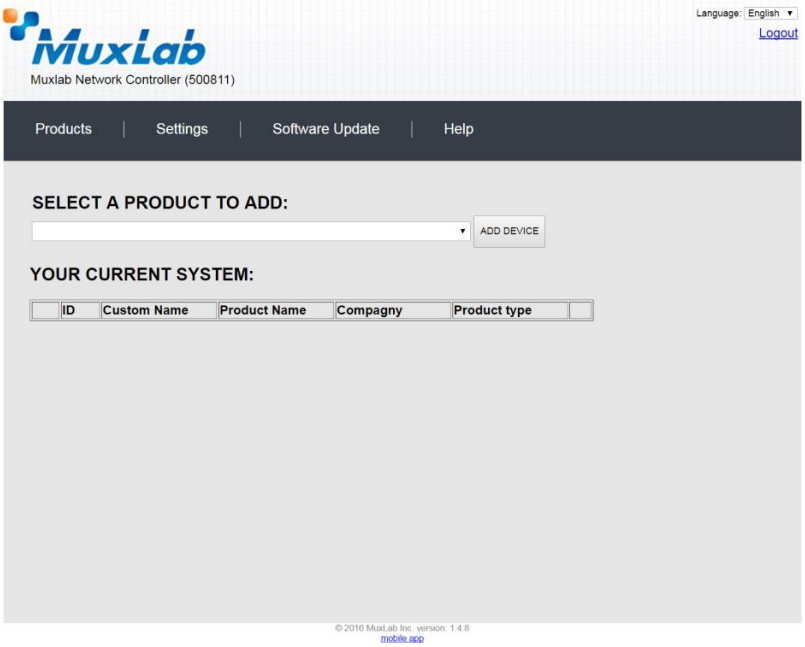


Figure 300: Products Screen – Initial View

In the **SELECT A PRODUCT TO ADD:** drop down box, select **Hdmi Over IP H264/H.265 (500762)** and then click on **ADD DEVICE** (Figure 301).

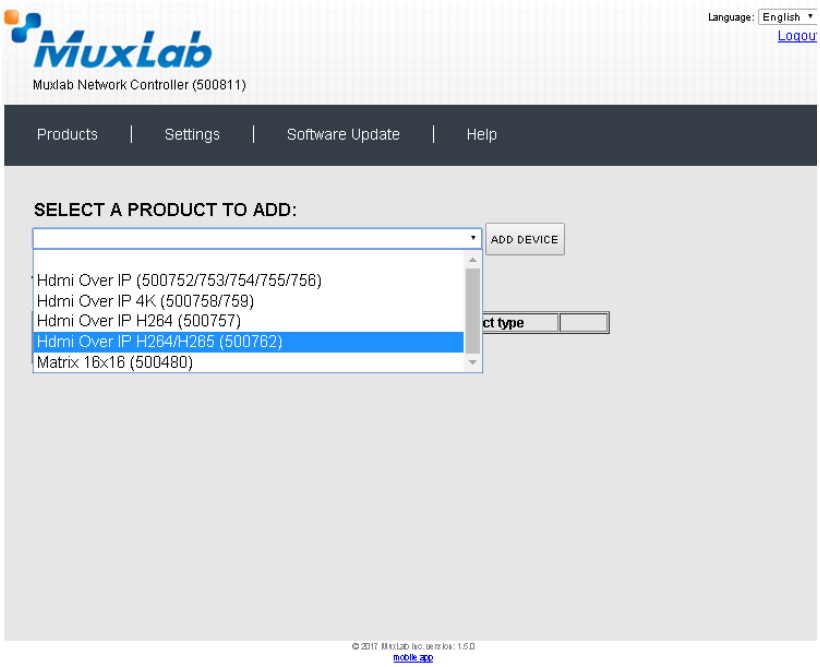


Figure 301: Products Screen – Selecting a Product

A dialog box appears asking the user to provide a custom name for the selected product (Figure 302). The user then types a name in the **Custom Name:** field and clicks on **OK**. Note that if the user decides to click on **CANCEL**, the previous screen appears (Figure 301), without a product being added.

Figure 302: Products Screen – Naming a Product

The custom name has been added to **YOUR CURRENT SYSTEM** (Figure 303).

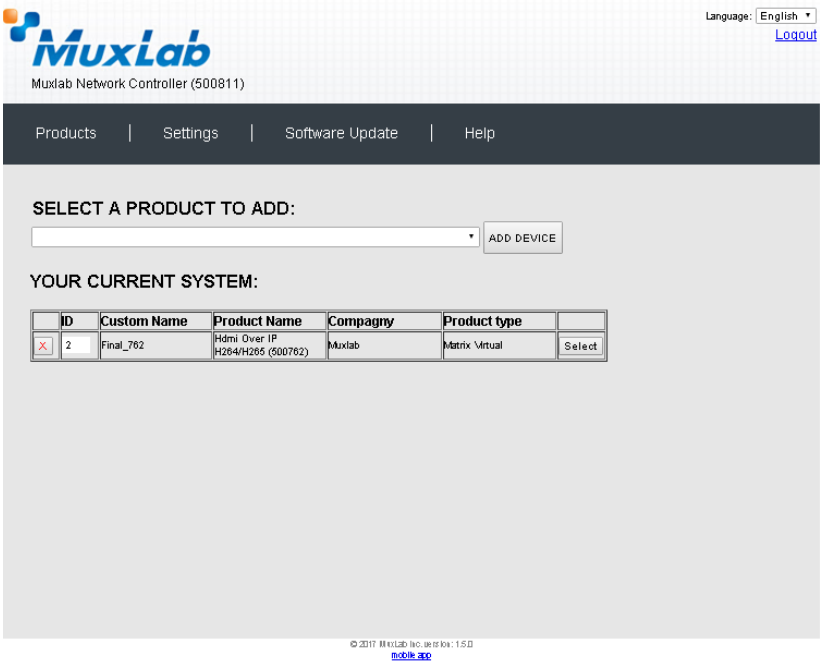


Figure 303: Products Screen – Your Current System Selection

The user can change the ID of each row by modifying the **ID** field. The user can also delete the entire row completely by clicking the X next to it.

To configure a given product, the user clicks on **Select**, which brings up a multi-tabbed screen (Figure 304).

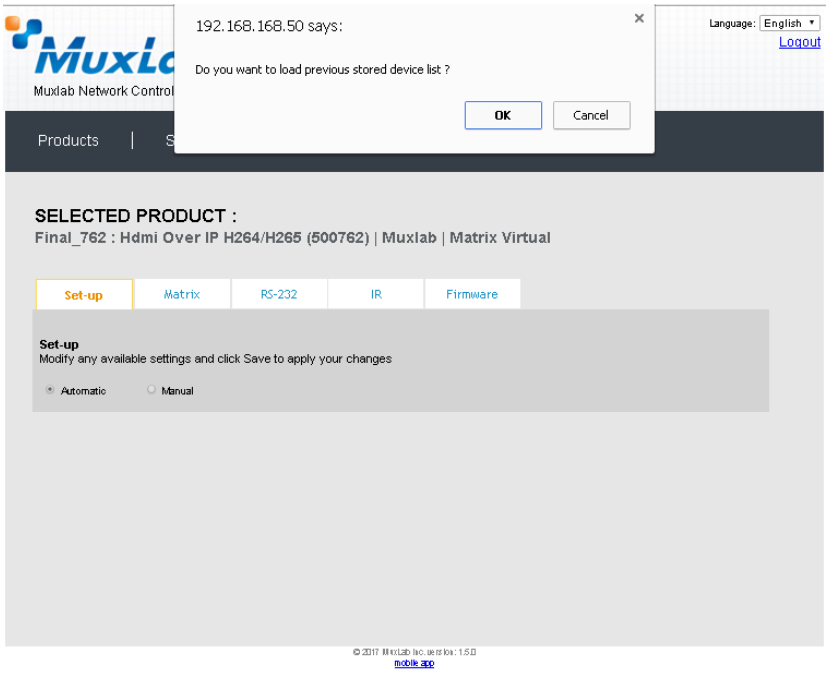


Figure 304: Products Screen – Load Dialog

By default, a dialog appears asking the user to load a previously saved device list (in case such a list has already been stored). This dialog will appear even if no device list has been previously saved.

Four tabs appear within the **Products** screen:

1. Set-up
2. Matrix
3. RS-232
4. IR
5. Firmware

1. Products Screen - Set-up Tab

The **Set-up** tab offers the user two options for the type of set-up allowed: **Automatic** or **Manual**.

Automatic means that the software will scan the system for every dip-switch enabled device. The software will then override its manual dip-switch address settings and place these units under software address control. (Automatic is recommended).

Manual means that the software will allow the manual dip-switch address settings of any found device to remain active.

After selecting **Automatic** or **Manual**, click on **Launch discovery** (Figure 305).

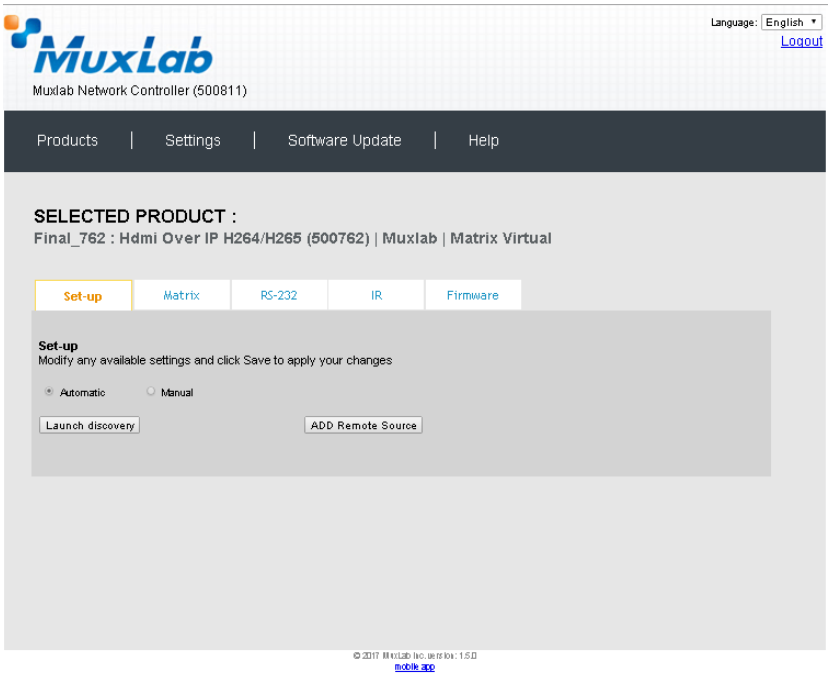


Figure 305: Products Screen – Set-up Tab

The system will scan the network for all source side devices (500762 transmitters) and display side devices (500762 receivers), and will display the scan results in tabular form (Figure 306).

Each 500762 transmitter and receiver can be assigned an arbitrary descriptive name, normally reflecting the end device that it is terminated to. To change the name of any Display (RX) or Source (TX) device, click the **Name** field to edit its contents. Several **Name** fields can be edited before saving changes, as shown in Figure 307 (orange highlighted fields).

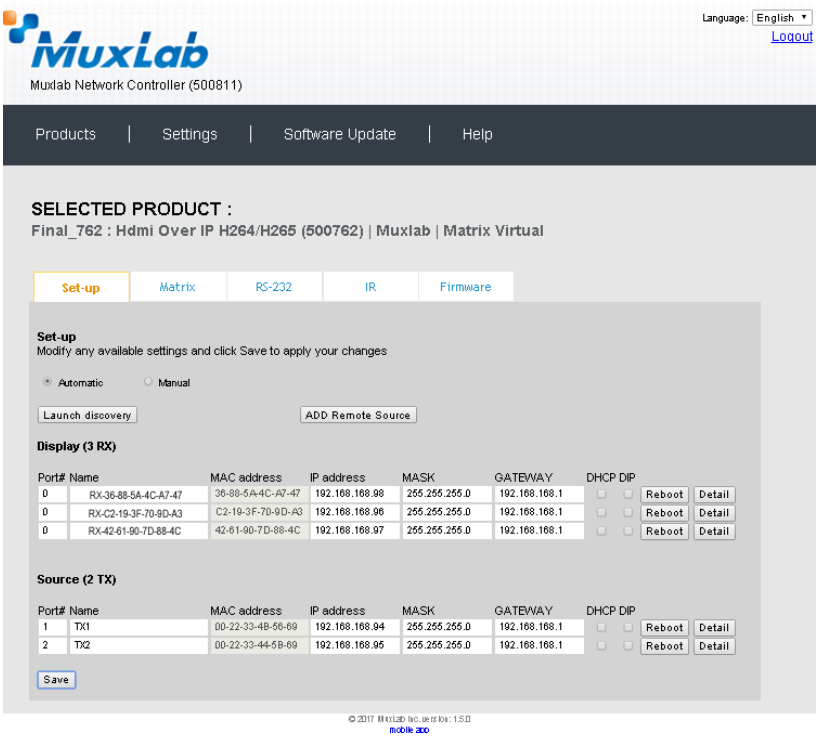


Figure 306: Products Screen – Set-up Tab

Figure 307: Name Editing

To save all name changes, click on **Save**. A green UPDATED tag will appear next to newly changed names (Figure 308).

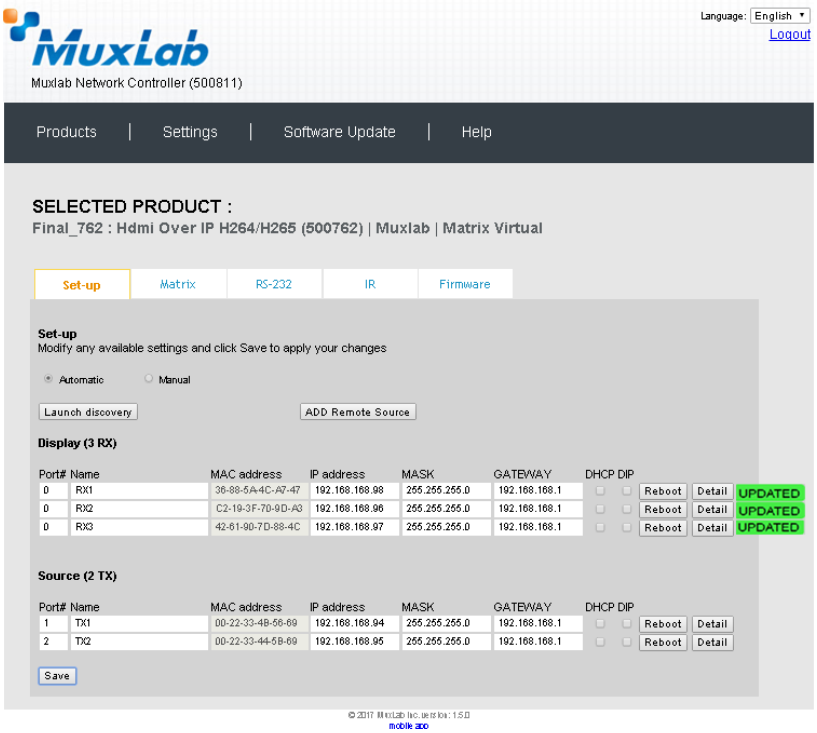


Figure 308: Saving Name Changes

To view and modify component parameters, click on the **Detail** button next to the given component. A dialog appears (Figure 309).

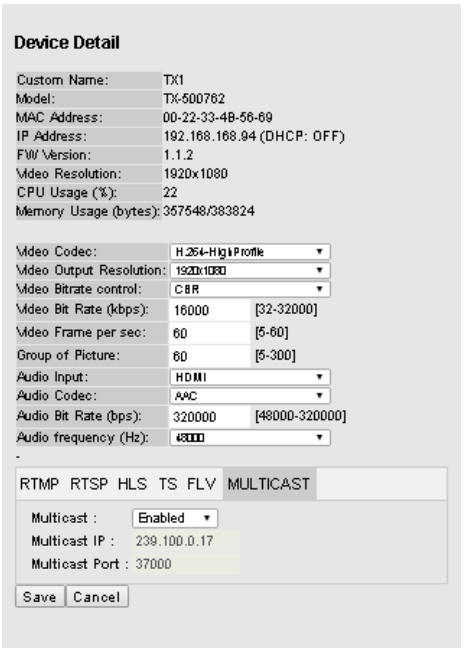


Figure 309a: TX Device Detail Dialog

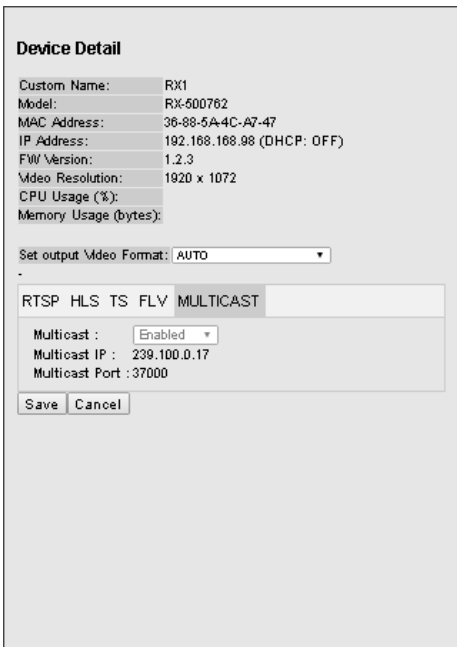


Figure 309b: RX Device Detail Dialog

Transmitter (500762-TX) Parameters:

- Custom Name: Device name defined by user (info only)
- Model: Device model number (info only)
- Mac Address: Device MAC Address (info only)
- IP Address: Device IP Address (info only)
- FW Version: Installed firmware version (info only)
- Video Resolution: Video resolution at input (info only)
- CPU Usage: Device CPU usage in percentage (info only)
- Memory Usage: Device memory usage in bytes (info only)
- Video Codec: Allows for selection of video codec (to baseline, main or high profile for H.264, or main profile for H.265)
- Video Output Resolution: Allows for selection of output video resolution (to "Same as Input", or from 176x144 to 1920x1080)
- Bit Rate Control: Allows for selection of bit rate control (to VBR - variable bit rate, or CBR - continuous bit rate)
- Video Bit Rate: Allows for selection is bit rate (from 32kbps to 32Mbps)
- Video Frames per Sec: Video refresh rate in frames per sec (from 5 to 60)
- Group of Picture: Set the GOP or Group of Pictures (from 5 to 300)
- Audio Input: Select embedded audio input source (to HDMI, or Analog via 3.5mm jack)
- Audio Codec: Select audio codec type (to AAC or MP3)
- Audio Bit Rate: Select audio bit rate (from 48Kbps to 320Kbps)
- Audio Frequency: Select audio frequency (to 44100Hz, or 48000Hz)
- Communication Protocol Selection: RTMP, RTSP, HLS, TS, FLV and Multicast (**Note**: Only a limited selection should be made at a time. Do not enable all at the same time.)
- Multicast: Allows for enabling or disabling the multicast protocol
- Multicast IP: Shows the multicast IP (info only)
- Multicast Port: Shows the multicast port used (info only)

Receiver (500762-RX) Parameters:

- Custom Name: Device name defined by user (info only)
- Model: Device model number (info only)
- Mac Address: Device MAC Address (info only)
- IP Address: Device IP Address (info only)
- FW Version: Installed firmware version (info only)
- Video Resolution: Video resolution at input (info only)
- CPU Usage: Device CPU usage in percentage (info only)
- Memory Usage: Device memory usage in bytes (info only)
- Set Output Video Format: Allow for the selection of output video format (to Auto, or from 480p/60 to 3840x2160/60)
- Communication Protocol Selection: RTSP, HLS, TS, FLV and Multicast
- Multicast: Allows for enabling or disabling the multicast protocol
- Multicast IP: Shows the multicast IP (info only)
- Multicast Port: Shows the multicast port used (info only)

Note: In both cases above click on "Save" to accept any changes, or on "Cancel" to ignore them.

2. Products Screen - Matrix Tab

The **Matrix** tab of the **Products** screen allows the user to connect any Display to any Source. The user also has the option of using **Presets** to save connection schemes ("Presets"), as well as to edit and delete existing presets (Figure 310).

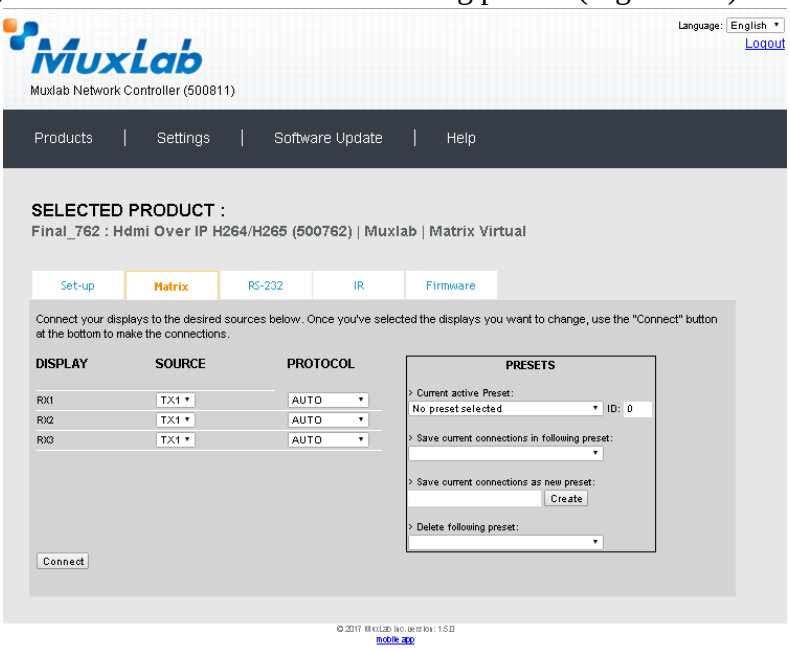


Figure 310: Matrix Tab

To connect a display to a source, the user first clicks on the drop-down list next to the given display (for example "RX-1") and selects which source to connect it to (Figure 311).

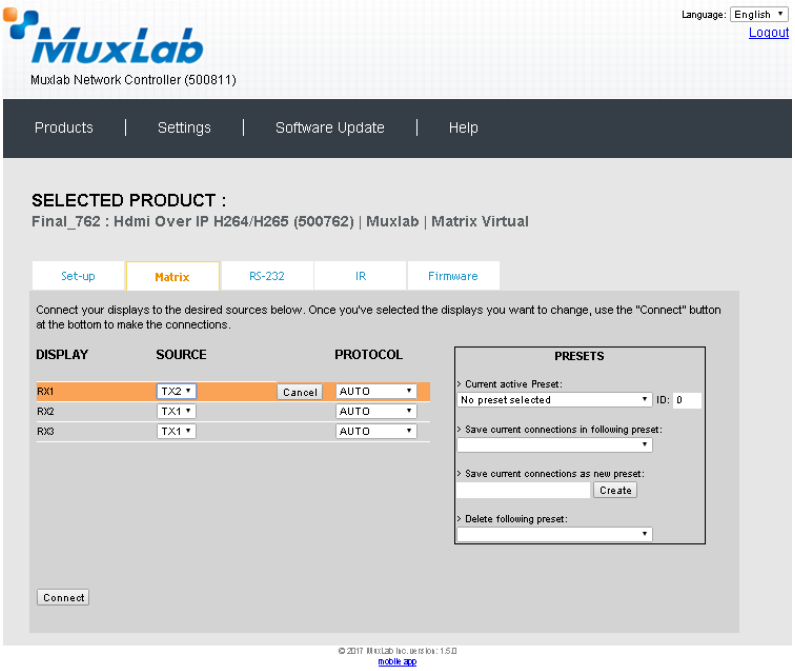


Figure 311: Change Connection

Once the selection is made (the user can change any or all connections between displays and sources), the user clicks on **Connect** to finalize the change. A green SUCCESS tag will appear next to the new or changed connection (Figure 312).

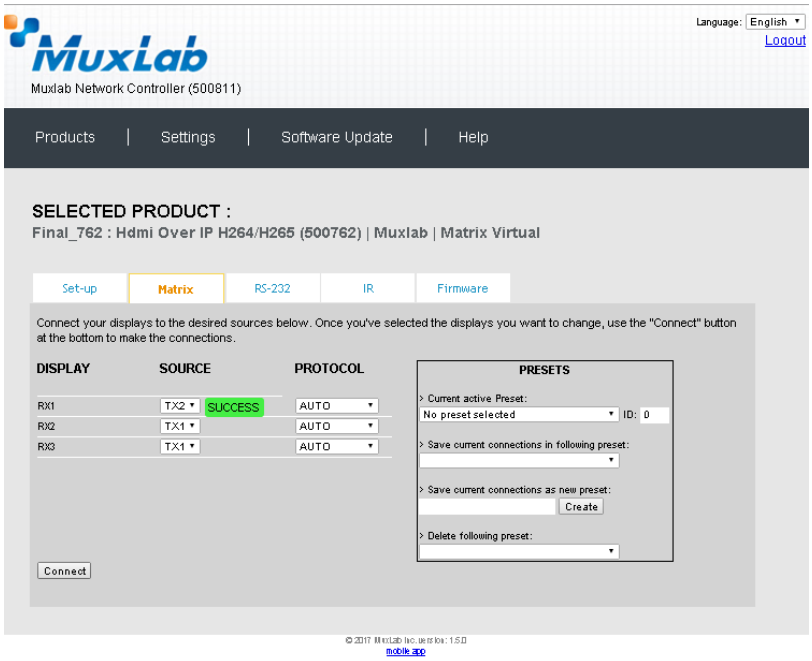


Figure 312: Change Successful

To create a new preset, the user clicks the **> Save current connections as new preset** field (Figure 313) and types a name. This assigned preset name will be linked to the existing connection scheme being shown within the **Matrix** tab.

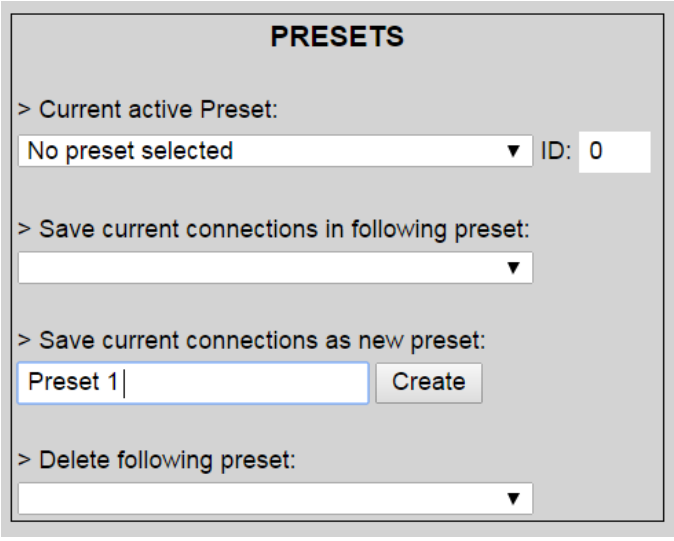


Figure 313: Create New Preset

To save this preset, the user clicks on **Create**. A green SUCCESS tag will appear next to the **> Save current connections as new preset** field and the newly created preset becomes the **Current active Preset** (Figure 314).

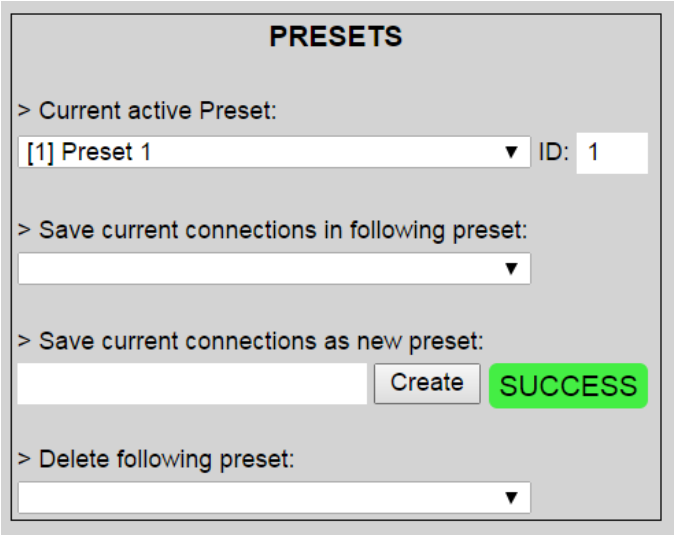


Figure 314: Confirmation of New Preset

To delete a preset, the user clicks the **> Delete following preset** drop-down box and selects a preset name from the list shown (Figure 315).

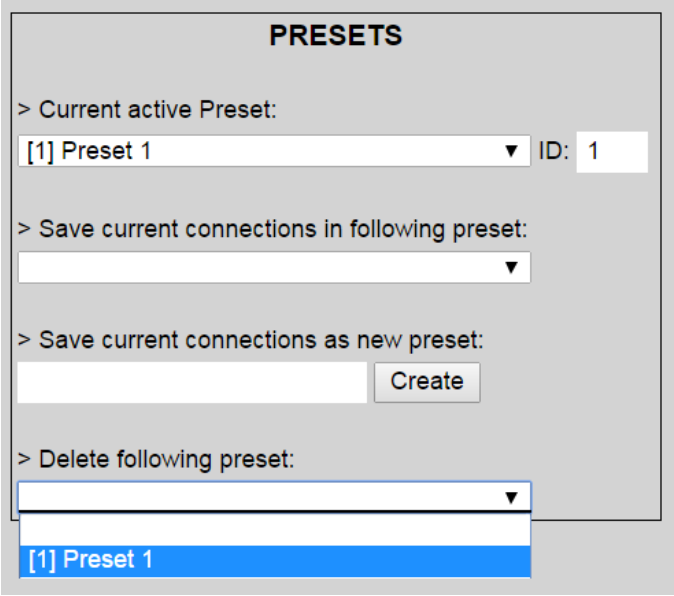


Figure 315: Delete Preset

Once selected, a dialog will appear asking the user to confirm the deletion request (Figure 316).

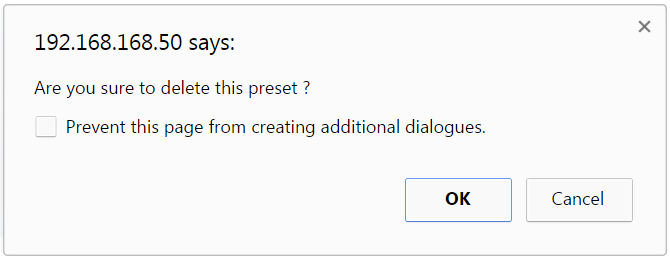


Figure 316: Confirmation of Deleted Preset

Click on **OK**. The preset will be deleted and a green SUCCESS tag will appear next to the **> Delete following preset** field (Figure 317).

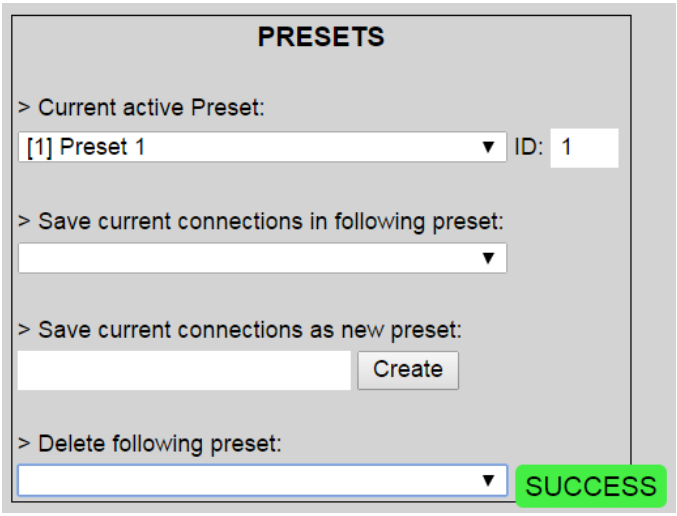


Figure 317: Confirmation of Deleted Preset

To save the current matrix configuration under an existing **Preset** name, click on **> Save current connection in following preset** drop-down box and selects a preset name (Figure 318).

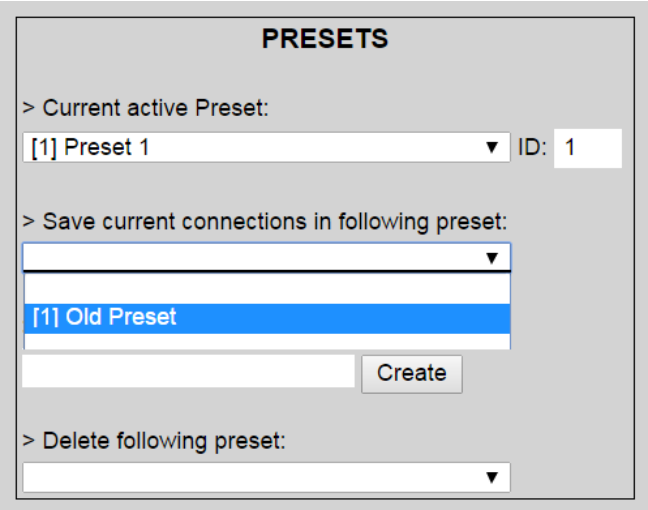


Figure 318: Change Current Active Preset

Once selected, the **Preset** will be saved and a green SUCCESS tag will appear next to the **> Save current connections in following preset** field (Figure 319).

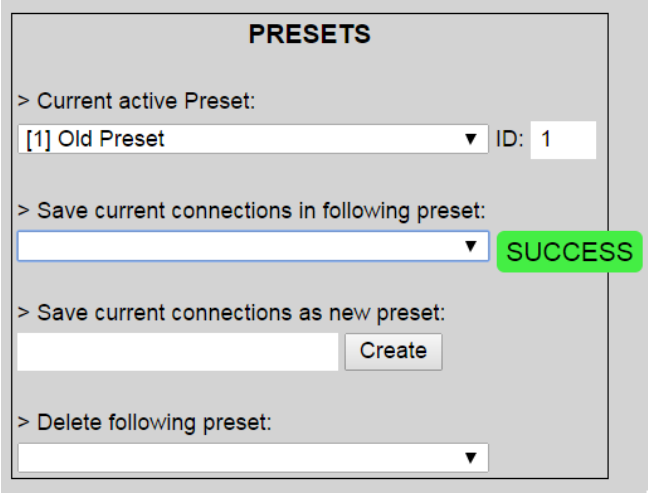


Figure 319: Confirmation of Changed Preset Name

In order to activate an existing **Preset**, select > **Current active Preset**, and select the **Preset** name from the drop-down box and the **Preset** will become active. The active **Preset** will also be displayed in the **Current active Preset** field.

3. Products Screen - RS-232 Tab

The **RS-232** tab of the **Products** screen enables the user to send RS-232 commands from the Network Controller to a MuxLab 500762 transmitter or receiver (Figure 320).

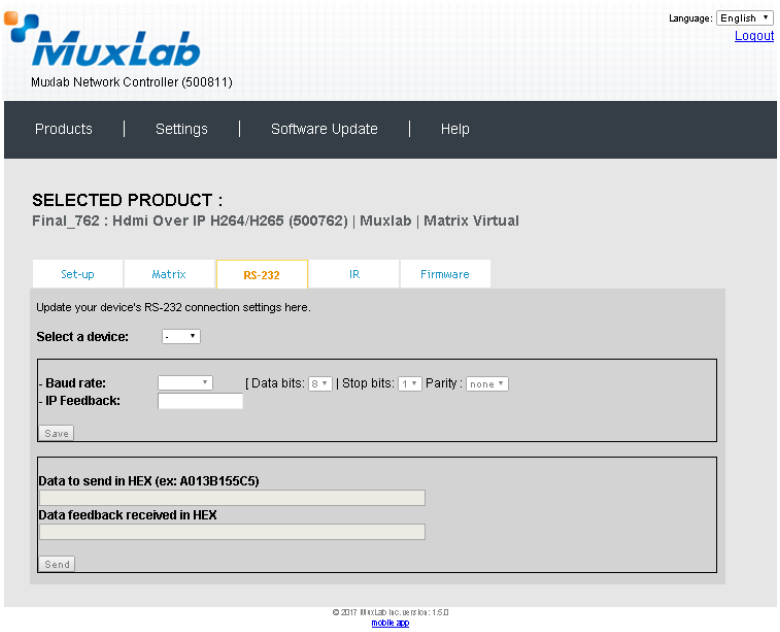


Figure 320: RS-232 Tab

When sending RS-232 commands through the Network Controller, the user first selects the device that the RS-232 commands will be sent to. This is done by clicking on the **Select a device** drop-down list and making a selection (Figure 321).

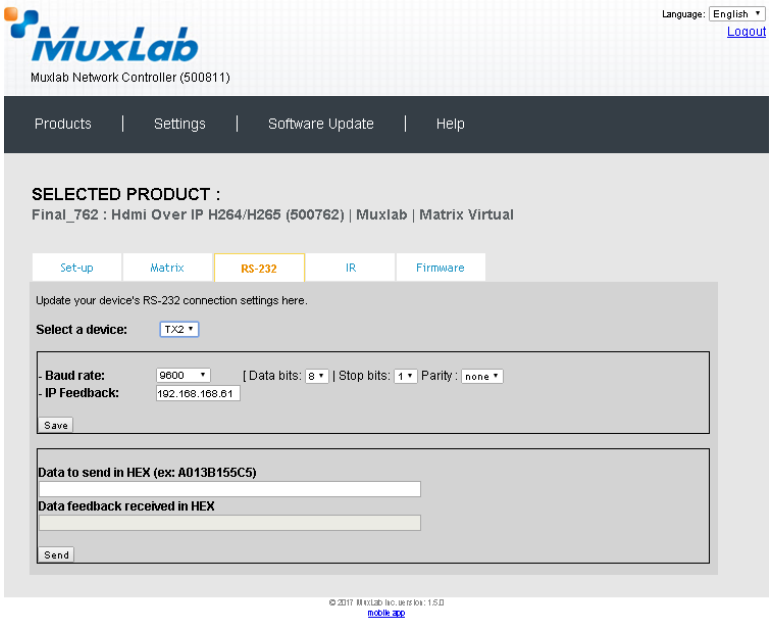


Figure 321: RS-232 Tab - Selecting a Device

Once a device is selected, the **Data to send in HEX** field becomes enabled. Begin by setting the RS232 parameters as required and click on "Save". Next enter the RS232 command in Hex in the **Data to send in HEX** field and click on "Send". In the above example, TX2 was chosen as the selected device (but a receiver connected to sink equipment could have also been selected), meaning that a command sent to TX2 will travel from the Network Controller to the Ethernet Switch, and from the Ethernet Switch to the transmitter connected to the TX2 port. That transmitter will then send the specified data command to the attached source device.

Note that any RS232 feedback data returned from the end device is automatically sent to the Network Controller and displayed in the Data Feedback Received field.

Note that RS232 pass-through mode is not currently supported.

4. Products Screen - IR Tab

The **IR** tab of the **Products** screen enables the user to send IR commands from the Network Controller to a MuxLab 500762 transmitter or receiver IR port (Figure 322).

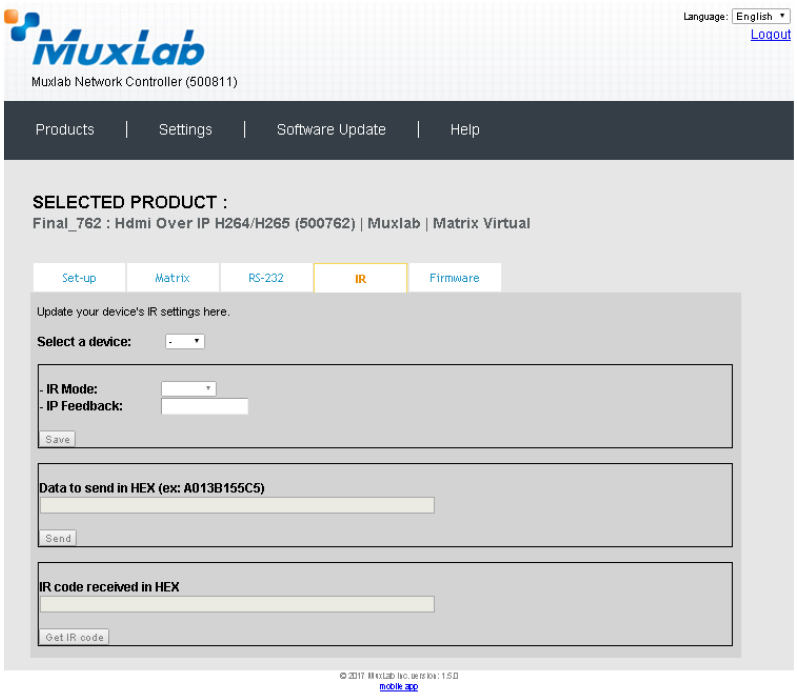


Figure 322: IR Tab

The 500762 supports a bi-directional IR port. The 500762 can be set to transmit IR commands from the Network Controller to a transmitter or receiver and then to a source or sink device, and can also be configured to receive IR commands from a handheld IR Remote and sending these commands to the Network Controller for learning IR command purposes.

Transmitting IR Commands to Source and Sink Equipment:

When sending IR commands through the Network Controller, the user first selects the device that the IR commands will be sent to. This is done by clicking on the **Select a device** drop-down list and making a selection (Figure 323).

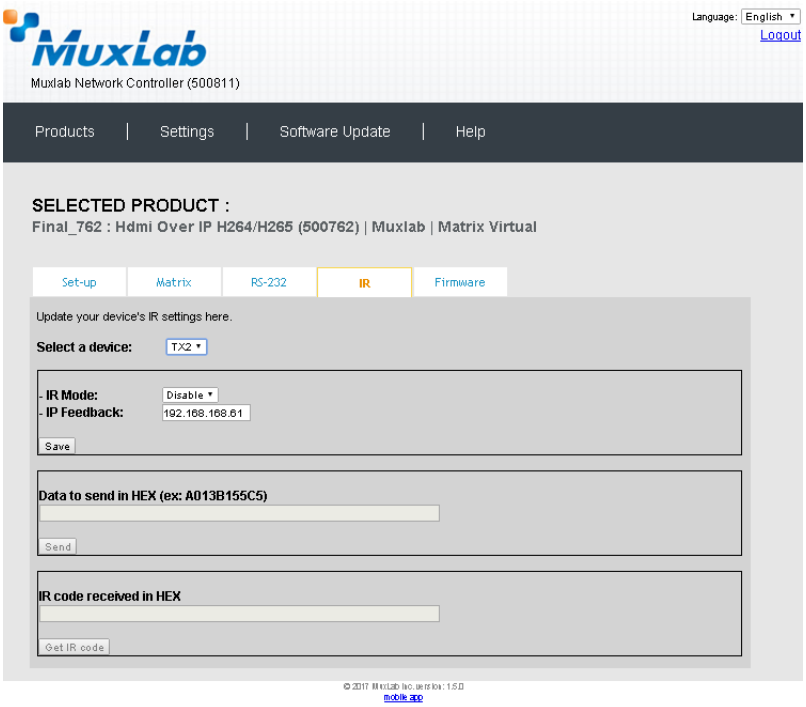


Figure 323: IR Tab – Selecting a Device

Once a device is selected, the **Data to send in HEX** field becomes enabled. Begin by setting the IR Mode to "Emitter" and click on "Save". Next enter the IR command in Hex in the **Data to send in HEX** field and click on "Send". In the above example, TX2 was chosen as the selected device (but a receiver connected to sink equipment could have also been selected), meaning that a command sent to TX2 will travel from the Network Controller to the Ethernet Switch, and from the Ethernet Switch to the transmitter connected to the TX2 port with an attached IR Emitter. That transmitter will then send the specified data command via the attached IR Emitter to the source device.

Note that IR pass-through mode is not currently supported.

Learning IR Commands from a Handheld IR Remote:

The Network Controller can learn IR Commands in combination with the 500762. To begin the process, select the 500762 device as indicated above, set the IR Mode to Sensor and click on "Save", and attach an IR Senor to the 500762 IR port. Click on "Get IR Code", aim the handheld IR Remote at the Sensor while pressing on an IR command key on the IR Remote. The **IR code received in HEX** field will display the HEX version of an IR command sent from a handheld remote.

5. Products Screen - Firmware Tab

The **Firmware** tab of the Products screen enables the user to update the firmware for MuxLab transmitters and receiver (Figure 324).

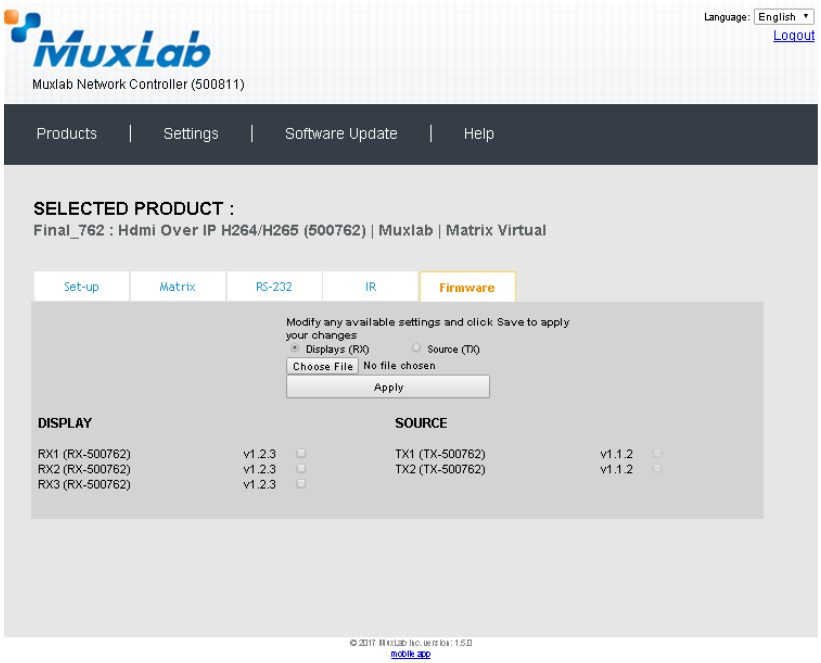


Figure 324: Firmware Tab

The user first selects either **Display (RX)** or **Source (TX)**, then chooses the firmware update file to upload to the given device. Once the file is selected, the user checks the box next to the given device (listed under **DISPLAY** and **SOURCE**) targeted for firmware upgrade, and then clicks **Apply**.

Settings Screen

The **Settings** screen contains two tabs: **Network** and **Administration**.

The **Network** tab (Figure 325) is used to change the IP address of the MuxLab Network Controller, the network mask, as well as the router IP address. It also allows the user to enable or disable DHCP.

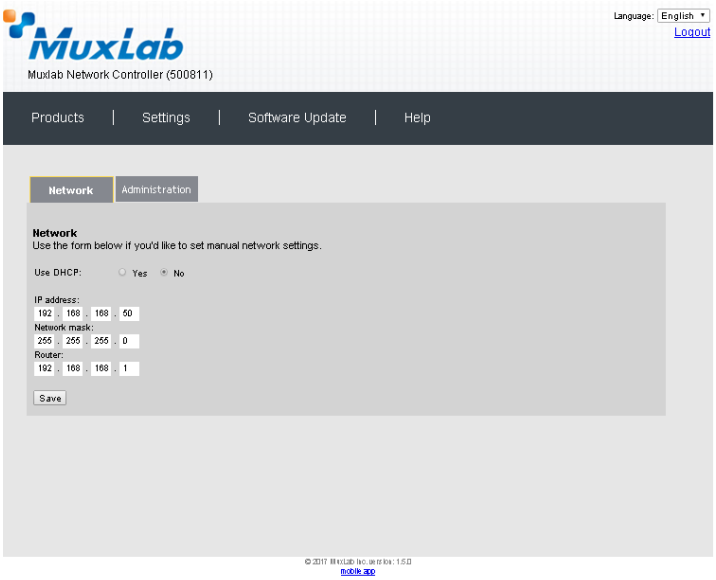


Figure 325: Settings Screen: Network Tab

The **Administration** tab is used to create or delete user accounts, change passwords, restore data, backup data, and retrieve logs (Figure 326).

Figure 326: Settings Screen: Administration Tab

Software Update Screen

The **Software Update** enables the user to update MuxLab Network Controller software (Figure 327). This software is available on MuxLab's website (www.muxlab.com). Download the software to the local PC before performing the update.

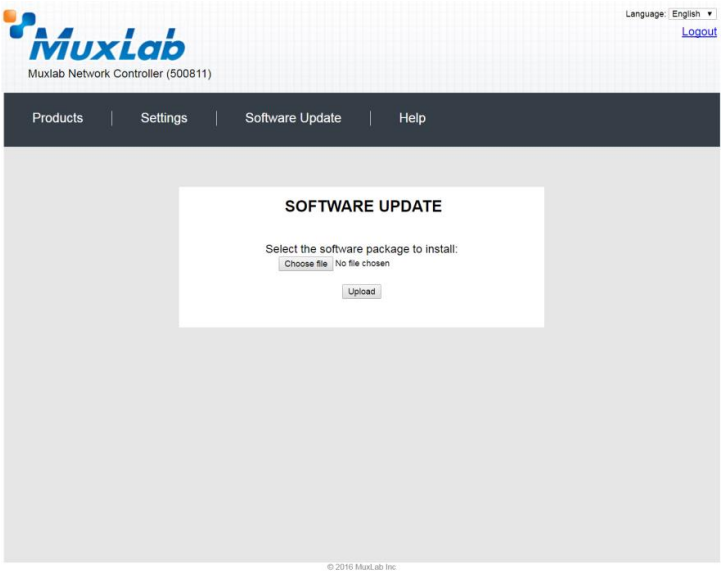


Figure 327: Software Update Screen

Help Screen

The **Help** screen offers quick contact information for customer support and all other inquiries (Figure 328).

Figure 328: Help Screen

4. Troubleshooting

Table 3 lists common problems, as well as their possible causes and solutions. If the information below does not solve the problem, technical support contact information can be found at the end of this section.

PROBLEM	POSSIBLE SOLUTIONS
Unable to connect computer to MNC	Ensure the computer IP subnet address matches the IP subnet address of the MNC
	Ensure that http://192.168.168.50/mnc/ is written in lower case
Unable to connect computer to Ethernet Switch or to the Router	Ensure the computer IP subnet address matches the IP subnet address of the Ethernet Switch and Router.
General communication problem between devices	As a general rule, all devices required to communicate together on the same local network, must have an IP address in the same subnet Static IP address must be unique and in the same subnet. DHCP addresses must be assigned within the same subnet and configured at the DHCP server not to overlay with any assigned Static IP addresses.

Table 3: Troubleshooting

When contacting your nearest MuxLab dealer or MuxLab Technical Support at 877-689-5228 (toll free in North America) or (+1) 514-905-0588 (International), please have the following information ready:

- Unit model number.
- Description of problem.
- List of tests performed.

5. Appendix – IP Command API

5.1 IP Command API: definition and format

5.1.1 Definition

The IP command API use HTTP POST witch JSON data.
Each IP command must sent to the following URL:
http://aaa.bbb.ccc.ddd/mnc/secure_api.php
Each IP command must contain the MNC username and password
aaa.bbb.ccc.ddd: the MNCIP address **(**default static IP: **192.168.168.50)**
p_userName: the MNC user name **(**default value: **admin)**
p_password: the MNC user password **(**default value: **admin)**

5.1.2 General Format

The IP command (JSON data) has the following format.
Command **without** data parameters:

```
{"p_targetId":<target id>,"p_cmd":"<command name>","p_userName:"<MNC User Name >","p_password":"<MNC password >"}
```

Response format **without** additional data:

```
{"p_targetId":<target id>,"p_cmd":"<command name>","p_rspStatus:"<command status>","p_msg":"<a message>"}
```

Command **with** data parameters:

```
{"p_targetId":<target id>,"p_cmd":"<command name>","p_userName:"<MNC User Name >","p_password":"<MNC password >", "p_data":[{"key1":"value1","key2":"value2",… }]}
```

Response format **with** additional data:

```
{"p_targetId":<target id>,"p_cmd":"<command name>","p_rspStatus:"<command status>","p_msg":"<a message>","p_data":[{"key1":"value1","key2":"value2",… }]}
```

- ⇨ **"p_data"** field will depend on the associated command.
- ⇨ **"p_targetId"** value is:
  "0" to send a command for the MNC
  Use the system **ID** displayed in the "Product" web page.
  This is not a constant value, it depend on the client system

EX: To set-up an HDMI Over IP Virtual matrix (must be done only once)

- Login to MNC

- On “products” web page, select “Hdmi Over IP (500752/753) and click “Add Device”
- Enter a name (ex: myHdmiOverIpMatrix) then click OK
- Your Hdmi Over IP virtual Matrix is now added in your system, its system **ID** is now displayed:
  You must use this ID in the IP commands.
- To auto-configure all 500752/753, click on “select “ then “Launch automatic discovery”

5.2 IP Command API for 500752\753\754\755\756: command/response list

5.2.1 Automatic discovery

Description:
The system will retrieve all the devices in the network and automatically send all the necessary updates to the devices to configure them properly (duplicate IP address will not be solved by the system; it will let the user resolve this kind of issue). Then it will return the list of devices found with their attributes.

Command:
{"p_targetId":<*systemID*>**,"p_cmd":"launch_discovery_auto","p_userName:"**<*MNC User Name*>**","p_password":"**<*MNC password*>**"}**

Response:
{"p_targetId":<*systemID*>**,"p_cmd":"launch_discovery_auto","p_rspStatus:"***SUCSESS***","p_msg":"**<*a_message*>**","p_data":**[{"productName":"<value>","modelName":"<value>","customName":"<value>","mac":"<value>","ip":"<value>","mask":"<value>","isDhcp":<0/1>,"multicastGroupIp":"<value>","videoResolution":"<value>","videoFrameRate":"<value>","audioFormat":"<value>","isVideoSignalDetected":<0/1>,"isIrOn":<0/1>,"isDipSwitchEnabled":<0/1>,"fwVer":"<value>","uartBaudRate":"<value>","irMode":"<emitter/sensor>","rs232FeedbackIP":"<value>","irFeedbackIP":"<value>","isRs232FeedbackOn":<0/1>,"isRs232IpHeader":<0/1>,"compressionRate":"<value>","isAutoCompressionOn":<0/1>>,"is60fps":<0/1>,"isDisplayConnected":<0/1>,"isScreenImageOn":<0/1>,"isScreenTextOn":<0/1>,"connectedMac":"<value>","isAutoResolutionOn":<0/1> { … }, …]}
In Red, these are the additional attributes for RX device
In Green, these are the additional attributes for TX device

5.2.2 Manual discovery

Description:
The system will retrieve all the devices in the network and it will return the list of devices found with their attributes. (No other actions will be performed)

Command:
{"p_targetId":<*systemID*>**,"p_cmd":"launch_discovery","p_userName":"**<*MNC User Name*>**","p_password":"**<*MNC password*>**"}**

Response:

{"p_targetId":*<systemID>***,"p_cmd":"launch_discovery_auto","p_rspStatus":"***SUCSESS***","p_msg":"***<a_message>***","p_data":**[{"productName":"<value>","modelName":"<value>","customName":"<value>","mac":"<value>","ip":"<value>","mask":"<value>","isDhcp":<0/1>,"multicastGroupIp":"<value>","videoResolution":"<value>","videoFrameRate":"<value>","audioFormat":"<value>","isVideoSignalDetected":<0/1>,"isIrOn":<0/1>,"isDipSwitchEnabled":<0/1>,"fwVer":"<value>","uartBaudRate":"<value>","irMode":"<emitter/sensor>","rs232FeedbackIP":"<value>","irFeedbackIP":"<value>","isRs232FeedbackOn":<0/1>,"isRs232IpHeader":<0/1>,"compressionRate":"<value>","isAutoCompressionOn":<0/1>,"is60fps":<0/1>,"isDisplayConnected":<0/1>,"isScreenImageOn":<0/1>,"isScreenTextOn":<0/1>,"connectedMac":"<value>","isAutoResolutionOn":<0/1> { … }, …]}

In Red, these are the additional attributes for RX device
In Green, these are the additional attributes for TX device

5.2.3 Get devices from the database

Description:
The system will retrieve all the devices currently stored in the database

Command:

{"p_targetId":*<systemID>***,"p_cmd":"get_devices","p_userName":"***<MNC User Name>***","p_password":"***<MNC password>***"}**

Response:

{"p_targetId":*<systemID>***,"p_cmd":"launch_discovery_auto","p_rspStatus":"***SUCSESS***","p_msg":"***<a_message>***","p_data":**[{"productName":"<value>","modelName":"<value>","customName":"<value>","mac":"<value>","ip":"<value>","mask":"<value>","isDhcp":<0/1>,"multicastGroupIp":"<value>","videoResolution":"<value>","videoFrameRate":"<value>","audioFormat":"<value>","isVideoSignalDetected":<0/1>,"isIrOn":<0/1>,"isDipSwitchEnabled":<0/1>,"fwVer":"<value>","uartBaudRate":"<value>","irMode":"<emitter/sensor>","rs232FeedbackIP":"<value>","irFeedbackIP":"<value>","isRs232FeedbackOn":<0/1>,"isRs232IpHeader":<0/1>,"compressionRate":"<value>","isAutoCompressionOn":<0/1>>,"is60fps":<0/1>,"isDisplayConnected":<0/1>,"isScreenImageOn":<0/1>,"isScreenTextOn":<0/1>,"connectedMac":"<value>","isAutoResolutionOn":<0/1> { … }, …}]}

5.2.4 Update some devices attributes

Description:
The system will update the devices specified with the new attributes provided.
Note that to update a device parameter, the device MUST already exist in the MNC database.

Command:

{"p_targetId":*<systemID>***,"p_cmd":"update_devices","p_userName":"***<MNC User Name>***","p_password":"***<MNC password>***","p_data":[{"mac":"<device mac address>",***<attribute name>:<attribute value>***,…"}, {"mac":"<device mac address>",** *<attribute name>:<attribute value>***,…},…]}**

NOTE: You have the option to use a port ID (to be defined in web server) instead of the mac address

- **"portIn":"<input port number >"**
- **"portOut":"<output port number >"**

List of attribute names that can be modified:

For TX and RX:

```
       "customName" : set the custom name to give to this device
       "ip" : set the device ip address (EX: "192.168.1.80")
       "mask" : set the device mask (EX: "255.255.255.0")
       "isDhcp" : set the dhcp on(1) or off(0) (EX: 1 )
       "isIrOn" : set the IR on(1) or off(0) (EX: 1 )
       "isDipSwitchEnabled" : set the dip switch on(1) or off(0) (EX: 0 )
       "uartBaudRate" : set the RS232 baud rate
(9600,19200,38400,57600,115200)
       "rs232FeedbackIP" : set IP address where RS232 data feedback
should be sent
       "isRs232FeedbackOn" : To enable or disable data feedback
       "irMode" (500756 ONLY): set IR direction mode <sensor> OR
<emitter>
```

For RX only:

```
"isScreenImageOn" : 1 => to display loaded image when no video signal
                    0 => to display a plain black screen when no video
signal
"isScreenTextOn"  : 1 => to display some debug text information
                    0 => to not display any debug text information
"videoResolution" : set the desire output video resolution
                    value="0051" to set video resolution to: 720X480 60Hz
                    value="2011" to set video resolution to: 480P 60Hz
                    value="2021" to set video resolution to:576P 50Hz
                    value="2034" to set video resolution to:720P 50Hz
                    value="2035" to set video resolution to:720P 60Hz
                    value="2041" to set video resolution to:1080P 24Hz
                    value="2042" to set video resolution to:1080P 25Hz
                    value="2044" to set video resolution to:1080P 50Hz
                    value="2045" to set video resolution to:1080P 60Hz
                    value="3041" to set video resolution to: 1080I 50Hz
                    value="3042" to set video resolution to: 1080I 60Hz
"isAutoResolutionOn" : 1 => to let the device auto-set video resolution
                       0 => to allow setting video resolution manually
"irFeedbackIP" : set IP address where IR data feedback should be sent
```

For TX only:

```
"isAutoCompressionOn" : 1 => to enable automatic video compression
                        0 => to disable automatic video compression
"irFeedbackIP" (500756 ONLY) : set IP address where IR data feedback
should be sent
"is60fps" : 1 => to set video mode to 60 frames per second
            0 => to set video mode to 30 frames per second
```

Response:

{"p_targetId":*<systemID>*,**"p_cmd":"update_devices","p_rspStatus":"***SUCSESS***","p_msg":"***<amessage>***","p_data":**[{"productName":"<value>","modelName":"<value>","customName":"<value>","mac":"<value>","ip":"<value>","mask":"<value>","isDhcp":<0/1>,"multicastGroupIp":"<value>","videoResolution":"<value>","videoFrameRate":"<value>","audioFormat":"<value>","isVideoSignalDetected":<0/1>,"isIrOn":<0/1>,"isDipSwitchEnabled":<0/1>,"isDisplayConnected":<0/1>,"isScreenImageOn":<0/1>,"isScreenTextOn":<0/1>,"connectedMac":"<value>"}, { … }, …]}

		500752	500753/754	500755	500756	500758/759		
	customName	X	X	X	X	X		
	ip	X	X	X	X	X		

RX & TX	**mask**	X	X	X	X	X		
	isDhcp	X	X	X	X	X		
	isIrOn	X	X	X	X			
	isDipSwitchEnabled	X	X	X	X	X		
	uartBaudRate	n/a	X	X	X	X		
	rs232FeedbackIP	n/a	X	X	X	n/a		
	isRs232FeedbackOn	n/a	X	X	X	n/a		
	irMode	n/a	n/a	X	X	n/a		
RX	**isScreenImageOn**	X	X	n/a	X	n/a		
	isScreenTextOn	X	X	n/a	X	n/a		
	videoResolution	X	X	n/a	X	X		
	isAutoResolutionOn	X	X	n/a	X	X		
	irFeedbackIP	X	X	X	X	n/a		
	hdcpFormat	n/a	n/a	n/a	n/a	X		
TX	**isAutoCompressionOn**	X	X	X	X	n/a		
	irFeedbackIP	n/a	n/a	n/a	X	n/a		
	is60fps	X	X	n/a	X	n/a		

5.2.5 Reboot device

Description:
The system will reboot the devices

Command:
{"p_targetId":*<systemID>***,"p_cmd":"reboot_devices","p_userName":"***<MNC User Name>***","p_password":"***<MNC password>***","p_data":[{"mac":"<device mac address>"}, {…}, …}]}**

NOTE: You have the option to use a port ID (to be defined in web server) instead of the mac address

- **"portIn":"<input port number >"**
- **"portOut":"<output port number >"**

Response:
{"p_targetId":*<systemID>***,"p_cmd":"update_devices","p_rspStatus":"***SUCSESS***","p_msg":"***<a message>***","p_data":**[{"mac":"<device mac address>","rspStatus":"SUCCESS or FAILED","msg":""}, …]}

5.2.6 Connect/disconnect device

Description:
Perform a connect/disconnect between devices

Command:

{"p_targetId":<*systemID*>**,"p_cmd":"connection","p_userName":"**<*MNC User Name*>**","p_password":"**<*MNC password*>**","p_data":[{"macRx":"<Rx device mac address>","macTx":"<Tx device mac address>"}, {…}, …]}**
"macRx" : the RX mac address to connect/disconnect
"macTx": - To disconnect, use "00-00-00-00-00-00"
- To connect, use the TX device mac address to connect to

NOTE: You have the option to use a port ID (to be defined in web server) instead of the mac address

- **"portIn":"<input port number >"** (use "0" to disconnect the output port)
- **"portOut":"<output port number >"**

Response:

{"p_targetId":<*systemID*>**,"p_cmd":"connection","p_rspStatus":"***SUCCSESS***","p_msg":"**<*a message*>**","p_data":**[{"macRx":"<Rx device mac address>","macTx":"<Tx device mac address>","rspStatus ":"SUCCESS or FAILED","msg":""}, …}]}

5.2.7 Select and apply a preset

Description:
Apply a (existent) preset

Command:

{"p_targetId":<*systemID*>**,"p_cmd":"select_preset","p_userName":"**<*MNC User Name*>**","p_password":"**<*MNC password*>**","p_data":[{"presetId":"<preset id number>"}]}**

Response:

{"p_targetId":<*systemID*>**,"p_cmd":"select_preset","p_rspStatus":"***SUCCSESS***","p_msg":"**<*amessage*>**","p_data":**[{"macRx":"<Rx device mac address>","macTx":"<Tx device mac address>","rspStatus ":"SUCCESS or FAILED","msg":""}, …}]}

Note:
"p_data" will return all the connections result that took place

5.2.8 Save current matrix connections in a specific preset

Description:
Save the current matrix connections in a specific (existent) preset

Command:

{"p_targetId":<*systemID*>**,"p_cmd":"save_preset","p_userName":"**<*MNC User Name*>**","p_password":"**<*MNC password*>**","p_data":[{"presetId":"<preset id number>"}]}**

Response:

{"p_targetId":<*systemID*>**,"p_cmd":"save_preset","p_rspStatus":"***SUCCSESS***","p_msg":"**<*a message*>**","p_data":**[{"presetId":"<preset ID number >"}]}

5.2.9 Save current matrix connections in a NEW preset name

Description:
Save the current matrix connections in a NEW preset name

Command:
{"p_targetId":<*systemID*>**,"p_cmd":"create_preset","p_userName":"**<*MNC User Name*>**","p_password":"**<*MNC password*>**","p_data":[{"presetName":"<a new preset name>"}]}**

Response:
{"p_targetId":<*systemID*>**,"p_cmd":"create_preset","p_rspStatus":"***SUCCSESS***","p_msg":"**<*a message*>**","p_data":**[{"prestName": "<name of the preset>", presetId":"<preset ID number >"}]}

5.2.10 Delete a preset

Description:
Delete a preset

Command:
{"p_targetId":<*systemID*>**,"p_cmd":"delete_preset","p_userName":"**<*MNC User Name*>**","p_password":"**<*MNC password*>**","p_data":[{"presetId":"<preset id number>"}]}**

Response:
{"p_targetId":<*systemID*>**,"p_cmd":"delete_preset","p_rspStatus":"***SUCCSESS***","p_msg":"**<*a message*>**","p_data":**[{"presetId":"<preset ID number >"}]}

5.2.11 Send data to RS-232 (For 500753/754/755/756/757/758/759)

Description:
Send data (in hexadecimal) to RS232 port of a device

Command:
{"p_targetId":<*systemID*>**,"p_cmd":"send_data_to_rs232 ","p_userName":"**<*MNC User Name*>**","p_password":"**<*MNC password*>**","p_data": [{"mac":"<Tx/Rx device mac address>","hexdata":"<hex data>">","ack":<0/1>,"feedback":<0/1>}]}**

<hex data> maximum length = 390 characters (i.e: 195 bytes)
<feedback> 1 : to wait for a feedback data to be returned from the RS-232 port
<ack> 1 : to wait to wait for a command acknowledge

NOTE: You have the option to use a port ID (to be defined in web server) instead of the mac address

- **"portIn":"<input port number >"**
- **"portOut":"<output port number >"**

Response:

{"p_targetId":*<systemID>*,**"p_cmd":"send_data_to_rs232","p_rspStatus":"***SUCCSESS***","p_msg":"***<a message>***","p_data":**[{"mac":"<device mac address>","rspStatus":"SUCCESS or FAILED","msg":""}, …}]}

5.2.12 Send data to IR (For 500752/753/754 (TX) and 500755/756 (TX & RX)

Description:
Send data (in hexadecimal) to IR port of a device

Command:
{"p_targetId":*<systemID>*,**"p_cmd":"send_data_to_ir","p_userName":"***<MNC User Name>*****","p_password":"***<MNC password>*****","p_data": [{"mac":"<Tx/Rx device mac address>","hexdata":"<hex data>"}]}**

<hex data> maximum length = 390 characters (i.e: 195 bytes)

NOTE: You have the option to use a port ID (to be defined in web server) instead of the mac address

- **"portIn":"<input port number >"**
- **"portOut":"<output port number >"**

Response:
{"p_targetId":*<systemID>*,**"p_cmd":"send_data_to_ir","p_rspStatus":"***SUCCSESS***","p_msg":"***<a message>*****","p_data":**[{"mac":"<device mac address>","rspStatus":"SUCCESS or FAILED","msg":""}, …}]}

5.2.13 Modify network setting OF THE MNC

Description:
Modify any network settings of the MNC (ip/mask/gateway/dhcp)

Command:
{"p_targetId":*0*,**"p_cmd":"modifyNetSettings","p_userName":"***<MNC User Name>*****","p_password":"***<MNC password>*****","p_data":[{"dhcp":"<0/1>"},{"ip":"<ip address>"},{"mask":"<mask address>"},{"gateway":"<gateway address>"}]}**

Response:
{"p_targetId":0,"p_cmd":"modifyNetSettings","p_rspStatus":"*SUCSESS/FAILED***","p_msg":"***<a message>***"}**

5.2.14 Modify Administrator password OF THE MNC

Description:
Modify the administrator password of the MNC

Command:

{"p_targetId":0,"p_cmd":"changeAdminPswd","p_userName":"<MNC User Name **>","p_password":"**<MNC password>**","p_data":[{"usrname":"<the user name>"}, {"currpswd":"<current passsword>"},{"newpswd":"<new password>"}]}**

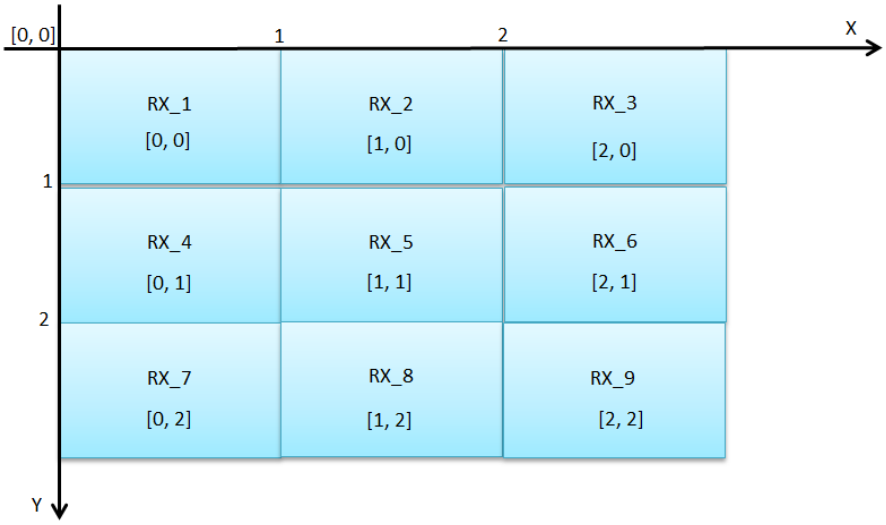
Response:

{"p_targetId":0,"p_cmd":"modifyNetSettings","p_rspStatus":"*SUCSESS/FAILED***","p_msg":"***<a message>***"}**

5.2.15 VIDEO WALL: Connection command (For 500754/759)

Description:

Set RX as video wall and connect it to a source (TX)



Command:

{"p_targetId":*<systemID>***,"p_cmd":"vwconnection","p_userName":"**<MNC User Name**>","p_password":"**<MNC password>**","p_data":[{"macRx":"**<Rx device mac address>**","macTx":"**<Tx device mac address to connect to>**","isVideoWallMode":true, "vwGlobalSize":"***<Global nb of TV on x axis>*****x***<global nb of TV on y axis>***","vwSizeX":***<nb of TV of current video wall on x axis>***,"vwSizeY":***<nb of TV of current video wall on y axis>***,"xCoordonate":":***<x coordinate of this RX>***,"yCoordonate":":***<x coordinate of this RX>***,"measureUnit":"***<inch or cm>***","screenWidth":***<screen width>***,"screenHeight":***<screen Heigth>***,"bezelTop":***<measure of top Tv bezel>***,"bezelBottom":***<measure of bottom Tv bezel>***,"bezelLeft":***<measure of left Tv bezel>***,"bezelRight":***<measure of right Tv bezel>***,"scaleUpH":***<0 to 255>***,"scaleDownH":***<0 to 255>***,"scaleUpV":***<0 to 255>***,"scaleDownV":***<0 to 255>***,"shiftRight":***<0 to 255>***,"shiftLeft":***<0 to 255>***,"shiftUp":***<0 to 255>***,"shiftDown":***<0 to 255>***}, …]}**

NOTE: You have the option to use a port ID (to be defined in web server) instead of the mac address

- **"portIn":"<input port number >"**
- **"portOut":"<output port number >"**

EX: Create a 2x1 video wall inside a global video wall of 2x2

{"p_targetId":*1***,"p_cmd":"vwconnection","p_userName":**"admin"**,"p_password":**"admin"**,"p_data":[{"macRx00-0B-78-00-74-14","macTx":**"00-0B-78-00-74-15"**,"isVideoWallMode":true,**
"vwGlobalSize":"2x2","vwSizeX":2,"vwSizeY":1,
"xCoordonate":0,"yCoordonate":0,"measureUnit":"inch","screenWidth":34.8,"screenHeight":19.6,"bezelTop":0.1,"bezelBottom":0.1,"bezelLeft":0.1,"bezelRight":0.1,"scaleUpH":0,"scaleDownH":0,"scaleUpV":0,"scaleDownV":0,"shiftRight":0,"shiftLeft":0,"shiftUp":0,"shiftDown":0}, …]}

Response:

{"p_targetId":*<systemID>***,"p_cmd":"vwconnection","p_rspStatus":"***SUCCSESS***","p_msg":"***<a message>***","p_data":**[{"macRx":"<Rx device mac address>","macTx":"<Tx device mac address>","rspStatus ":"SUCCESS or FAILED","msg":""}, …]}

5.2.16 VIDEO WALL: Select and apply a configuration (For 500754/500759)

Description:

Apply a (existent) video wall configuration

Command:

{"p_targetId":*<systemID>***,"p_cmd":"vwApplyConfig ","p_userName":"***<MNC User Name>***","p_password":"***<MNC password>***","p_data":[{"vwConfigId ":"<vwConfig id number>"}]}**

Response:

{"p_targetId":*<systemID>***,"p_cmd":"vwApplyConfig","p_rspStatus":"***SUCCSESS***","p_msg":"***<a message>***","p_data":**[{"macRx":"<Rx device mac address>","macTx":"<Tx device mac address>","rspStatus ":"SUCCESS or FAILED","msg":""}, …}]}

Note:

"p_data" will return all the connections result that took place

5.2.17 VIDEO WALL: Changing source to a configuration (For 500754/500759)

Description:

Apply another source (TX) to an existent video wall configuration (But the original configuration parameters is not changed)

Command:

{"p_targetId":*<systemID>***,"p_cmd":"vwApplyConfig ","p_userName":"***<MNC User Name>***","p_password":"***<MNC password>***","p_data":[{"vwConfigId ":"<vwConfig id number>","macTx":"Tx device mac address"}]}**

NOTE: You have the option to use a port ID (to be defined in web server) instead of the mac address

- **"portIn":"<input port number >"**

Response:

{"p_targetId":*<systemID>***,"p_cmd":"vwApplyConfig","p_rspStatus":"***SUCCSESS***","p_msg":"***<a message>***","p_data":**[{"macRx":"<Rx device mac address>","macTx":"<Tx device mac address>","rspStatus ":"SUCCESS or FAILED","msg":""}, …]}

Note:

"p_data" will return all the connections result that took place

5.3 IP Command API for 500480: command/response list

5.3.1 Get all port status from the database

Description:

The system will retrieve all the current port status

Command:

{"p_targetId":*<systemID>***,"p_cmd":"get_devices","p_userName":"***<MNC User Name >***","p_password":"***<MNC password>***"}**

Response:

{"p_targetId":*<systemID>***,"p_cmd":"get_devices","p_rspStatus:"***SUCSESS***","p_msg":"***<a_message>***","p_data":**[{"customName":"<value>","portId":"<value>","connectedPortId":"<value>","typeId":<value>,"typeName":"<value>","purposeId":"<value>","isPresent":<0/1>,"cardNb":"<value>"},{ … }, …]}

Notes:

connectedPortId: "0" => disconnected

typeId:

- 1 => HDMI
- 2 => HDBT
- 3 => RS232
- 4 => VGA
- 5 => LAN
- 6 => IR
- 7 => USB

purposeId:

- 1 => INPUT_VIDEO
- 4 => OUTPUT_VIDEO

5.3.2 Get all presets

Description:
The system will retrieve all the preset ID and name

Command:
{"p_targetId":*<systemID>***,"p_cmd":"get_presets","p_userName":"***<MNC User Name >***","p_password":"***<MNC password>***"}**

Response:
{"p_targetId":*<systemID>***,"p_cmd":"get_presets","p_rspStatus:"***SUCSESS***","p_msg":"***<a_message>***","p_data":**[{"presetId":"<value>","presetIdv":"<value>","presetName":"<value>"},{ … }, …]}

5.3.3 Connect/disconnect device

Description:
Perform a connect/disconnect

Command:
{"p_targetId":*<systemID>***,"p_cmd":"connection","p_userName":"***<MNC User Name>***","p_password":"***<MNC password>***","p_data":[{"portOut":"<output #>","portIn":"<input #>"}, {…}, …]}**

- To disconnect, set input # = "0"”

Response:
{"p_targetId":*<systemID>***,"p_cmd":"connection","p_rspStatus":"***SUCCSESS***","p_msg":"***<a message>***","p_data":**[{"portOut":"<output #>","portIn":"<input #>","rspStatus ":"SUCCESS or FAILED","msg":""}, …]}

5.3.4 Update some ports attributes

Description:
The system will update the ports specified with the new attributes provided.

Command:
{"p_targetId":*<systemID>***,"p_cmd":"update_devices","p_userName":"***<MNC User Name>***","p_password":"***<MNC password>***","p_data":[{"<port to update>":"<port #>",** *<attribute name>:<attribute value>***,…"}, {"<port to update>":"<port #>",** *<attribute name>:<attribute value>***,…},…]}**

Values of **<port to update>**: **"portIn"** or **"portOut "**

List of attribute names that can be modified:

For TX and RX:

"customName" : set the custom name to give to this port

Response:

{"p_targetId":*<systemID>***,"p_cmd":"update_devices","p_rspStatus":"***SUCSESS***","p_msg":"***<amessage>***","p_data":**[{"customName":"<value>","portId":"<value>","connectedPortId":"<value>","typeId":<value>,"typeName":"<value>","purposeId":"<value>","isPresent":<0/1>,"cardNb":"<value>"},{ … }, …]}

5.3.5 Select and apply a preset

Description:
Apply a preset

Command:

{"p_targetId":*<systemID>***,"p_cmd":"select_preset","p_userName":"***<MNC User Name>***","p_password":"***<MNC password>***","p_data":[{"presetId":"<preset id number>"]}**

Response:

{"p_targetId":*<systemID>***,"p_cmd":"**
select_preset","p_rspStatus":"*SUCCSESS***","p_msg":"***<amessage>***","p_data":**[{"portOut":"5-<output #>","portIn":"1-<input #>","rspStatus ":"SUCCESS or FAILED","msg":""}, …]}

Note:

"p_data" will return all the connections result that took place

5.4 Examples of commands

Muxlab MNC controller :

IP address: 192.168.168.50

Login: admin

Password: admin

Target ID: 1 (Click on "Product" menu in the 500811 web server to know the target ID to use)

Transmitter #1 Mac address: 00-0B-78-00-70-19 (assigned to port# 1 via 500811 web server)

Receiver #1 Mac address: 00-0B-78-00-75-38 (assigned to port# 1 via 500811 web server)

Receiver #2 Mac address: 00-0B-78-00-74-14 (assigned to port# 2 via 500811 web server)

All commands must be HTTP POST and sent to the following URL:

http://192.168.168.50/mnc/secure_api.php

The data must be formatted in JSON, here are some command data examples:

a) {"p_targetId":1,"p_cmd":"connection","p_userName":"admin","p_password":"admin","p_data":[{"macRx":"00-0B-78-00-75-38","macTx":"00-0B-78-00-70-19"}]}

b) {"p_targetId":1,"p_cmd":"connection","p_userName":"admin","p_password":"admin","p_data":[{"portOut":"2","portIn":"1"}]}

c) {"p_targetId":1,"p_cmd":"send_data_to_rs232","p_userName":"admin","p_password":"admin","p_data":[{"portOut":"2","hexdata":"5F45Ac9B","ack":1,"feedback":1}]}

d) {"p_targetId":1,"p_cmd":"send_data_to_ir","p_userName":"admin","p_password":"admin","p_data":[{"portIn":"1","hexdata":"AABBCC01020355FF"}]}

e) {"p_targetId":1,"p_cmd":"select_preset","p_userName":"admin","p_password":"admin","p_data":[{"presetId":"6"}]}

f) {"p_targetId":1,"p_cmd":"update_devices","p_userName":"admin","p_password":"admin","p_data":[{"irFeedbackIP":"192.168.168.50","portOut":"1"}]}

g) {"p_targetId":1,"p_cmd":"vwApplyConfig","p_userName":"admin","p_password":"admin","p_data":[{"vwConfigId":"3"}]}

h) {"p_targetId":1,"p_cmd":"vwApplyConfig","p_userName":"admin","p_password":"admin","p_data":[{"vwConfigId":"3","portIn":"1"}]}

6. Product Warranty Policy

Items Under Warranty - Company Policy

MuxLab guarantees its products to be free of defects in manufacturing and workmanship for the warranty period from the date of purchase. If this product fails to give satisfactory performance during this warranty period, MuxLab will either repair or replace this product at no additional charge, except as set forth below. Repair and replacement parts will be furnished on an exchange basis and will be either reconditioned or new. All replaced parts and products become the property of MuxLab. This limited warranty does not include repair services for damage to the product resulting from accident, disaster, misuse, abuse, or unauthorized modifications or normal decay of battery driven devices. Batteries, if included with the product, are not covered under this warranty.

Limited warranty service can be obtained by delivering the product during the warranty period to the authorized MuxLab dealer from whom you purchased the product, or by sending it to MuxLab. MuxLab will not accept any such product for repair without a Return Material Authorization number (RMA#) issued by its Customer Service Department and a proof of purchase date. If this product is delivered to MuxLab by mail, you agree to assume risk of loss or damage in transit, to prepay shipping charges to the warranty service location, and to use the original shipping container or equivalent.

THE ABOVE LIMITED WARRANTY IS THE ONLY WARRANTY COVERING YOUR MUXLAB PRODUCT. THERE ARE NO OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. SOME STATES DO NOT ALLOW LIMITATIONS ON IMPLIED WARRANTIES, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU.

IF THIS PRODUCT IS NOT IN GOOD WORKING ORDER, YOUR SOLE REMEDY SHALL BE REPAIR OR REPLACEMENT AS PROVIDED FOR ABOVE. IN NO EVENT SHALL MuxLab BE LIABLE TO YOU FOR ANY DAMAGES, INCLUDING ANY LOSS OF PROFITS, LOST SAVINGS, OR OTHER INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OF OR INABILITY TO USE THIS PRODUCT, EVEN IF MUXLAB OR AN AUTHORIZED MuxLab DEALER HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES; NOR WILL MUXLAB BE LIABLE FOR ANY CLAIM BY ANY OTHER PARTY. SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES FOR CONSUMER PRODUCTS, SO THE ABOVE LIMITATIONS OR EXCLUSIONS MAY NOT APPLY TO YOU. THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS. YOU MAY ALSO HAVE OTHER RIGHTS WHICH MAY VARY FROM STATE TO STATE.

Warranty Periods

Any 500811 ProDigital Network Controller found to be defective within three (3) years of invoice, including one (1) month shelf life, may be returned for replacement by a new unit or a satisfactory repair within one (1) month of receiving any returned product. The customer must provide MuxLab with the serial number and proof of purchase of the defective unit being returned. All R.M.A.'s issued are subject to inspection by MuxLab, and will be returned to customer if not properly package – units must be returned in original container or equivalent. MuxLab will not accept any such product for repair without an authorization for its Technical Support department and without a return authorization number issued by MuxLab Customer Service department. For credit & replace R.M.A., customer will be liable to pay replacement invoice if defective products are not returned.

Product more than six months old, including shelf life.

The defective unit must be returned prepaid to MuxLab and then the unit will be repaired or if repair is not possible, replaced by an equivalent unit and returned to the customer within one (1) month of receiving any returned product. There is no charge for repair (parts and labor) during the full warranty period.

Items Defective and not under Warranty

For products which are no longer under warranty the policy is repair and return. An amount of 25% of the products published list price at the time of purchase will be charged. Customer must issue a purchase order to cover the cost of repair.

Each unit will be returned to the customer within one (1) month from receipt of the unit by MuxLab. The defective unit must be returned prepaid to MuxLab. The repaired unit will be returned to the customer FOB MuxLab. The repaired unit has a 90 day warranty.

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