

# Configuring Network Settings of the Ethernet Switch & MuxLab AV over IP Devices

## Overview

The MuxLab AV over IP Devices can be used with or without the help of software. When used in an environment without software the configuration can be managed locally using the Device DIP Switches. When used with the software, all management functions may be performed remotely. Independent of the manner in which the product is controlled, a gigabit Ethernet Switch is required. This manual explains how to correctly setup the Ethernet Switch, how to manage the system manually, and how to use the MuxLab Management Software.

## Applicable AV over IP Devices

The following AV over IP Devices are applicable to this document as of this writing, and will be referred to throughout this document as “AV over IP Device(s)”.

500752: HDMI over IP Extender with PoE

500753: HDMI / RS232 over IP Extender with PoE

500754: Video Wall over IP Extender with PoE

500755: Audio / RS232 over IP PoE Transceiver

500756: 3G-SDI / RS232 over IP Extender with PoE

500757: HDMI over IP H.264 PoE Extender

500758: HDMI 4K over IP PoE Extender

500759: Video Wall 4K over IP PoE Extender

Note: This document may be updated from time to time to include new AV over IP Devices as they become available.

## Configuration of the Ethernet Switch

It is assumed that the Ethernet Switch bandwidth is reserved for only the audio & video transport of the AV over IP Device signals, and will not be shared with other LAN intensive traffic, including daily LAN traffic within the building. This is required in order to maximize the system performance and to be able to expand the system as needed.

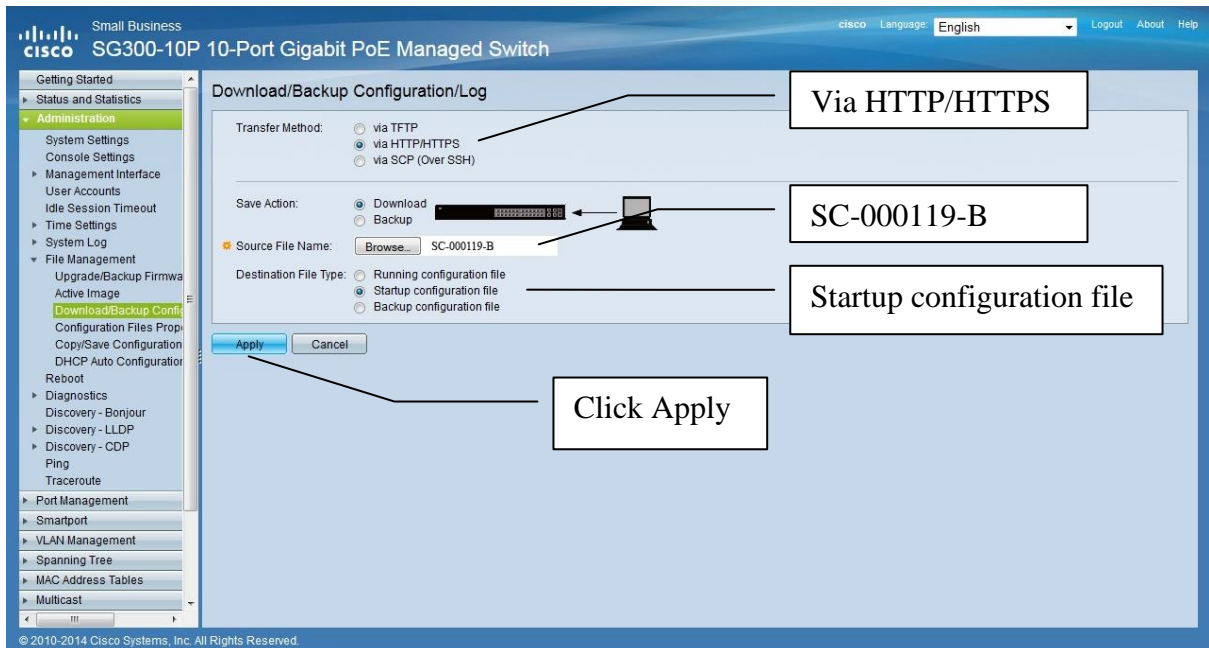
When the AV over IP Devices are used in a matrix configuration (multipoint-to-multipoint) it is required that the Ethernet Switch support the following capabilities: Gigabit Ethernet, DHCP Server and IGMP. An Ethernet Switch with “Jumbo Frame” support is also required when utilizing the 500758 and 500759 models. MuxLab recommends using the Cisco SG300 Series of gigabit Ethernet Switches. The following section explains how to correctly configure the DHCP Server and enable IGMP and Jumbo Frame on the Cisco Ethernet Switch. If you are using a different brand Ethernet Switch please look at the corresponding product user manual on how to perform these steps.

There are two methods offered for configuring the Cisco Ethernet Switch, a Quick Method (via a script provided by MuxLab with default settings) and a Detailed Method (with manual entry allowing for default or custom settings).

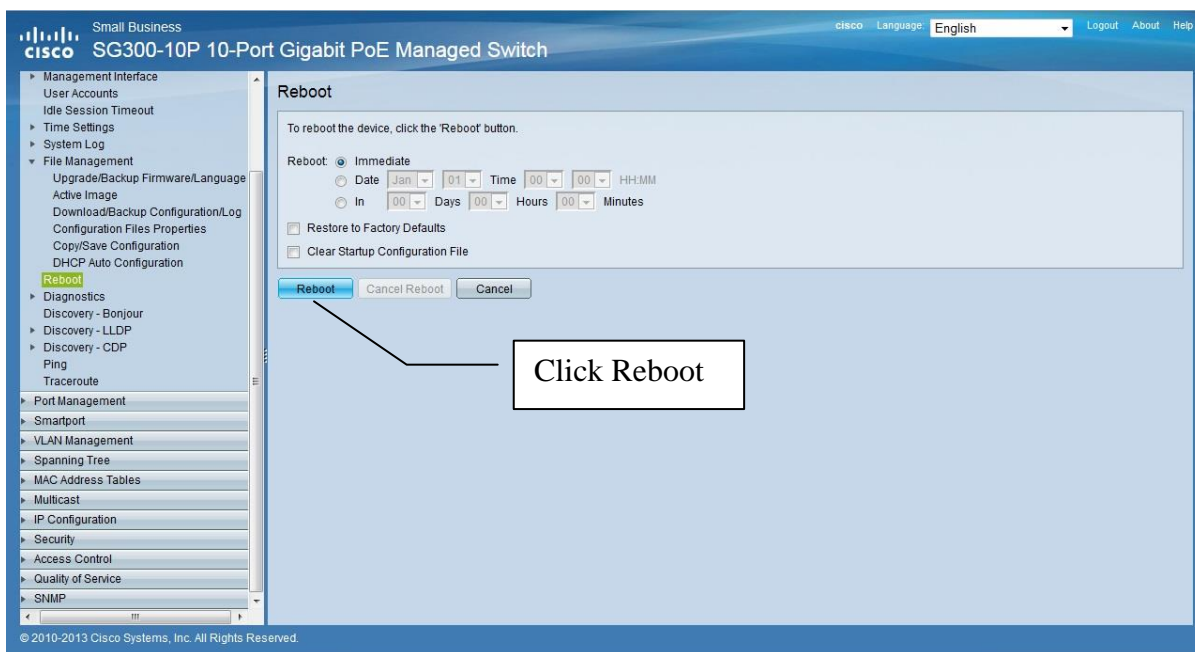
## Quick Method of Configuring the Cisco Ethernet Switch

### Establishing communication with the Cisco Ethernet switch

1. Connect your computer directly to the Cisco Ethernet Switch using an Ethernet patch cord.  
Note: The Cisco SG300 Ethernet Switch comes configured from the factory with a Static IP address of 192.168.1.254 and in order to communicate with this unit you must configure your computer to have a Static IP address in the same subnet.
2. Set a Static IP address on your computer network interface card, such as 192.168.1.2 along with the following mask 255.255.255.0 Reference your computer operating system manual on how to accomplish this.
3. Using a standard browser connect to the Cisco Ethernet Switch. Enter the Cisco Ethernet Switch Static IP address in the address bar and press **Enter**. For example <http://192.168.1.254> The Default User ID and Password for the unit is “cisco”.
4. Go to Administration→File Management→Download/Backup Config. Set the “Transfer Method” to “via HTTP/HTTPS”, and set the “Save Action” to “Download”, type the file name for the script file (which is “SC-000119-B” as of this writing, although the last letter may have changed to version C, or D, etc. depending on the revision). Set the “Destination File Type” to “Startup Configuration File”. Click the “Apply” button and wait for the automated configuration process to complete.



5. Go to Administration→File Management→Reboot, and click on the “Reboot” button to reboot the Ethernet switch.



6. That completes the configuration of the Ethernet Switch; you can now use it with the MuxLab AV over IP solution.

Note: The script changed the Cisco Ethernet Switch Static IP address to 192.168.168.1. If you need to access the Web interface of the Ethernet Switch via web browser you need to use this address. The User-ID and Password are still “cisco”.

## Detailed Method of Configuring the Cisco Ethernet Switch

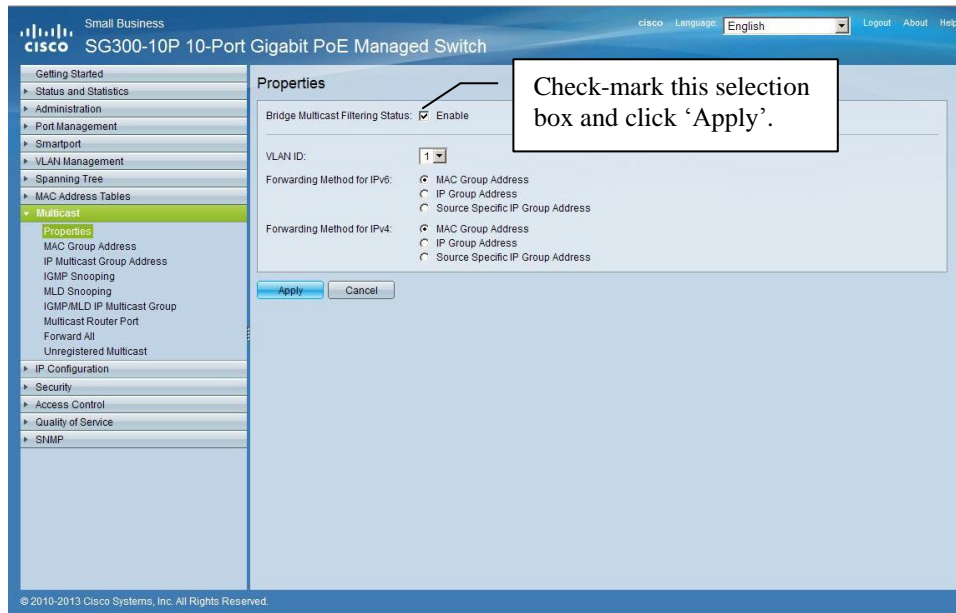
### Establishing communication with the Cisco Ethernet Switch

1. Connect your computer directly to the Cisco Ethernet Switch using an Ethernet patch cord. Note: The Cisco SG300 Ethernet Switch comes configured from the factory with a Static IP address of 192.168.1.254 and in order to communicate with this unit you must configure your computer to have a Static IP address in the same subnet.
2. Set a Static IP address on your computer network interface card, such as 192.168.1.2 along with the following mask 255.255.255.0 Reference your computer operating system manual on how to accomplish this.
3. Using a standard browser connect to the Cisco Ethernet Switch. Enter the Cisco Ethernet Switch Static IP address in the address bar and press **Enter**. For example <http://192.168.1.254> The Default User ID and Password for the unit is “cisco”.

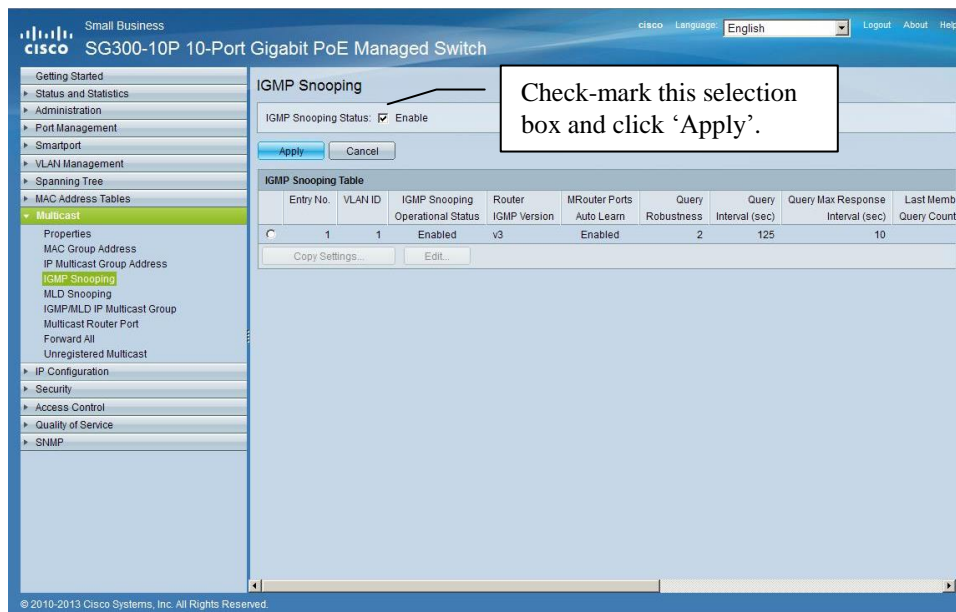
## Enabling IGMP Protocol

The IGMP Protocol is mandatory when more than one AV over IP Transmitter Device is present on the same network. Without IGMP the audio/video may freeze from time to time.

1. Go to Multicast→Properties. Enable the “Bridge Multicast Filtering Status” by “check-marking” the related selection box and clicking on “Apply”.

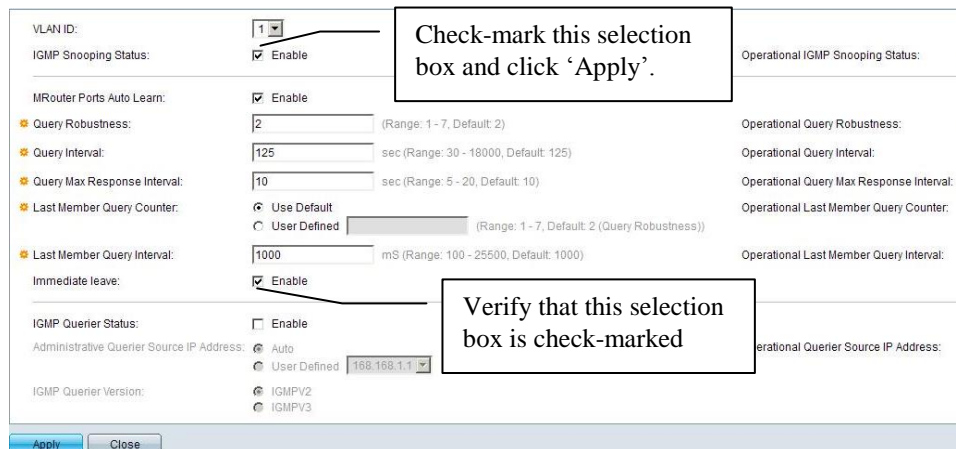
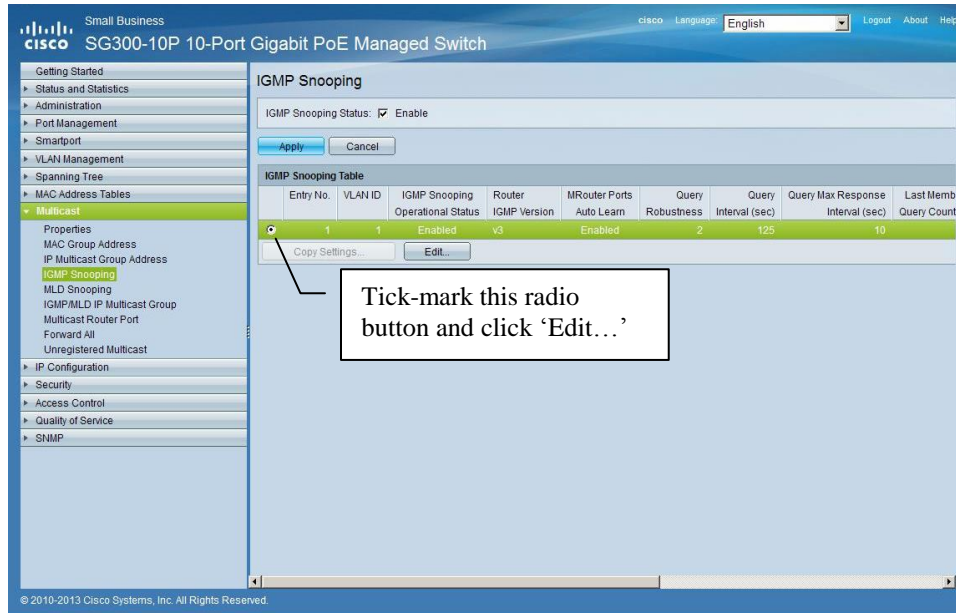


2. Go to Multicast→IGMP Snooping. Enable the “IGMP Snooping Status” by “check-marking” the related selection box and clicking on “Apply”.



- In the “IGMP Snooping Table”, “tick mark” (enable) the radio button and click on “Edit”. In the resulting window “check-mark” the related selection box for “IGMP Snooping Status” and then click on “Apply”.

Verify that the “Immediate Leave” selection box under the section “Last Member Query Interval” is “check-marked” (enabled).

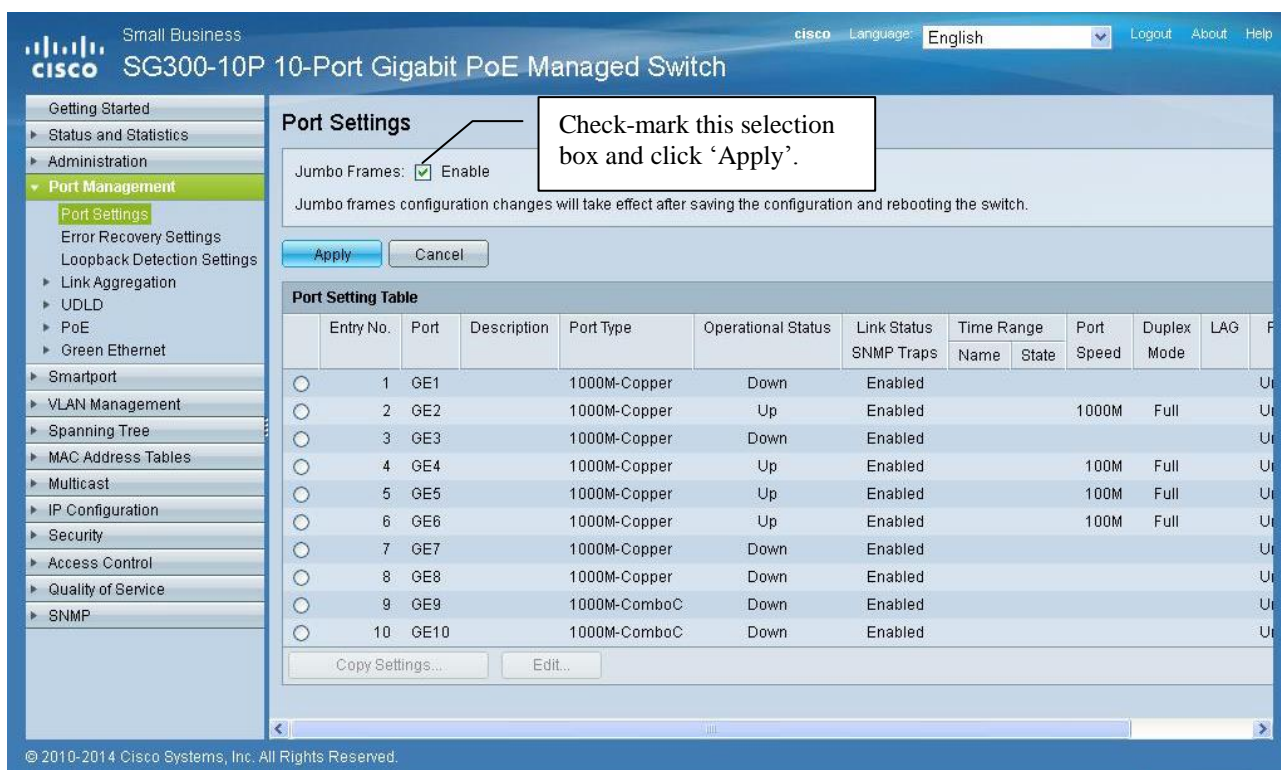


### Enabling Jumbo Frame (required for MuxLab 500758 and 500759 models)

Jumbo Frame support is required when using the MuxLab 500758 and 500759 models. Without Jumbo Frame supported and enabled, these units will not perform as intended and video output will be negatively affected.



1. Go to Port Management→Port Settings. Enable “Jumbo Frames” by “check-marking” the related selection box and clicking on “Apply”.

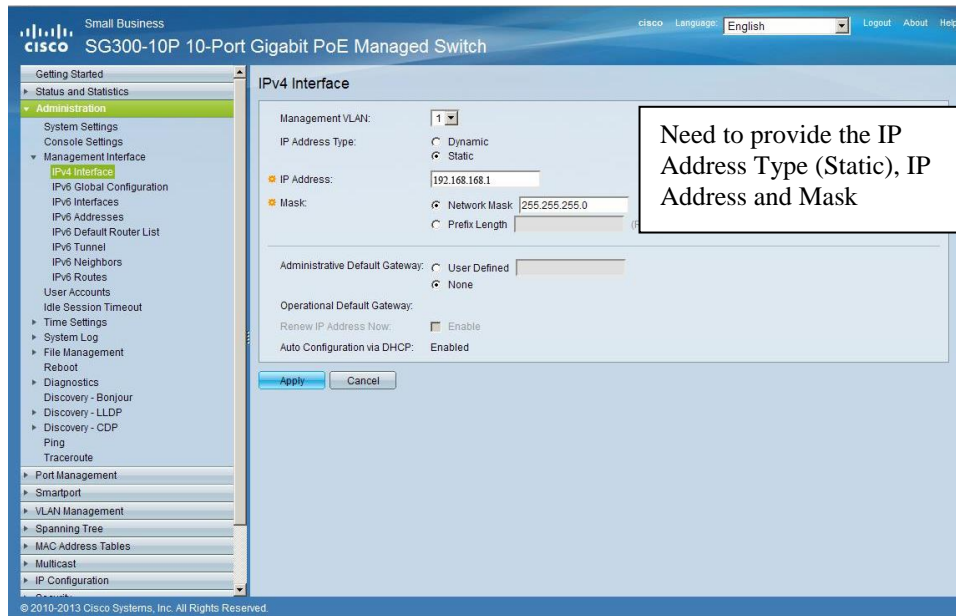


## Configuring the DHCP Server

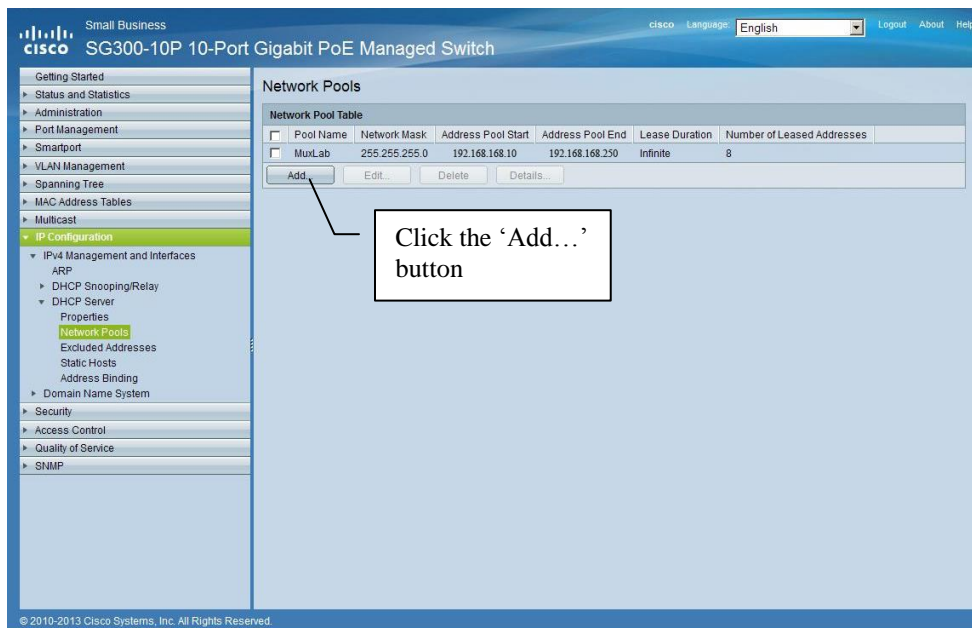
The Ethernet Switch DHCP Server will automatically configure all the IP addresses of each AV over IP Device, eliminating any conflict between devices.

**Note:** If DHCP Server functionality is supported by your Ethernet Switch skip to step 1 below, otherwise you need to use the MuxLab Management Software to assign Static IP addresses to each AV over IP Device. However, before using the Management software, you need to configure a Static IP address on your computer within the same subnet as on the AV over IP Devices, we recommend using 192.168.168.2

1. To set the Ethernet Switch Static IP address to the same subnet as the AV over IP Devices, go to Administration→Management Interface→IPv4 Interface. Set the “IP Address Type” to Static, and enter the IP Address, we recommend using 192.168.168.1 and set the Network Mask to 255.255.255.0 After applying these settings you need to change the IP address on your computer network interface card to the same subnet just set above, we recommend 192.168.168.2 Reconnect with the Cisco Ethernet Switch Web Interface using [HTTP://192.168.168.1](http://192.168.168.1) as was configured above.



2. Go to IP Configuration→DHCP Server→Network Pools. Click on the “Add...” Button.



- In the window provided, set the “Pool Name”, the “Network Mask” (255.255.255.0), the “Address Pool Start” (192.168.168.10), and the “Address Pool End” (192.168.168.250). An example is shown below. Verify that you allocate enough IP addresses for all Transmitters and Receivers present on the network.

Pool Name: Muxlab (6/32 Characters Used)

Subnet IP Address: [ ]

Mask:
 

- Network Mask: 255.255.255.0
- Prefix Length: 24 (Range: 8 - 30)

Address Pool Start: 192.168.168.10

Address Pool End: 192.168.168.250

Lease Duration:
 

- Infinite
- Days: 1 Hours: 00 Minutes: 00 (Default: 1 Day)

Default Router IP Address (Option 3): [ ]

Domain Name Server IP Address (Option 6): None [ ]

Domain Name (Option 15): [ ] (0/32 Characters Used)

NetBIOS WINS Server IP Address (Option 44): [ ]

NetBIOS Node Type (Option 46):
 

- Hybrid
- Mixed
- Peer-to-Peer
- Broadcast

SNTP Server IP Address (Option 4): None [ ]

File Server IP Address (siaddr): [ ]

File Server Host Name (sname): [ ] (0/64 Characters Used)

Configuration File Name (file): [ ] (0/128 Characters Used)

Buttons: Apply, Close

- Go to IP Configuration→IPv4 Management and Interfaces→DHCP Server→Properties. Enable the “DHCP Server Status” by “check-marking” the related selection box and clicking on “Apply”.

Small Business

SG300-10P 10-Port Gigabit PoE Managed Switch

Language: English

Getting Started

Status and Statistics

Administration

Port Management

Smartport

VLAN Management

Spanning Tree

MAC Address Tables

Multicast

IP Configuration
 

- IPv4 Management and Interfaces
  - ARP
  - DHCP Snooping/Relay
  - DHCP Server
    - Properties
    - Network Pools
    - Excluded Addresses
    - Static Hosts
    - Address Binding
  - Domain Name System
- Security
- Access Control
- Quality of Service
- SNMP

Properties

DHCP Server Status:  Enable

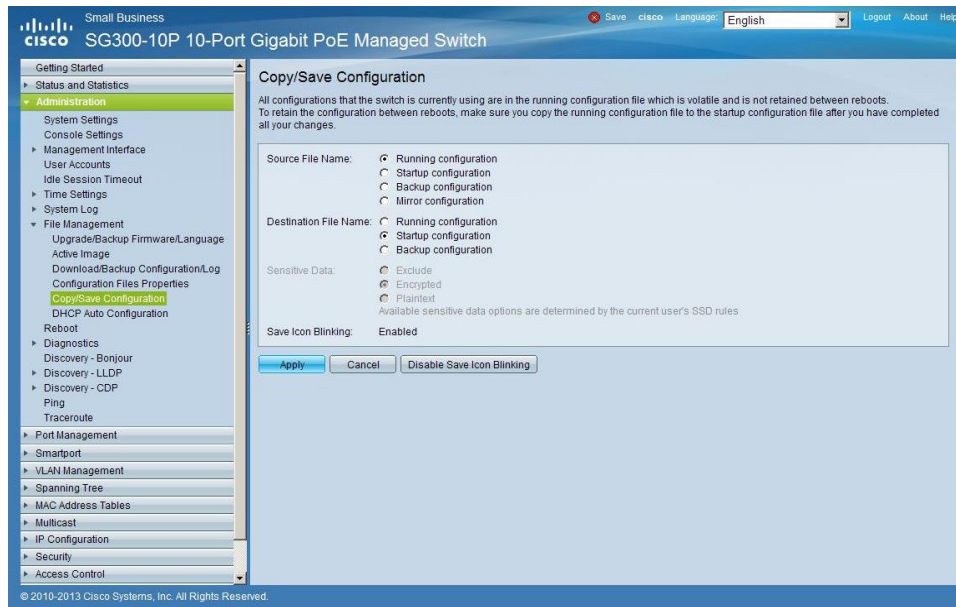
Buttons: Apply, Cancel

Check this selection box and click 'Apply'.

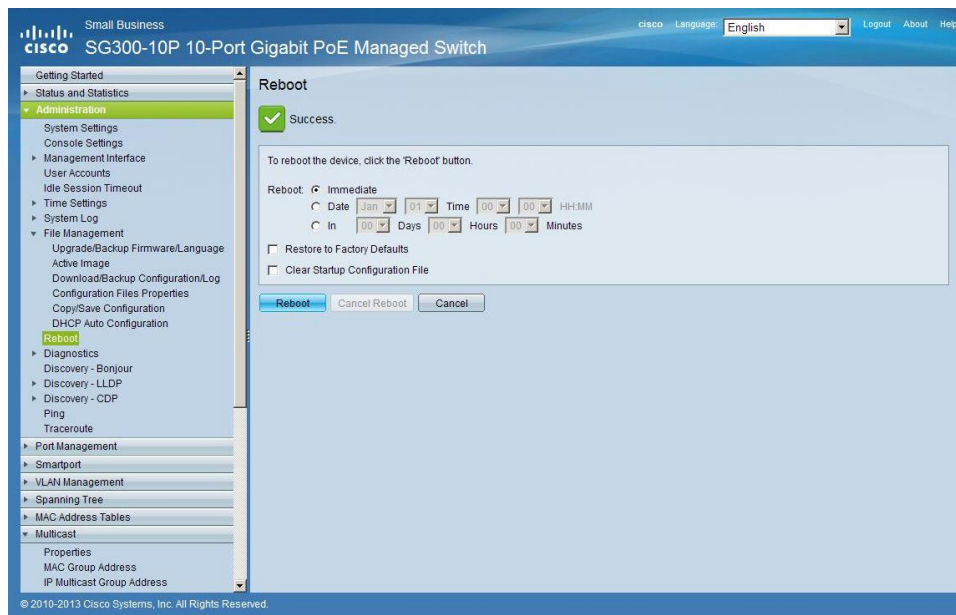
© 2010-2013 Cisco Systems, Inc. All Rights Reserved.



5. Go to Administration→File Management→Copy/Save Configuration. “Tick-mark” (enable) “Running Configuration” and “Startup Configuration” as shown below and save all changes made thus far by clicking “Apply”.



6. Go to Administration→File Management→Reboot, and click on the “Reboot” button to reboot the Ethernet switch.



7. If needed you can configure your computer network interface card to obtain an IP address automatically and you can reconnect with the Cisco Ethernet Switch via a browser and using the IP address 192.168.168.1

## Using the AV over IP Device with DIP Switches (Manual Method)

Before installing the AV over IP Device in the intended operating location it is recommended that you first configure the Dip Switch address of each Transmitter and Receiver unit.

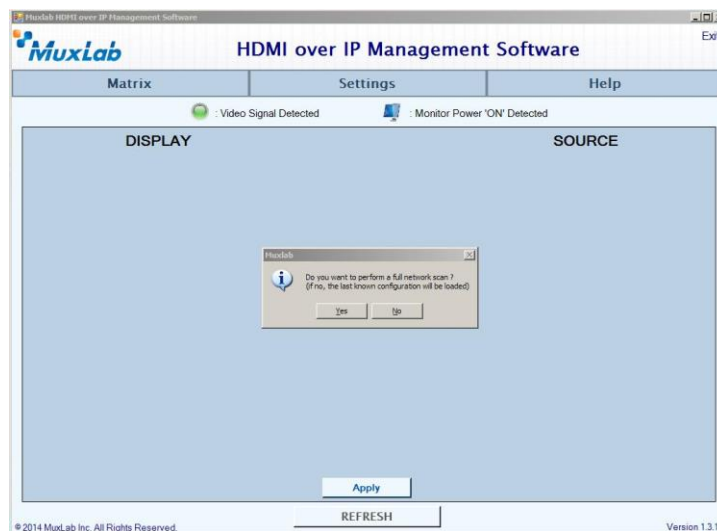
1. Configure each AV over IP Transmitter Device with a unique DIP Switch address setting. There are 16 unique possibilities and thus you are allowed up to 16 Transmitters on a given local network (subnet). Note that it is very important that each Transmitter have a unique DIP Switch address.
2. Configure the DIP Switches of each Receiver to match a corresponding Transmitter address (in order that they communicate with each other). More than one Receiver can have the same DIP Switch setting of a given Transmitter (for point-to-multipoint configurations).
3. Follow the above procedure to install the remaining AV over IP Devices, and reference the AV over IP Device Installation Guide for additional setup information.

## Using the product with the MuxLab Management Software

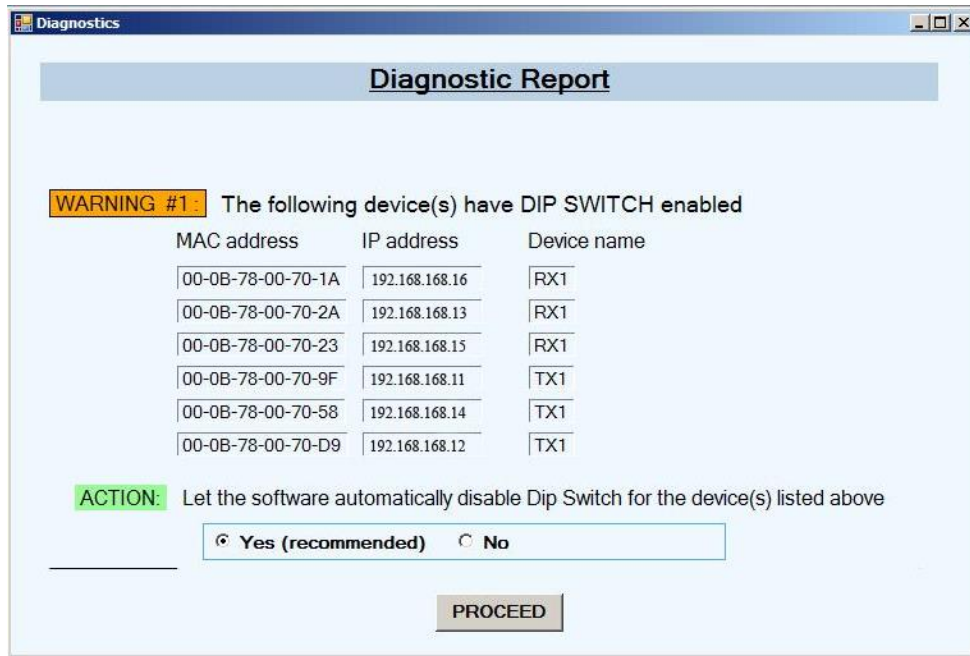
1. Reference the AV over IP Device Installation Guide to correctly setup and install all Devices.
2. Install the software on a computer that is connected on the same subnet as the AV over IP Devices.

Note: The computer network interface card should be configured to use DHCP if a DHCP Server is present, otherwise configure the computer network interface card to use the same subnet as the AV over IP Devices, such as 192.168.168.2

3. Run the MuxLab Management Software. Click on “Yes” to perform a full network scan.



4. The first time the software is executed you will receive a warning that all the devices have DIP Switches enabled. Click on “Yes” and then on “Proceed”, to allow the software to override the DIP Switch settings.



5. Select the “Matrix Connection” tab to perform the desired connections between AV over IP Devices (Transmitters and Receivers).

Note: For further information on how to operate the MuxLab Management Software, please download the software from the MuxLab website, and reference the MuxLab Management Software Manual.

## Troubleshooting

The following table describes some of the symptoms, probable causes and possible solutions in regard to the installation of the AV over IP Devices:

Symptom	Probable Cause	Possible Solutions
Freezing Audio or Video	IGMP not enable or not working properly.	<ul style="list-style-type: none"><li>• Check the Ethernet Switch configuration and enable the IGMP protocol.</li></ul>
DIP Switches not working	Unit DIP Switches have been disable via software.	<ul style="list-style-type: none"><li>• Use the MuxLab Management Software to perform the connection or to re-enable the DIP Switches.</li></ul>
No Audio or Video	IP Address Conflict.	<ul style="list-style-type: none"><li>• Check the Ethernet Switch configuration and enable the DHCP Server.</li></ul>
Software cannot detect the AV over IP Device	Computer not on the same network or wrong IP address.	<ul style="list-style-type: none"><li>• Check that the computer is connected to the same Ethernet Switch as the AV over IP Device.</li><li>• Verify that the computer network interface card is set to obtain an IP address automatically.</li></ul>
Software updates are very slow	Too much traffic on the network.	<ul style="list-style-type: none"><li>• Turn off all the sources during software update.</li></ul>

**If you still cannot diagnose the problem, please call MuxLab Customer Technical Support at 877-689-5228 (toll-free in North America) or (+1) 514-905-0588 (International).**



8495 Dalton Road, Mount Royal, Quebec, Canada. H4T 1V5  
Tel: (514) 905-0588 Fax: (514) 905-0589  
Toll Free (North America): (877) 689-5228  
E-mail: [videoease@muxlab.com](mailto:videoease@muxlab.com) URL: [www.muxlab.com](http://www.muxlab.com)