

Verified Network Switches for use with Key Digital AV over IP Systems

Supported Models:

4K Systems:

KD-IP922ENC, KD-IP922DEC
KD-IP822ENC, KD-IP822DEC
KD-IP1022ENC, KD-IP1022DEC

1080p Systems:

KD-IP1080Tx, KD-IP1080Rx
KD-IP120Tx, KD-IP120Rx, KD-IP120POETx, KD-IP120POERx

Important Note:

Setup is different for 4K (KD-IP922, KD-IP822, KD-IP1022) and 1080p (KD-IP1080, KD-IP120) systems.
There are separate setup instructions for each where applicable.


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Supported Models:

Key Digital AV over IP product family consists of many different models. Not all models are compatible together
See [Key Digital AV over IP Solutions Selection Guide](#) for more info

Key Digital® AV over IP Solutions Selection Guide

Key Digital's AV over IP Solutions come in 10 sizes, from 16x16 IP systems that can be scaled to fit any size installation or project.

 **KEY DIGITAL**
AV OVER IP

	16 PEDESTAL	32 PEDESTAL	64 PEDESTAL	128 PEDESTAL	256 PEDESTAL	512 PEDESTAL	1024 PEDESTAL	2048 PEDESTAL
Available To Order By	Second Quarter	Second Quarter	Second Quarter	Second Quarter	Second Quarter	Second Quarter	Second Quarter	Second Quarter
Resolution	1080p @ 30 FPS	1080p @ 30 FPS	1080p @ 30 FPS	1080p @ 30 FPS	1080p @ 30 FPS	1080p @ 30 FPS	1080p @ 30 FPS	1080p @ 30 FPS
Resolution Capability	1080p @ 30 FPS	1080p @ 30 FPS	1080p @ 30 FPS	1080p @ 30 FPS	1080p @ 30 FPS	1080p @ 30 FPS	1080p @ 30 FPS	1080p @ 30 FPS
Audio	2 Stereo, 4x 16-bit	4 Stereo, 16x 16-bit	8 Stereo, 32x 16-bit	16 Stereo, 64x 16-bit	32 Stereo, 128x 16-bit	64 Stereo, 256x 16-bit	128 Stereo, 512x 16-bit	256 Stereo, 1024x 16-bit
Video In	16x 16x 16	32x 32x 32	64x 64x 64	128x 128x 128	256x 256x 256	512x 512x 512	1024x 1024x 1024	2048x 2048x 2048
Video Out	16x 16x 16	32x 32x 32	64x 64x 64	128x 128x 128	256x 256x 256	512x 512x 512	1024x 1024x 1024	2048x 2048x 2048
USB In	16x 16x 16	32x 32x 32	64x 64x 64	128x 128x 128	256x 256x 256	512x 512x 512	1024x 1024x 1024	2048x 2048x 2048
AV	16x 16x 16	32x 32x 32	64x 64x 64	128x 128x 128	256x 256x 256	512x 512x 512	1024x 1024x 1024	2048x 2048x 2048
Compositions	16x 16x 16	32x 32x 32	64x 64x 64	128x 128x 128	256x 256x 256	512x 512x 512	1024x 1024x 1024	2048x 2048x 2048
Latency	16x 16x 16	32x 32x 32	64x 64x 64	128x 128x 128	256x 256x 256	512x 512x 512	1024x 1024x 1024	2048x 2048x 2048

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www.keydigital.com

System Facts

4K Systems: KD-IP822, KD-IP922, KD-IP1022 models

- Video Compression Standard: Motion JPEG 2000
- Data Stream Bandwidth: < 900 Mbps

Stream Resolution	Bandwidth
4K @ 60Hz/30Hz	≤ 850 Mbps
1080p @ 60Hz	≤ 250 Mbps
1080i / 720p @ 60Hz	≤ 125 Mbps

- Latency: $\approx 40\text{ms}$ @4K. Less at lower resolutions.
- PoE Power Consumption: ≤ 9 Watts per unit
- Required network cabling: CAT6 UTP/STP, CAT6A, CAT7

1080p Systems: KD-IP1080, KD-IP120 models

- Video Compression Standard: H.264
- Data Stream Bandwidth: < 15 Mbps

Stream Resolution	Bandwidth
1080p @ 60Hz	≤ 15 Mbps
1080i / 720p @ 60Hz	≤ 12 Mbps
480p @ 60Hz	≤ 4 Mbps

- Latency: $\approx 400\text{ms}$ @1080p. Less at lower resolutions.
- PoE Power Consumption: ≤ 6 Watts per unit
- Required network cabling: CAT5e UTP/STP, CAT6 UTP/STP, CAT6A, CAT7

Network switch Requirements for Key Digital AV over IP Systems

Key Digital's AV over IP systems utilizes multicasting technology to broadcast streams throughout the network.

Key Digital's AV over IP systems require a network switch with IGMP (Internet Group Management Protocol) support in order to direct traffic of the broadcasted streams, ensuring that only the desired decoders receive the stream from the selected encoder.

If the system spans multiple network switches, it is required for the switches to be connected via 10G fiber cabling for the purpose of stacking. It is recommended to use two of the same model of network switch in these scenarios for best compatibility.

For 1080p systems (KD-IP1080, KDIP120 models) that plan to use the video preview feature of the [Key Digital App](#), IGMP v3 must be enabled. For 1080p or 4K systems that will not use the video preview feature, IGMP v2 is enabled.

KD-IP822, 922, 1022 systems require the following IP addresses to be reserved. They cannot be assigned to KD-IP822, 922, or 1022 units: 192.168.1.1, 192.168.1.50, 192.168.1.90, 192.168.1.100, 192.168.1.150, 192.168.1.200

Feature	4K System (KD-IP822, KD-IP922, KD-IP1022 models)	1080p System (KD-IP1080, KD-IP120 models)
IGMP v2	X	X (for non-video preview systems)
IGMP v3		X (for video preview systems)
Bandwidth	1Gbps	100BaseT
8K Jumbo Frame	X	
PoE	Optional	Optional (excl KD-IP120PoE models)

Verified Network Switches

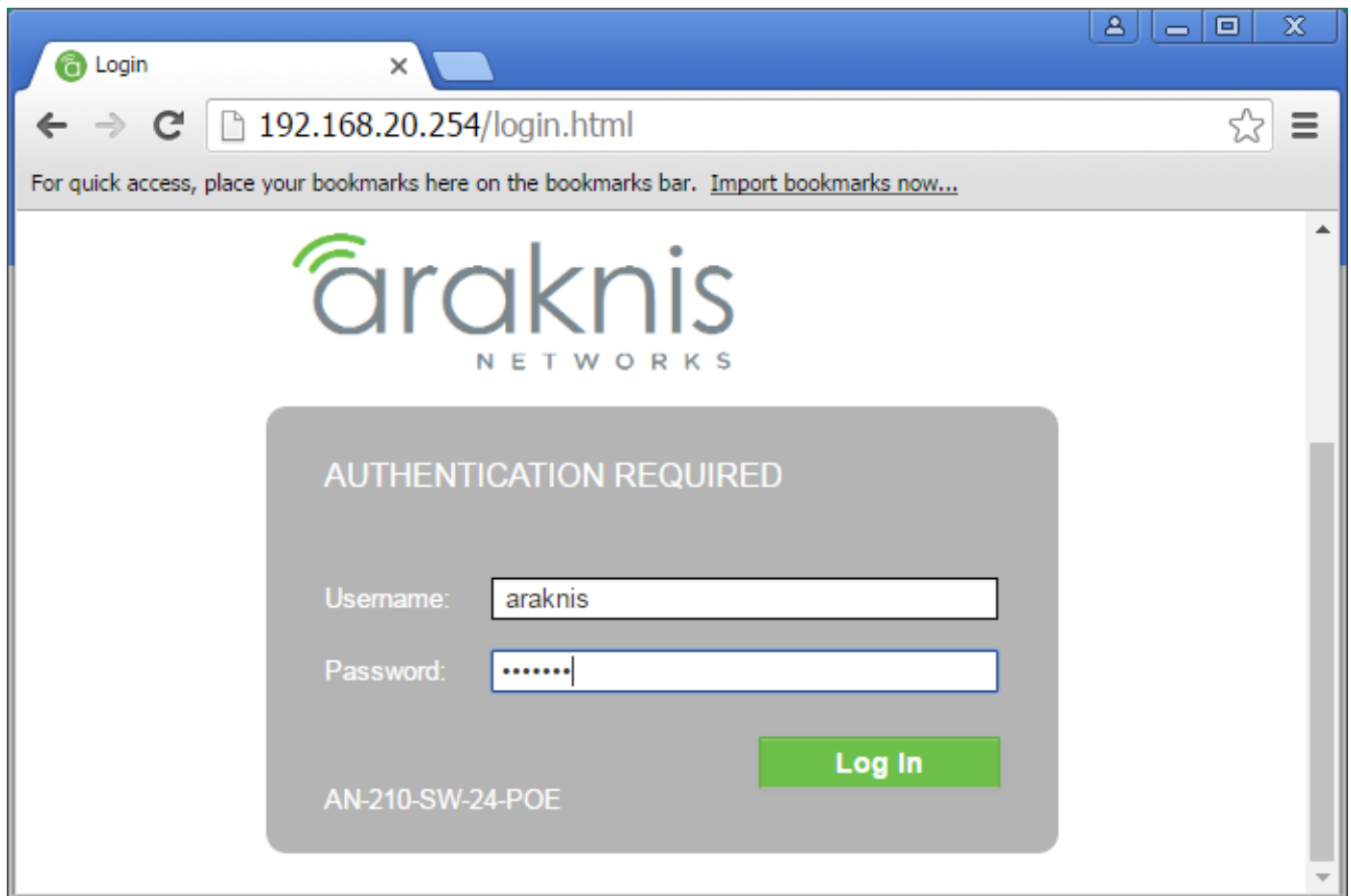
Brand	Model	Port Number	PoE	10G Fiber Stacking	Approved for KD-IP1080/120	Approved for KD-IP822/922/1022
Araknis	AN-210-SW-R-8-POE	8	YES		YES	YES
	AN-210-SW-F-8-POE	8	YES		YES	YES
	AN-210-SW-R-16-POE	16	YES		YES	YES
	AN-210-SW-F-16-POE	16	YES		YES	YES
	AN-210-SW-R-24-POE	24	YES		YES	YES
	AN-210-SW-F-24-POE	24	YES		YES	YES
	AN-210-SW-F-48-POE	48	YES		YES	YES
	AN-310-SW-R-8	8			YES	YES
	AN-310-SW-F-8	8			YES	YES
	AN-310-SW-R-16	16			YES	YES
	AN-310-SW-F-16	16			YES	YES
	AN-310-SW-R-24	24			YES	YES
	AN-310-SW-F-24	24			YES	YES
	AN-310-SW-R-8-POE	8	YES		YES	YES
	AN-310-SW-F-8-POE	8	YES		YES	YES
	AN-310-SW-R-16-POE	16	YES		YES	YES
	AN-310-SW-F-16-POE	16	YES		YES	YES
	AN-310-SW-R-24-POE	24	YES		YES	YES
	AN-310-SW-F-24-POE	24	YES		YES	YES
	AN-310-SW-F-48-POE	48	YES		YES	YES

Brand	Model	Port Number	PoE	10G Fiber Stacking	Approved for KD-IP1080	Approved for KD-IP822/922/1022
Cisco	SF500-48	48			YES	NO
	SG300-28				YES	YES
	Catalyst 3850 Series		YES		YES	YES
D-Link	DGS-3630-52PC	52	YES	YES	YES	YES
	DGS-3630-52TC	52		YES	YES	YES
	DGS-3630-28PC	28	YES	YES	YES	YES
	DGS-3630-28SC	28		YES	YES	YES
	DGS-3630-28TC	28		YES	YES	YES
	DGS-3130-54PS	54	YES		YES	YES
Engenius	EGS5212P	8	YES		YES	NO
	EGS7228FP	24	YES		YES	NO
	EGS7252FP	24	YES		YES	NO
	EWS1200D-10T	10			YES	NO
	EWS1200D-28T	24			YES	NO
	EWS1200D-52T	48			YES	NO
	EWS5912FP	8	YES		YES	NO
	EWS7928P	24	YES		YES	NO
	EWS7928FP	24	YES		YES	NO
Niveo	NGSME24TH-AV	24	YES		YES	YES

Brand	Model	Port Number	PoE	10G Fiber Stacking	Approved for KD-IP1080/120	Approved for KD-IP822/922/1022
Linksys	LGS552P	52	YES	YES	YES	YES
	LGS528P	28	YES	YES	YES	YES
	LGS326P	26	YES		YES	YES
	LGS318P	18	YES		YES	YES
	LGS326MP	26	YES		YES	YES
	LGS326P	26	YES		YES	YES
	LGS326	26			YES	YES
	LGS318P	18	YES		YES	YES
	LGS318	18			YES	YES
	LGS308MP	8	YES		YES	YES
	LGS308P	8	YES		YES	YES
	LGS308	8			YES	YES
Luxul	AMS-4424P	24	YES	YES	YES	YES
Netgear	GS716T	16			YES	YES
	GS724T	24			YES	YES
	GS748T	48			YES	YES
	GS752TP	48	YES		YES	YES
	GS728TP	28	YES		YES	YES
Pakedge	S3L-24P	24	YES		YES	NO
	SX-8EP	8			YES	YES
	SX-8P	8	YES		YES	YES
	SX-24	24			YES	YES
	SX-24P8	24	YES (8)		YES	YES
	SX-24P16	24	YES (16)		YES	YES
	SX-24P	24	YES (24)		YES	YES
Titan Networkx	TNSS2400P	24	YES		YES	NO

**IGMP Setup Guide: Araknis
1080p Systems (KD-IP1080, KD-IP120)**

1. Before Araknis network switch is configured Key Digital KD-IP120/KD-IP1080 HDMI switch set must be connected to all HDMI sources/displays/network switches, and configured using Key Digital KD-IP120 Key Digital Management Software latest version; refer to Key Digital KD-IP120/KD-IP1080 configuration manual.
2. Power-up all the system components. Using Key Digital KD-IP120 Key Digital Management Software, switch **All Outputs -> Through** at switching page.
3. **IMPORTANT:** Disconnect all the DHCP devices like routers, servers from the Araknis network switch.
4. Locate a pinhole "RESET" button at the front panel left bottom corner of your Araknis network switch. Using a paper clip press and hold a reset button for more than 10 seconds and then release. Wait while the device is restarted and ready to use (about 5min).
5. **IMPORTANT:** At this point all the displays should be displaying distorted randomly flashing video images.
6. Connect your PC to the Araknis network switch directly using a network cable.
7. If you have not done yet, configure your PC's IP address to the same range as the switch (default **192.168.20.xxx**).
8. Enter the switch's IP address (default is **192.168.20.254**) in your browser and press ENTER.
9. Enter user name and password (default is "**araknis**" for both). Then click **Log In**.



10. Navigate to **Settings** -> **System**. Under **IP Address Settings** elect **Static**. Change an IP address to **192.168.1.251**, Subnet Mask to **255.255.255.0**, Default Gateway to **192.168.1.1** (in this case), and at the bottom click **Apply**. If you are setting up multiple network switches it is recommended to set first one to **192.168.1.251**, second to **192.168.1.252**, and so on, and each switch must be set individually same way as described below.

Araknis 210 24 Port PoE

192.168.1.251/#2

Apps Google 192.168.1.250/csb8af7/ 192.168.0.4

ADVANCED

Q Search

IPv4		IPv6	
Auto Configuration	<input checked="" type="radio"/> Static <input type="radio"/> DHCP	IPv6 State	Auto Configuration
IPv4 Address	192.168.1.251	IPv6 Address	fe80::d66a:91ff:fe3b:75fb
Subnet Mask	255.255.255.0	Link Local Address	fe80::d66a:91ff:fe3b:75fb
Default Gateway	192.168.1.1		
DNS Server 1	0.0.0.0		
DNS Server 2	0.0.0.0		

Date and Time Settings

☒ Manually Set Date and Time

Date: 2001 / 1 / 03

Time: 18 : 25 (24-Hour)

☐ Automatically Get Date and Time

NTP Server: time.nist.gov

Time Zone: (GMT-05:00) Eastern Time (US and Canada)

☐ Enable Daylight Saving

Start: March 2nd Sun 02 : 00

End: November 1st Sun 02 : 00

UPnP Configuration

UPnP: Enabled

- Page will refresh. Configure your PC's IP address to the same range as the switch (default **192.168.1.xxx**). Enter the switch's IP address (default is **192.168.1.251**) in your browser and press ENTER.
- Make sure the settings remain as above.
- Navigate to **Advanced -> Multicast -> IGMP Snooping**. Under **Settings** select **Enable** for **Status**, **V3** for **Version**, and **Enable** for **Report Suppression**. Under **VLAN Settings / VLAN ID 1** select **Enable** for **IGMP Snooping Status** and **Enable** for **Fast Leave**. Under **Querier Settings / VLAN ID 1** select **Enable** for **Querier State**, **V3** for **Querier Version** and make sure all other setting are exactly as shown below. Click **Apply**.

Araknis 210 24 Port PoE

192.168.1.251/#16

Google 192.168.1.250/cs525da TN55-2400P TN55-2400P 192.168.1.254/csb8af7 192.168.0.4

CLOUD SERVER: No Connection System Time: 2001-01-03 19:45:43 System Uptime: 3d 00:46:07

IGMP SNOOPING

Settings

Status	<input checked="" type="radio"/> Enabled <input type="radio"/> Disabled
Version	<input type="radio"/> V2 <input checked="" type="radio"/> V3
Report Suppression	<input checked="" type="radio"/> Enabled <input type="radio"/> Disabled

VLAN Settings

VLAN ID	IGMP Snooping Status	Fast Leave
1	Enabled	Enabled

Querier Settings

VLAN ID	Querier State	Querier Version	Querier Status	Querier IP	Robustness	Interval	Oper Interval	Max Response Interval	Oper Max Response Interval	Last Member Query Counter	Oper Last Member Query Counter	Last Member Query Interval	Oper Last Member Query Interval
1	Enabl	v3	Non-Querier	---	2	125	125	10	10	2	2	1	1

Group List

VLAN ID	Group IP Address	Member Ports
1	239.255.42.43	12

Router Settings

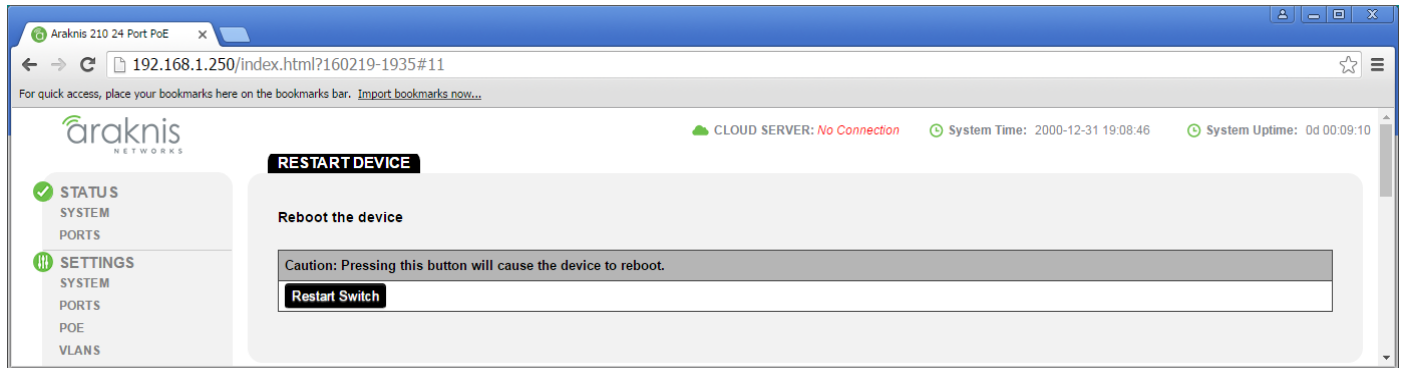
VLAN ID	Router Ports Auto-Learned	Dynamic Port List	Static Port List	Forbidden Port List
1	Enabled			

URC Settings

URC State	Member Ports	VLAN
Disabled	1	1

Apply Cancel

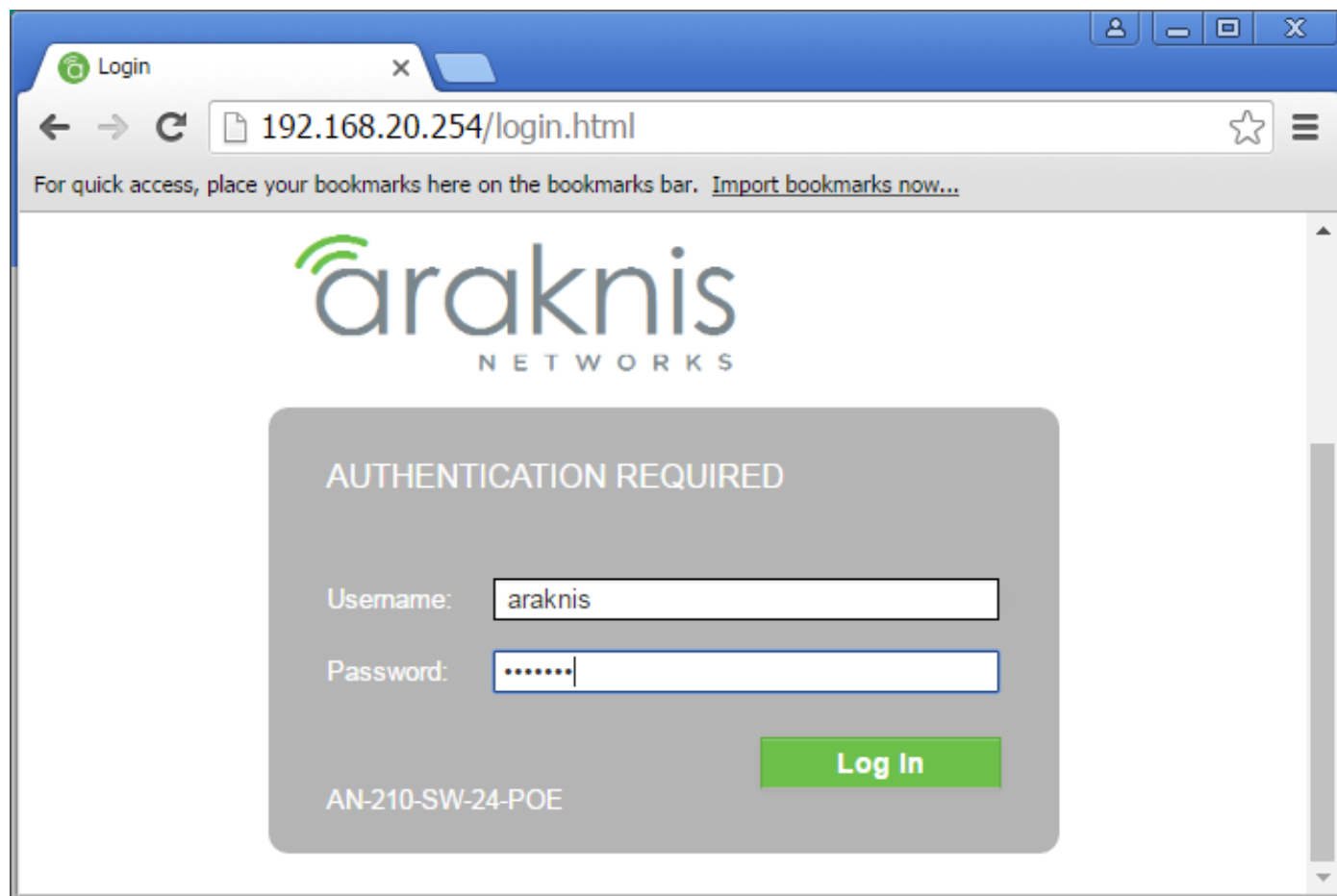
14. **IMPORTANT:** At this point all the displays should be displaying stable running video from the selected sources. If you do not have them displaying properly, than network switch is configured incorrectly.
15. Navigate to **Maintenance -> Restart Device** and click Restart Switch. After switch is rebooted and back to normal log in again, check all the settings again.



16. **IMPORTANT:** Now you can connect back you DHCP equipment (routers, servers and so on).
17. Power down Araknis network switch and power it up back again. Wait for the whole system to start and until you can see video on your displays.
18. Log in to your Araknis network switch again and make sure that IGMP settings are intact.
19. Rescan your components with Key Digital KD-IP120 Key Digital Management Software and make sure HDMI video switch is functional.
20. At this point your Araknis network switch is set and ready to use.

IGMP Setup Guide: Araknis 4K Systems (KD-IP822/922/1022)

1. Before Araknis network switch is configured Key Digital KD-IP120/KD-IP1080 HDMI switch set must be connected to all HDMI sources/displays/network switches, and configured using Key Digital KD-IP120 Key Digital Management Software latest version; refer to Key Digital KD-IP120/KD-IP1080 configuration manual.
2. Power-up all the system components. Using Key Digital KD-IP120 Key Digital Management Software, switch **All Outputs -> Through** at switching page.
3. **IMPORTANT:** Disconnect all the DHCP devices like routers, servers from the Araknis network switch.
4. Locate a pinhole "RESET" button at the front panel left bottom corner of your Araknis network switch. Using a paper clip press and hold a reset button for more than 10 seconds and then release. Wait while the device is restarted and ready to use (about 5min).
5. **IMPORTANT:** At this point all the displays should be displaying distorted randomly flashing video images.
6. Connect your PC to the Araknis network switch directly using a network cable.
7. If you have not done yet, configure your PC's IP address to the same range as the switch (default **192.168.20.xxx**).
8. Enter the switch's IP address (default is **192.168.20.254**) in your browser and press ENTER.
9. Enter user name and password (default is "**araknis**" for both). Then click **Log In**.



10. Navigate to **Settings** -> **System**. Under **IP Address Settings** elect **Static**. Change an IP address to **192.168.1.251**, Subnet Mask to **255.255.255.0**, Default Gateway to **192.168.1.1** (in this case), and at the bottom click **Apply**. If you are setting up multiple network switches it is recommended to set first one to **192.168.1.251**, second to **192.168.1.252**, and so on, and each switch must be set individually same way as described below.

Araknis 210 24 Port PoE

192.168.1.251/#2

Apps Google 192.168.1.250/cs525da TN55-2400P TN55-2400P 192.168.1.254/csb8af7 192.168.0.4

ADVANCED

Search

IPv4		IPv6	
Auto Configuration	<input checked="" type="radio"/> Static <input type="radio"/> DHCP	IPv6 State	Auto Configuration
IPv4 Address	192.168.1.251	IPv6 Address	fe80::d66a:91ff:fe3b:75fb
Subnet Mask	255.255.255.0	Default Gateway	::
Default Gateway	192.168.1.1	Link Local Address	fe80::d66a:91ff:fe3b:75fb
DNS Server 1	0.0.0.0		
DNS Server 2	0.0.0.0		

Date and Time Settings

☒ Manually Set Date and Time

Date: 2001 / 1 / 03

Time: 18 : 25 (24-Hour)

☐ Automatically Get Date and Time

NTP Server: time.nist.gov

Time Zone: (GMT-05:00) Eastern Time (US and Canada)

☐ Enable Daylight Saving

Start: March 2nd Sun 02 : 00

End: November 1st Sun 02 : 00

UPnP Configuration

UPnP Enabled

- Page will refresh. Configure your PC's IP address to the same range as the switch (default **192.168.1.xxx**). Enter the switch's IP address (default is **192.168.1.251**) in your browser and press ENTER.
- Make sure the settings remain as above.
- Navigate to **Advanced -> Multicast -> IGMP Snooping**. Under **Settings** select **Enable** for **Status**, **V2** for **Version**, and **Enable** for **Report Suppression**. Under **VLAN Settings / VLAN ID 1** select **Enable** for **IGMP Snooping Status** and **Enable** for **Fast Leave**. Under **Querier Settings / VLAN ID 1** select **Enable** for **Querier State**, **V2** for **Querier Version** and make sure all other setting are exactly as shown below. Click **Apply**.

IGMP SNOOPING

Settings

Status	Enabled Disabled
Version	IPv2 IPv3
Report Suppression	Enabled Disabled

VLAN Settings

VLAN ID	IGMP Snooping Status	Fast Leave
1	Enabled	Enabled

Querier Settings

VLAN ID	Querier State	Querier Version	Querier Status	Querier IP	Robustness	Interval	Oper Interval	Max Response Interval	Oper Max Response Interval	Last Member Query Counter	Oper Last Member Query Counter	Last Member Query Interval	Oper Last Member Query Interval
1	Enabled	v2	Querier	192.168.1.251	2	125	125	10	10	2	2	1	1

Group List

VLAN ID	Group IP Address	Member Ports
---------	------------------	--------------

Router Settings

VLAN ID	Router Ports Auto-Learned	Dynamic Port List	Static Port List	Forbidden Port List
1	Enabled			

URC Settings

URC State	Member Ports	VLAN
Disabled	1	1

Apply Cancel

- Enter **Settings** -> **Ports** and set Jumbo Frame size to 9216 bytes, enabling the required 8K jumbo frame support feature.

PORT SETTINGS

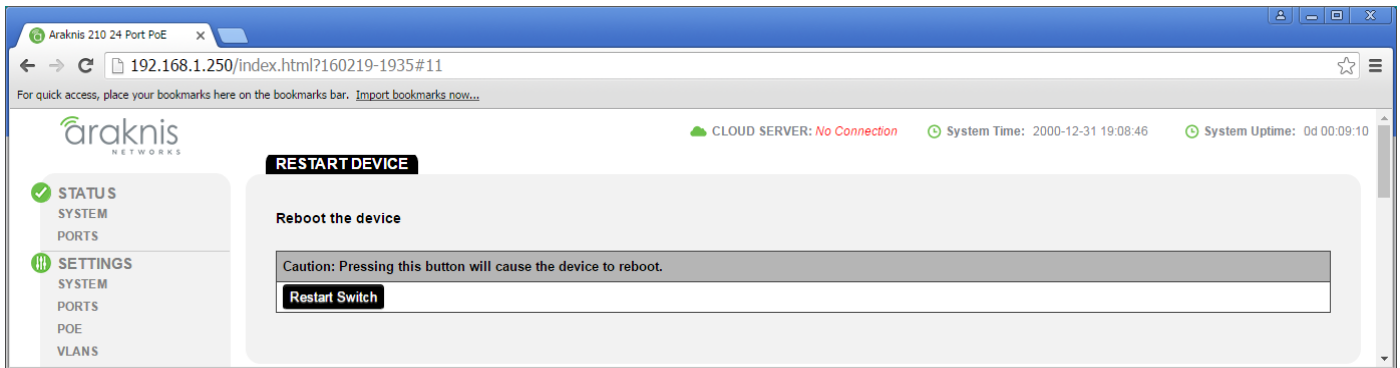
Jumbo Frame

Size	9216 Bytes (1522-9216)
------	------------------------

Basic Port Settings

Port	Name	Speed	Duplex
1	Port 1	Auto	Auto
2	Port 2	Auto	Auto
3	Port 3	Auto	Auto
4	Port 4	Auto	Auto
5	Port 5	Auto	Auto
6	Port 6	Auto	Auto
7	Port 7	Auto	Auto
8	Port 8	Auto	Auto
9	Port 9	Auto	Auto
10	Port 10	Auto	Auto
11	Port 11	Auto	Auto
12	Port 12	Auto	Auto
13	Port 13	Auto	Auto
14	Port 14	Auto	Auto
15	Port 15	Auto	Auto
16	Port 16	Auto	Auto
17	Port 17	Auto	Auto
18	Port 18	Auto	Auto
19	Port 19	Auto	Auto
20	Port 20	Auto	Auto

15. **IMPORTANT:** At this point all the displays should be displaying stable running video from the selected sources. If you do not have them displaying properly, then network switch is configured incorrectly.
16. Navigate to **Maintenance** -> **Restart Device** and click Restart Switch. After switch is rebooted and back to normal log in again, check all the settings again.

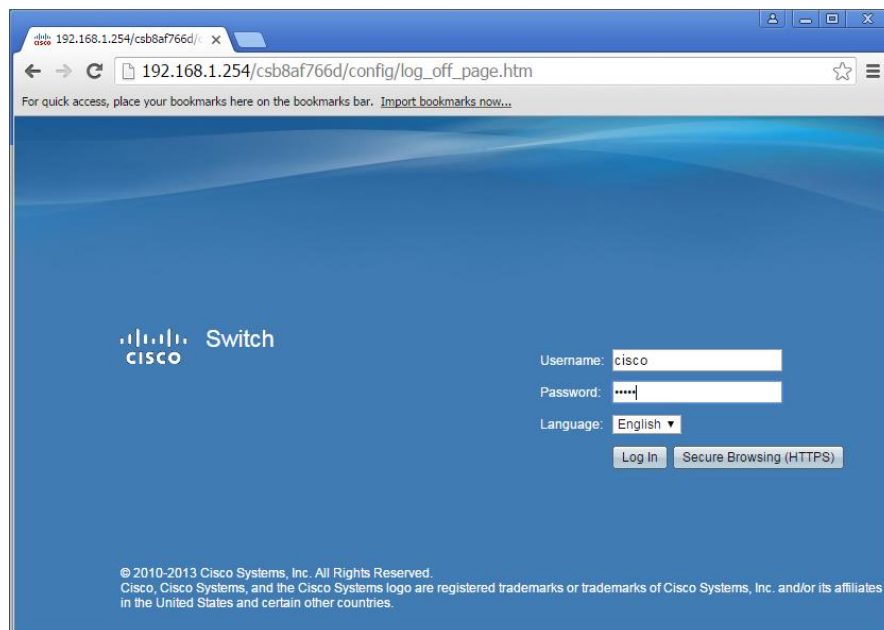


17. **IMPORTANT:** Now you can connect back you DHCP equipment (routers, servers and so on).
18. Power down Araknis network switch and power it up back again. Wait for the whole system to start and until you can see video on your displays.
19. Log in to your Araknis network switch again and make sure that IGMP settings are intact.
20. Rescan your components with Key Digital KD-IP120 Key Digital Management Software and make sure HDMI video switch is functional.
21. At this point your Araknis network switch is set and ready to use.

IGMP Setup Guide: Cisco SF500-48, SG300 1080p Systems (KD-IP1080, KD-IP120)

Note: Compatible with KD-IP1080, KD-IP120 Enterprise AV Systems Only

1. Before Cisco network switch is configured Key Digital KD-IP120/KD-IP1080 HDMI switch set must be connected to all HDMI sources/displays/network switches, and configured using Key Digital KD-IP120 Key Digital Management Software latest version.
2. Power-up all the system components. Using Key Digital KD-IP120 Key Digital Management Software, switch **All Outputs** -> **Through** at switching page.
3. **IMPORTANT:** Disconnect all the DHCP devices like routers, servers from the Cisco network switch.
4. Locate a pinhole "RESET" button at the front panel left bottom corner of your Cisco network switch. Using a paper clip press and hold a reset button for more than 10 seconds and then release. Wait while the device is restarted and ready to use (about 5min).
5. **IMPORTANT:** Make sure the green "SYSTEM" LED next to the pinhole "RESET" button is flashing.
6. **IMPORTANT:** At this point all the displays should be displaying distorted randomly flashing video images.
7. Connect your PC to the Cisco network switch directly using a network cable.
8. If you have not done yet, configure your PC's IP address to the same range as the switch (default **192.168.1.xxx**).
9. Enter the switch's IP address in your browser and press ENTER (check the user manual for a default IP address - it is usually **192.168.1.254**).
10. Enter user name and password (check the user manual for a default user name and password; it is usually **"cisco"** for both). Then click **Log In**.



11. **Change Password** screen will appear. Enter old and then new password two times as at the picture below and click Apply.

The screenshot shows a web browser window displaying the Cisco Small Business SF500-48 48-Port 10/100 Stackable Managed Switch configuration page. The browser's address bar shows the URL `192.168.1.254/csb8af766d/home.htm`. The page title is "Small Business SF500-48 48-Port 10/100 Stackable Managed Switch". The "Change Password" tab is selected in the left sidebar. The main content area is titled "Change Password" and contains the following text:

Please change your password from the default settings for better protection of your network

The minimum requirements are as follows:

- Cannot be the same as the user name.
- Cannot be the same as the current password.
- Minimum length is 8.
- Minimum number of character classes is 3. Character classes are upper case, lower case, numeric, and special characters.

New Password Configuration

Old Password:

New Password:

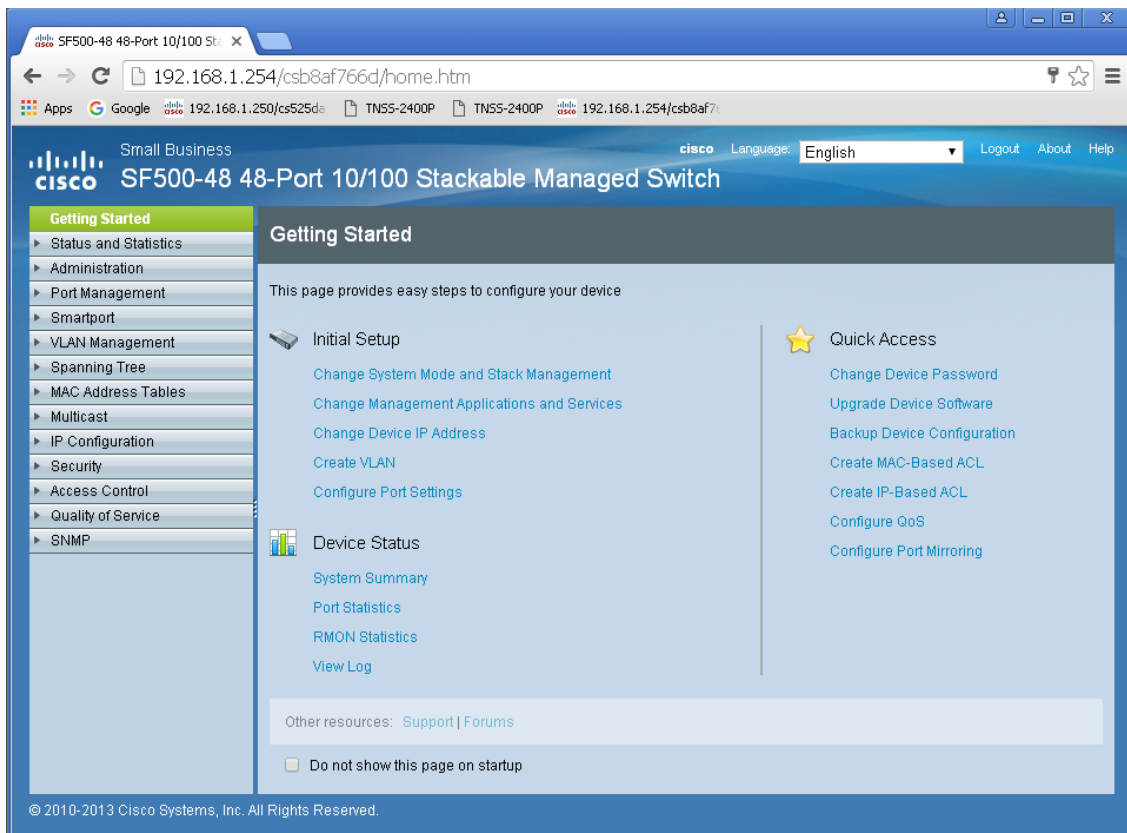
Confirm Password:

Password Strength Meter: Below Minimum

Password Strength Enforcement: ☒ Disable

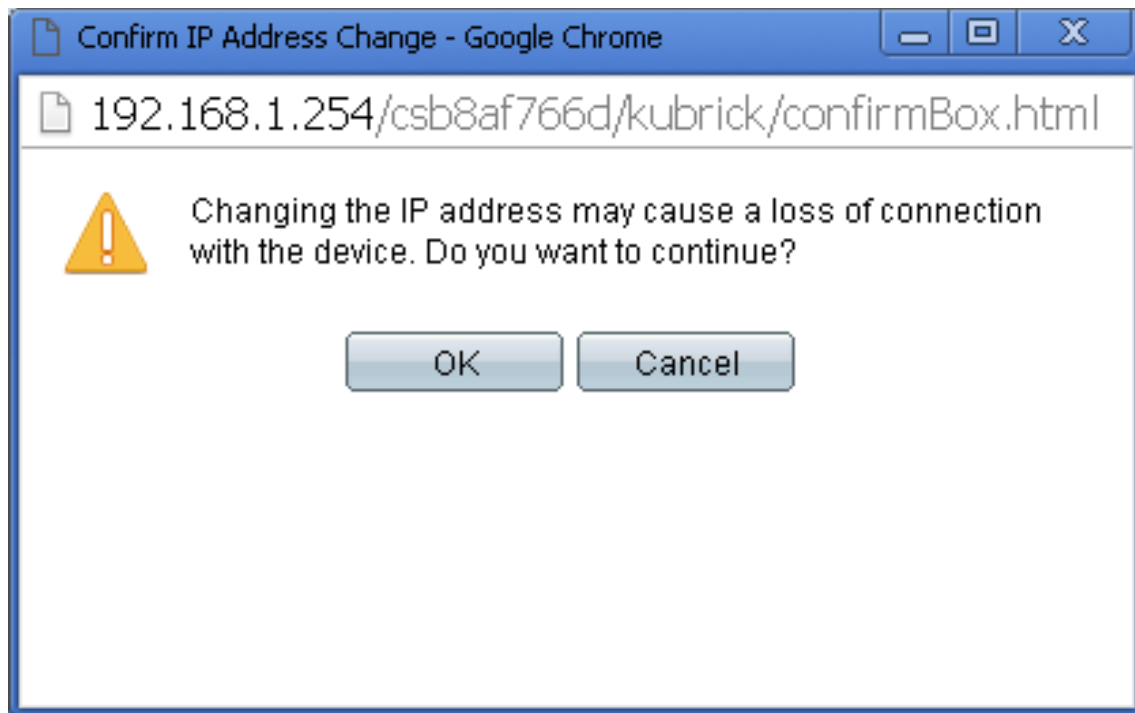
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12. **Getting Started** screen will appear.

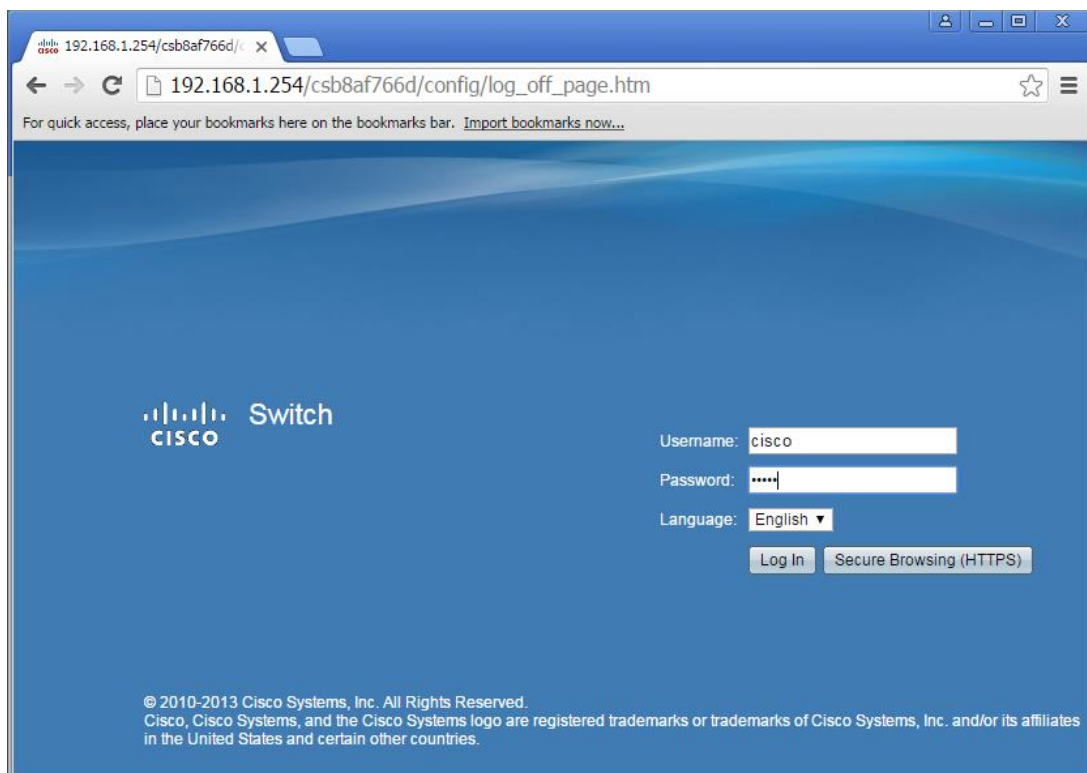


13. Navigate to **Administration -> Management Interface -> IPv4 Interface**. Select **"1"** under **Management VLAN**. Select **Static** for **IP Address Type**. Change an IP address to **192.168.1.251**. If you are using multiple network switches it is recommended to set first one to **192.168.1.251**, second to **192.168.1.252**, and so on. Leave **Network Mask** as **255.255.255.0**, set **Administrative Default Gateway** as **User Defined** and enter your router IP address (in this case: **192.168.1.1**), then click **Apply**.

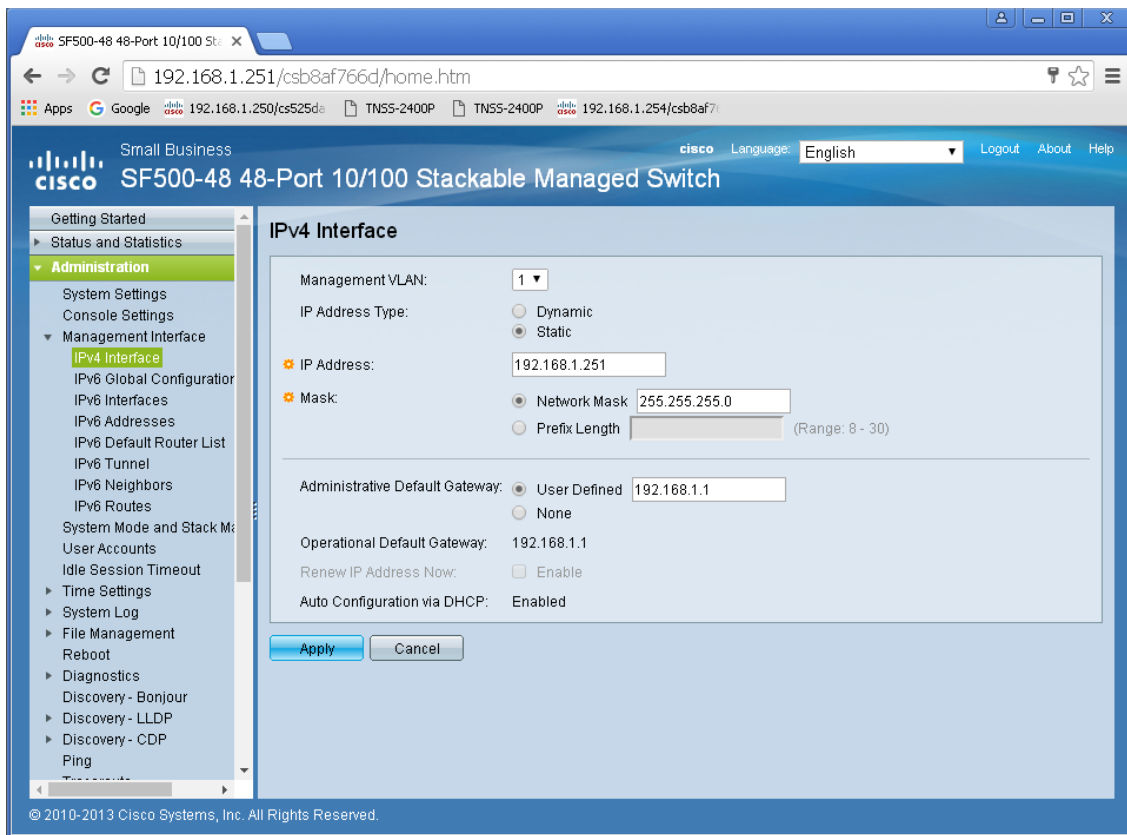
14. Click **OK** to confirm.



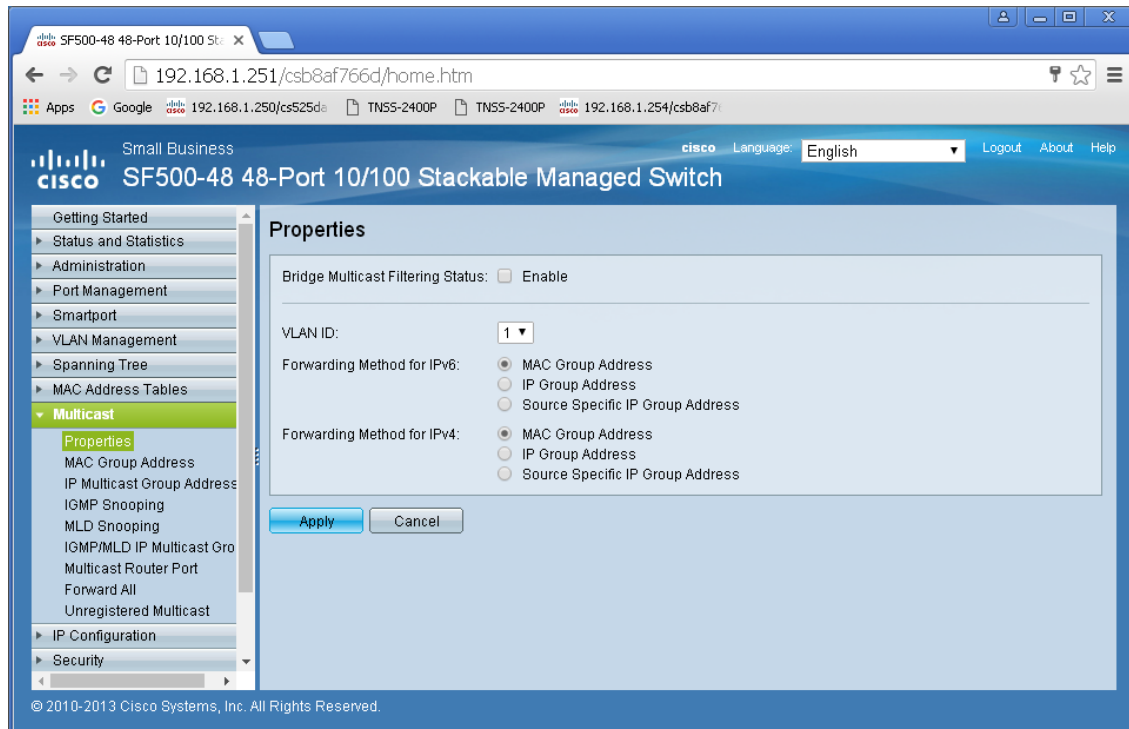
15. Log in again using new password and new IP address.



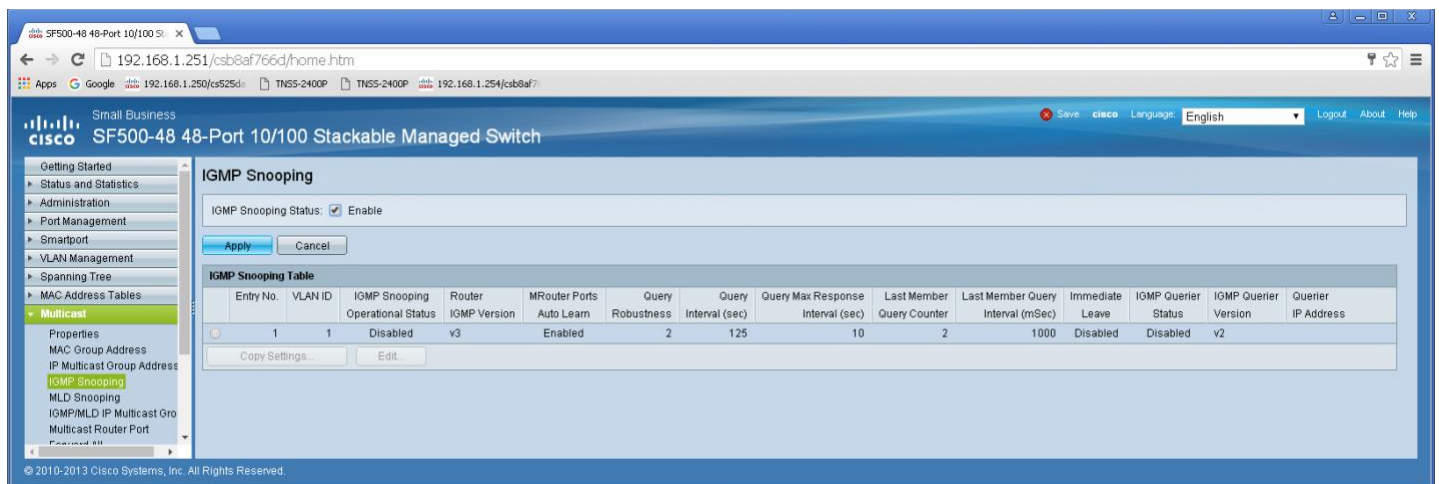
16. Confirm all the administration page settings as at the picture below.



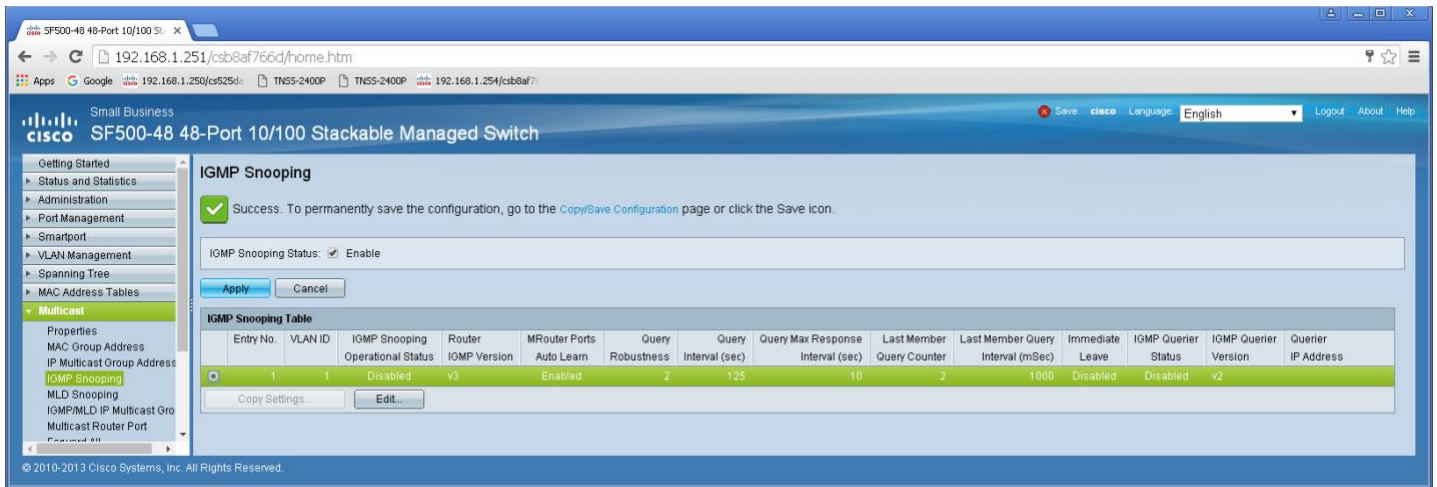
17. Navigate to **Multicast -> Properties**. Check **Enable** box next to the **Bridge Multicast Filtering Status** box. Make sure the other settings are exactly as shown below. Then click **Apply**.



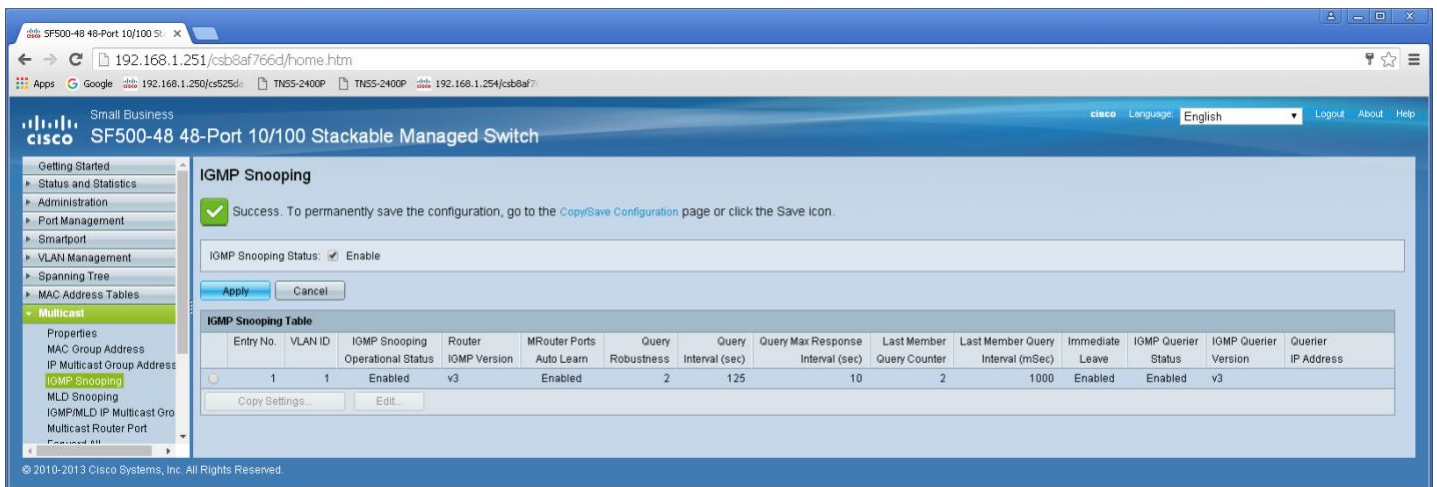
18. Navigate to **Multicast -> IGMP Snooping**. Check the **IGMP Snooping Status: Enable** box and click **Apply**.



19. Click on a radio button on the left and then click **Edit**. New window will appear.



20. Click on a radio button on the left and then click **Edit**. New window will appear. Select **"1"** for **VLAN ID**. Check **Enable** box under **IGMP Snooping Status**. Check **Enable** box under **Immediate Leave**. Check **Enable** box under **IGMP Querier Status**. Select **User Defined** next to **Administrative Querier Source IP Address**: and select **192.168.1.1**. For **IGMP Querier Version**: select **IGMPV3**. Then click **Apply** and **Close**. Make sure all the setting are exactly as shown at the picture below.

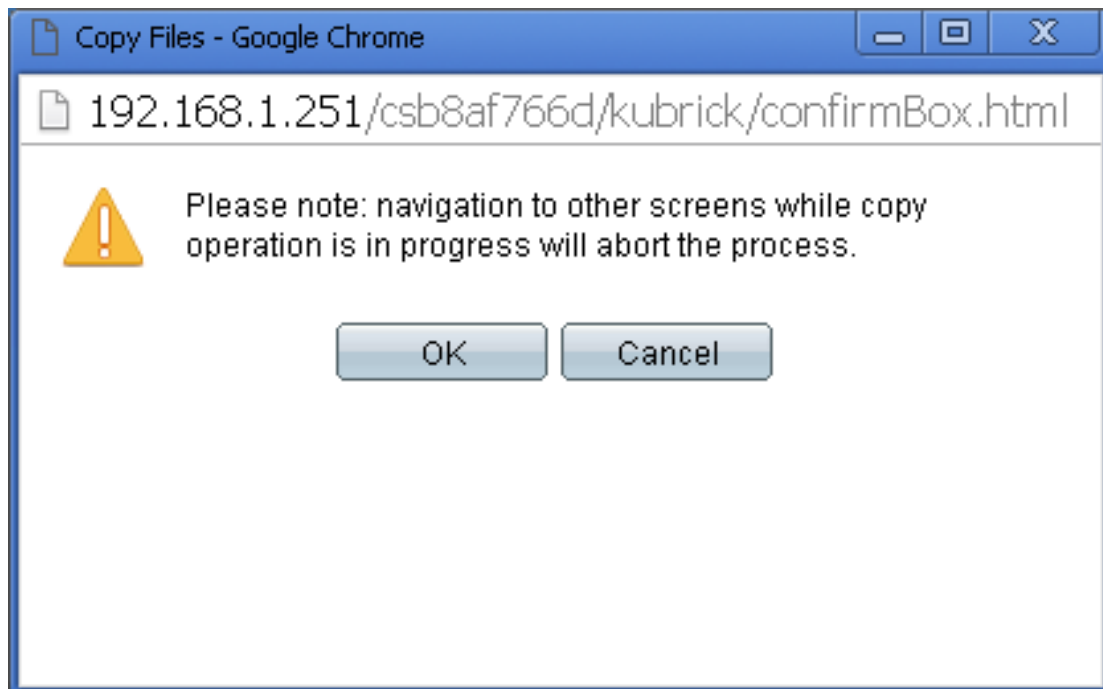


21. **IMPORTANT:** At this point all the displays should be displaying stable running video from the selected sources. If you do not have them displaying properly, than network switch is configured incorrectly.

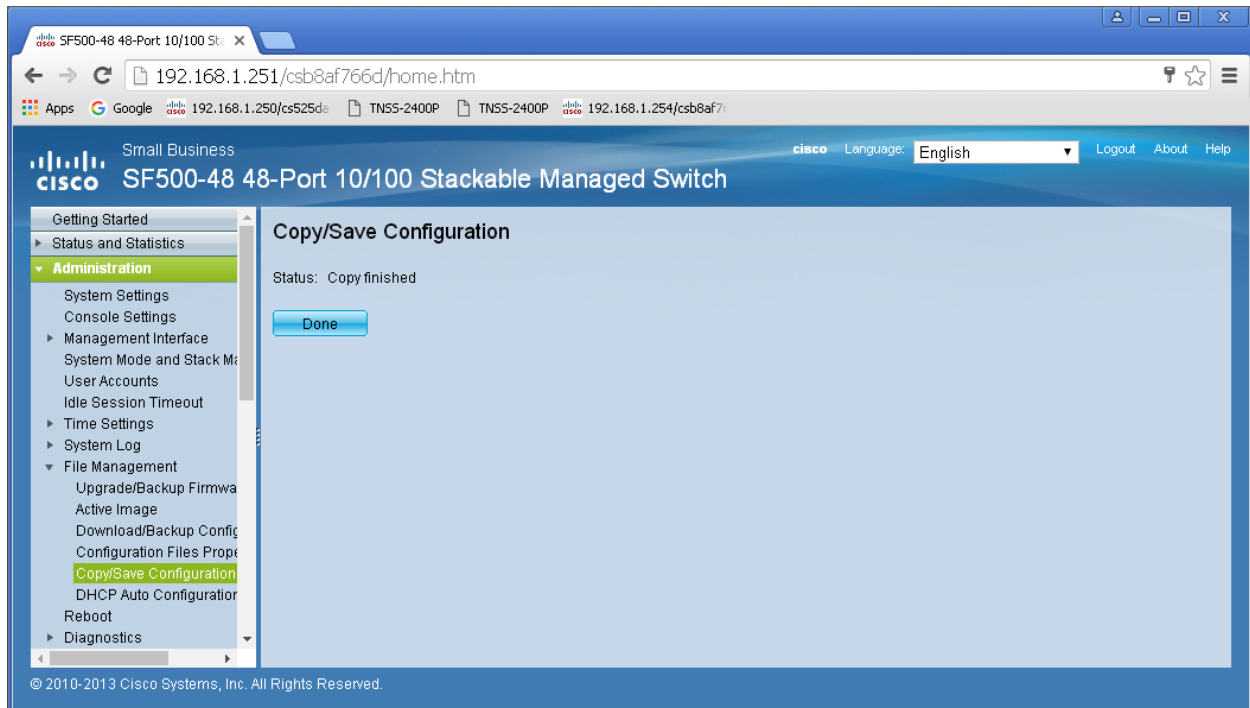
22. On the top of the page click on flashing “x Save”. For **Source File Name**: select **Running configuration**. For **Destination File Name**: select **Startup configuration**. Check the selections and make sure they are exactly as shown below. Click **Apply**.



23. Click **Apply** to confirm.



24. Click **Done**.



25. **IMPORTANT:** Now you can connect back you DHCP equipment (routers, servers and so on).

26. Power down Cisco network switch and power it up back again. Wait for the whole system to start and until you can see video on your displays.

27. Log in to your Cisco network switch again and make sure that IGMP settings are intact:



28. Rescan your components with Key Digital KD-IP120 Key Digital Management Software and make sure HDMI video switch is functional.

29. At this point your Linksys network switch is set and ready to use.

IGMP Setup Guide: Cisco C3850 Series 4K Systems (KD-IP822/922/1022)


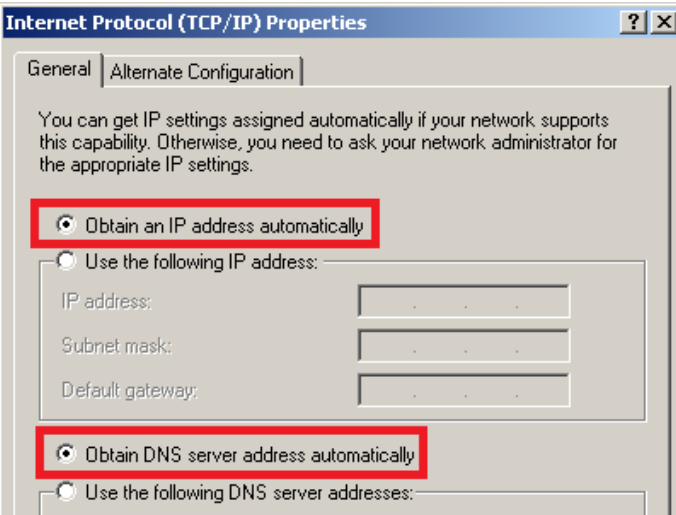
Cisco Catalyst 3850 series

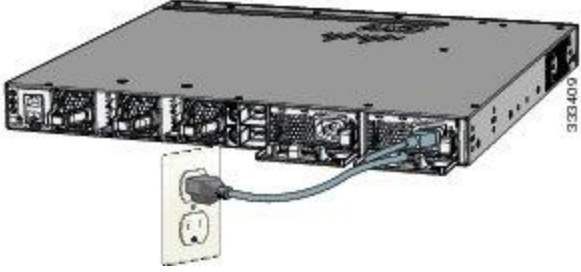


This guide describes how to use **Express Setup** to initially configure your Catalyst 3850 switch. We have modified original Express Setup guide from Cisco to help out you install it easily. For more installation and configuration information, see the Catalyst 3850 documentation on Cisco.com.

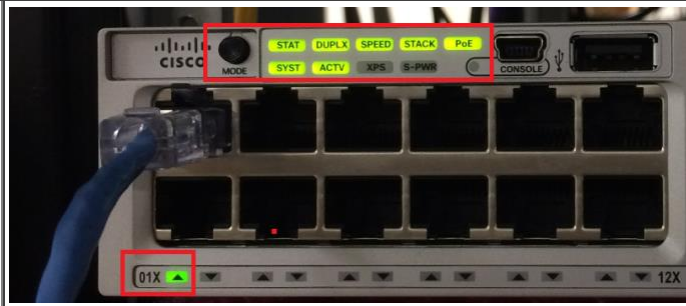
Running Express Setup & Configuration Setup for KD-IP822, KD-IP922, KD-IP1022

Use Express Setup to enter the initial IP information. This action enables the switch to connect to local routers and the Internet. You can access the switch through the IP address for further configuration.

Note : Even you already finish Express Setup on your switch, please check every step one by one.

Step 1	Make sure that nothing is connected to the switch.	
Step 2	<p>During Express Setup, the switch acts as a DHCP server. If your PC or laptop has a static IP address, temporarily change your PC or laptop settings to DHCP.</p> <p>Note. Do not connect LAN cable from your PC or laptop to Cisco's switch until Step 7.</p>	
Step 3	<p>Install the power supply modules. See the "Power Supply Installation" chapter in the <i>Catalyst 3850 Switch Hardware Installation Guide</i> for instructions.</p> <p>http://www.cisco.com/go/cat3850_hw</p>	

Step 4	<p>Power the switch.</p> <p>AC power switches: Plug the AC power cord into the switch power supply and into a grounded AC outlet.</p> <p>DC power switches: See the wiring instructions in Step3</p>	
Step 5	<p>Observe the POST results. Approximately 30 seconds after the switch powers on, it begins the power-on self-test (POST), which can take up to 5 minutes to complete.</p> <p>During POST, the SYSTEM LED blinks green. When POST is complete, the SYSTEM LED turns solid green. The ACTV LED is green if the switch is acting as the active switch.</p> <p>Note Before going to the next step, wait until POST is complete.</p> <p>Troubleshooting:</p> <p>If the SYST LED does not turn solid green, or turns amber, the switch failed the POST. Contact your Cisco representative or reseller.</p>	
Step 6	<p>Press and hold the Mode button until all the LEDs next to the Mode button turn green.</p> <p>You might need to hold the button for more than 3 seconds.</p> <p>The switch is now in Express Setup mode.</p>	
	<p>Troubleshooting:</p> <p>If the LEDs next to the Mode button blink when you press the button, release it. Blinking LEDs mean that the switch is already configured and cannot go into Express Setup mode. For more information, see the “Resetting the Switch” section.</p>	
Step 7	<p>Connect a Category 5e/6 Ethernet cable to first port on the front panel of Cisco Switch.</p> <p>Connect the other end of the cable to the Ethernet port on your PC or laptop.</p> <p>Wait until the port LEDs on the switch and your PC or laptop or laptop are green or blinking green. Green LEDs indicate a successful connection.</p> <p>Troubleshooting:</p> <p>If the port LEDs do not turn green after about 30 seconds, make sure that: You are using an undamaged Category 5 or 6 Ethernet cable</p> <p>(Do not connect console ports)</p>	



- Step 8 Run command shell on your PC or laptop and enter “ipconfig” on the command line. You will get Windows IP configuration and find IP address of Default Gateway.
Note. According to Express Setup from Cisco, it said “10.0.01” is default IP address. But it’s not correct for all Cisco Catalyst 3850 series. It looks default IP address will be varied depend on Cisco Switches.

```

C:\WINDOWS\system32\cmd.exe
C:\Documents and Settings\M60-USER>
C:\Documents and Settings\M60-USER>ipconfig

Windows IP Configuration

Ethernet adapter VMware Network Adapter VMnet8:

    Connection-specific DNS Suffix  . : 
    IP Address. . . . . : 192.168.180.1
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 

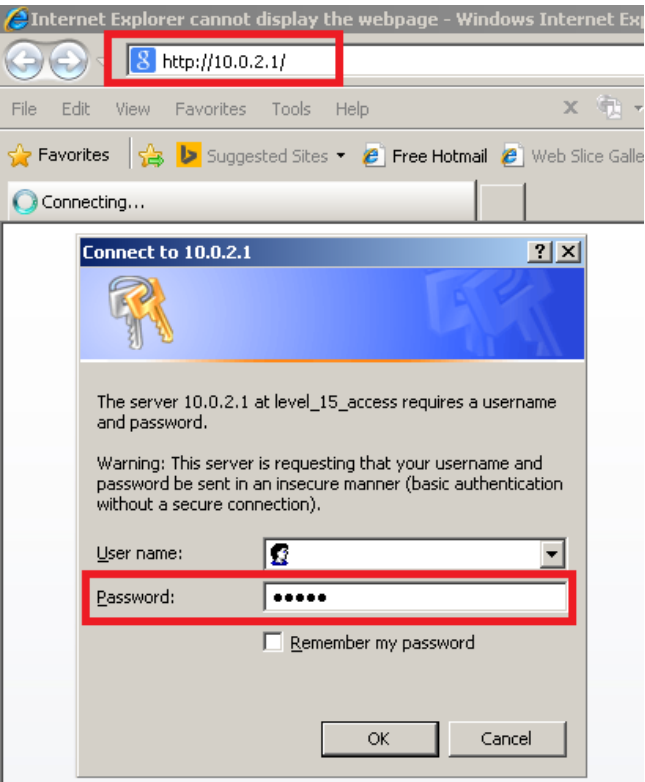
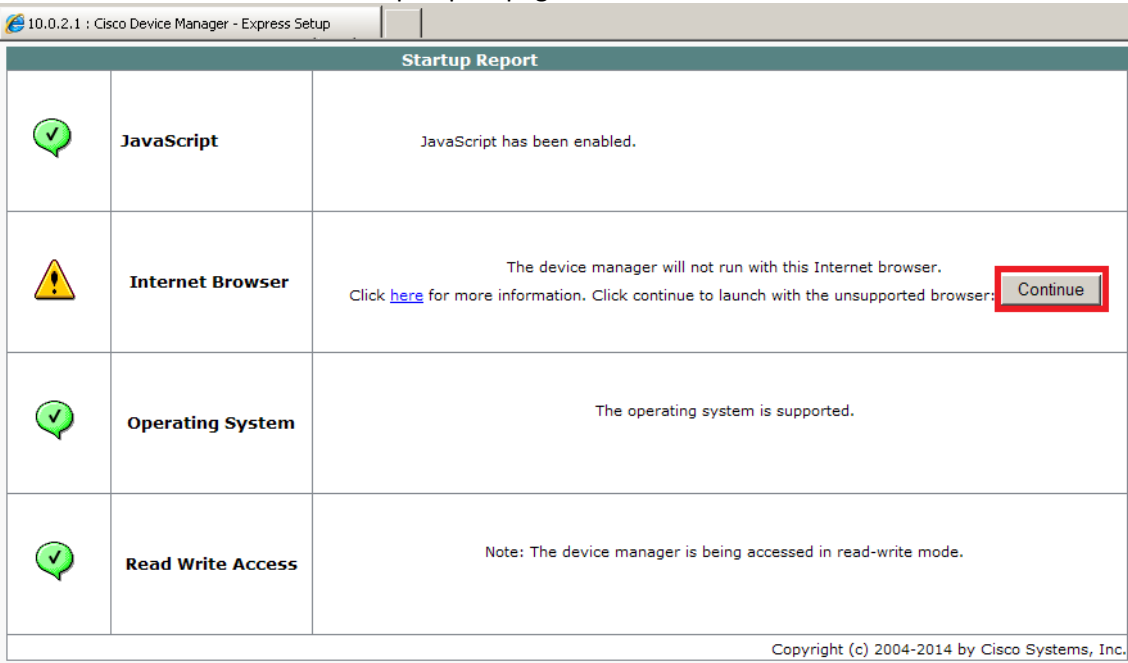
Ethernet adapter VMware Network Adapter VMnet1:

    Connection-specific DNS Suffix  . : 
    IP Address. . . . . : 192.168.119.1
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 

Ethernet adapter Local Area Connection:

    Connection-specific DNS Suffix  . : 
    IP Address. . . . . : 10.0.2.2
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 10.0.2.1

C:\Documents and Settings\M60-USER>
C:\Documents and Settings\M60-USER>
C:\Documents and Settings\M60-USER>
    
```

<p>Step 9</p>	<p>Start a browser session on the PC or laptop, and enter the IP address of your Default Gateway.</p> <p>Note: As I mentioned on Step8, your IP address of Default Gateway may differ with our IP address.</p> <p>When a pop-up dialog window “Connect to 10.0.2.1” appear, skip the User name and enter the default password, “cisco”</p> <p>Troubleshooting: If the Express Setup window does not appear, make sure that any browser pop-up blockers or proxy settings are disabled and that any wireless client is disabled on your PC or laptop.</p>	 <p>The screenshot shows an Internet Explorer window titled "Internet Explorer cannot display the webpage - Windows Internet Explorer". The address bar contains "http://10.0.2.1/". Below the address bar, a "Connect to 10.0.2.1" dialog box is displayed. The dialog box contains a warning message: "The server 10.0.2.1 at level_15_access requires a username and password. Warning: This server is requesting that your username and password be sent in an insecure manner (basic authentication without a secure connection)." There are input fields for "User name:" and "Password:". The "Password:" field is highlighted with a red box. Below the password field is a checkbox labeled "Remember my password". At the bottom of the dialog box are "OK" and "Cancel" buttons.</p>															
<p>Step 10</p>	<p>Click “Continue” button on Startup Report page.</p>	 <p>The screenshot shows the "Startup Report" page of the Cisco Device Manager - Express Setup. The page has a title bar "10.0.2.1 : Cisco Device Manager - Express Setup". The main content area is a table with four rows:</p> <table border="1"> <thead> <tr> <th colspan="3">Startup Report</th> </tr> </thead> <tbody> <tr> <td></td> <td>JavaScript</td> <td>JavaScript has been enabled.</td> </tr> <tr> <td></td> <td>Internet Browser</td> <td>The device manager will not run with this Internet browser. Click here for more information. Click continue to launch with the unsupported browser: Continue</td> </tr> <tr> <td></td> <td>Operating System</td> <td>The operating system is supported.</td> </tr> <tr> <td></td> <td>Read Write Access</td> <td>Note: The device manager is being accessed in read-write mode.</td> </tr> </tbody> </table> <p>At the bottom right of the page, there is a copyright notice: "Copyright (c) 2004-2014 by Cisco Systems, Inc.".</p>	Startup Report				JavaScript	JavaScript has been enabled.		Internet Browser	The device manager will not run with this Internet browser. Click here for more information. Click continue to launch with the unsupported browser: Continue		Operating System	The operating system is supported.		Read Write Access	Note: The device manager is being accessed in read-write mode.
Startup Report																	
	JavaScript	JavaScript has been enabled.															
	Internet Browser	The device manager will not run with this Internet browser. Click here for more information. Click continue to launch with the unsupported browser: Continue															
	Operating System	The operating system is supported.															
	Read Write Access	Note: The device manager is being accessed in read-write mode.															
<p>Step 11</p>	<p>Select the Basic Settings on the Express Setup window and change the network settings as you like, then go Step12.</p>																

Note. Please do not click "Submit" button in this step.

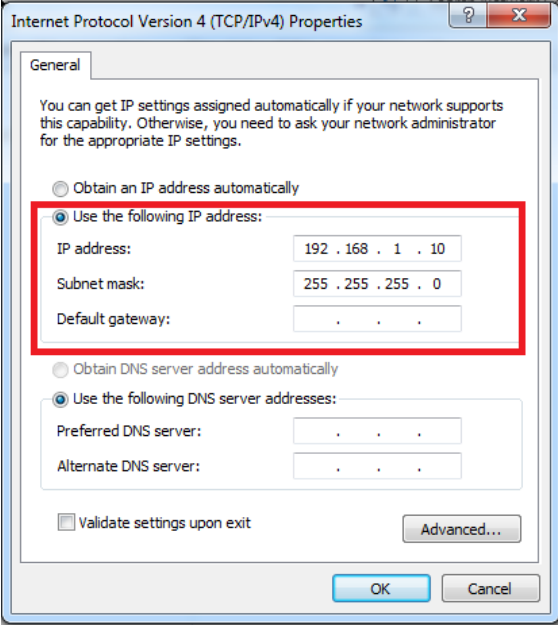
The screenshot shows the 'Catalyst 3850 Series Express Setup' window with the 'Basic Settings' tab selected. The 'Network Settings' section is highlighted with a red box. It contains the following fields: 'Management Interface (VLAN ID)' set to 1, 'IP Address' set to 192.168.1.251, 'Subnet Mask' set to 255.255.255.0, 'Default Gateway' set to 192.168.1.1, 'Switch Password' set to four dots, and 'Confirm Switch Password' set to four dots. The 'Optional Settings' section includes 'Host Name' set to 'Switch', 'System Date' set to 11/Oct/2017, 'System Time' set to 12:29 PM, 'Time Zone' set to (GMT - 05:00) Eastern Time (US & Canada), and 'Daylight Saving Time' checked.

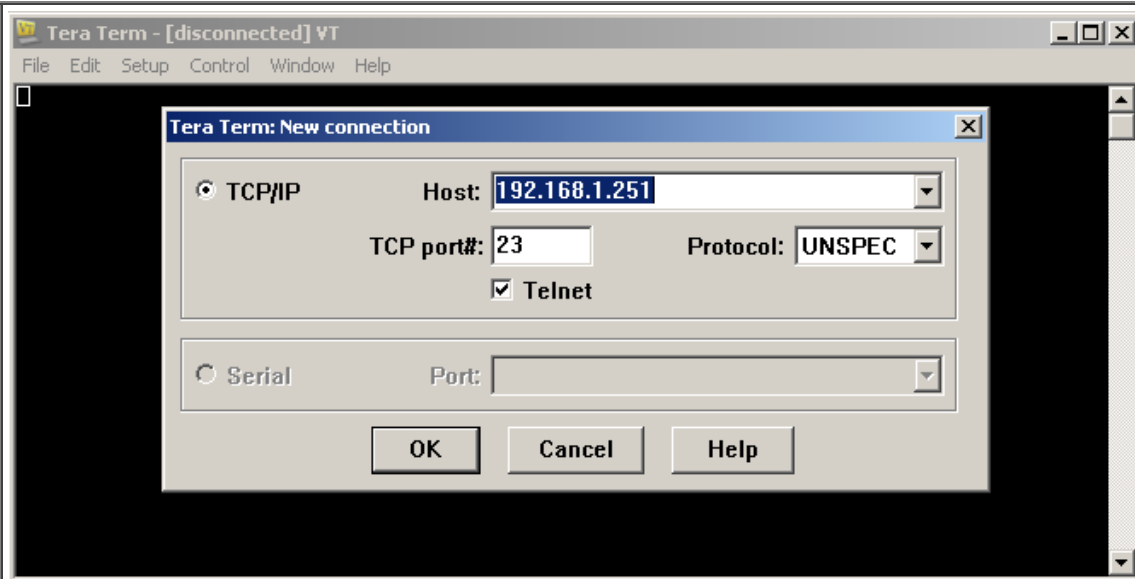
Step 12 Select the **Advanced Settings** tab on the Express Setup window

- In the Telnet Access field, click **Enable** to use Telnet to manage the switch by using the command-line interface (CLI). If you enable Telnet access, you must enter a Telnet password.
- In the Telnet Password field, enter a password. The Telnet password can be from 1 to 25 alphanumeric characters, is case sensitive, allows embedded spaces, but does not allow spaces at the beginning or end. In the Confirm Telnet Password field, reenter the Telnet password.

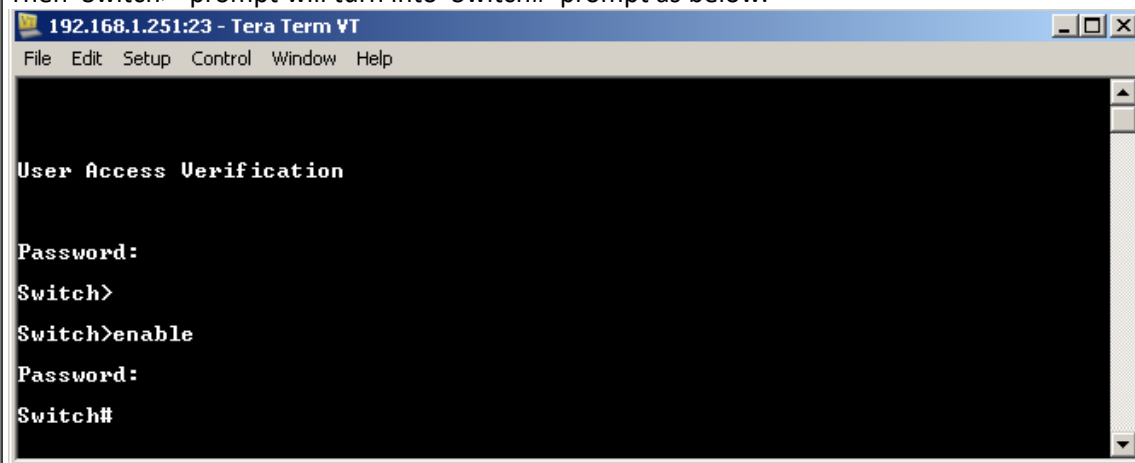
And click **Submit** to save your changes and to complete the initial setup.

The screenshot shows the 'Catalyst 3850 Series Express Setup' window with the 'Advanced Settings' tab selected. The 'Telnet Access' section is highlighted with a red box. It contains the following fields: 'Telnet Access' with 'Enable' selected, 'Telnet Password' set to four dots, and 'Confirm Telnet Password' set to four dots. The 'SNMP' section includes 'SNMP' with 'Disable' selected, 'SNMP Read Community' set to an empty field, 'SNMP Write Community' set to an empty field, 'System Contact' set to an empty field, and 'System Location' set to an empty field. The 'Submit' button is highlighted with a red box.

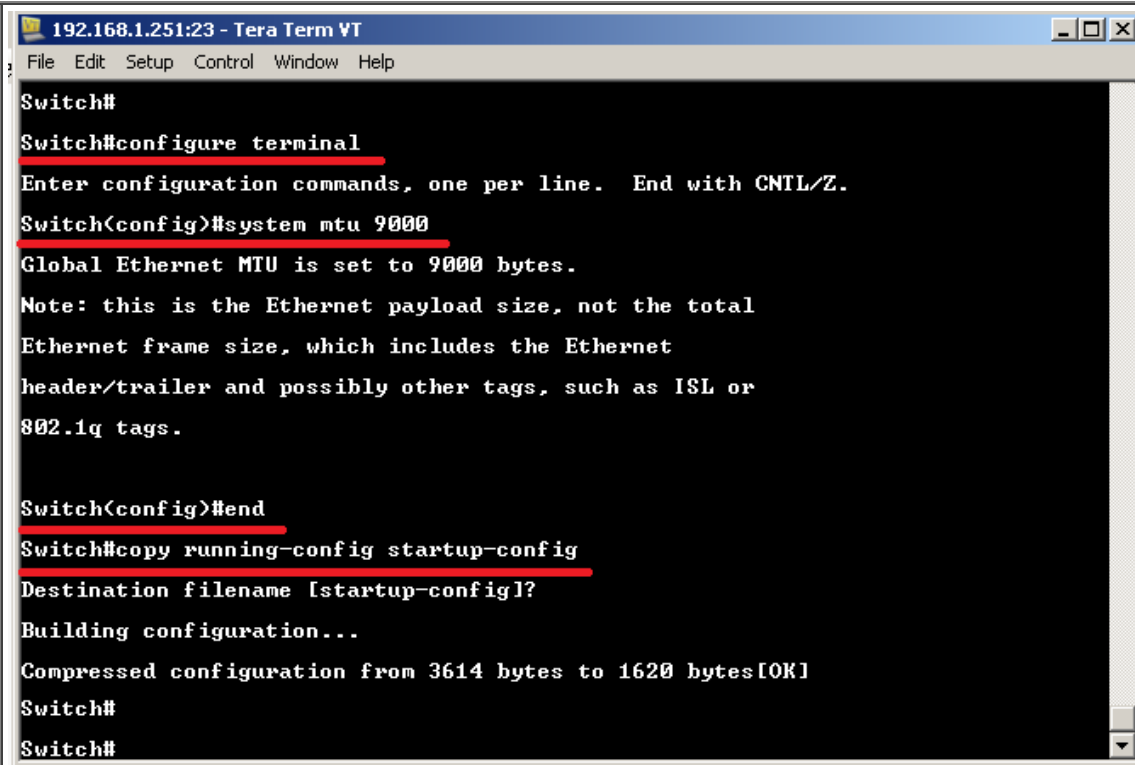
<p>Step 13</p>	<p>After you click Submit :</p> <ul style="list-style-type: none">• The switch is configured and exits Express Setup mode.• The browser displays a warning message and tries to connect with the earlier switch IP address. Typically, connectivity between the PC or laptop and the switch is lost because the configured switch IP address is in a different subnet from the IP address on the PC or laptop. <p>Now, change IP address of your PC or laptop to static IP address in same subnet of the Switch.</p>	
<p>Step 14</p>	<p>To configuring Multicast IGMP Snooping and Jumbo Frame setting at the switch for KD-IP922 devices, you have to connect to the Switch via Telnet.</p> <p>Note. To access Telnet, you can use PuTTY or Tera Term software. We recommend to use Tera Term software and you can download it as below link. https://osdn.net/projects/ttssh2/downloads/68252/teraterm-4.96.exe/</p> <p>Run Tera Term software, and press Alt + N keys to open new connection.</p> <p>14-1. Select “TCP/IP” on Tera Term:New Connection Window.</p> <p>14-2. Type the IP address of the Switch at the field of Host: Ex) 192.168.1.251</p> <p>14-3. Type 23 at the field of TCP Port# and select “Telnet”.</p> <p>14-4. Then click OK button.</p>	



- Step 15 When you connect to the switch via Telnet successfully, you have to log in to Telnet server of the switch.
- 15-1. Enter your Telnet password you assigned at Step12 if prompted.
 - 15-2. Enter “enable” on Switch> prompt to enable privileged EXEC mode
 - 15-3. Enter your Telnet password once again.
- Then ‘Switch>’ prompt will turn into ‘Switch#’ prompt as below.



- Step 16 **To Enable Jumbo Frame for IP922.**
- Note: IP922 requires Jumbo Frame(8K) for video/audio transmission via 1G-BaseT with the Switch.
- 16-1. Enter “configure terminal” on Switch# prompt
 - 16-2. Enter “system mtu 9000” on Switch(config)# prompt
 - 16-3. Enter “end” on Switch(config)# prompt
 - 16-4. Enter “copy running-config startup-config” on Switch# prompt
 - 16-5. Press Enter key on the question of “Destination filename [startup-config]?”



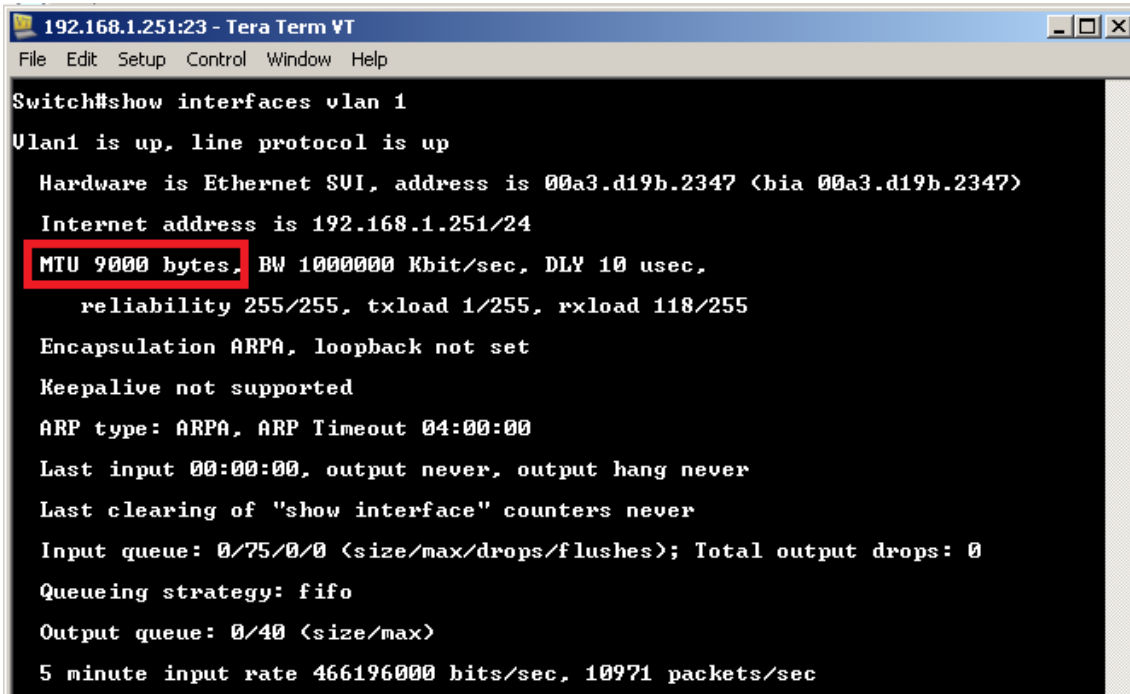
```
192.168.1.251:23 - Tera Term VT
File Edit Setup Control Window Help

Switch#
Switch#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#system mtu 9000
Global Ethernet MTU is set to 9000 bytes.
Note: this is the Ethernet payload size, not the total
Ethernet frame size, which includes the Ethernet
header/trailer and possibly other tags, such as ISL or
802.1q tags.

Switch(config)#end
Switch#copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
Compressed configuration from 3614 bytes to 1620 bytes[OK]
Switch#
Switch#
```

Step 17 To confirm Jumbo Frame setting on the switch.

17-1. Enter "show interfaces vlan 1" on Switch# prompt
You can check MTU 9000 bytes in the status of Vlan1 interface



```

192.168.1.251:23 - Tera Term VT
File Edit Setup Control Window Help

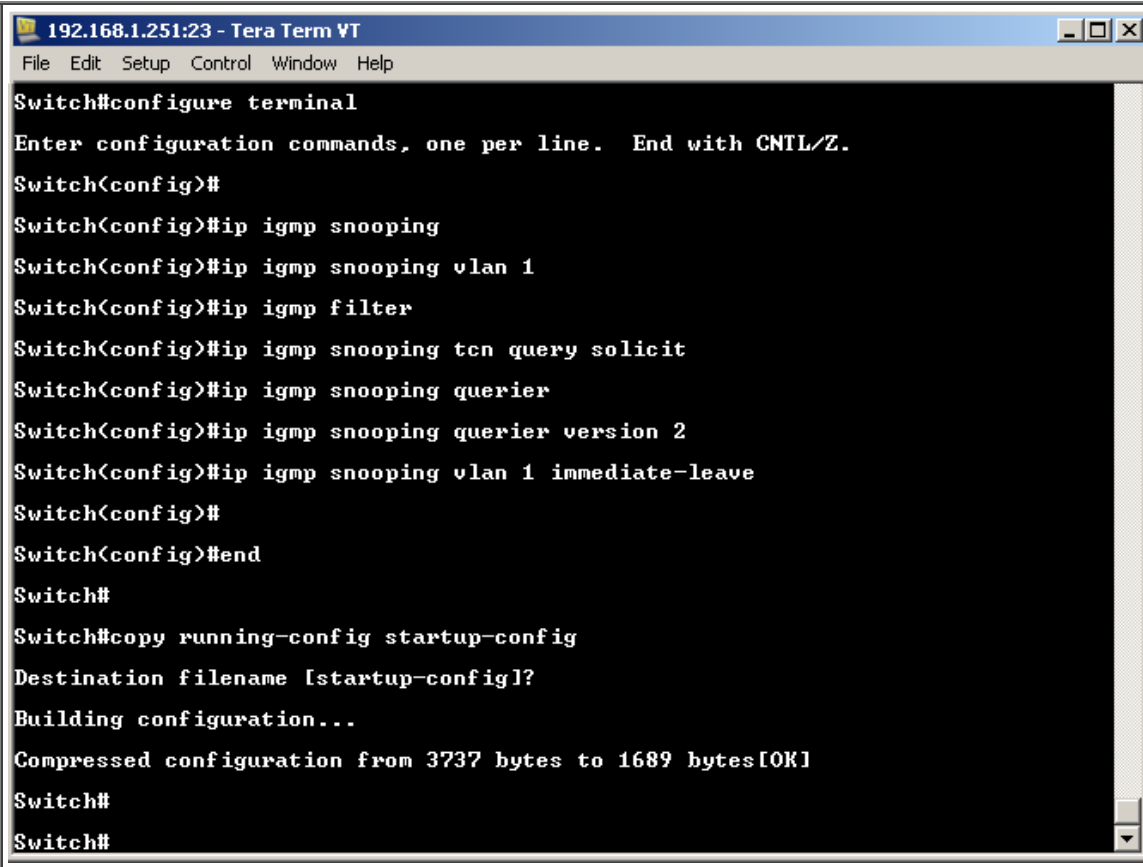
Switch#show interfaces vlan 1
Vlan1 is up, line protocol is up
  Hardware is Ethernet SVI, address is 00a3.d19b.2347 (bia 00a3.d19b.2347)
  Internet address is 192.168.1.251/24
  MTU 9000 bytes, BW 1000000 Kbit/sec, DLY 10 usec,
    reliability 255/255, txload 1/255, rxload 118/255
  Encapsulation ARPA, loopback not set
  Keepalive not supported
  ARP type: ARPA, ARP Timeout 04:00:00
  Last input 00:00:00, output never, output hang never
  Last clearing of "show interface" counters never
  Input queue: 0/75/0/0 <size/max/drops/flushes>; Total output drops: 0
  Queueing strategy: fifo
  Output queue: 0/40 <size/max>
  5 minute input rate 466196000 bits/sec, 10971 packets/sec
  
```

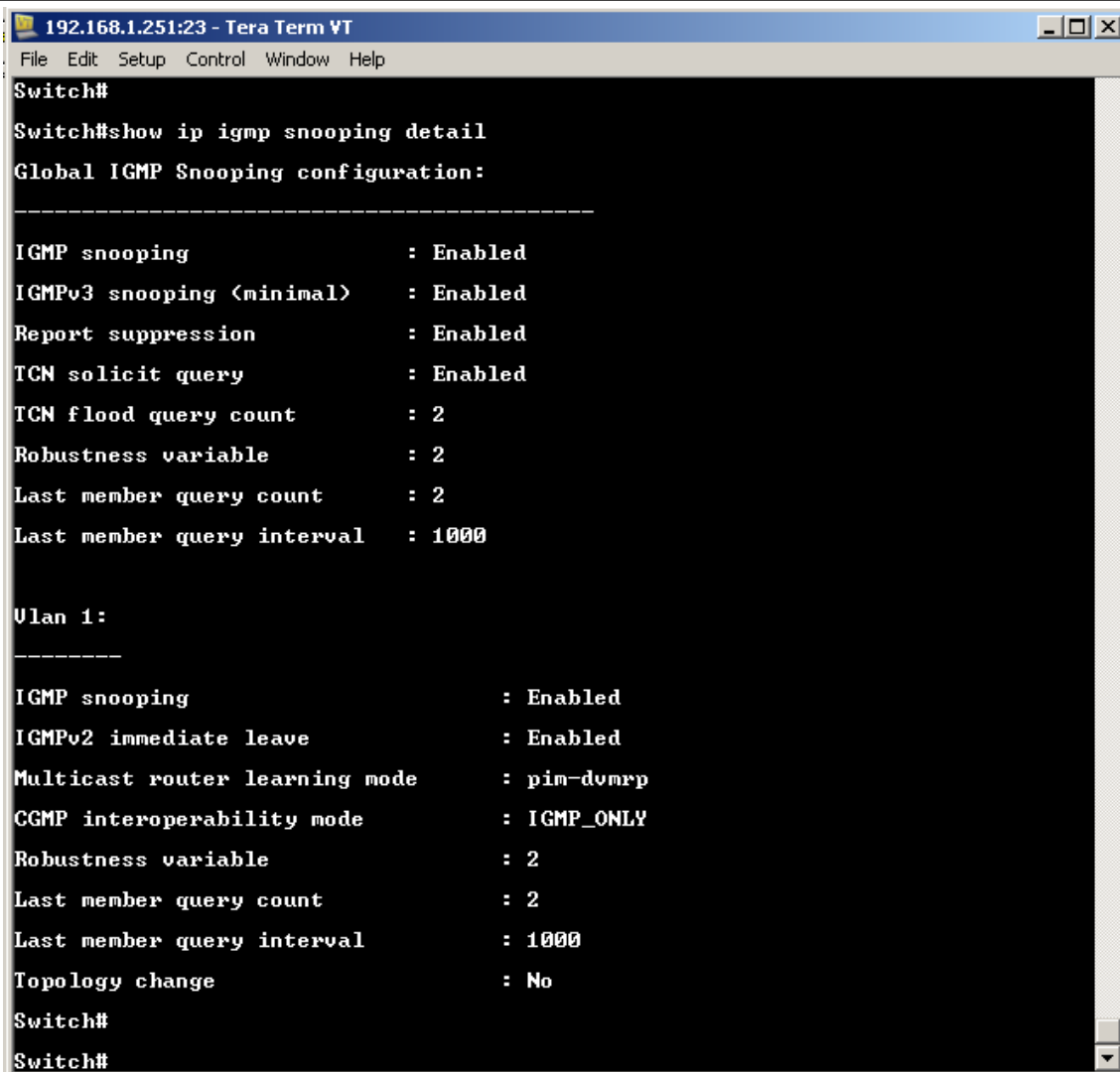
Step
18

To Enable Multicast IGMP Snooping for IP922.

Note: IP922 requires Multicast IGMP Snooping for matrix switch configuration.

- 18-1. Enter "configure terminal" on Switch# prompt
 - 18-2. Enter "ip igmp snooping" on Switch(config)# prompt
 - 18-3. Enter "ip igmp snooping vlan 1" on Switch(config)# prompt
 - 18-4. Enter "ip igmp filter" on Switch(config)# prompt
 - 18-5. Enter "ip igmp snooping tcu query solicit" on Switch(config)# prompt
 - 18-6. Enter "ip igmp snooping querier" on Switch(config)# prompt
 - 18-7. Enter "ip igmp snooping querier version 2" on Switch(config)# prompt
 - 18-8. Enter "ip igmp snooping vlan 1 immediate-leave" on Switch(config)# prompt
 - 18-9. Enter "end" on Switch(config)# prompt
 - 18-10. Enter "copy running-config startup-config" on Switch# prompt
 - 18-11. Press Enter key on the question of "Destination filename [startup-config]?"
- Now, we are all set.

	 <pre> 192.168.1.251:23 - Tera Term VT File Edit Setup Control Window Help Switch#configure terminal Enter configuration commands, one per line. End with CNTL/Z. Switch(config)# Switch(config)#ip igmp snooping Switch(config)#ip igmp snooping vlan 1 Switch(config)#ip igmp filter Switch(config)#ip igmp snooping tcn query solicit Switch(config)#ip igmp snooping querier Switch(config)#ip igmp snooping querier version 2 Switch(config)#ip igmp snooping vlan 1 immediate-leave Switch(config)# Switch(config)#end Switch# Switch#copy running-config startup-config Destination filename [startup-config]? Building configuration... Compressed configuration from 3737 bytes to 1689 bytes[OK] Switch# Switch# </pre>
<p>Step 19</p>	<p>To confirm multicast IGMP Snooping setting on the switch.</p> <p>19-1. Enter “show ip igmp snooping detail” on Switch# prompt You can check global IGMP Snooping configuration on the switch.</p>



192.168.1.251:23 - Tera Term VT

File Edit Setup Control Window Help

Switch#

Switch#show ip igmp snooping detail

Global IGMP Snooping configuration:

IGMP snooping : Enabled

IGMPv3 snooping (minimal) : Enabled

Report suppression : Enabled

TCN solicit query : Enabled

TCN flood query count : 2

Robustness variable : 2

Last member query count : 2

Last member query interval : 1000

Ulan 1:

IGMP snooping : Enabled

IGMPv2 immediate leave : Enabled

Multicast router learning mode : pim-dvmrp

CGMP interoperability mode : IGMP_ONLY

Robustness variable : 2

Last member query count : 2

Last member query interval : 1000

Topology change : No

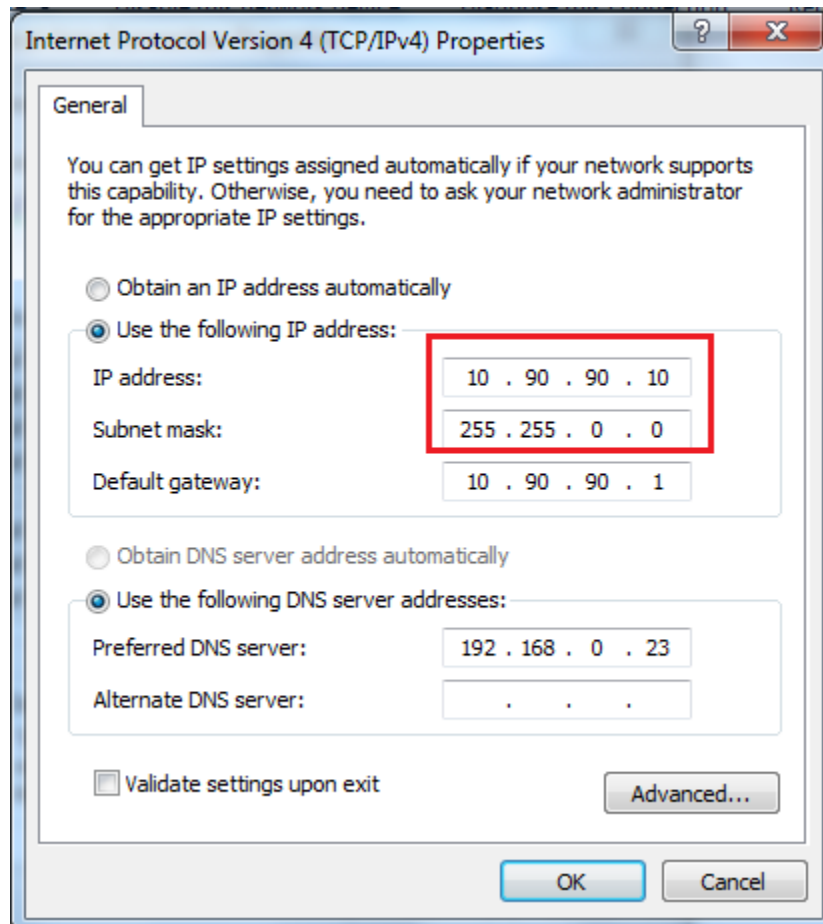
Switch#

Switch#

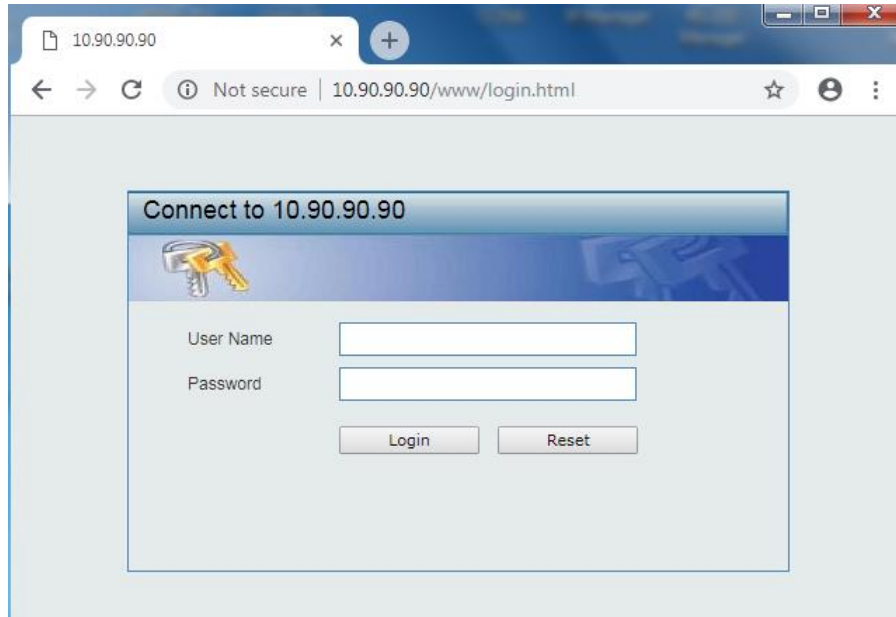
D-Link DGS-3630 Series Network Setup Guide

Login to the switch:

1. Plug an Ethernet cable into any of the ports of the switch
2. Plug the other end into the Ethernet port of your computer
3. Power on the switch
4. Check to see that the IP address of the computer is within this network
Subnet: 10.90.90.xxx ("xxx" ranges 1~254). For example, 10.90.90.10



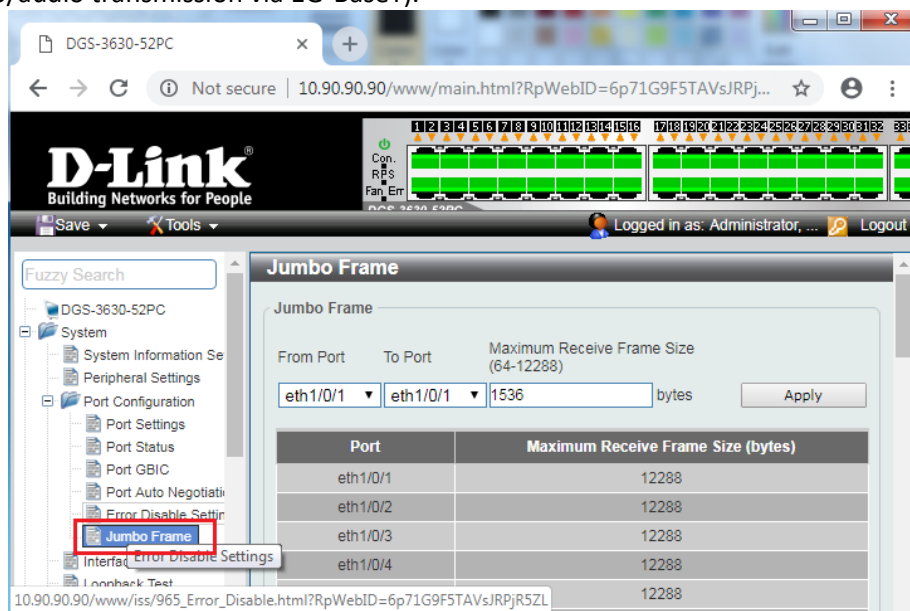
5. Open the Web browser and enter **10.90.90.90** (default IP address of D-Link DGS-3630-52PC). The login window appears as below.



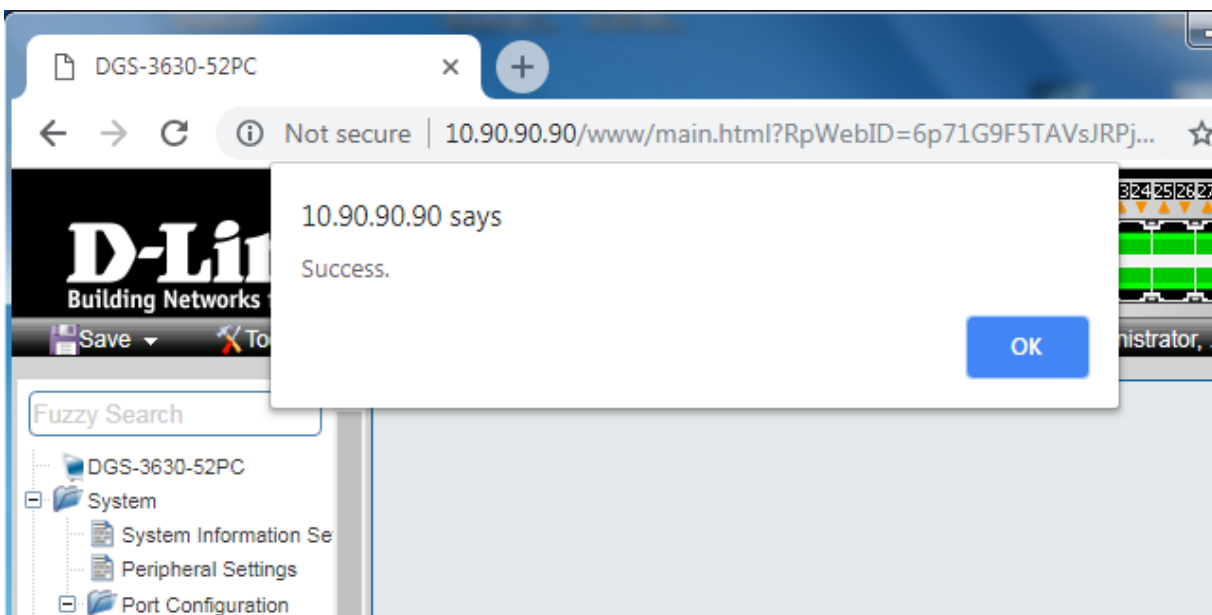
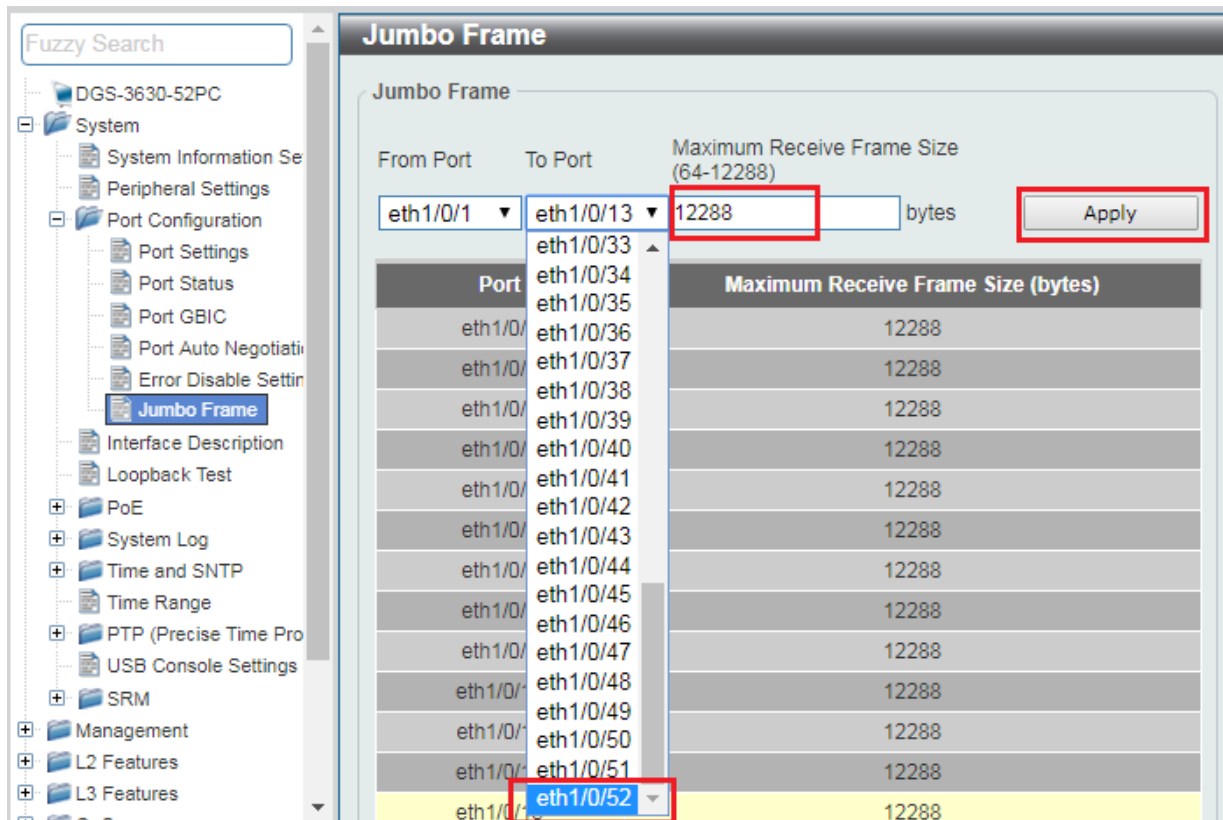
6. Leave the user name and password fields empty. They are NOT required. Click “**Login**” to login to the switch configuration window.

Enable Jumbo Frame:

7. Find **System -> Port Configuration -> Jumbo Frame** in the menu on left side of the window. (IP922 requires Jumbo Frame(8K) for video/audio transmission via 1G-BaseT).



8. Select the last 52 port “eth 1/0/52” in the menu on To Port, then enter “12288” in Maximum Frame Size on the right side of the Jumbo Frame window as below. And then click “Apply” button.



9. After applying, you should see Maximum Receive Frame Size **12288** for all ports as below.

Port	Maximum Receive Frame Size (bytes)
eth1/0/1	12288
eth1/0/2	12288
eth1/0/3	12288
eth1/0/4	12288
eth1/0/5	12288
eth1/0/6	12288
eth1/0/7	12288
eth1/0/8	12288

Enable IGMP Snooping:

10. Find **L2 Features -> L2 Multicast Control -> IGMP Snooping -> IGMP Snooping Settings** in the menu on left side of the window. (KD-IP922 requires IGMP Snooping for multicasting video/audio transmission via 1G-BaseT). Check the **Global State Enabled** box of Global Settings in IGMP Snooping Settings window as below. Click **“Apply”** button on the right side of IGMP Snooping Settings window.

11. To add VLAN of the IGMP Snooping at the switch, **enter “1”** in VID of VLAN Status Settings. (VLAN must be added in IGMP Snooping). Then select **“Enabled”** and click **“Apply”** button.

12. Click “Edit” button in IGMP Snooping Settings window.

IGMP Snooping Settings

Global Settings

Global State ☒ Enabled ☐ Disabled Apply

VLAN Status Settings

VID (1-4094) ☐ Enabled ☒ Disabled Apply

IGMP Snooping Table

VID (1-4094) Find Show All

Total Entries: 1

VID	VLAN Name	Status
1	default	Enabled

Show Detail Edit 1/1 Go

13. In the IGMP Snooping VLAN Settings window, select below options as depicted below in red and then click “Apply” button:

- Minimum Version: **2**
- Fast Leave: **Enabled**
- Report Suppression: **Enabled**
- Querier State: **Enabled**
- Query Version: **2**
- Ignore Topology Change: **Enabled**

IGMP Snooping VLAN Settings

IGMP Snooping VLAN Settings

VID (1-4094)

Status ☒ Enabled ☐ Disabled

Minimum Version

Fast Leave ☒ Enabled ☐ Disabled

Report Suppression ☒ Enabled ☐ Disabled

Suppression Time (1-300)

Querier State ☒ Enabled ☐ Disabled

Query Version

Query Interval (1-31744) sec

Max Response Time (1-25) sec

Robustness Value (1-7)

Last Member Query Interval (1-25) sec

Proxy Reporting ☐ Enabled ☒ Disabled

Source Address

Rate Limit (1-1000) ☒ No Limit

Ignore Topology Change ☒ Enabled ☐ Disabled

Apply

Network IP Settings:

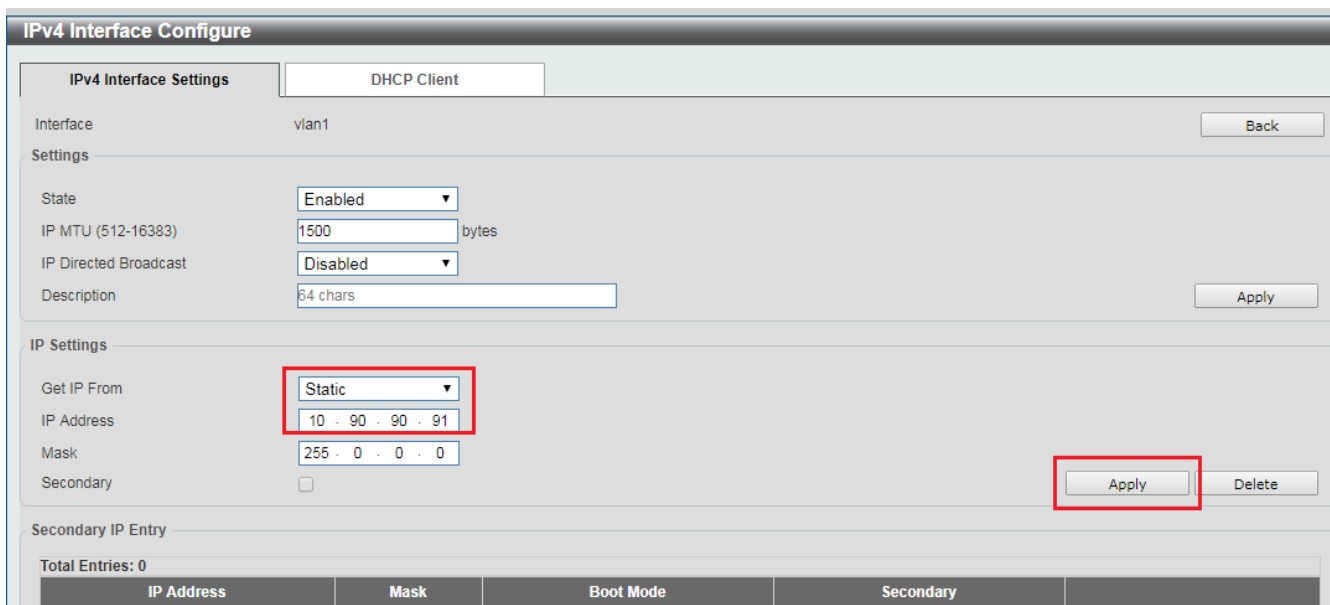
14. Find **L3 Features** -> **Interface** -> **IPv4 Interface**. Select “Edit” button.

This D-Link switch series can be set to IP address range 10.x.x.x. ONLY.

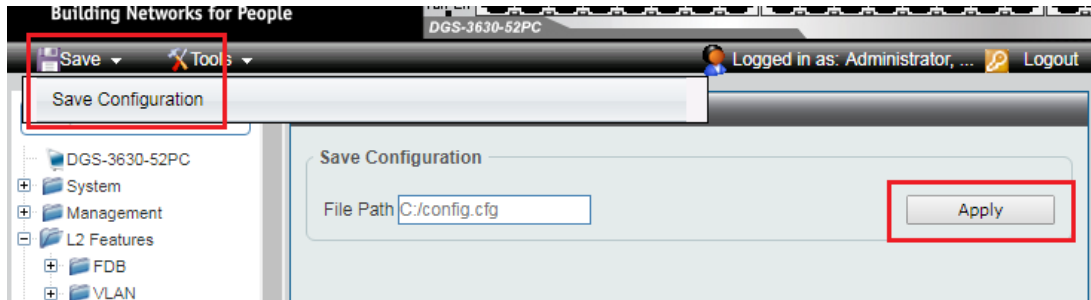
If you use a single network switch, you may not need to change network IP settings. But if you are stacking network switches (connecting multiple network switches through D-Link 10G fiber cables), it is recommended to set first on to 10.90.90.91, second to 10.90.90.92, and so on.

Set Get IP From “**Static**”, set **Subnet Mask to 255.0.0.0** and click **Apply**.

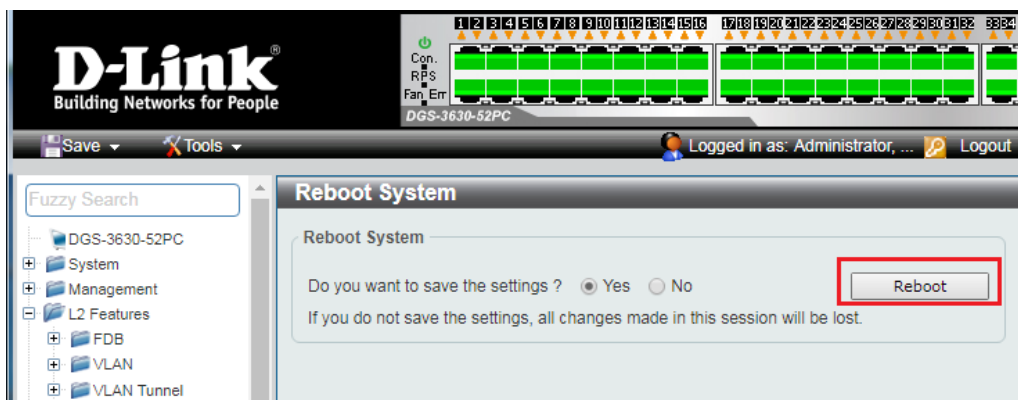
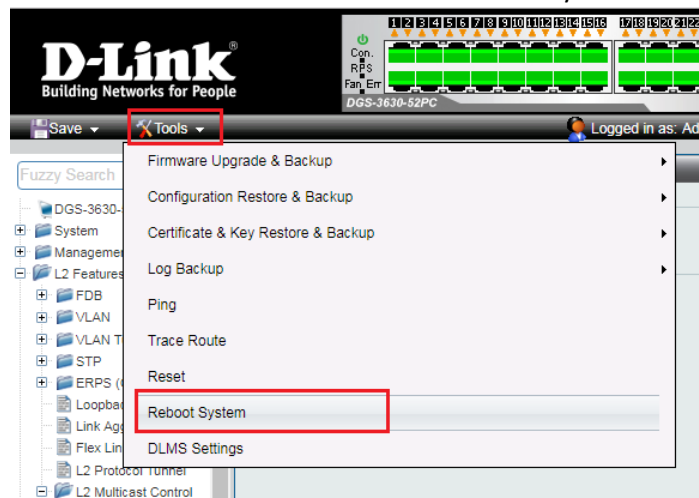
If you change an IP address, the page will be refreshed and you will need to log in again using new IP address, same user name and password. If you did not change IP address just continue to the next step. Make sure your screen looks exactly like pictured below.



15. To save all Running Configurations to Startup-Configuration, Find **Save → Save Configuration** in the menu on top of the window. Then click **“Apply”** button in Save Running Configuration to startup-config window.

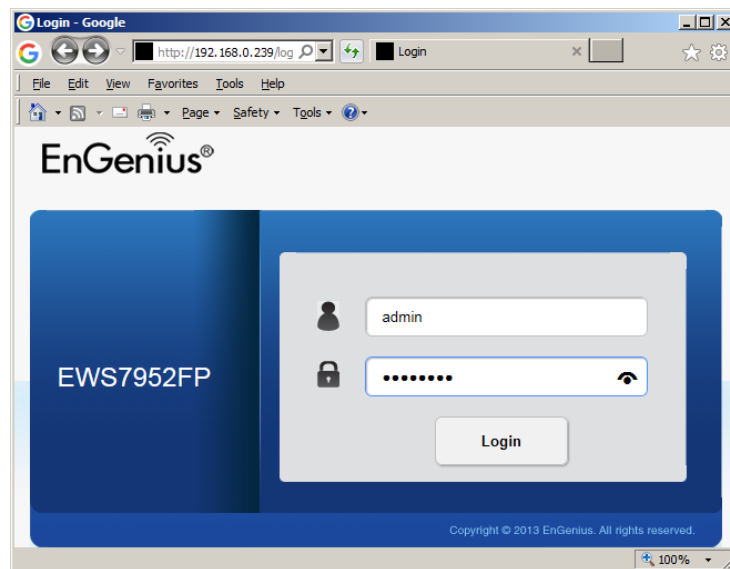


16. To reboot the switch, Find **Tool → Reboot System** in the menu on top of the window. Then click **“Reboot”** button in Reboot System window. The switch will be rebooted automatically.

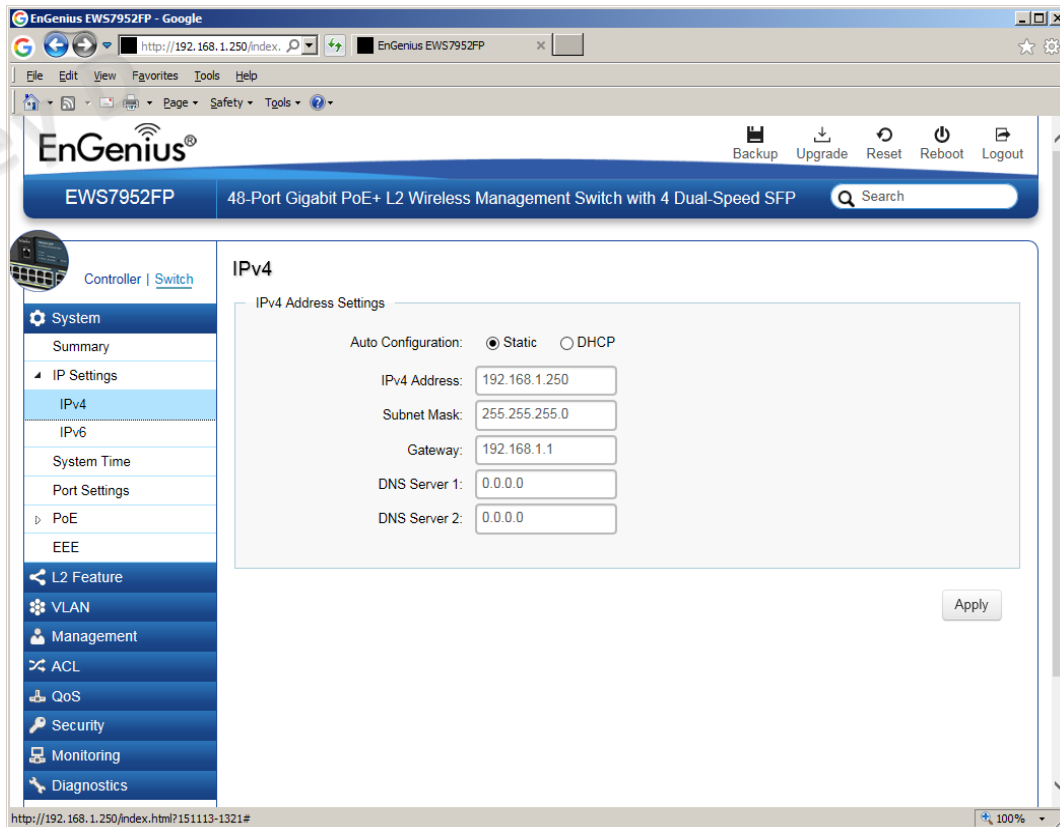


IGMP Setup Guide: Engenius 1080p Systems (KD-IP1080, KD-IP120)

1. It is recommended to reset the switch to factory defaults before configuring for multicast operation. Power up the device, wait for about 2 minutes, using a paper clip press and hold a reset button for more than 10 seconds and then release. After device is rebooted power down and then power up the device. Wait while the device is restarted and ready to use.
2. Connect your PC to the switch directly using a network cable.
3. Configure your PC's IP address to the same range as the switch (default **192.168.0.xxx**).
4. Enter the switch's IP address (default is **192.168.0.239**) in your browser and press ENTER.
5. Enter user name and password (default is "**admin**" and "**password**"). Then click **Log In**.

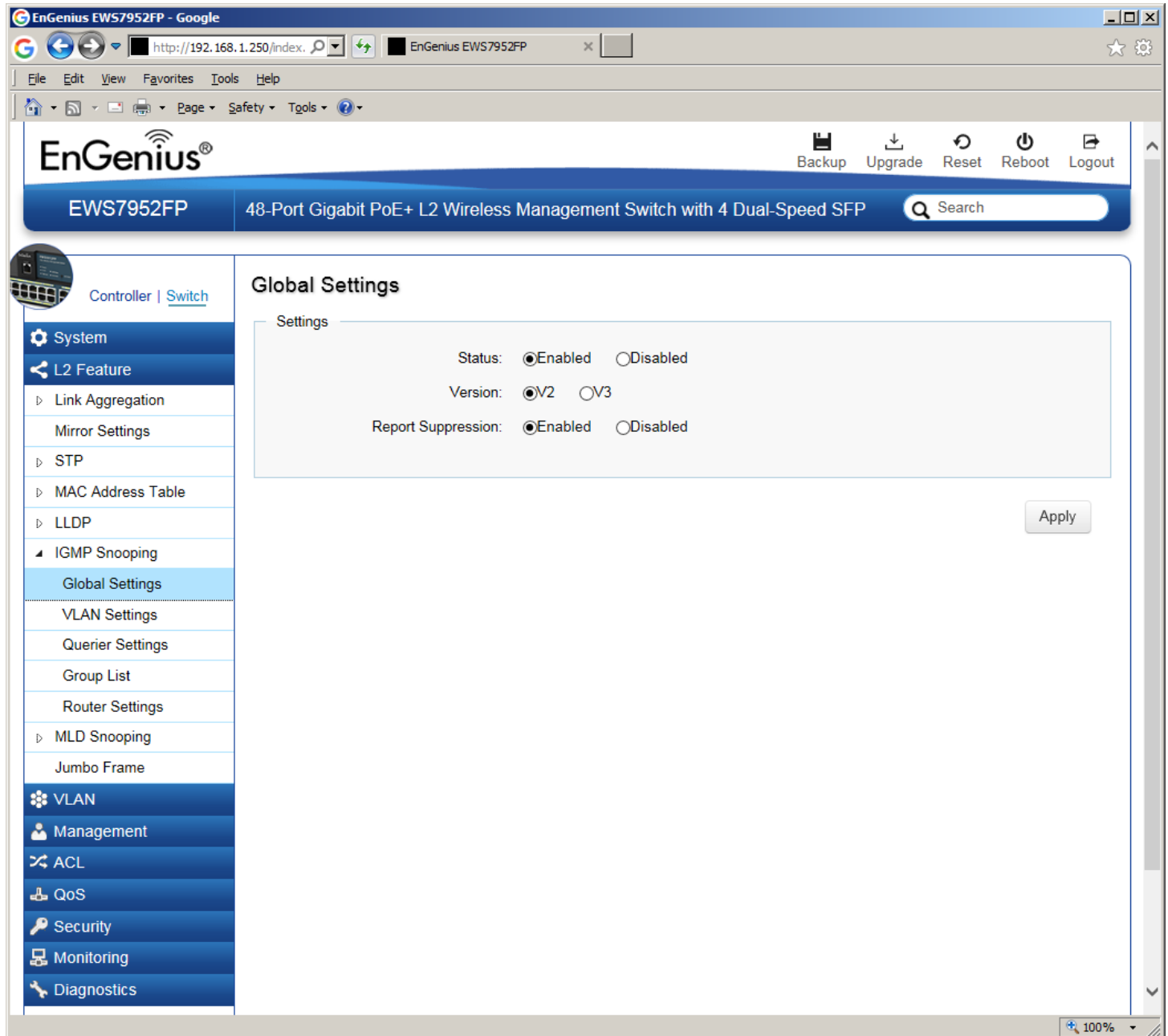


6. On the left select **Switch**. Navigate to **System -> IP Settings -> IPv4**. Under **Auto Configuration** select **Static**. Change an IP address to **192.168.1.250**, Subnet Mask to **255.255.255.0**, Default Gateway to **192.168.1.1** (in this case), and at the bottom click **Apply**.

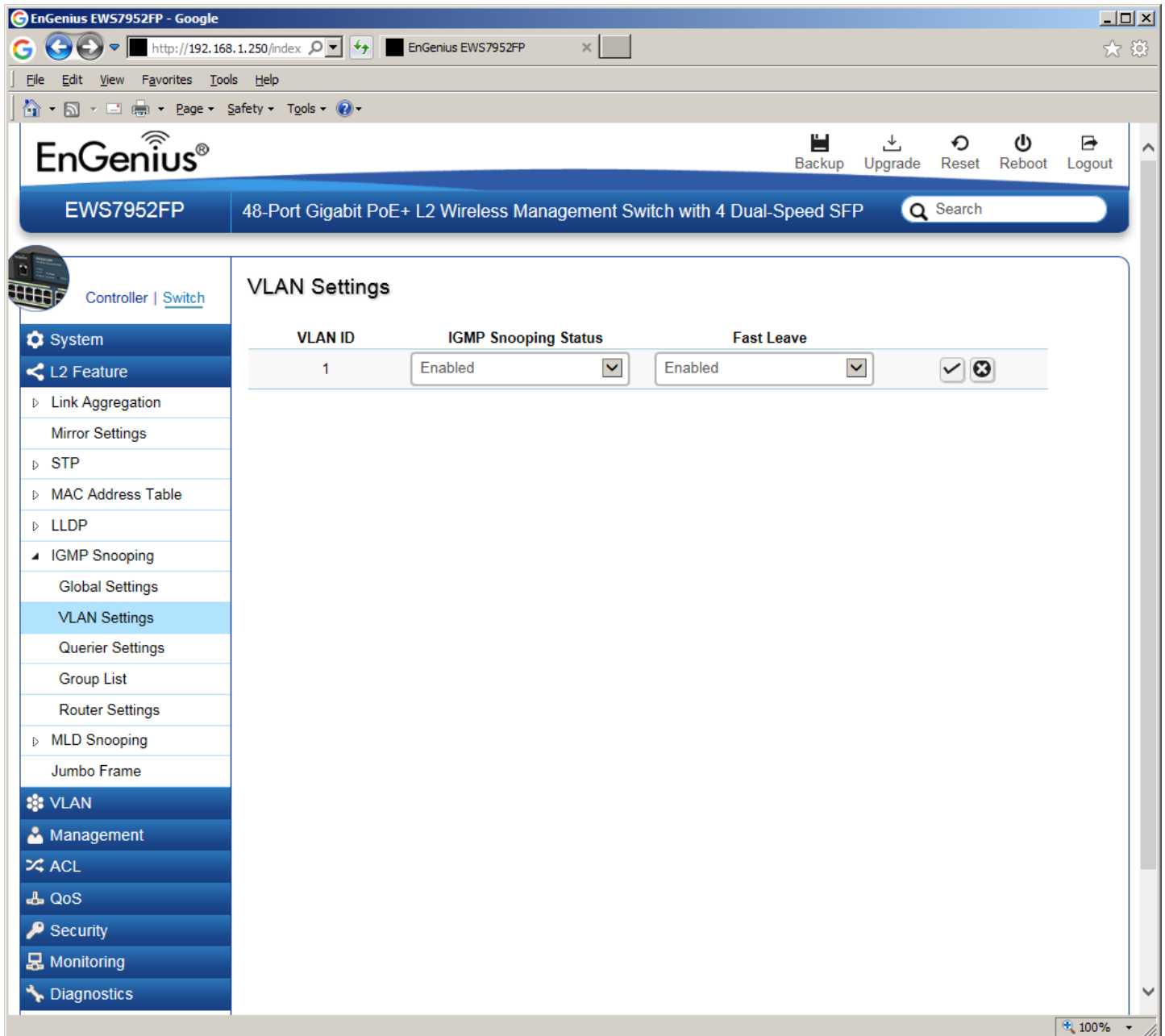


7. Page will refresh. Configure your PC's IP address to the same range as the switch (default **192.168.1.xxx**). Enter the switch's IP address (default is **192.168.1.250**) in your browser and press ENTER. Log in again with the same user name /password.

8. On the left select **Switch**. Navigate to **L2 Feature** -> **IGMP Snooping** -> **Global Settings**. Under **Status** select **Enabled**, under **Version: V2** and under **Report Suppression: Enabled**. Click **Apply**.



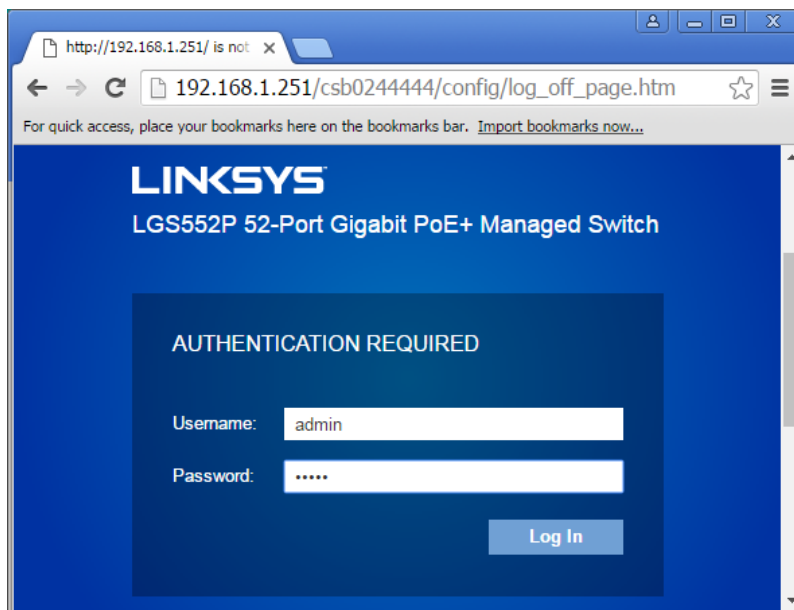
9. Navigate to **L2 Feature** -> **IGMP Snooping** -> **VLAN Settings**. Click on Edit button on the right in the **VLAN ID** 1 line. Under **IGMP Snooping Status** select **Enabled**, under **Fast Leave** select **Enabled**. Click check mark button to apply settings.



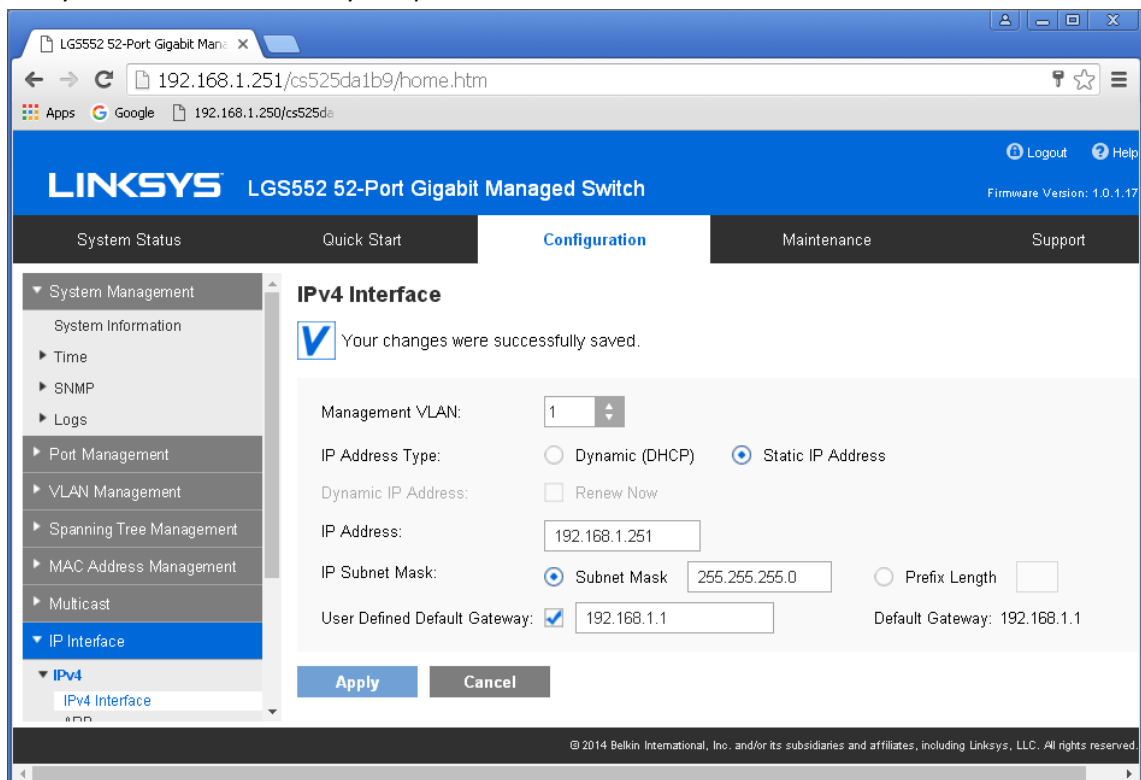
10. Now the switch should work properly with IP audio/video equipment.

IGMP Setup Guide: Linksys 1080p Systems (KD-IP1080, KD-IP120)

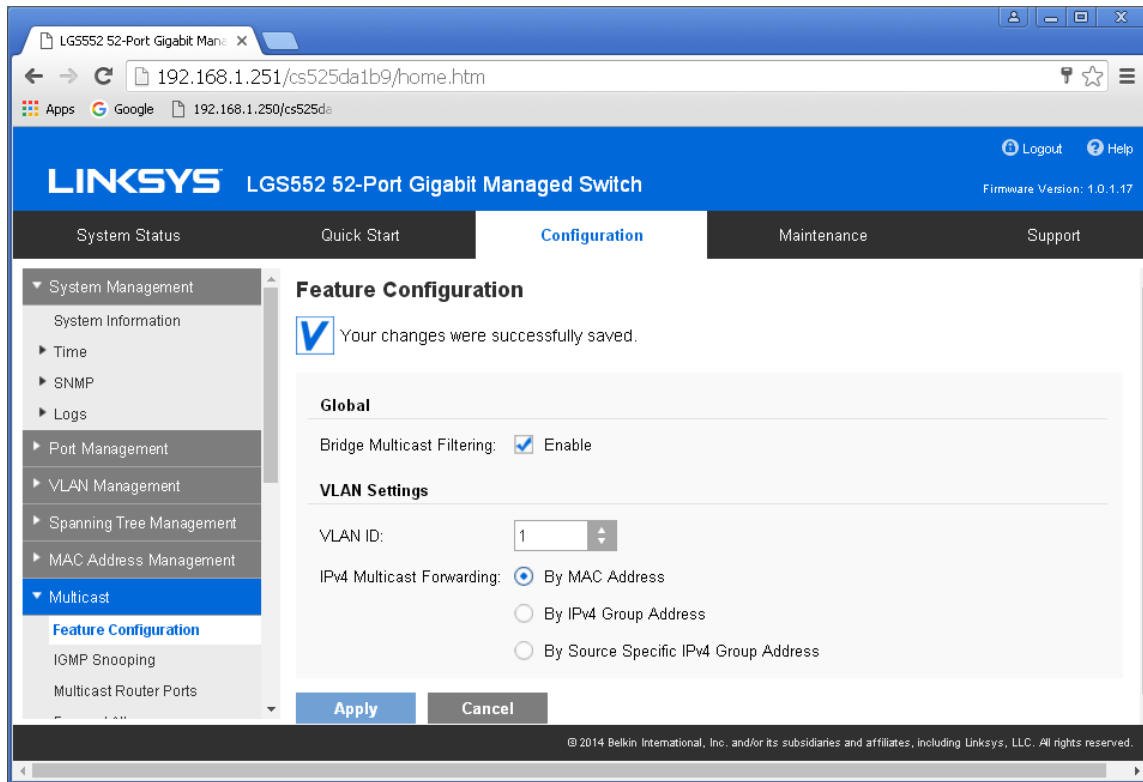
1. Before Linksys network switch is configured Key Digital KD-IP120/KD-IP1080 HDMI switch set must be connected to all HDMI sources/displays/network switches, and configured using Key Digital KD-IP120 Key Digital Management Software latest version.
2. Power-up all the system components. Using Key Digital KD-IP120 Key Digital Management Software, switch **All Outputs** -> **Through** at switching page.
3. **IMPORTANT:** Disconnect all the DHCP devices like routers, servers from the Linksys network switch.
4. Locate a pinhole "RESET" button at the front panel left bottom corner of your Linksys network switch. Using a paper clip press and hold a reset button for more than 10 seconds and then release. Wait while the device is restarted and ready to use (about 5min).
5. **IMPORTANT:** Make sure the blue "SYSTEM" LED next to the pinhole "RESET" button is flashing.
6. **IMPORTANT:** At this point all the displays should be displaying distorted randomly flashing video images.
7. Connect your PC to the Linksys network switch directly using a network cable.
8. If you have not done yet, configure your PC's IP address to the same range as the switch (default **192.168.1.xxx**).
9. Enter the switch's IP address in your browser and press ENTER (check the user manual for a default IP address - it is usually **192.168.1.251**).
10. Enter user name and password (check the user manual for a default user name and password; it is usually **"admin"** for both). Then click **Log In**.



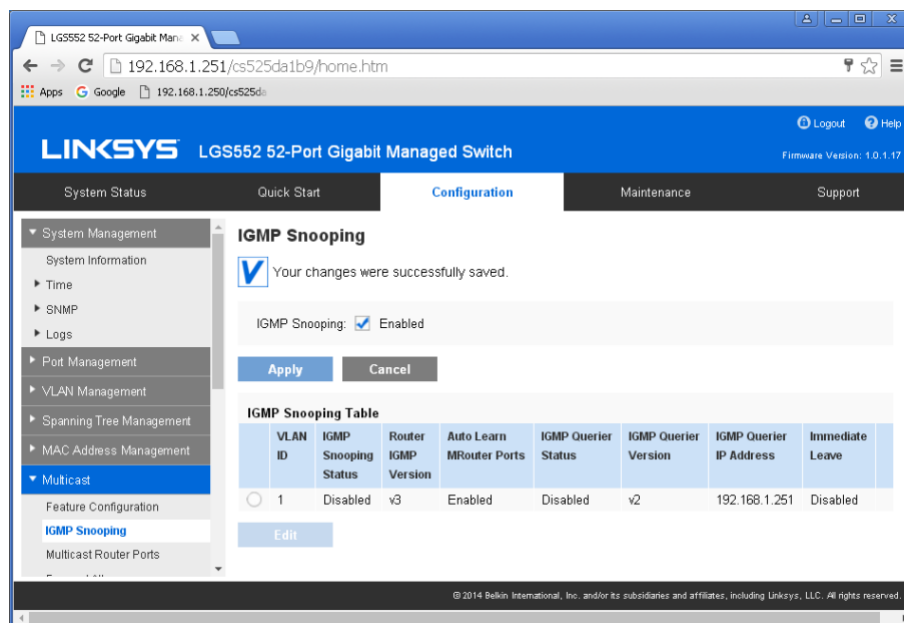
11. Navigate to **Configuration -> IP Interface -> IPv4-> IPv4 Interface**. Select **Static IP Address**. IP address can be changed by the administrator depending on the network configuration. If you are using multiple network switches it is recommended to set first one to **192.168.1.251**, second to **192.168.1.252**, and so on (we will leave the IP address unchanged). Set **Subnet Mask** to **255.255.255.0**, set **User Defined Default Gateway** to **192.168.1.1** (in this case), make sure that Management VLAN is set to "1" and click **Apply**. If you changed an IP address page will refresh and you will need to log in again using new IP address, same user name and password. If you did not change IP address just continue to the next step.
12. Make sure your screen looks exactly like pictured below.



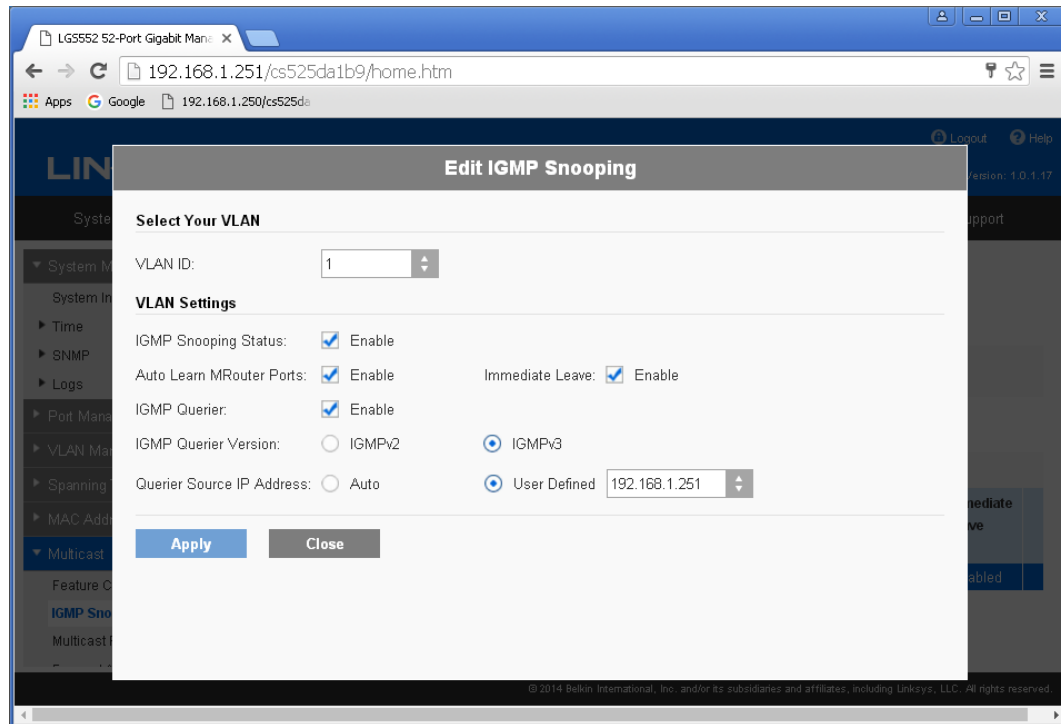
13. Navigate to **Multicast -> Feature Configuration**. Select **Enable** under **Bridge Multicasting Filtering** and click **Apply**.



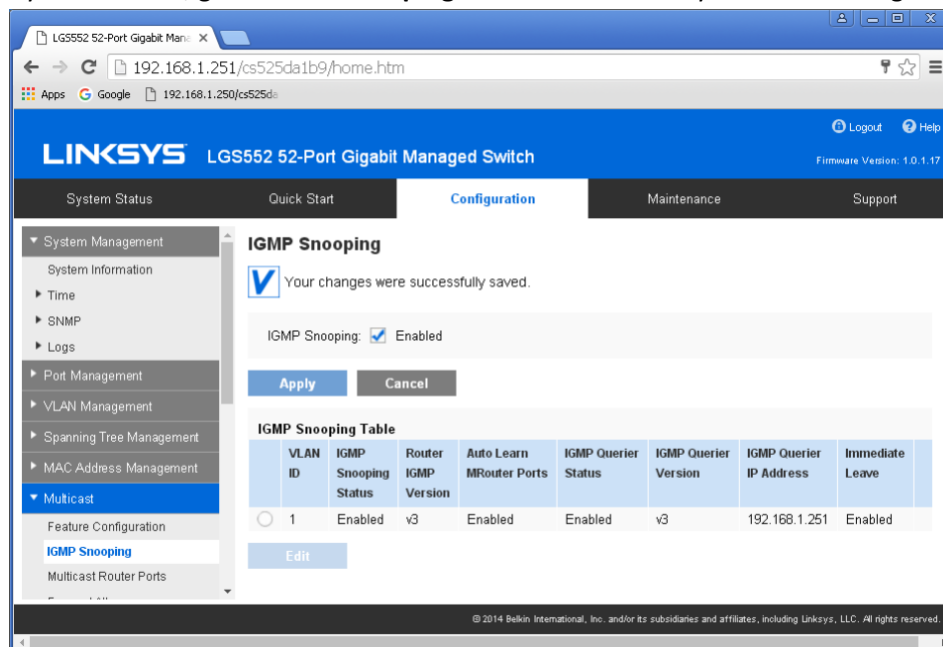
14. Navigate to **Multicast -> IGMP Snooping**. Select **Enable** under **IGMP Snooping**, click **Apply**.



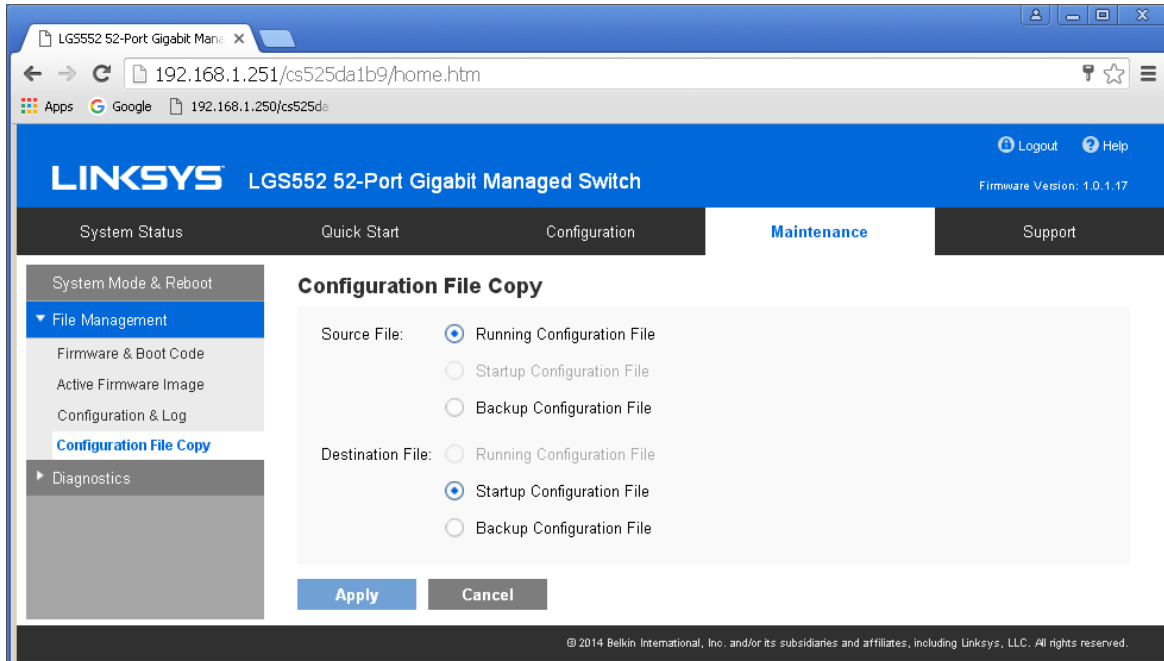
15. Click on radio button and click **Edit**. **Edit IGMP Snooping** window will appear. Make sure **VLAN ID <1>** is selected. Enable all the settings as shown below. Select **IGMP v3** as **IGMP Querier Version**, Click **Apply** and then **Close**.



16. Refresh your browser, go to **IGMP Snooping** tab and make sure you have an image as below:

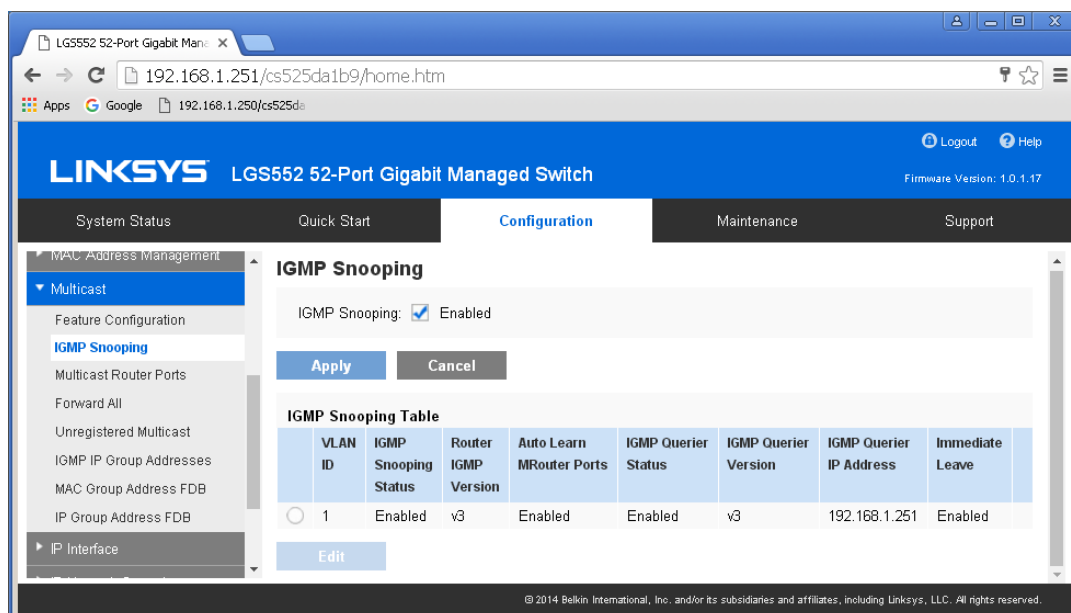
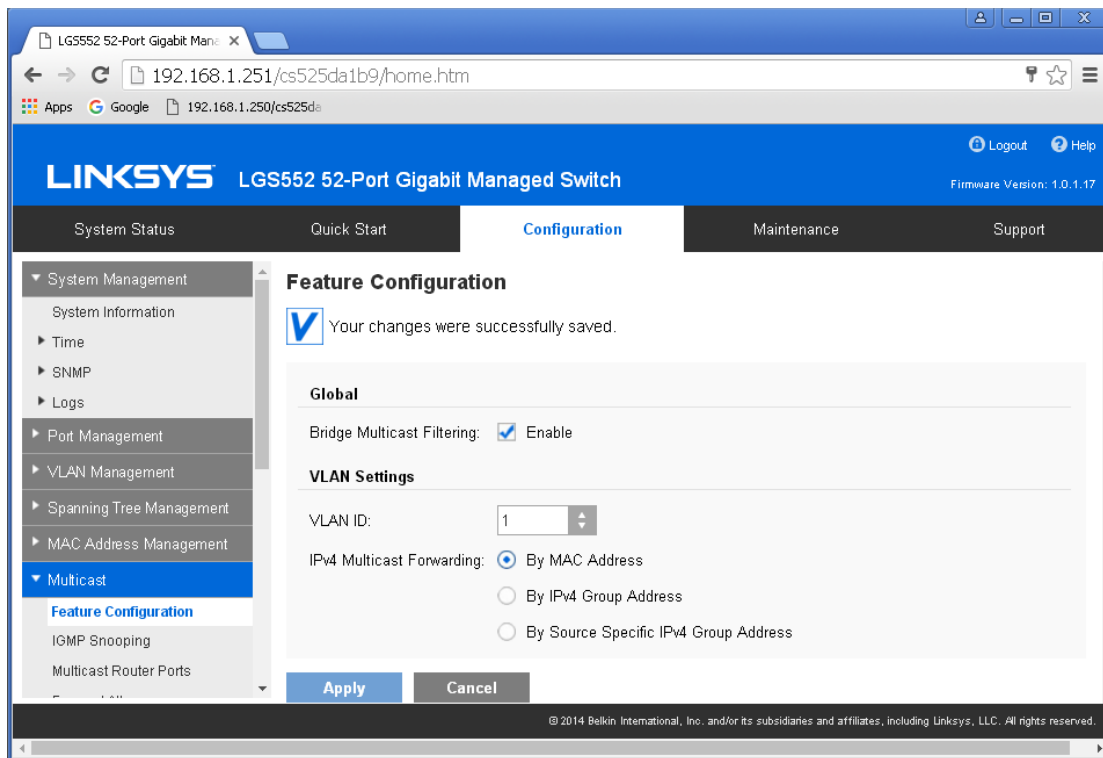


17. **IMPORTANT:** At this point all the displays should be displaying stable running video from the selected sources. If you do not have them displaying properly, than network switch is configured incorrectly.
18. Navigate to **Maintenance** -> **File Management** -> **Configuration File Copy**. Select radio buttons as shown below, click **Apply**. This will save current configuration and will apply this configuration every time switch is powered up.



19. **IMPORTANT:** Now you can connect back you DHCP equipment (routers, servers and so on).
20. Power down Linksys network switch and power it up back again. Wait for the whole system to start and until you can see video on your displays.

21. Log in to your Linksys network switch again and make sure that IGMP settings are intact:

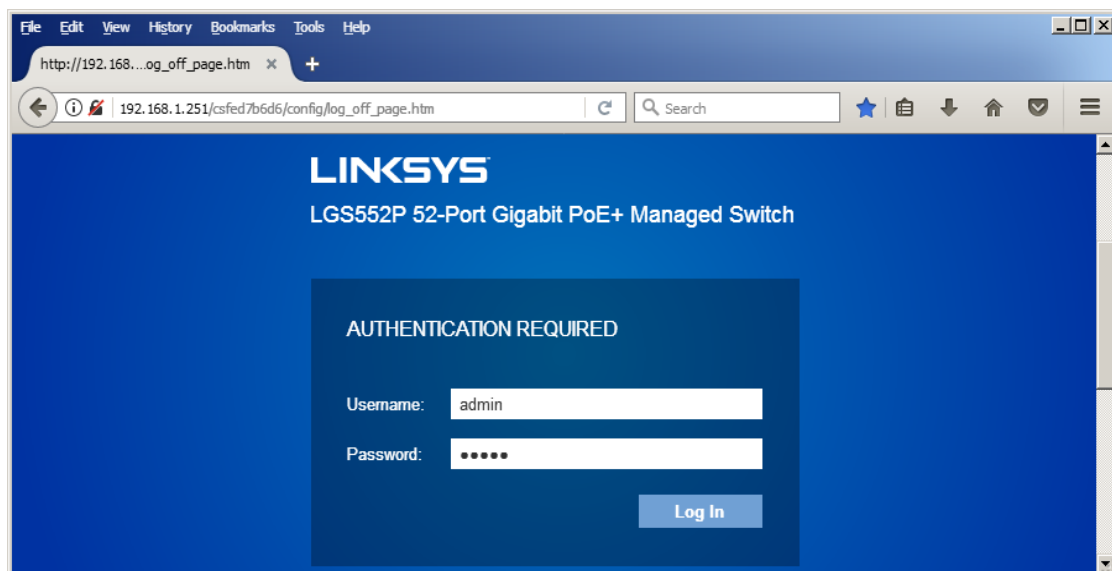


22. Rescan your components with Key Digital KD-IP120 Key Digital Management Software and make sure HDMI video switch is functional.

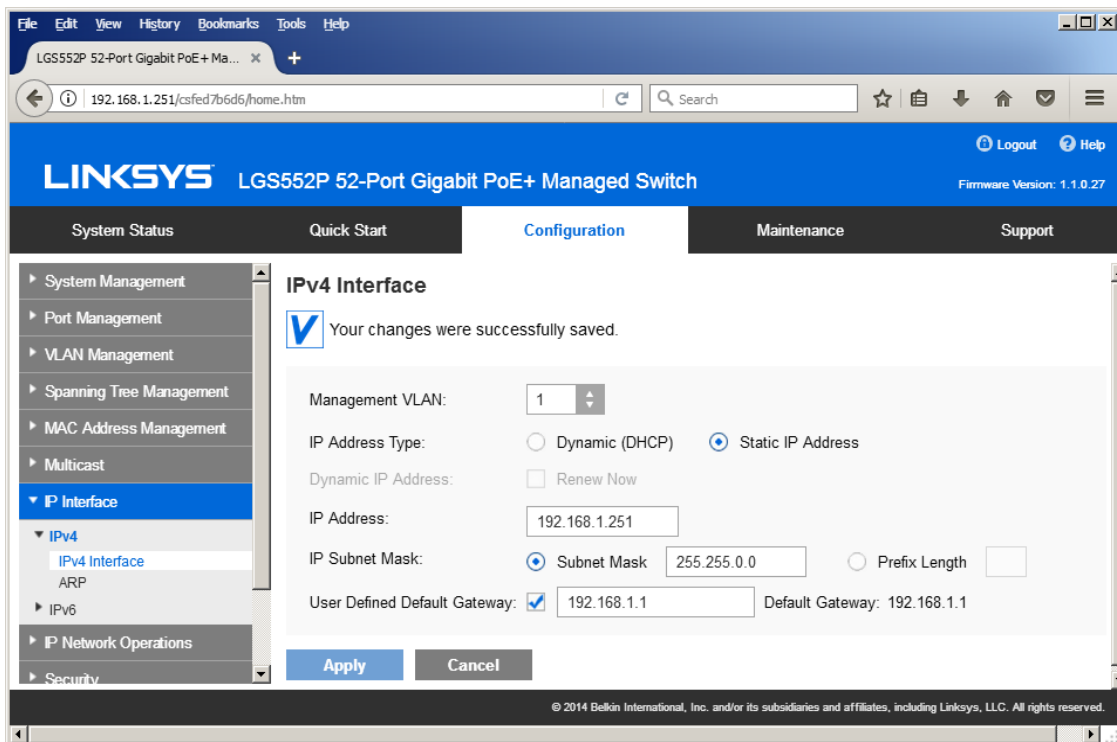
23. At this point your Linksys network switch is set and ready to use.

IGMP Setup Guide: Linksys 4K Systems (KD-IP822, KD-IP922, KD-IP1022)

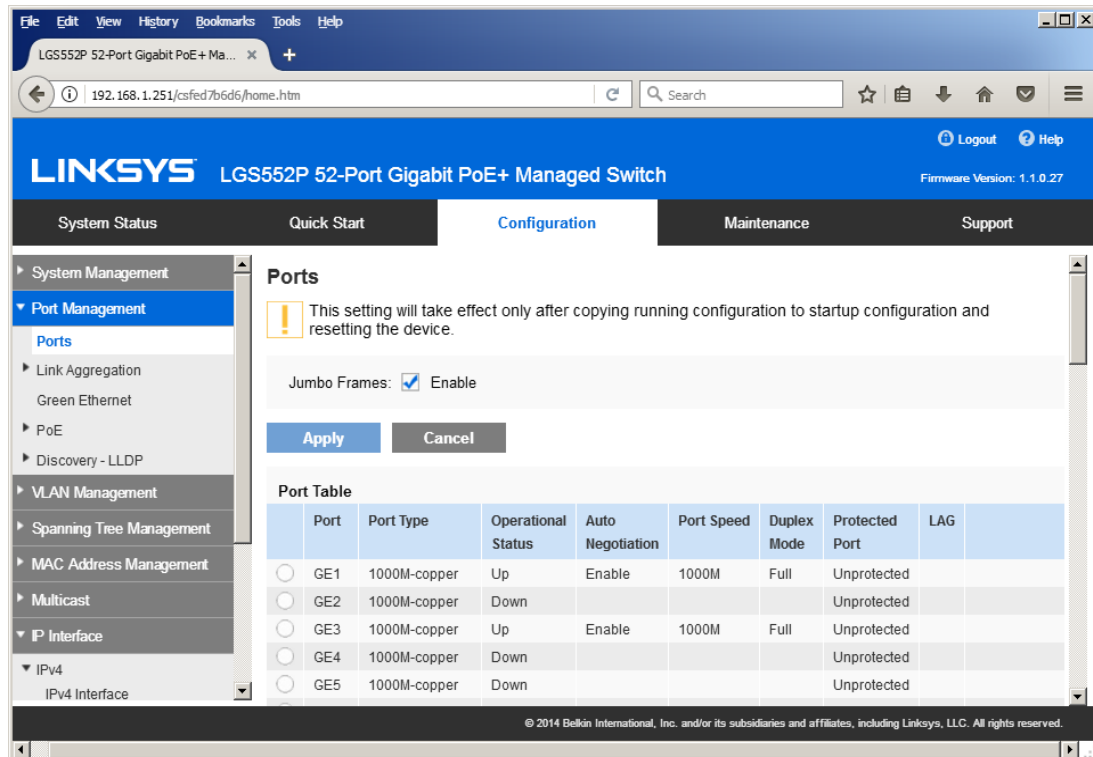
1. Before Linksys network switch is configured Key Digital KD-IP922 HDMI switch set must be connected to all HDMI sources/displays/network switches, and configured using Key Digital Management Software latest version.
2. Power-up all the system components. Using Key Digital Management Software, switch **All Outputs** -> **Through** at switching page.
3. **IMPORTANT:** Disconnect all the DHCP devices like routers, servers from the Linksys network switch.
4. Locate a pinhole “RESET” button at the front panel left bottom corner of your Linksys network switch. Using a paper clip press and hold a reset button for more than 10 seconds and then release. Wait while the device is restarted and ready to use (about 5min).
5. **IMPORTANT:** Make sure the blue “SYSTEM” LED next to the pinhole “RESET” button is flashing.
6. **IMPORTANT:** At this point all the displays should be displaying or flashing Key Digital logo with information stamp.
7. Connect your PC to the Linksys network switch directly using a network cable.
8. If you have not done yet, configure your PC's IP address to the same range as the switch (default **192.168.1.xxx**).
9. Enter the switch's IP address in your browser and press ENTER (check the user manual for a default IP address - it is usually **192.168.1.251**).
10. Enter user name and password (check the user manual for a default user name and password; it is usually “**admin**” for both). Then click **Log In**.



11. Navigate to **Configuration -> IP Interface -> IPv4-> IPv4 Interface**. Select **Static IP Address**. IP address can be changed by the administrator depending on the network configuration. If you are using multiple network switches it is recommended to set first one to **192.168.1.251**, second to **192.168.1.252**, and so on (we will leave the IP address unchanged). Set **Subnet Mask** to **255.255.0.0**, set **User Defined Default Gateway** to **192.168.1.1** (in this case), make sure that Management VLAN is set to "1" and click **Apply**. If you changed an IP address page will refresh and you will need to log in again using new IP address, same user name and password. If you did not change IP address just continue to the next step.
12. Make sure your screen looks exactly like pictured below.



13. Navigate to **Port Management -> Ports**. Select **Enable** under **Jumbo Frames** and click **Apply**.



LINKSYS LGS552P 52-Port Gigabit PoE+ Managed Switch Firmware Version: 1.1.0.27

System Status Quick Start **Configuration** Maintenance Support

System Management

- Port Management
 - Ports**
 - Link Aggregation
 - Green Ethernet
 - PoE
 - Discovery - LLDP
- VLAN Management
- Spanning Tree Management
- MAC Address Management
- Multicast
- IP Interface
 - IPv4 Interface

Ports

! This setting will take effect only after copying running configuration to startup configuration and resetting the device.

Jumbo Frames: ☒ Enable

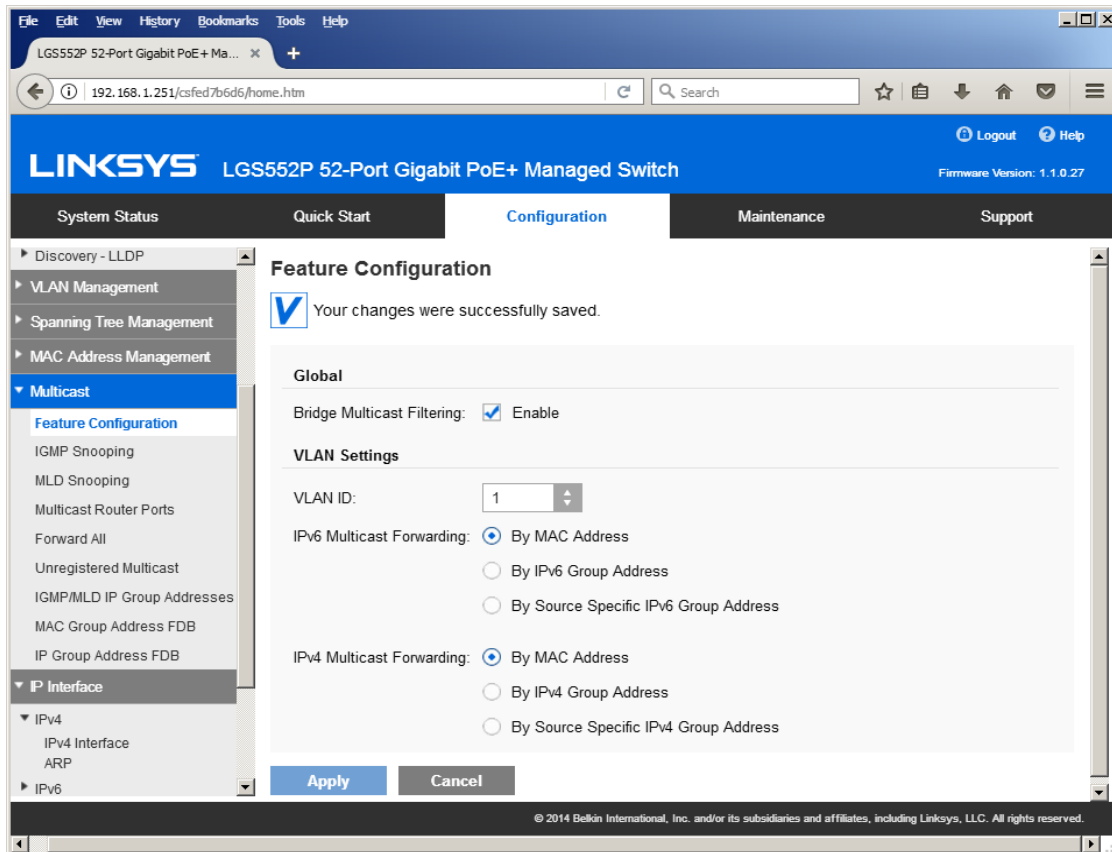
Apply Cancel

Port Table

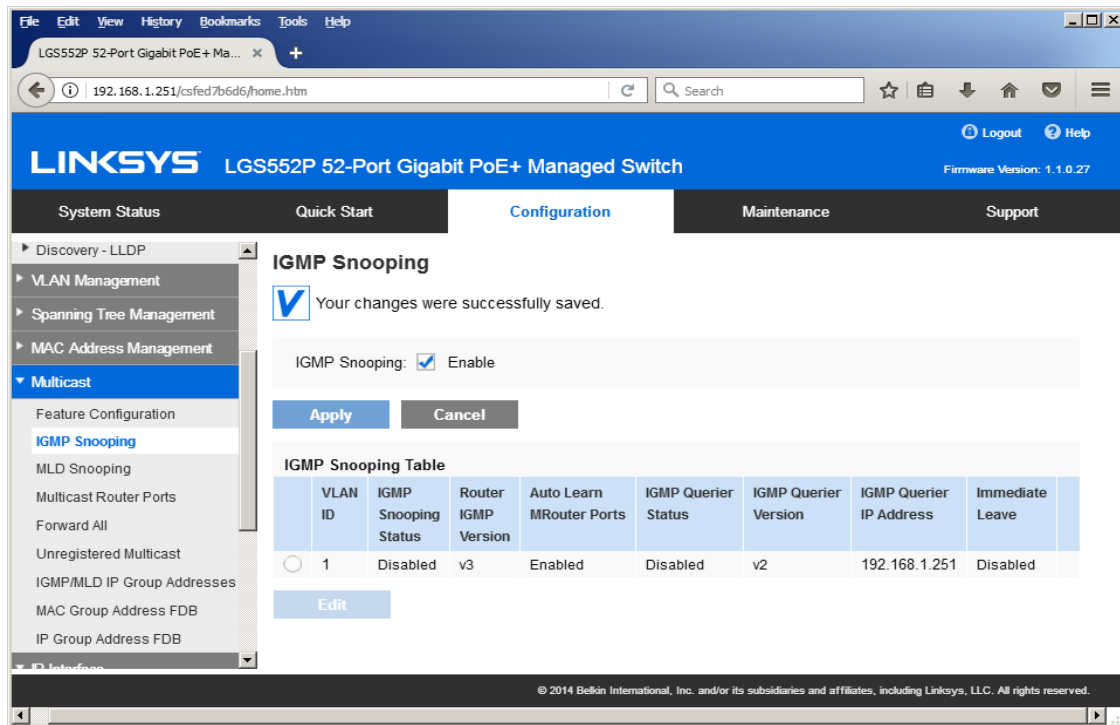
Port	Port Type	Operational Status	Auto Negotiation	Port Speed	Duplex Mode	Protected Port	LAG
<input type="radio"/> GE1	1000M-copper	Up	Enable	1000M	Full	Unprotected	
<input type="radio"/> GE2	1000M-copper	Down				Unprotected	
<input type="radio"/> GE3	1000M-copper	Up	Enable	1000M	Full	Unprotected	
<input type="radio"/> GE4	1000M-copper	Down				Unprotected	
<input type="radio"/> GE5	1000M-copper	Down				Unprotected	

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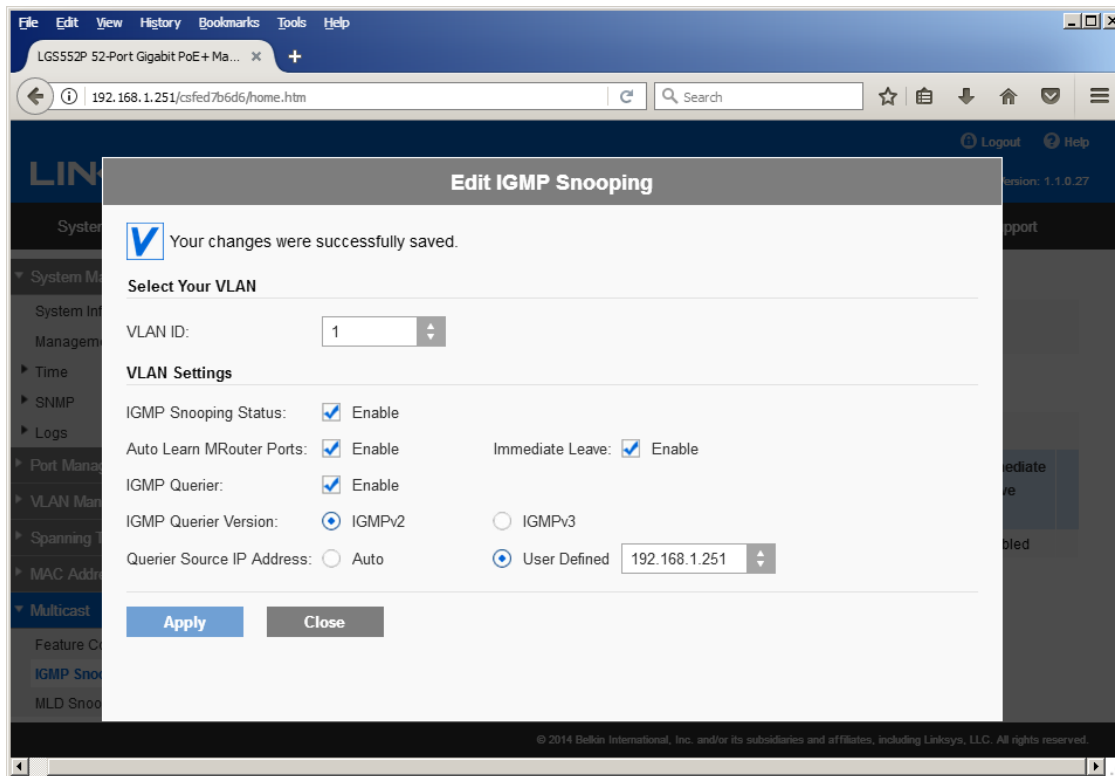
14. Navigate to **Multicast -> Feature Configuration**. Select **Enable** under **Bridge Multicasting Filtering** and click **Apply**.



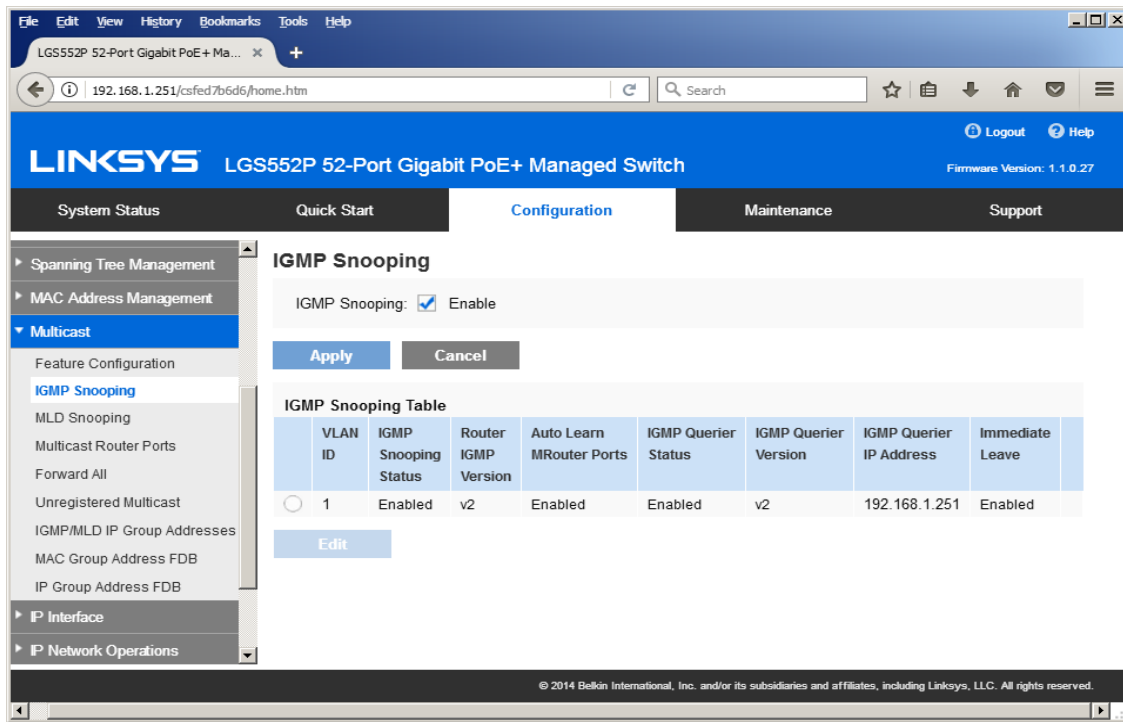
15. Navigate to **Multicast -> IGMP Snooping**. Select **Enable** under **IGMP Snooping**, click **Apply**.



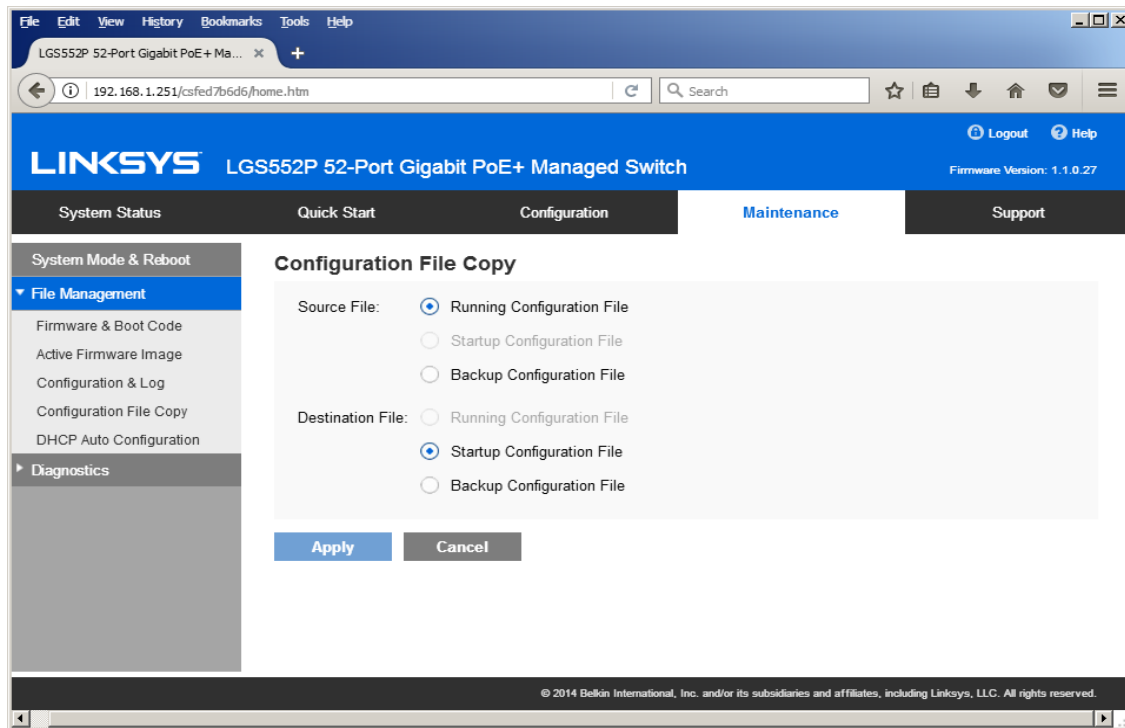
16. Click on radio button and click **Edit**. **Edit IGMP Snooping** window will appear. Make sure **VLAN ID <1>** is selected. Enable all the settings as shown below. Select **IGMP v2** as **IGMP Querier Version**, Click **Apply** and then **Close**.



17. Refresh your browser, go to **IGMP Snooping** tab and make sure you have an image as below:



18. Navigate to **Maintenance -> File Management -> Configuration File Copy**. Select radio buttons as shown below, click **Apply**. This will save current configuration and will apply this configuration every time switch is powered up.



19. **IMPORTANT:** Now you can connect back you DHCP equipment (routers, servers and so on).
20. Power down Linksys network switch and power it up back again. Wait for the whole system to start and until you can see video on your displays.

21. Log in to your Linksys network switch again and make sure that IGMP settings are intact:

The top screenshot shows the Linksys web interface for the LGS552P 52-Port Gigabit PoE+ Managed Switch. The 'Configuration' tab is selected, and the 'Multicast' section is expanded. The 'Feature Configuration' page shows 'Bridge Multicast Filtering' set to 'Enable'. Under 'VLAN Settings', 'VLAN ID' is set to 1. For both 'IPv6 Multicast Forwarding' and 'IPv4 Multicast Forwarding', the 'By MAC Address' option is selected.

The bottom screenshot shows the 'IGMP Snooping' configuration page. 'IGMP Snooping' is set to 'Enable'. Below the configuration are 'Apply' and 'Cancel' buttons. An 'IGMP Snooping Table' is displayed with the following data:

VLAN ID	IGMP Snooping Status	Router IGMP Version	Auto Learn MRouter Ports	IGMP Querier Status	IGMP Querier Version	IGMP Querier IP Address	Immediate Leave
1	Enabled	v2	Enabled	Enabled	v2	192.168.1.251	Enabled

An 'Edit' button is located below the table. The footer of both screenshots reads: '© 2014 Belkin International, Inc. and/or its subsidiaries and affiliates, including Linksys, LLC. All rights reserved.'

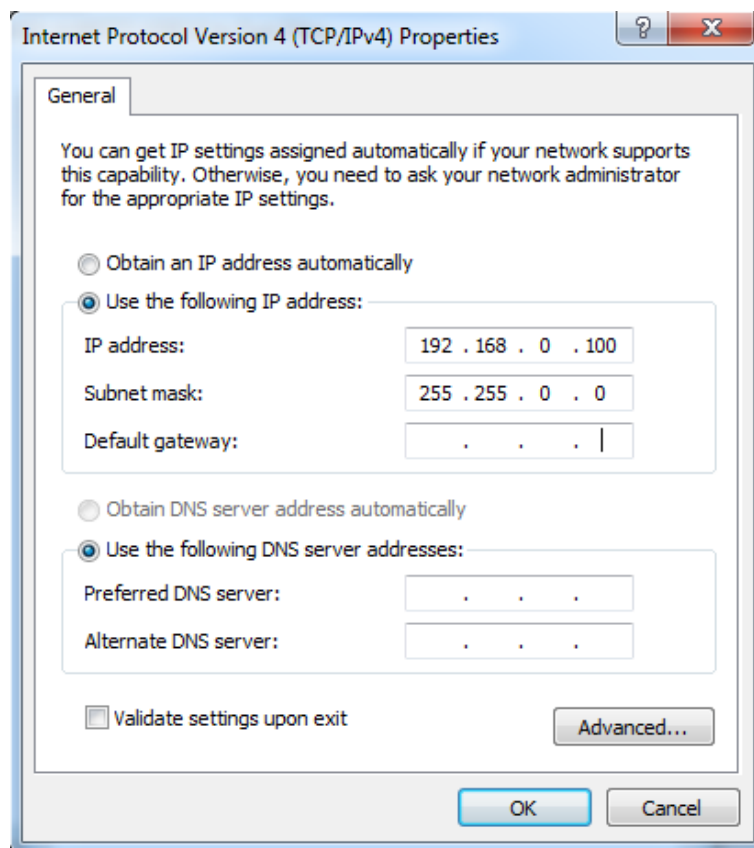
22. **IMPORTANT:** At this point all the displays should be displaying stable running video from the selected sources. If you do not have them displaying properly, than network switch is configured incorrectly
23. Rescan your components with Key Digital KD-IP922 Management Software and make sure HDMI video switch is functional.
24. At this point your Linksys network switch is set and ready to use.

Luxul AMS-4424P
Network Setup Guide for KD-IP822, KD-IP922, KD-IP1022, KD-IP1080

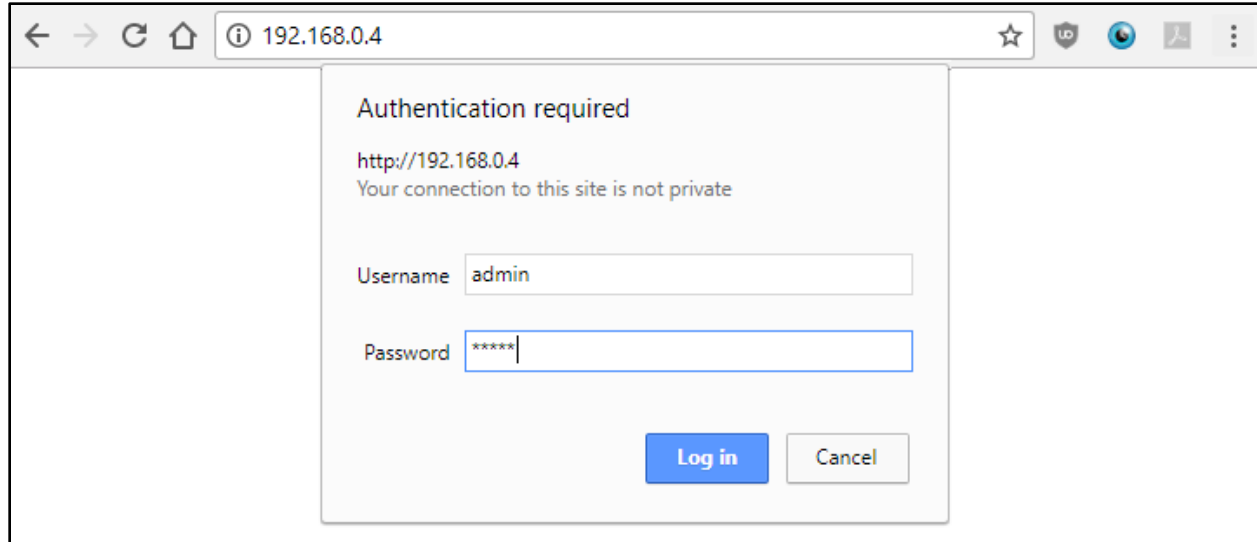
Important Notes:

- Please use firmware v.4.0.8.1. Other firmware versions are not compatible.
- Verified for single switch use only. Stacking switches may cause compatibility issues.

1. Login to the switch:
 - a. Plug an Ethernet cable into any of the ports of the switch
 - b. Plug the other end into the Ethernet port of your computer
 - c. Power on the Switch
 - d. Check to see that the IP address of the computer is within this network Subnet : **192.168.0.xxx** ("xxx" ranges 1~254). For example, 192.168.0.100



2. Open the Web browser, and enter **192.168.0.4** (default IP address of Luxul AMS-4424P). The login window appears as below:



3. Enter the user name and password. (default user name and password are both set as “admin”), then click “OK” to login to the switch configuration window.
4. Ensure all ports have Maximum Frame Size of 10056 entered as below. To check it, find Configuration → Ports → Ports in the menu on left side of the window. (KD-IP922 requires Jumbo Frame(8K) for video/audio transmission via 1G-BaseT).

Switch 3 Refresh

Port Configuration for Switch 3

Port	Link	Current	Speed	Adv Duplex		Adv speed			Flow Control			Maximum Frame Size	Excessive Collision Mode
			Configured	Fdx	Hdx	10M	100M	1G	Enable	Curr Rx	Curr Tx		
*			<>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			10056	<>
1	✓	1Gfdx	Auto	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10056	Discard
2	✓	1Gfdx	Auto	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10056	Discard
3	✓	1Gfdx	Auto	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10056	Discard
4	✓	1Gfdx	Auto	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10056	Discard
5	✓	1Gfdx	Auto	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10056	Discard
6	✓	1Gfdx	Auto	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10056	Discard
7	✓	1Gfdx	Auto	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10056	Discard
8	✓	1Gfdx	Auto	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10056	Discard
9	✓	1Gfdx	Auto	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10056	Discard

5. To enable **IGMP Snooping** of the switch, Find Configuration → IPMC → IGMP Snooping → Basic Configuration in the menu on left side of the window. (KD-IP922 requires IGMP Snooping for multicasting video/audio transmission via 1G-BaseT), then **check the box of Snooping Enabled** of Global Configuration in

IGMP Snooping Configuration window. And **check the Fast Leave box for all Ports** related Configuration in the same window as below.

Switch 3
Refresh

Configuration
Quick Setup
Green Ethernet
Ports
DHCP
Security
Aggregation
Loop Protection
IPMC Profile
MVR
IPMC
IGMP Snooping
Basic Configuration
VLAN Configuration
Port Filtering Profile
MLD Snooping
LLDP
MAC Table
Voice VLAN
QoS
Mirroring
UPnP
GVRP
Stack
sFlow
UDLD
Monitor
Quick Setup

IGMP Snooping Configuration

Stack Global Settings

Global Configuration	
Snooping Enabled	<input checked="" type="checkbox"/> Enabled
Unregistered IPMCv4 Flooding Enabled	<input type="checkbox"/> Make sure unchecked.
IGMP SSM Range	232.0.0.0 / 8
Leave Proxy Enabled	<input type="checkbox"/>
Proxy Enabled	<input type="checkbox"/>

Port Related Configuration for Switch 3

Port	Router Port	Fast Leave	Throttling
*	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<>
1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	unlimited
2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	unlimited
3	<input type="checkbox"/>	<input checked="" type="checkbox"/>	unlimited
4	<input type="checkbox"/>	<input checked="" type="checkbox"/>	unlimited
5	<input type="checkbox"/>	<input checked="" type="checkbox"/>	unlimited
6	<input type="checkbox"/>	<input checked="" type="checkbox"/>	unlimited

- Click **"Save"** button on the bottom of IGMP Snooping Configuration window

MVR
IPMC
IGMP Snooping
Basic Configuration
VLAN Configuration
Port Filtering Profile
MLD Snooping

22	<input type="checkbox"/>	<input checked="" type="checkbox"/>	unlimited
23	<input type="checkbox"/>	<input checked="" type="checkbox"/>	unlimited
24	<input type="checkbox"/>	<input checked="" type="checkbox"/>	unlimited

Save
Reset

- To add VLAN of the IGMP Snooping at the switch, Find Configuration → IPMC → IGMP Snooping → VLAN Configuration in the menu on left side of the window. (VLAN must be added in IGMP Snooping), then click **"Add New IGMP VLAN"** if there is not any specified VLAN in IGMP Snooping VLAN Configuration window.

Switch 3 ▼ Refresh

IGMP Snooping VLAN Configuration

Start from VLAN 1 with 20 entries per page.

Delete	VLAN ID	Snooping Enabled	Querier Election	Querier Address	Compatibility
--------	---------	------------------	------------------	-----------------	---------------

Add New IGMP VLAN

Save Reset

Step 11. Then enter “1” in VLAN ID, check the box of Snooping Enabled and Querier Election in new VLAN. And select “Forced IGMPv2” in the list box of Compatibility in IGMP Snooping VLAN Configuration window. Then click “Save” button on the bottom of IGMP Snooping VLAN Configuration window.

Switch 3 ▼ Refresh

IGMP Snooping VLAN Configuration

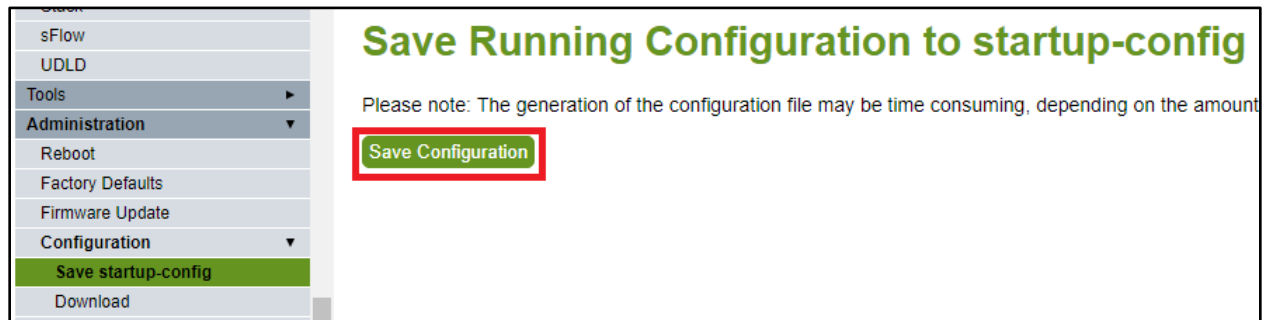
Start from VLAN 1 with 20 entries per page.

Delete	VLAN ID	Snooping Enabled	Querier Election	Querier Address	Compatibility
Cancel	1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0.0.0.0	Forced IGMPv2 ▼ 0

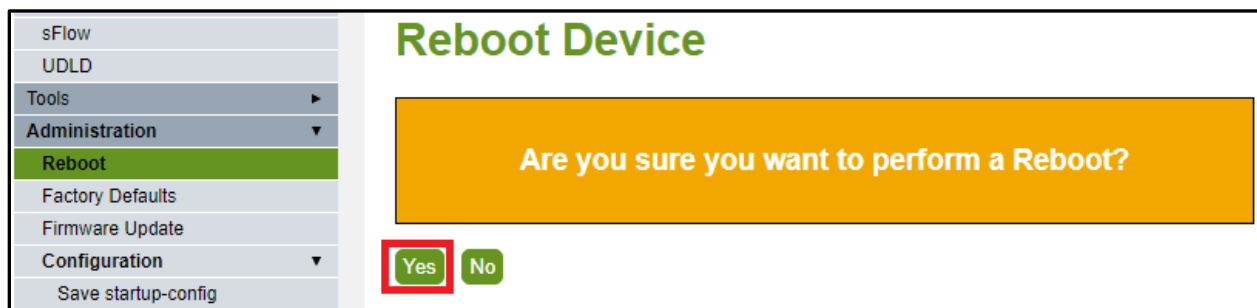
Add New IGMP VLAN

Save Reset

Step 12. To save all Running Configurations to Startup-Configuration, Find **Administration** → **Configuration** → **Save startup-config** in the menu on left side of the window. Then click “**Save Configuration**” button in Save Running Configuration to startup-config window.



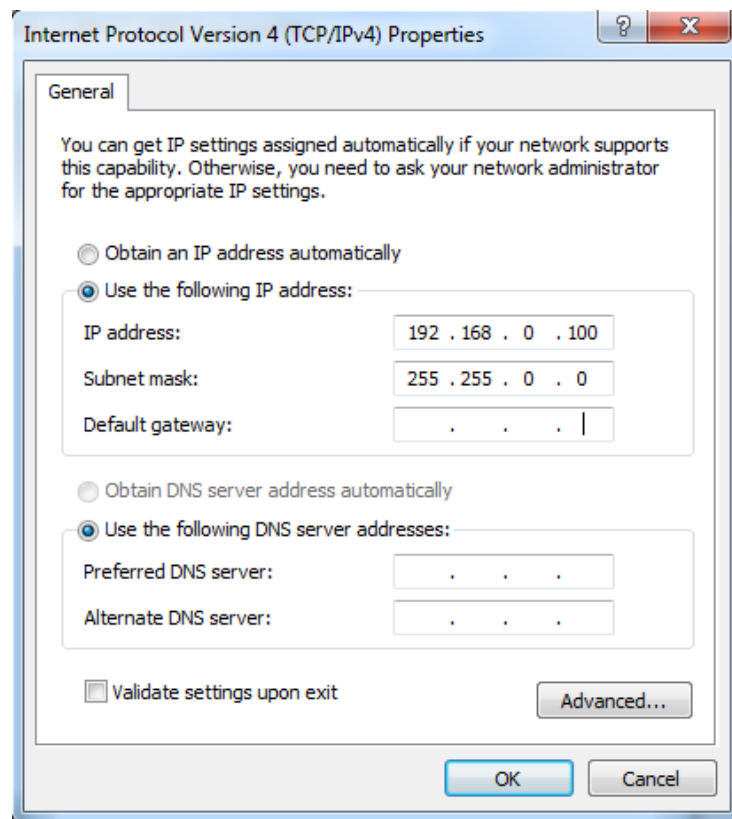
Step 13. To reboot the switch, Find Administration → Reboot in the menu on left side of the window. Then click “Yes” button in Reboot Device window. The switch will be rebooted automatically.



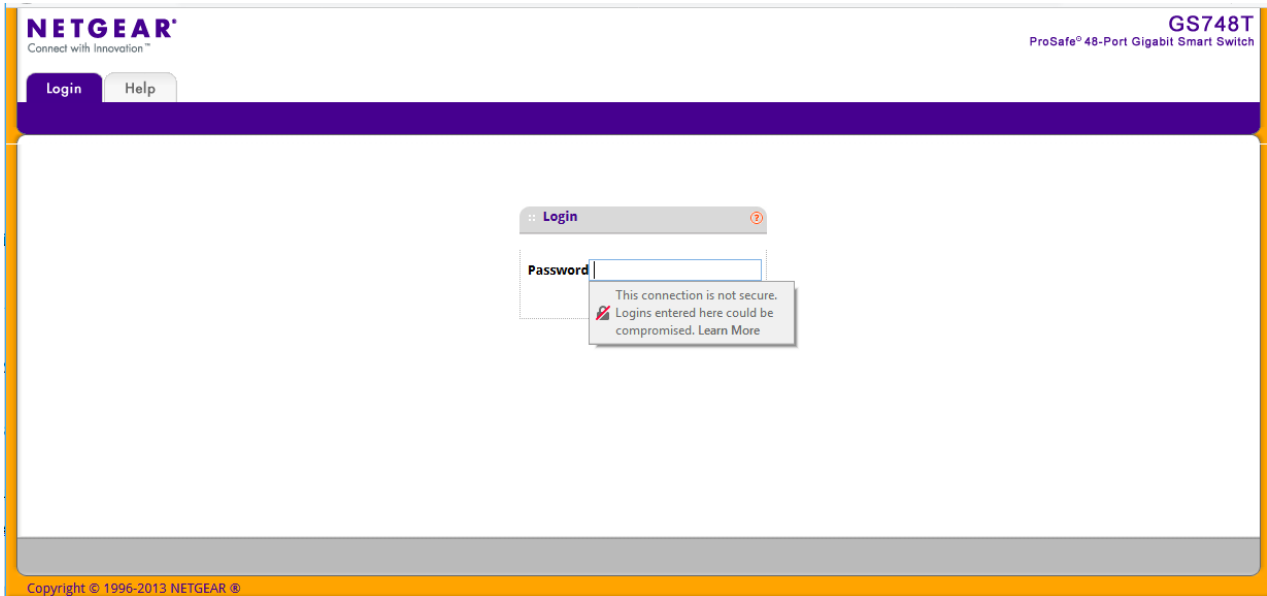
Netgear GS Series Network Setup Guide for KD-IP822, KD-IP922, KD-IP1022, KD-IP1080

Login to the switch with the following steps:

1. Plug an Ethernet cable into any of the ports of the switch
2. Plug the other end into the Ethernet port of your computer
3. Power on the Switch
4. Check to see that the IP address of the computer is within this network, 192.168.0.xxx ("xxx" ranges 1~254).
For example, 192.168.0.100



5. Open the Web browser, and enter 192.168.0.239 (default IP address of Netgear GS). The login window appears as below:



- 6.
7. Enter the password (default password is "password"). And then click 'OK' to login to the switch configuration window
8. To enable Jumbo Frame of the switch, go to Switching -> Ports -> Port Configuration. (IP922 requires Jumbo Frame(8K) for video/audio transmission via 1G-BaseT). Select the empty checkbox that is above the checkbox beside g1 Port in the table to select all the ports. All selected ports highlight to yellow color. Then enter "9216" in Maximum Frame Size field as shown below and press Apply button

NETGEAR
Connect with Innovation™

GS748T
ProSafe® 48-Port Gigabit Smart Switch

System | **Switching** | Routing | QoS | Security | Monitoring | Maintenance | Help | Index

Ports | LAG | VLAN | Auto-VoIP | STP | Multicast | MVR | Address Table

Port Configuration

Port Configuration

Go To Interface GO

	Port	Description	Port Type	Admin Mode	Port Speed	Physical Status	Link Status	Link Trap	Maximum Frame Size (1518 to 9216)	MAC
<input checked="" type="checkbox"/>				Enable	Auto			Enable	9216	
<input checked="" type="checkbox"/>	g1			Enable	Auto	1000 Mbps	Link Up	Enable	1518	08:00:27:00:00:00
<input checked="" type="checkbox"/>	g2			Enable	Auto	1000 Mbps	Link Up	Enable	1518	08:00:27:00:00:00
<input checked="" type="checkbox"/>	g3			Enable	Auto	1000 Mbps	Link Up	Enable	1518	08:00:27:00:00:00
<input checked="" type="checkbox"/>	g4			Enable	Auto	1000 Mbps	Link Down	Enable	1518	08:00:27:00:00:00
<input checked="" type="checkbox"/>	g5			Enable	Auto	1000 Mbps	Link Up	Enable	1518	08:00:27:00:00:00
<input checked="" type="checkbox"/>	g6			Enable	Auto	1000 Mbps	Link Down	Enable	1518	08:00:27:00:00:00
<input checked="" type="checkbox"/>	g7			Enable	Auto	1000 Mbps	Link Up	Enable	1518	08:00:27:00:00:00

CANCEL APPLY

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9. To enable IGMP Snooping of the switch, go to Switching -> Multicast -> IGMP Snooping -> IGMP Snooping Configuration. (IP922 requires IGMP Snooping for multicasting video/audio transmission via 1G-BaseT), Enable IGMP settings as shown below and press Apply button

NETGEAR
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GS748T
ProSafe® 48-Port Gigabit Smart Switch

System | **Switching** | Routing | QoS | Security | Monitoring | Maintenance | Help | Index

Ports | LAG | VLAN | Auto-VoIP | STP | **Multicast** | MVR | Address Table

IGMP Snooping Configuration

IGMP Snooping Configuration

IGMP Snooping Status ☐ Disable ☒ Enable

Validate IGMP IP header ☐ Disable ☒ Enable

Block Unknown Multicast Address ☒ Disable ☐ Enable

IGMP Statistics

Multicast Control Frame Count 0

Interfaces Enabled for IGMP Snooping

VLAN IDs Enabled for IGMP Snooping

CANCEL APPLY

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10. Go to Switching -> Multicast -> IGMP Snooping -> IGMP Snooping Interface Configuration. Select the empty checkbox that is above the checkbox beside g1 Port in the table to select all the ports. All selected ports highlight to yellow color. Enable Admin Mode and Fast Leave Admin Mode as shown below and press Apply button

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GS748T
ProSafe® 48-Port Gigabit Smart Switch

System | **Switching** | Routing | QoS | Security | Monitoring | Maintenance | Help | Index

Ports | LAG | VLAN | Auto-VoIP | STP | **Multicast** | MVR | Address Table

LOGOUT

MFDB
Auto-Video
IGMP Snooping
IGMP Snooping Configuration
IGMP Snooping Interface Configuration
IGMP Snooping Table
IGMP Snooping VLAN Configuration
Multicast Router Configuration
Multicast Router VLAN Configuration
IGMP Snooping Querier
MLD Snooping

IGMP Snooping Interface Configuration

IGMP Snooping Interface Configuration

1 LAGS All Go To Interface GO

	Interface	Admin Mode	Host Timeout	Max Response Time	MRouter Timeout	Fast Leave Admin Mode
<input checked="" type="checkbox"/>		Enable				Enable
<input checked="" type="checkbox"/>	g1	Disable	260	10	0	Disable
<input checked="" type="checkbox"/>	g2	Disable	260	10	0	Disable
<input checked="" type="checkbox"/>	g3	Disable	260	10	0	Disable
<input checked="" type="checkbox"/>	g4	Disable	260	10	0	Disable
<input checked="" type="checkbox"/>	g5	Disable	260	10	0	Disable
<input checked="" type="checkbox"/>	g6	Disable	260	10	0	Disable
<input checked="" type="checkbox"/>	g7	Disable	260	10	0	Disable
<input checked="" type="checkbox"/>	g8	Disable	260	10	0	Disable

CANCEL APPLY

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11. Go to Switching -> Multicast -> IGMP Snooping -> IGMP Snooping VLAN Configuration. Add VLAN ID=1, Fast Leave Admin Mode=Enable and Query Mode=Enable as shown below and press Add button. (Note: the empty fields are populated automatically to default values)

NETGEAR
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GS748T
ProSafe® 48-Port Gigabit Smart Switch

System | **Switching** | Routing | QoS | Security | Monitoring | Maintenance | Help | Index

Ports | LAG | VLAN | Auto-VoIP | STP | **Multicast** | MVR | Address Table

LOGOUT

MFDB
Auto-Video
IGMP Snooping
IGMP Snooping Configuration
IGMP Snooping Interface Configuration
IGMP Snooping Table
IGMP Snooping VLAN Configuration
Multicast Router Configuration
Multicast Router VLAN Configuration
IGMP Snooping Querier
MLD Snooping

IGMP Snooping VLAN Configuration

IGMP Snooping VLAN Configuration

	VLAN ID	Fast Leave Admin Mode	Host Timeout	Maximum Response Time	MRouter Timeout	Query Mode	Query Interval (1 to 1800 secs)
<input checked="" type="checkbox"/>	1	Enable				Enable	

ADD DELETE CANCEL APPLY

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12. Go to Switching -> Multicast > IGMP Snooping Querier -> Querier Configuration. Enable Querier Admin Mode as shown below and press Apply button

The screenshot shows the Netgear GS748T web interface. The browser address bar displays '192.168.0.239/base/cheetah_login.html'. The page title is 'NETGEAR GS748T ProSafe® 48-Port Gigabit Smart Switch'. The navigation menu includes System, Switching, Routing, QoS, Security, Monitoring, Maintenance, Help, and Index. The 'Switching' tab is active, and the 'Querier Configuration' page is displayed. The left sidebar shows a tree view with 'Querier Configuration' selected. The main content area shows the 'Querier Configuration' form with the following fields:

Querier Admin Mode	<input type="radio"/> Disable <input checked="" type="radio"/> Enable
Snooping Querier Address	192.168.0.239
IGMP Version	2 (1 to 2)
Query Interval(secs)	60 (1 to 1800)
Querier Expiry Interval(secs)	125 (60 to 300)

At the bottom of the form are buttons for REFRESH, CANCEL, and APPLY. The footer shows 'Copyright © 1996-2013 NETGEAR®'.

- Finally, go to Maintenance -> Device Reboot. Enable checkbox for device reboot as shown below and press Apply button. It takes approximately 2 minutes to power cycle the switch and an additional 2 min for IP922 to start showing video.

The screenshot shows the Netgear GS748T web interface with the 'Maintenance' tab selected. The 'Device Reboot' page is displayed. The left sidebar shows a tree view with 'Device Reboot' selected. The main content area shows the 'Device Reboot' form with the following fields:

Device Reboot	<input checked="" type="checkbox"/>
---------------	-------------------------------------

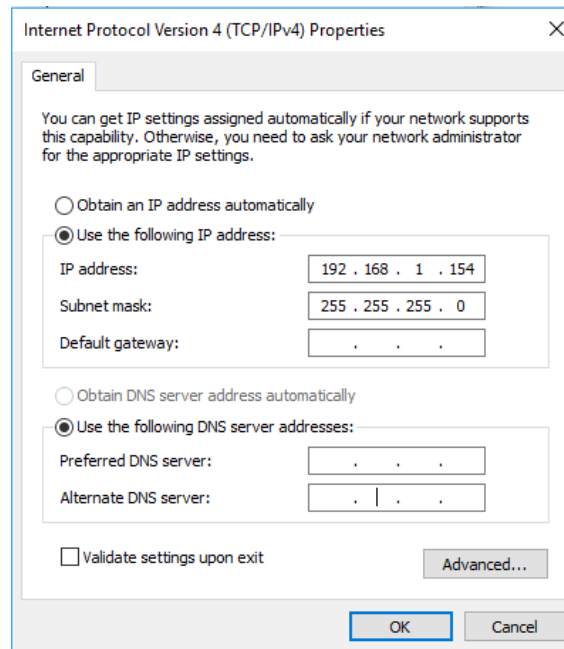
At the bottom of the form are buttons for CANCEL and APPLY. The footer shows 'Copyright © 1996-2013 NETGEAR®'.

Pakedge S3L

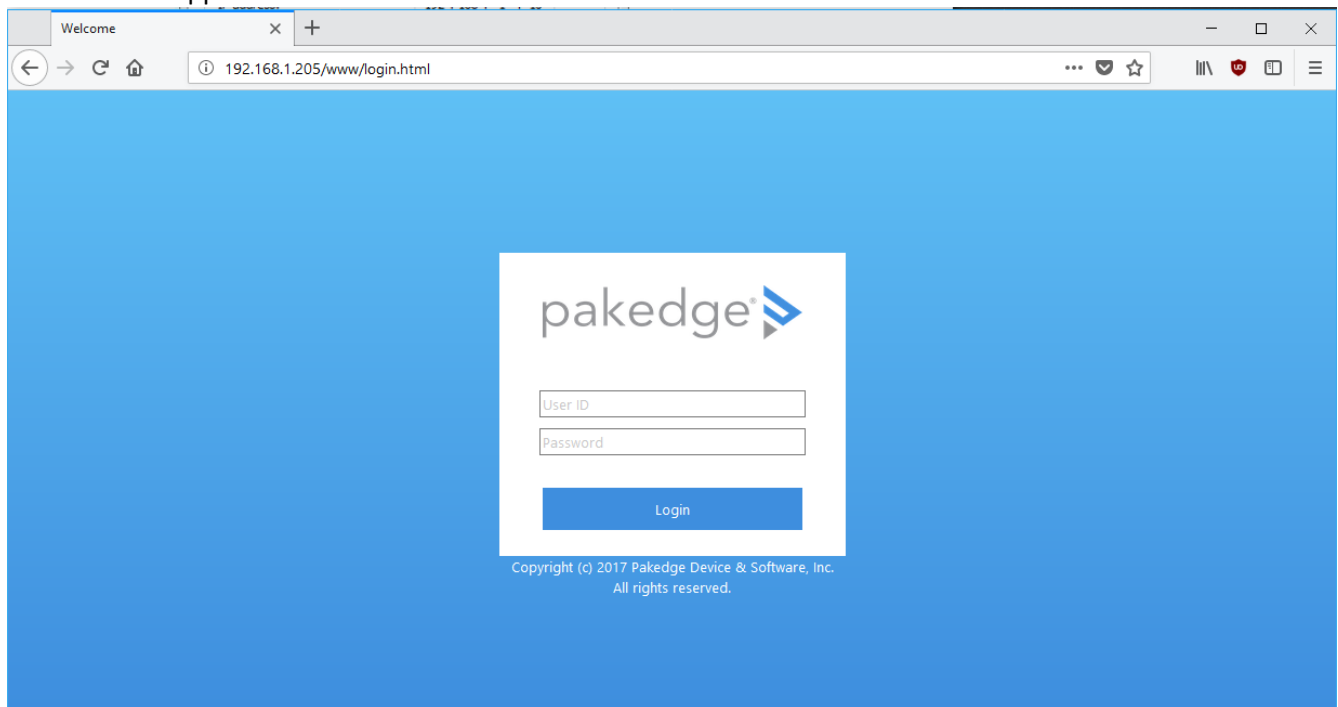
Network Setup Guide for KD-IP822, KD-IP922, KD-IP1022, KD-IP1080

Login to the switch with the following steps:

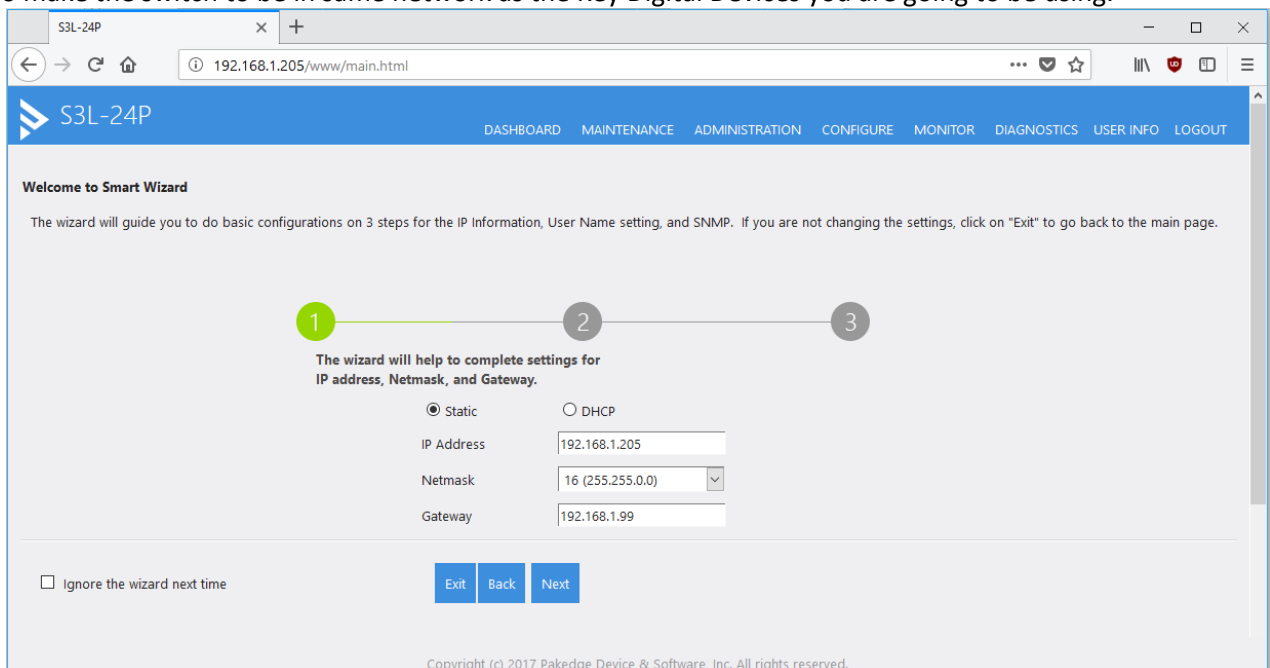
1. Plug an Ethernet cable into any of the ports of the switch
2. Plug the other end into the Ethernet port of your computer
3. Power on the Switch
4. Check to see that the IP address of the computer is within this network, 192.168.1.xxx (“xxx” ranges 1~254).
For example, 192.168.1.154



5. Open the Web browser, and enter 192.168.1.205 (default IP address of Pakedge S3L). Then the login window appears as below.



6. Enter the User ID (default user id is “pakedge”) and password (default password is “pakedges”). And then click ‘OK’ to login to the switch configuration window. Make sure to set appropriate IP address and netmask to make the switch to be in same network as the Key Digital Devices you are going to be using.



- To enable Jumbo Frame of the switch, go to Administration -> Management -> Port. (IP922 requires Jumbo Frame(8K) for video/audio transmission via 1G-BaseT). Make sure under Port Settings, Port field is set to All. Then enter "9216" in Maximum Receive Frame Size field as shown below and press Apply button. After applying check that the settings are updated in the table below.

The screenshot shows the S3L-24P web interface. The navigation menu includes ADMINISTRATION, Management, Port, and PORT SETTINGS. The Port Settings page has a sidebar with Port Settings, Port Status, Green-Ethernet, and DDM Settings. The main content area shows the Port Settings configuration. The 'Port' dropdown is set to 'All'. The 'Maximum Receive Frame Size' is set to '9216'. The 'Apply' button is visible. Below the configuration fields, a table shows the updated settings for all ports.

PORT	STATE	SPEED	DUPLEX	FLOW CONTROL	MAXIMUM RECEIVE FRAME SIZE	DESCRIPTION
eth1/1	Enabled	AUTO	AUTO	None	9216	
eth1/2	Enabled	AUTO	AUTO	None	9216	
eth1/3	Enabled	AUTO	AUTO	None	9216	
eth1/4	Enabled	AUTO	AUTO	None	9216	
eth1/5	Enabled	AUTO	AUTO	None	9216	
eth1/6	Enabled	AUTO	AUTO	None	9216	
eth1/7	Enabled	AUTO	AUTO	None	9216	
eth1/8	Enabled	AUTO	AUTO	None	9216	

8. To enable IGMP Snooping of the switch, go to Configure -> Application -> IGMP Snooping. (IP922 requires IGMP Snooping for multicasting video/audio transmission via 1G-BaseT), Enable IGMP settings as shown below and press Apply button. You should see a new entry in the table below.

The screenshot shows the S3L-24P web interface. The breadcrumb navigation is CONFIGURE > Application > IGMP Snooping > GLOBAL SETTING. The left sidebar has a menu with 'Global Setting' selected. The main content area is titled 'Global Setting' and contains the following configuration options:

- IGMP Snooping Proxy: ☒ Enabled ☐ Disabled [Apply]
- VLAN ID (1-4094): [Apply]
- IGMP Snooping Querier: ☒ Enabled ☐ Disabled
- Status: ☒ Enabled ☐ Disabled
- Report Suppression: ☒ Enabled ☐ Disabled
- Suppress time (0-300 sec): [Apply]
- Immediate Leave: ☒ Enabled ☐ Disabled

Below the configuration options, there is a table with the following columns: VLAN ID, STATUS, IGMP SNOOPING QUERIER, REPORT SUPPRESSION, SUPPRESS TIME, IMMEDIATE LEAVE. The table is currently empty, with 'Total Entries: 0' displayed above it. A 'Delete' button is located to the right of the table.

- Go to Configure -> Application -> IGMP. Enter the settings as shown in the picture below and press Apply button. You should see the updated settings in the entries table below.

IGMP Settings

VLAN ID (1-4094)

Status ☒ Enabled ☐ Disabled

Access Group ☐ Enabled ☒ Disabled

Last Member Query Interval (1000-25000 msec)

Query Interval (1-31744 sec)

Query Max Response Time (1-25 sec)

Robustness Variable (1-7)

Version ☐ v1 ☒ v2 ☐ v3

Apply

Total Entries: 1

INTERFACE	ACCESS GROUP	VERSION	QUERY INTERVAL(SEC)	QUERY MAX RESPONSE TIME	LAST MEMBER QUERY INTERVAL	ROBUSTNESS VARIABLE	
VLAN1		V2	125	10	1000	2	Detail

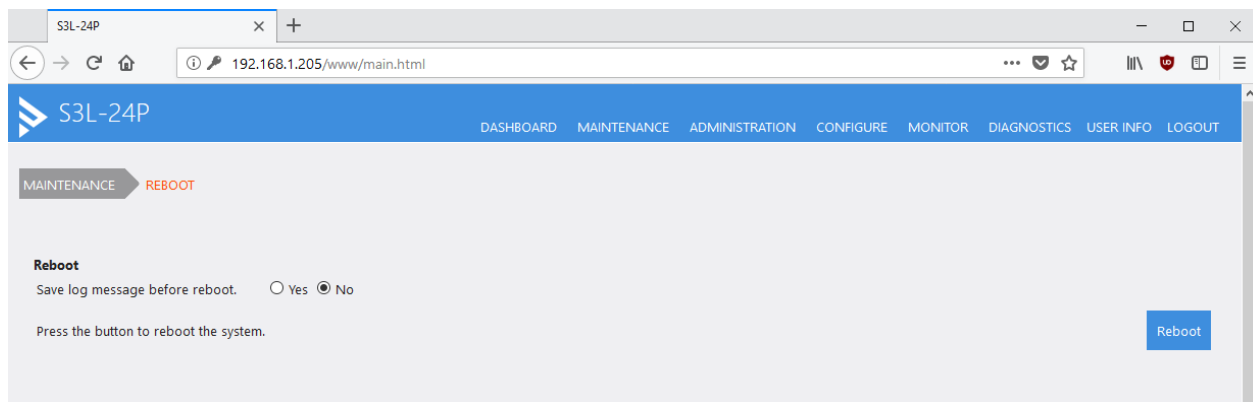
MAINTENANCE > SAVE

Save

Press the button to save the system settings to NV-RAM.

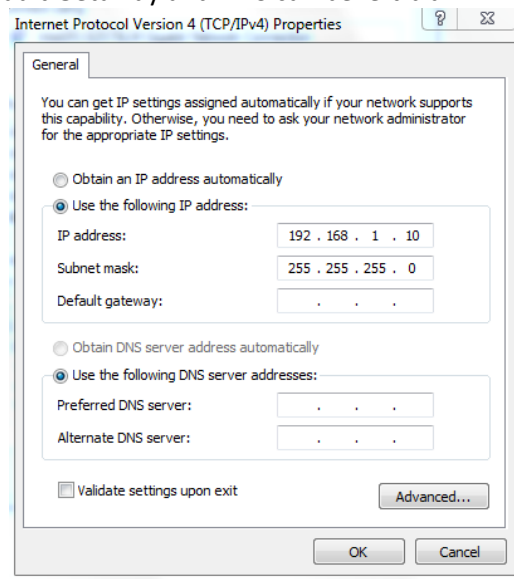
Save

10. Go to Maintenance -> Save. Click on Save button.
11. Go to Maintenance -> Reboot. Click on Reboot button. It takes approximately 30 seconds for the switch to reboot and an additional 30 sec for IP922 to start showing video.



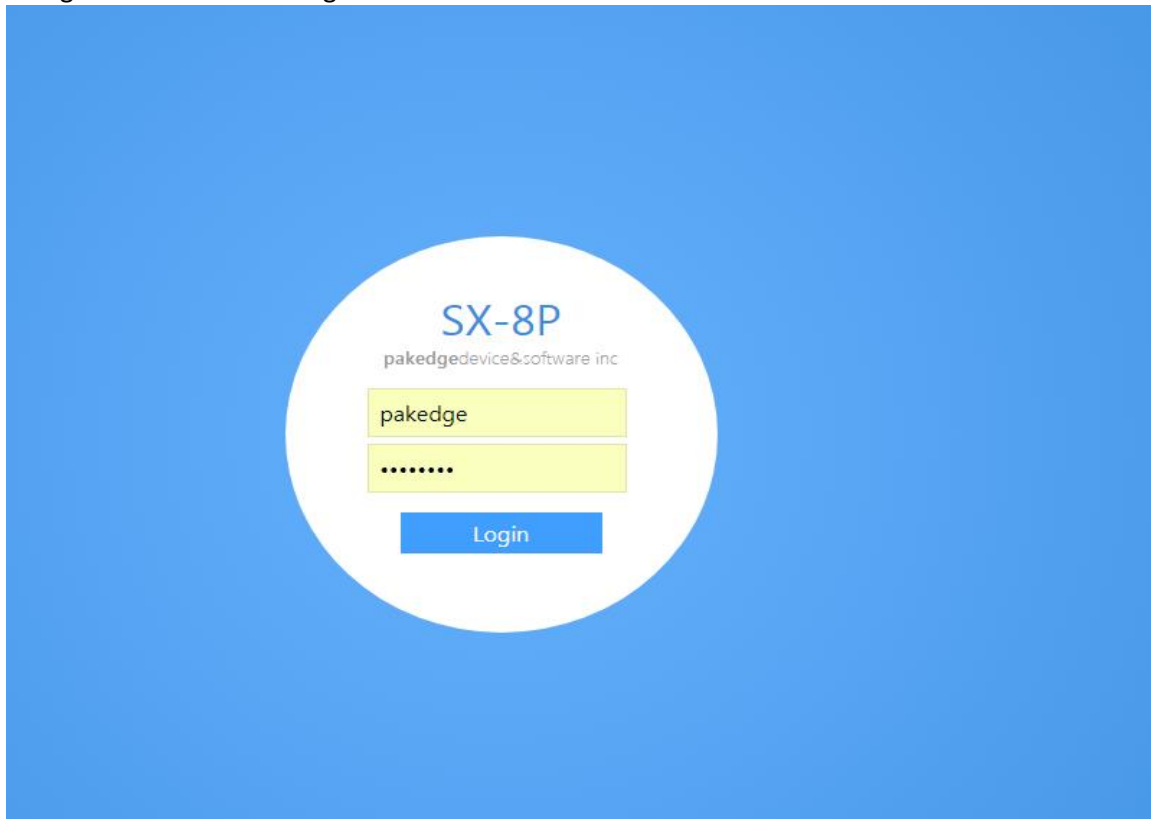
Pakedge SX Series
IGMP Setup Guide for KD-IP822, KD-IP922, KD-IP1022, KD-IP1080

1. Connect to the network switch
 - a. Plug an Ethernet cable into any of the ports of the switch
 - b. Plug the other end into the Ethernet port of your computer
 - c. Power on the Switch
 - d. Configure the PC with static IP address of 192.168.1.10 and the subnet mask of 255.255.255.0 to be within range of Pakedge's default settings (IP address 192.168.1.205 subnet mask 255.255.255.0). Default Gateway and DNS can be left blank

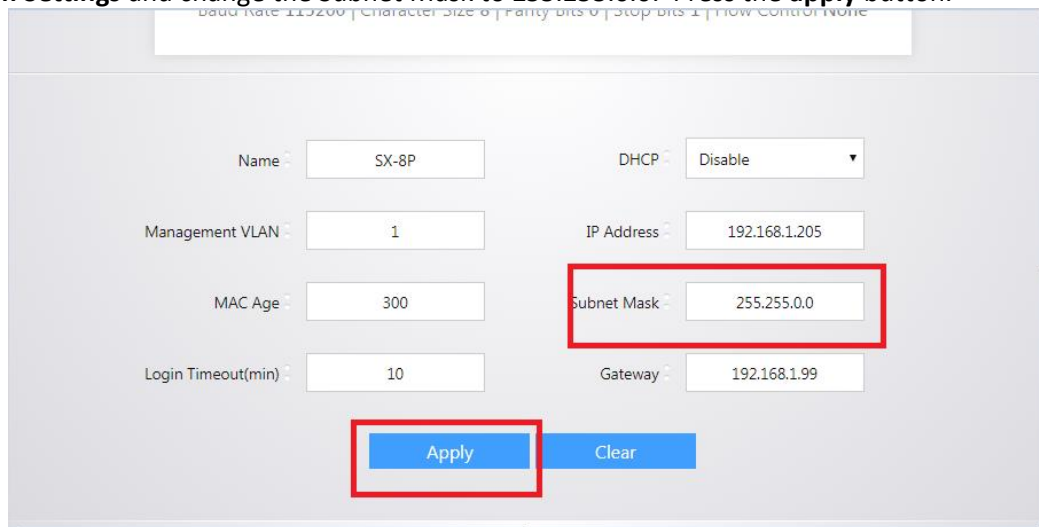


2. Open a web browser, and enter **192.168.1.205** (default IP address of Pakedge) to enter the login window

3. Enter the user name and password (default user name is **pakedge** and password is **pakedges**) and then click **Login** to login to the switch configuration window.



4. Go to **System Settings** and change the Subnet Mask to 255.255.0.0. Press the **apply** button.

The image displays the "System Settings" configuration page. At the top, there is a header bar with various status indicators. The main configuration area contains several fields: "Name" (SX-8P), "DHCP" (Disable), "Management VLAN" (1), "IP Address" (192.168.1.205), "MAC Age" (300), "Subnet Mask" (255.255.0.0), "Login Timeout(min)" (10), and "Gateway" (192.168.1.99). The "Subnet Mask" field and the "Apply" button at the bottom are highlighted with red rectangles.

5. Go to **Port → Port Settings → MTU** and change MTU to 10,000 (max)

Port MTU Setup

MTU: 10000 Byte (1518 - 10000, default 9000)

Apply Clear

6. Go to **TRAFFIC → IGMP → IGMP Snooping** and Enable **IGMP Status**, and **Report Suppression**. Press the **Apply** button.

7. Press the button with red pencil icon

IGMP Global Setup

IGMP Status: Enable Version: IGMPv2 Report Suppression: Enable

Apply Clear

ID	VLAN ID	Operational Status	Router Port Auto Learn	Query Robustness	Query Interval	Query Max Response Interval	Last Member Query Counter	Last Member Query Interval	Immediate Leave	
1	1	Enable	Enable	2	125	10	2	1	Enable	

8. Enable **State** and **Immediate Leave**

IGMP Status: Enable | Version: IGMPv2 | Report Suppression: Enable

Apply | Clear

IGMP VLAN Setup

VLAN ID: 1

Router Port Auto Learn: Enable

Query Robustness: 2

Query Max Response Interval: 10

Last Member Query Counter: 2

Last Member Query Interval: 1

State: Enable

Immediate leave: Enable

Query Interval: 125

9. Go to **TRAFFIC** → **IPMC** → **IGMP Querier** and press the button with red pencil icon

IGMP

IGMP Snooping | **IGMP Querier** | IGMP Statistics | Multicast Property | Multicast Group | Multicast Router Port

ID	VLAN ID	Status	Operational Status	Version	Querier Address	
1	1	Enable	Enable	IGMPv2	192.168.1.205	

10. Enable **State** and choose **IGMPv2** version. Click **Apply** button

IGMP

IGMP Snooping | **IGMP Querier** | IGMP Statistics | Multicast Property | Multicast Group | Multicast Router Port

Edit Querier Setup

VLAN ID: 1

State: Enable

Version: IGMPv2

Apply | Clear | Back

10. Go to **TRAFFIC**→ **IPMC**→**MULTICAST PORPERTY** and set Unknown Multicast Action to **Drop**. Press **Apply**

IGMP

IGMP Snooping IGMP Querier IGMP Statistics **Multicast Property** Multicast Group Multicast Router Port

Unknown Multicast Action : Drop ▼

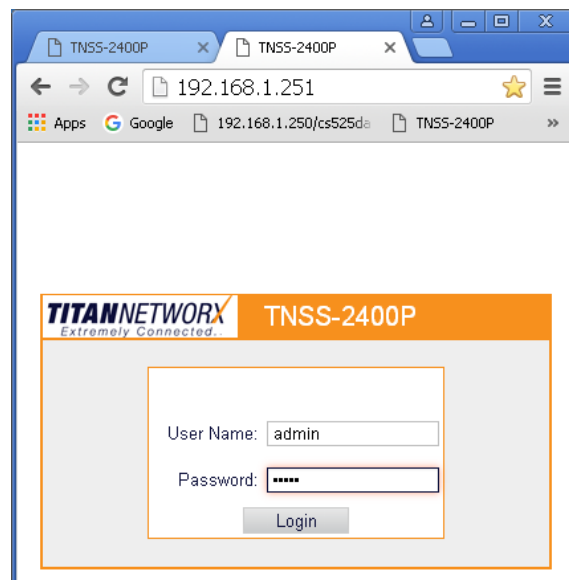
Multicast Forward Method

IPv4 : DMAC-VID ▼

Apply Clear

IGMP Setup Guide: Titan Networkx 1080p Systems (KD-IP1080, KD-IP120)

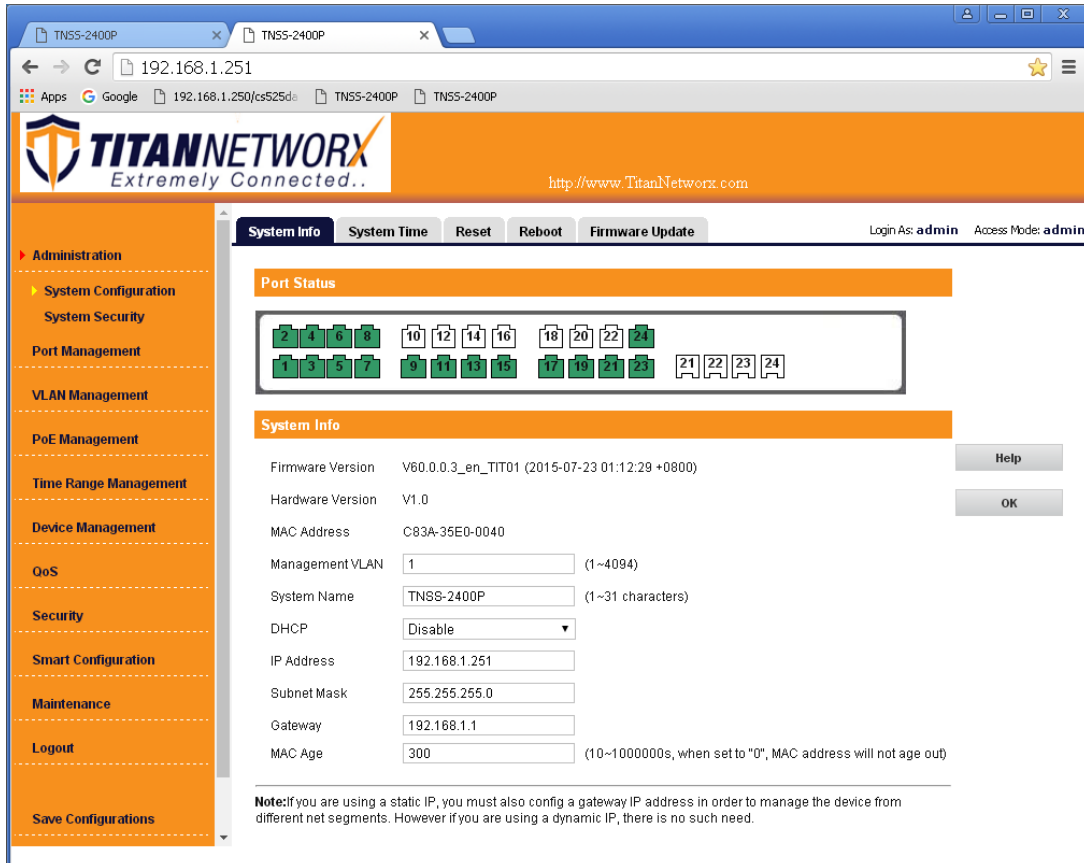
1. Before Titan Networkx network switch is configured Key Digital KD-IP120/KD-IP1080 HDMI switch set must be connected to all HDMI sources/displays/network switches, and configured using Key Digital KD-IP120 Key Digital Management Software latest version.
2. Power-up all the system components. Using Key Digital KD-IP120 Key Digital Management Software, switch **All Outputs -> Through** at switching page.
3. **IMPORTANT:** Disconnect all the DHCP devices like routers, servers from the Linksys network switch.
4. Locate a pinhole "RESET" button at the front panel left bottom corner of your Titan Networkx network switch. Using a paper clip press and hold a reset button for more than 10 seconds and then release. Wait while the device is restarted and ready to use (about 5min).
5. **IMPORTANT:** At this point all the displays should be displaying distorted randomly flashing video images.
6. Connect your PC to the Titan Networkx network switch directly using a network cable.
7. If you have not done yet, configure your PC's IP address to the same range as the switch (default **192.168.1.xxx**).
8. Enter the switch's IP address in your browser and press ENTER (check the user manual for a default IP address – usually, it is: **192.168.1.30**).
9. Enter user name and password (check the user manual for a default user name and password; it is usually **"admin"** for both). Then click **Log In**.



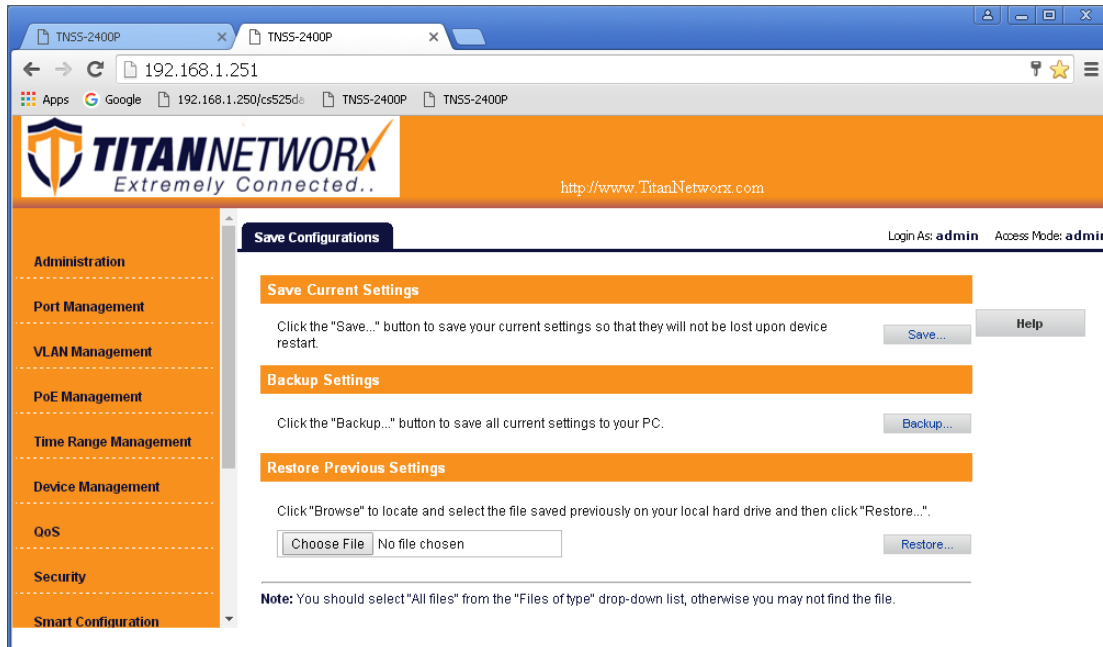
10. Navigate to **Administration -> System Configuration**. Select **IP Address** box. IP address can be changed by the administrator depending on the network configuration. If you are using multiple network switches it is recommended to set first one to **192.168.1.251**, second to **192.168.1.252**, and so on (we will change an IP

address to **192.168.1.251**). Set **Subnet Mask** to **255.255.255.0**, set **Gateway** to **192.168.1.1** (in this case), make sure that Management VLAN is set to "**1**", DHCP is set to "**Disable**" and click **OK**. Page will refresh with the new IP address. If it is timed out than log in again using the new IP address.

11. Make sure your screen looks exactly like pictured below.



12. Click **Save Configurations** on the left bottom corner. New screen will appear. Click **Save** under **Save Current Settings**, then **OK** and **OK** again.



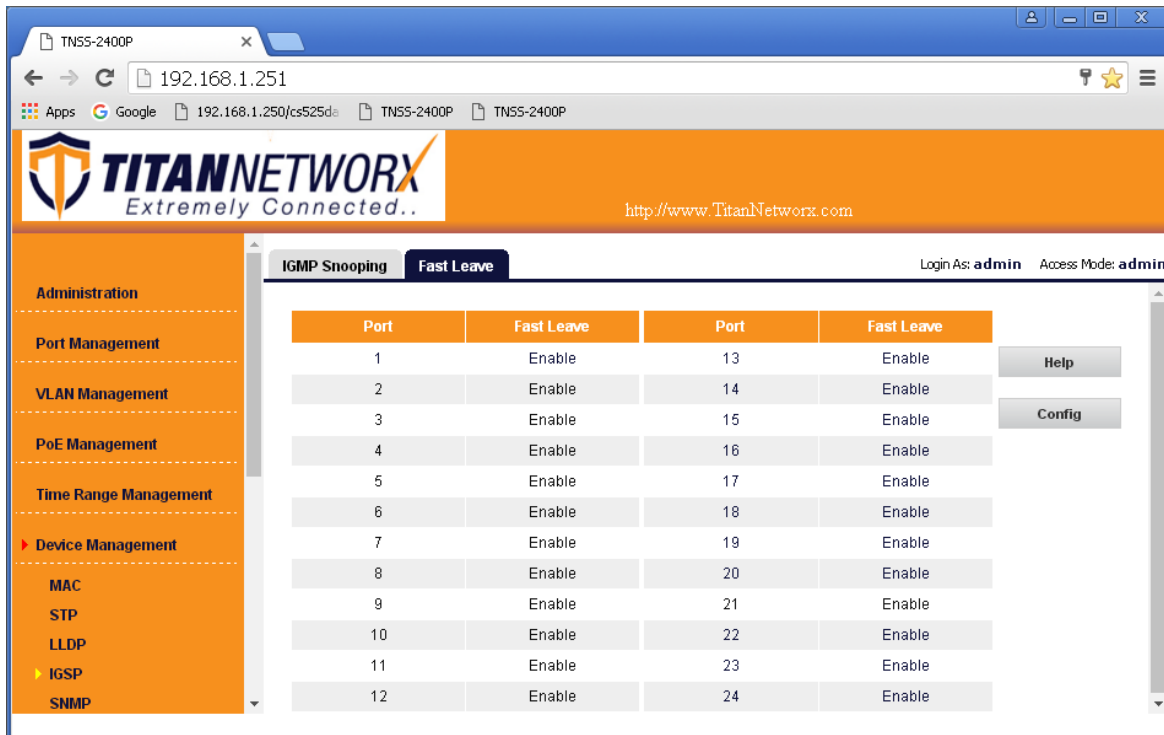
13. Navigate to **Device Management-> IGSP**, Select **IGMP Snooping** tab. Set **IGSP Status** to **Enable**, set **Unknown Multicast Drop** to **Enable**, set **Multicast VLAN Status** to **Enable**, set **Multicast VLAN ID** to **“1”**, and leave all other settings as indicated below. Click **OK**, and **OK** again.

The screenshot displays the TitanNetworkX web interface for configuring IGMP Snooping. The browser address bar shows the URL 192.168.1.251. The left sidebar contains a navigation menu with the following items: Administration, Port Management, VLAN Management, PoE Management, Time Range Management, Device Management (expanded), MAC, STP, LLDP, and IGSP. The main content area is titled 'IGMP Snooping' and includes a 'Fast Leave' tab. The settings are as follows:

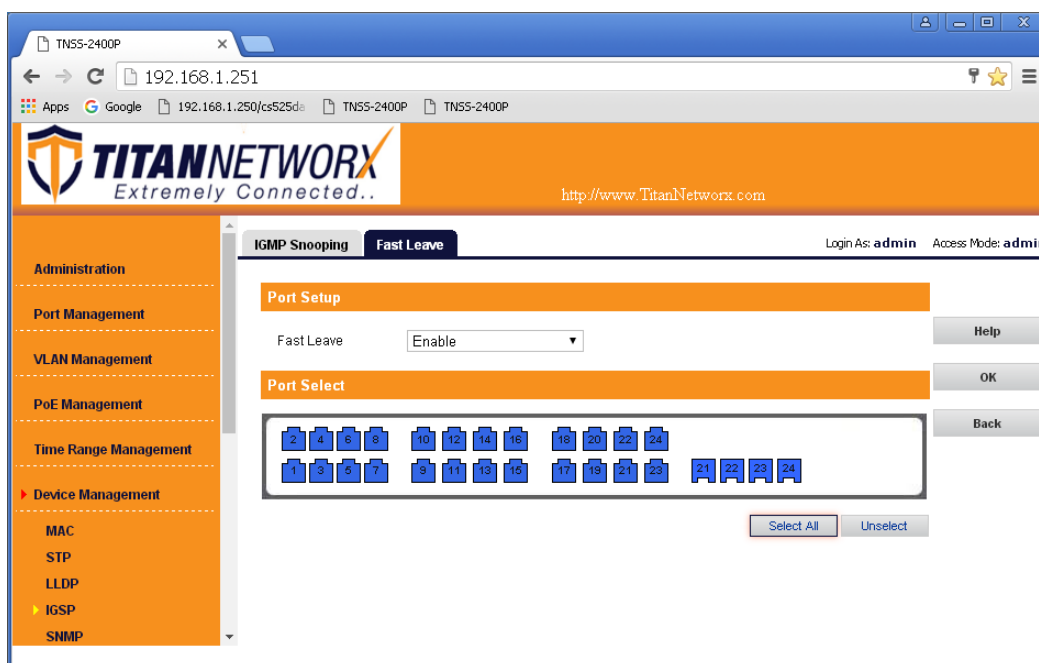
Setting	Value	Range/Note
IGSP Status	Enable	
Routing Port Age	105	(1~1000s)
Group-general Query Max Response Time	10	(1~25s)
Group-specific Query Max Response Time	2	(1~5s)
Host Port Age	260	(200~1000s)
Unknown Multicast Drop	Enable	
Multicast VLAN Status	Enable	
Multicast VLAN ID	1	(1~4094, the corresponding VLAN will only take effect when it already exists)

Buttons for 'Help' and 'OK' are located on the right side of the configuration area.

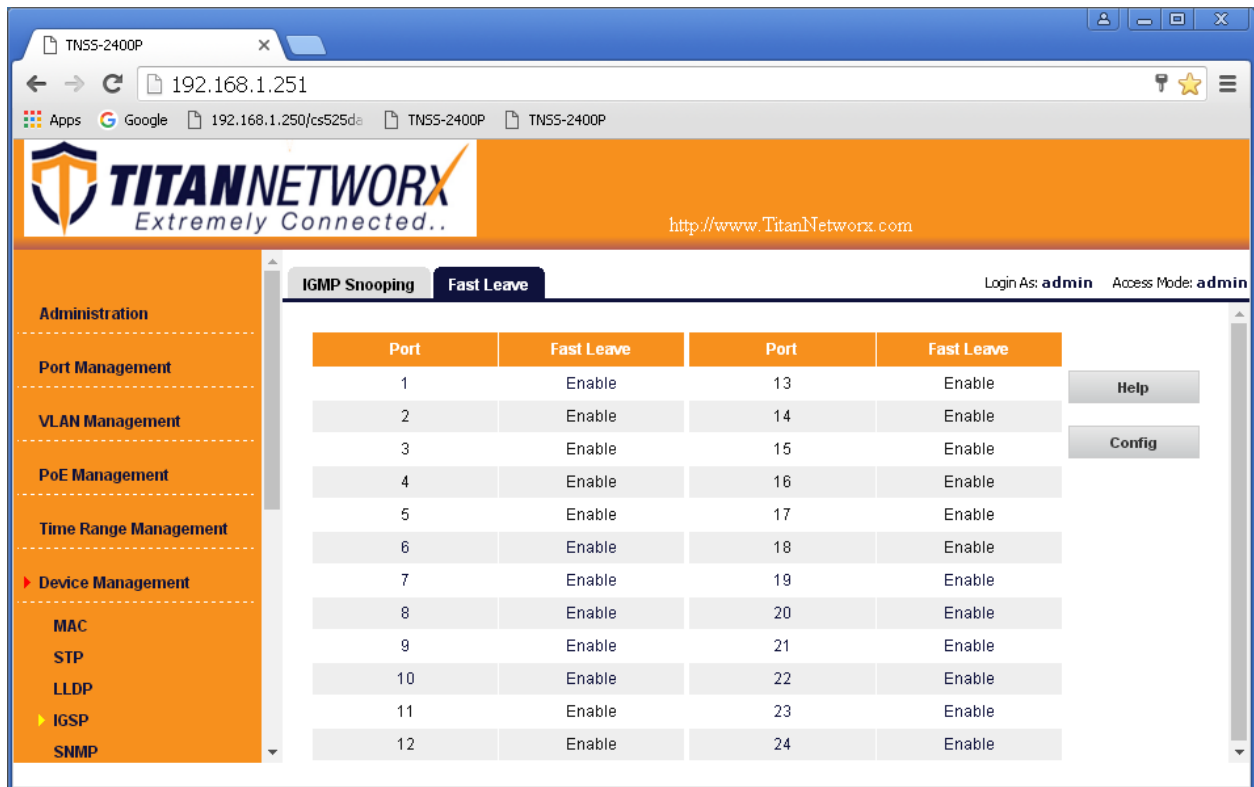
14. Select **Fast Leave** tab. Click **Config** button.



15. Set **Fast Leave** to **Enable**, click **Select All**. Click **OK**, and **OK** again.

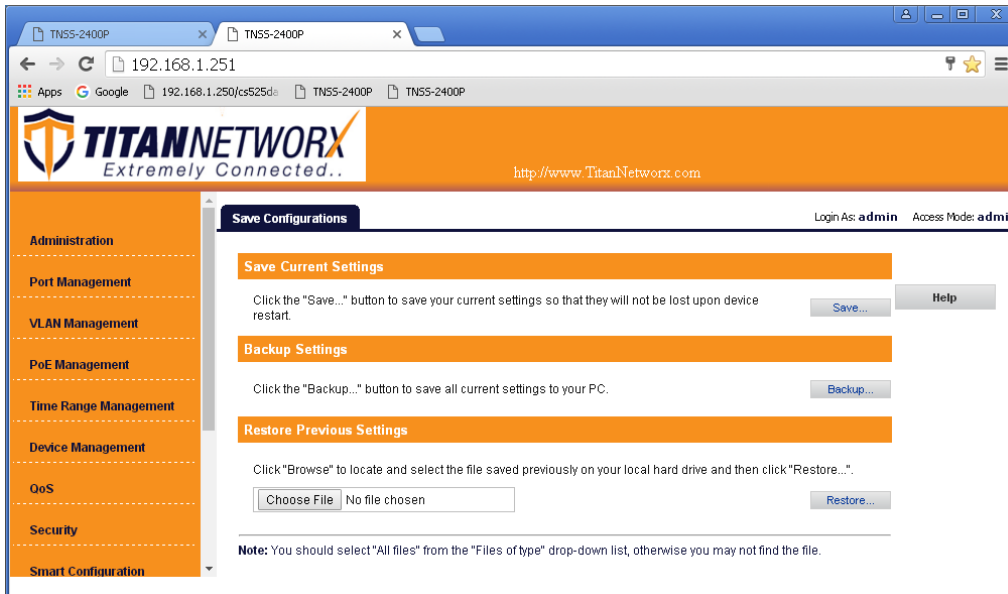


16. Make sure all the ports are set to **Enable**.



17. **IMPORTANT:** At this point all the displays should be displaying stable running video from the selected sources. If you do not have them displaying properly, than network switch is configured incorrectly.

18. Click **Save Configurations** on the left bottom corner. New screen will appear. Click **Save** under **Save Current Settings**, than **OK** and **OK** again.



19. **IMPORTANT:** Now you can connect back you DHCP equipment (routers, servers and so on).
20. Power down Titan Networkx network switch and power it up back again. Wait for the whole system to start and until you can see video on your displays.

21. Log in to your Titan Networkx network switch again and make sure that IGMP settings are intact:

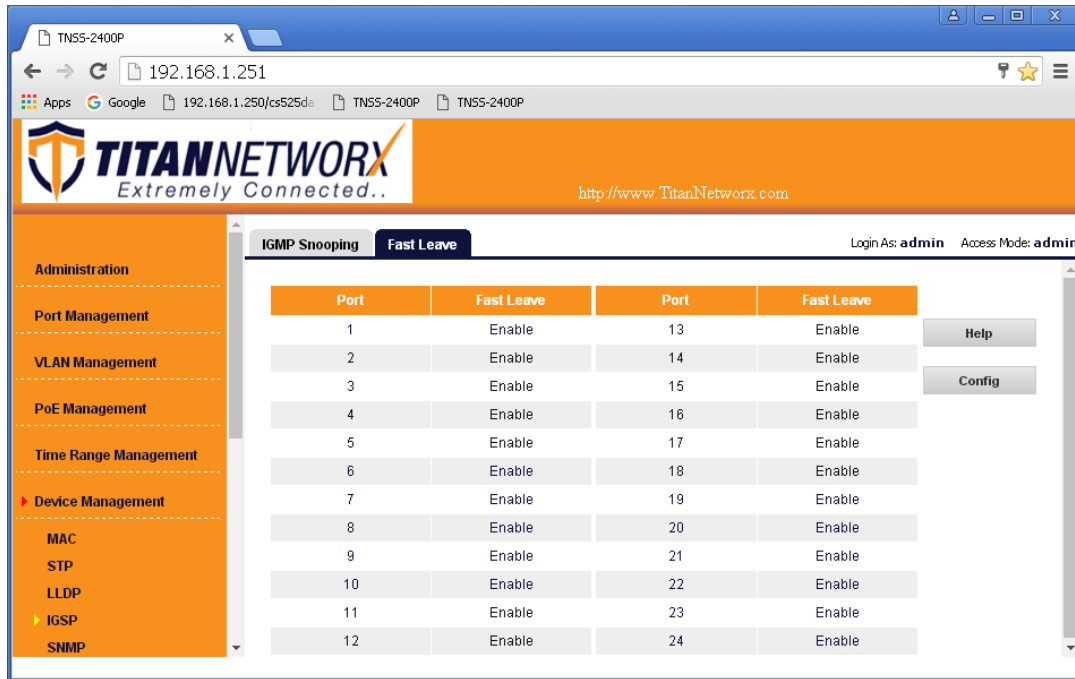
The image displays two screenshots of the Titan Networkx web interface, showing the configuration pages for a network switch.

Top Screenshot: System Info Page

- Port Status:** A visual representation of 24 ports, with ports 1-24 shown in a grid.
- System Info:**
 - Firmware Version: V60.0.0.3_en_TIT01 (2015-07-23 01:12:29 +0800)
 - Hardware Version: V1.0
 - MAC Address: C83A-35E0-0040
 - Management VLAN: 1 (1~4094)
 - System Name: TNSS-2400P (1~31 characters)
 - DHCP: Disable
 - IP Address: 192.168.1.251
 - Subnet Mask: 255.255.255.0
 - Gateway: 192.168.1.1
 - MAC Age: 300 (10~1000000s, when set to "0", MAC address will not age out)
- Note:** If you are using a static IP, you must also config a gateway IP address in order to manage the device from different net segments. However if you are using a dynamic IP, there is no such need.

Bottom Screenshot: IGMP Snooping Page

- IGMP Snooping:**
 - IGMP Status: Enable
 - Routing Port Age: 105 (1~1000s)
 - Group-general Query Max Response Time: 10 (1~25s)
 - Group-specific Query Max Response Time: 2 (1~5s)
 - Host Port Age: 260 (200~1000s)
 - Unknown Multicast Drop: Enable
 - Multicast VLAN Status: Enable
 - Multicast VLAN ID: 1 (1~4094, the corresponding VLAN will only take effect when it already exists)



22. Rescan your components with Key Digital KD-IP120 Key Digital Management Software and make sure HDMI video switch is functional.
23. At this point your Titan Networkx network switch is set and ready to use.

Niveo NGSME24TH-AV
Network Setup Guide for KD-IP822, KD-IP922, KD-IP1022, KD-IP1080

1. Set up the computer to connect to the switch. The best method is to set a static IP address for the computer's ethernet adapter and directly wire into the switch. The Default IP address of this switch is **192.168.2.1**

Internet Protocol Version 4 (TCP/IPv4) Properties

General

You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.

☐ Obtain an IP address automatically

☒ Use the following IP address:

IP address: 192 . 168 . 2 . 254

Subnet mask: 255 . 255 . 255 . 0

Default gateway: 192 . 168 . 0 . 172

☐ Obtain DNS server address automatically

☒ Use the following DNS server addresses:

Preferred DNS server: 192 . 168 . 0 . 24

Alternate DNS server: . . .

☐ Validate settings upon exit

Advanced...

OK Cancel

2. Once wired in, connect to the network switch via web browser. When prompted, log in with the default credentials.
 - a. The username and password are both **"admin"**.

Sign in

http://192.168.2.1

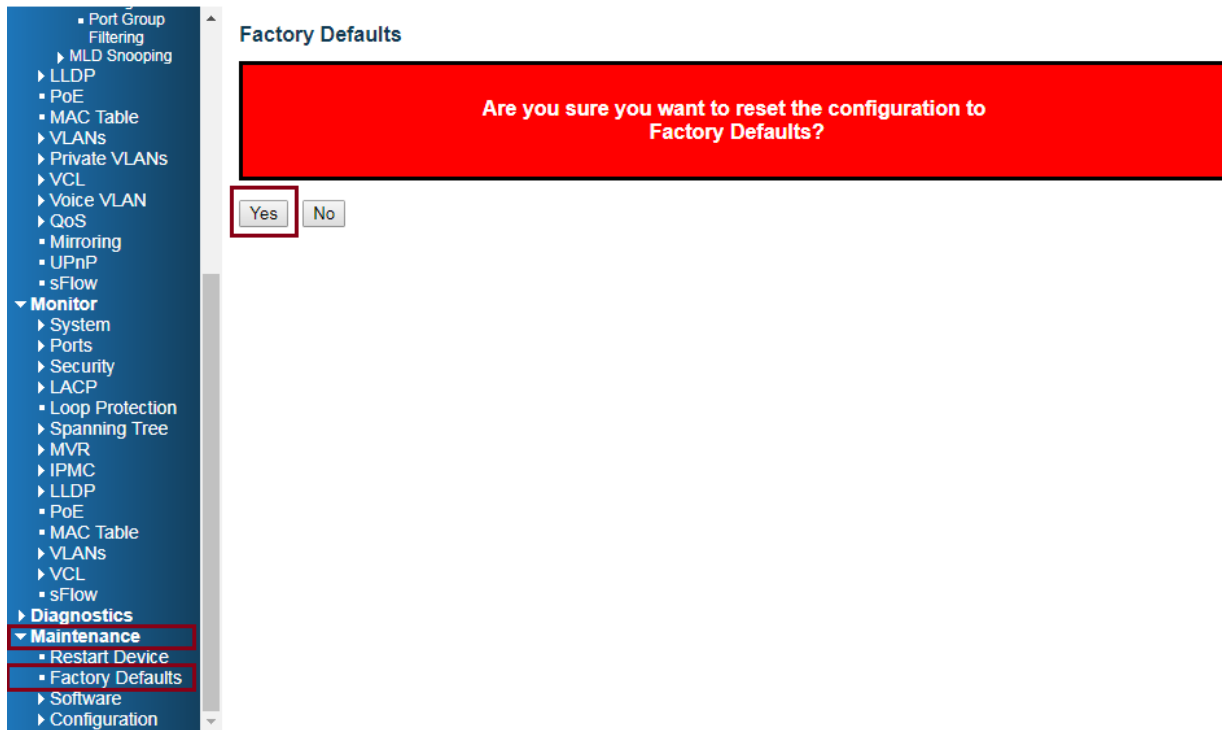
Your connection to this site is not private

Username: admin

Password:

Sign in Cancel

3. After connecting to the switch, it is recommended to reset it to factory defaults.
 - a. The path for this is **Maintenance -> Factory Defaults**.
 - b. Note that resetting the switch to Factory Defaults does not change the IP settings of the switch.



4. After setting factory defaults, adjust the switch to use the desired subnet. In our case we use the IP address **192.168.1.251** – as this fits the default subnet of the KD-IP922 system. Ensure the DHCP client is disabled as well. Set the Router IR address to that of the router in the network.
 - a. The path is: **Configuration -> System -> IP**
 - b. After making the adjustment, the switch will automatically move to the new IP address. The computer may lose connection to the switch at this time. Adjusting the static IP to be in the new subnet will allow for connection to be reestablished on the new IP address.

Configuration

- System
 - Information
 - IP**
 - IPv6
 - NTP
 - Time
 - Log
- Power Reduction
- Ports
- Security
- Aggregation
- Loop Protection
- Spanning Tree
- MVR
- IPMC
- LLDP
- PoE
- MAC Table

IP Configuration

	Configured	Current
DHCP Client	<input type="checkbox"/>	Renew
IP Address	192.168.1.251	192.168.2.1
IP Mask	255.255.255.0	255.255.255.0
IP Router	192.168.1.1	0.0.0.0
VLAN ID	1	1
DNS Server	0.0.0.0	0.0.0.0

IP DNS Proxy Configuration

DNS Proxy ☐

Save Reset

5. By default, Jumbo frames are enabled on this network switch. Verify that the maximum frame size is 9600 (the maximum value for this switch)
 - a. The path is: **Configuration -> Ports**

Configuration

- System
- Power Reduction
- Ports**
- Security
- Aggregation
- Loop Protection
- Spanning Tree
- MVR
- IPMC
- LLDP
- PoE
- MAC Table

Port Configuration

Port	Link	Speed		Flow Control			Maximum Frame Size	Excessive Collision Mode	Power Control
		Current	Configured	Current Rx	Current Tx	Configured			
*			<>				9600	<>	<>
1	1Gfdx	Auto		X	X		9600	Discard	Disabled
2	1Gfdx	Auto		X	X		9600	Discard	Disabled
3	1Gfdx	Auto		X	X		9600	Discard	Disabled
4	1Gfdx	Auto		X	X		9600	Discard	Disabled
5	1Gfdx	Auto		X	X		9600	Discard	Disabled

6. Enable IGMP Snooping. Check “Snooping Enabled” and verify that “Fast Leave” is also enabled. Uncheck “Unregister IPMCv4 Flooding enabled”

a. The path is: **Configuration -> IPMC -> IGMP -> Basic Configuration**

IGMP Snooping Configuration

Global Configuration			
Snooping Enabled	<input checked="" type="checkbox"/>		
Unregistered IPMCv4 Flooding Enabled	<input type="checkbox"/>		
IGMP SSM Range	232.0.0.0	/ 8	
Leave Proxy Enabled	<input type="checkbox"/>		
Proxy Enabled	<input type="checkbox"/>		

Port Related Configuration

Port	Router Port	Fast Leave	Throttling
*	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<>
1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	unlimited
2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	unlimited
3	<input type="checkbox"/>	<input checked="" type="checkbox"/>	unlimited
4	<input type="checkbox"/>	<input checked="" type="checkbox"/>	unlimited
5	<input type="checkbox"/>	<input checked="" type="checkbox"/>	unlimited
6	<input type="checkbox"/>	<input checked="" type="checkbox"/>	unlimited
7	<input type="checkbox"/>	<input checked="" type="checkbox"/>	unlimited

7. Create an IGMP VLAN. The ID should be set to 1. Force IGMPV2 compatibility for this VLAN. Ensure the configuration is as below:

a. The path is: **Configuration -> IPMC -> IGMP -> VLAN Configuration**

IGMP Snooping VLAN Configuration

Start from VLAN 1 with 20 entries per page.

Delete	VLAN ID	Snooping Enabled	IGMP Querier	Compatibility	RV	QI (sec)	QRI (0.1 sec)	LLQI (0.1 sec)	URI (sec)
<input type="checkbox"/>	1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Forced IGMPv2	2	125	100	10	1

Add New IGMP VLAN

Save Reset

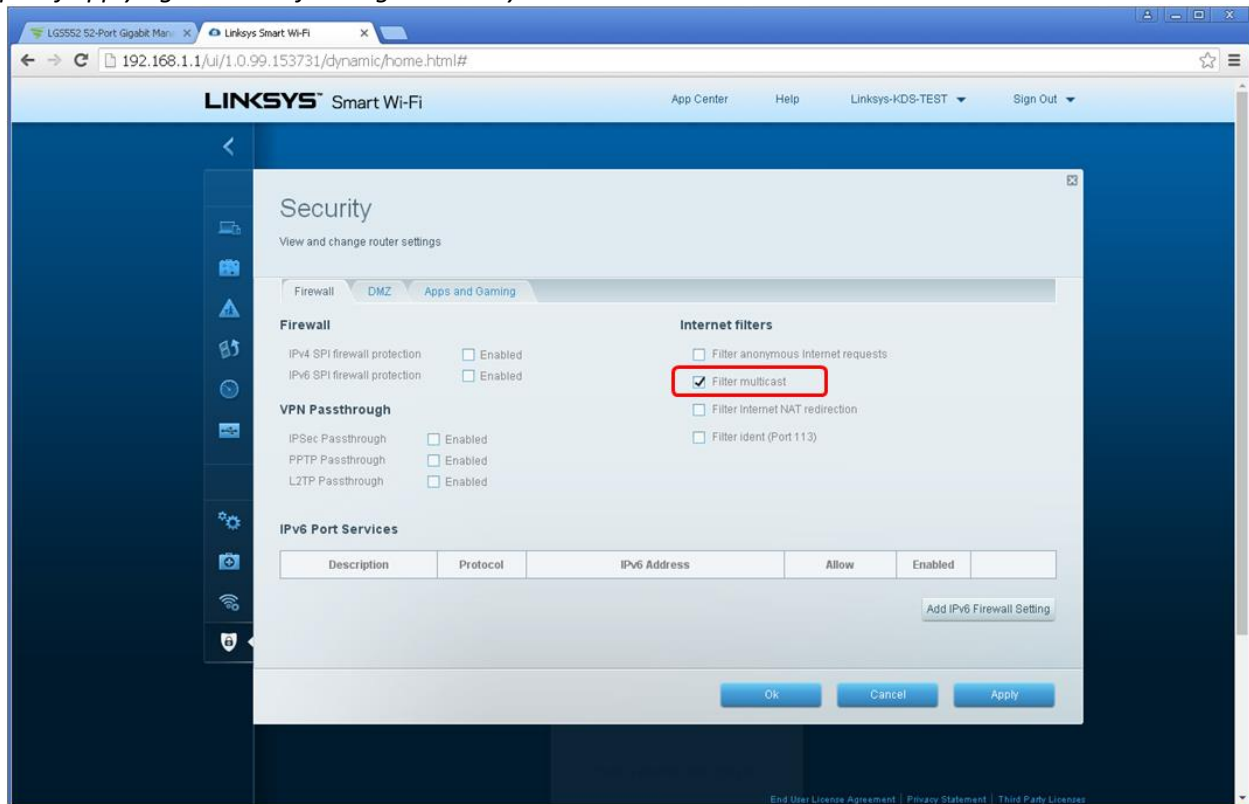
8. Reboot the network switch and verify that the settings are correct. The switch is now ready for the KD-IP922 system.

a. There is no need to save the running configuration of this network switch. The settings will persist on system reboot.

WiFi Router Setup

It is required to set your WiFi router to **filter multicast (aka filter broadcast)** to ensure that your router is not overwhelmed by the data broadcast from Enterprise AV units on the network.

Example of applying multicast filtering in a Linksys router:



*The following requirements must be met in order to support the live streaming feature of the Key Digital app (1080p systems, KD-IP1080/KD-IP120 only):

- Verified model = Cisco/Linksys EA6700 router
- Network switch must support IGMP v3 and configured to enable IGMP v3.
- Wifi Router
 - Must be configured so that multicast filtering is enabled. See above example
 - Must support 50Mbps bandwidth per iOS that will be streaming video
 - It is recommended that only 1 iOS be in the Live Stream page at a time
- iOS Device
 - Best performance is with iPad4, iPad Air, iPad Mini. More powerful processing will always benefit.
 - Should have Static IP with Router IP corresponding to master network switch