

MERGING TECHNOLOGIES

Cisco SG300 Manual Switch Configuration - Legacy



General Info.

This is in no case an exhaustive configuration procedure, It's a simple guide on how to configure these switches to use them with Ravenna/AES67 networks.

IMPORTANT NOTE ON IP ADDRESS RANGE :

The [Internet Engineering Task Force](#) (IETF) has directed the [Internet Assigned Numbers Authority](#) (IANA) to reserve the following IPv4 address ranges for private networks:

192.168.0.0 to 192.168.255.255 / 172.16.0.0 to 172.31.255.255 / 10.0.0.0 to 10.255.255.255.

Private IPs should only be in these ranges (see https://en.wikipedia.org/wiki/Private_network)

1. Access SG300-10&20 Administration

Config Files

Please note that this only applies if you are accessing the router for the 1st time.

If you load one of our configuration files, the ip address for the admin page is **169.254.1.254**
and the default user name and password is **cisco**

If you are doing this without one of our config files then follow this guide.

- Plug a network cable to the router/switch and to your computer.
- Set your computer to **use an IP** in the **192.168.1.x** address pool.

Default Network Access config.

The Cisco routers/switch's come with a default network configuration in that IP pool.

Default IP: 192.168.1.254

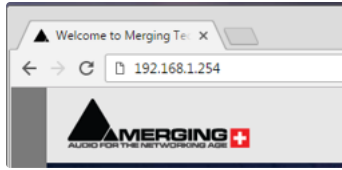
In order for your computer to communicate with the router/switch you must set your computer to use an IP that is in that IP RANGE.

The router/switch default IP can be changed configuration page once you are logged into it.

You can find more information about it in the CISCO user **manual**

- Open a navigator page to navigate to: <http://192.168.1.254>

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Once the page loads you will be prompted to enter the user name and password to login.

Default user name: **cisco**

Default password: **cisco**

i Change default user password.

After the login prompt, you will be asked to change that default password to whatever you want.

It is a required step and the first one into securing you're router/switch, it is also a one time step only.

After the default is changed, if you wish to change it again it you will have to do that in the Administration page.

Resetting the switch to "factory defaults" that will also ask you to do this step again.

- The Administration page will now load and you cant start configuring your switch.

2.Setup 1 - Single VLAN

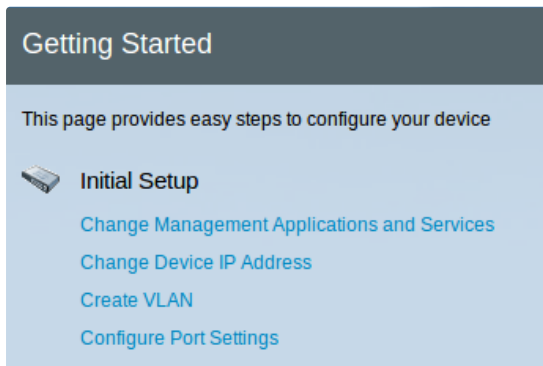
First step is to change the IP configuration to use a APIPA (Automatic Private Internet Protocol Addressing) type of IP.

The administration page will then be only accessed trough this new IP.

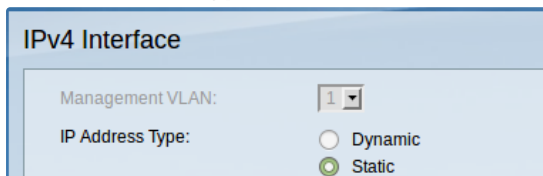
Putting this in an APIPA IP range (169.254.0.0/16) will ensure that you can always access its administration page.

Ravenna devices generally use APIPA IP range to communicate over the network.

- In the "**Getting Started**" page, click on "**Change Device IP Address**"



- On "**IP Address Type**" chose "**Static**"



- In the "**IP Address**" field and on the "**Mask**" chose as follows:

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IPv4 Interface

Management VLAN: 1

IP Address Type: ☐ Dynamic ☒ Static

IP Address: 169.254.1.254

Mask: ☐ Network Mask 255.255.0.0 ☒ Prefix Length 16 (Range: 8 - 30)

That will make your switch administration page respond to that IP address.

Note that we used Prefix Length instead of Network mask (16 is the same as 255.255.0.0).

But you could also set it to 255.255.0.0 it would also work.

- Click on "**Apply**" to apply the changes to the current running configuration.

IPv4 Interface

Management VLAN: 1

IP Address Type: ☐ Dynamic ☒ Static

IP Address: 192.168.1.254

Mask: ☐ Network Mask 255.255.255.0 ☒ Prefix Length 16 (Range: 8 - 30)

Loopback Interface: ☐ Enable

Loopback IP Address:

Loopback Mask: ☐ Network Mask ☐ Prefix Length (Range: 8 - 32)

Administrative Default Gateway: ☐ User Defined ☒ None

Operational Default Gateway:

Renew IP Address Now: ☐ Enable

Auto Configuration via DHCP: Enabled

Apply Cancel

Note that this **ONLY** Applies the changes to the **CURRENT RUNNING CONFIGURATION**.

That means that if you reboot the router, the changes will be **LOST**.

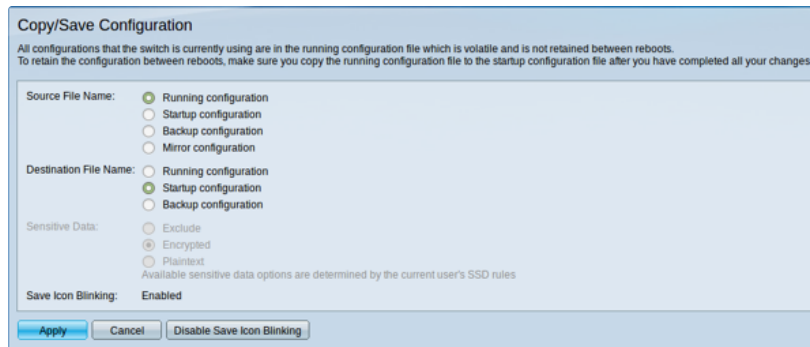
So to **PREVENT THAT** you need to **SAVE** them into the current configuration.

- At the top right corner of the screen you will see "**SAVE**" blinking, click on it.

Save cisco Language: English Logout About Help

- A new page will open with the following:
Just **CLICK ON APPLY**, this will save the current running configuration to the startup configuration thus keeping your changes even if the Switch is rebooted (if you reset they revert back to factory defaults).

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Copy/Save Configuration

All configurations that the switch is currently using are in the running configuration file which is volatile and is not retained between reboots. To retain the configuration between reboots, make sure you copy the running configuration file to the startup configuration file after you have completed all your changes.

Source File Name: ☒ Running configuration
☐ Startup configuration
☐ Backup configuration
☐ Mirror configuration

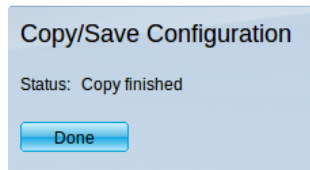
Destination File Name: ☐ Running configuration
☒ Startup configuration
☐ Backup configuration

Sensitive Data: ☐ Exclude
☒ Encrypted
☐ Plaintext
Available sensitive data options are determined by the current user's SSD rules

Save Icon Blinking: Enabled

Apply Cancel Disable Save Icon Blinking

- Click "OK" on the pop up window and it will start the save procedure, after that click on "Done" and you are all good.



Copy/Save Configuration

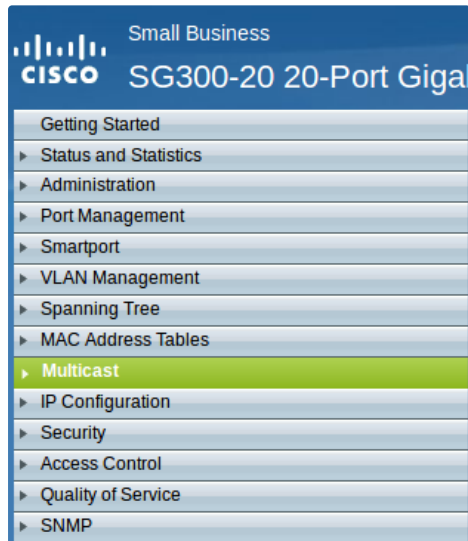
Status: Copy finished

Done

NOTE, YOUR SWITCH WILL NOW RESPOND TO THE NEW IP ADDRESS.
SO YOU MAY NEED TO CHANGE YOUR COMPUTER IP INTO "AUTOMATIC"

The switch is now only accessible on [HTTP://169.254.1.254](http://169.254.1.254)

- On the "left pannel" menu click on "MULTICAST"



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cisco SG300-20 20-Port Gigabit Ethernet

- Getting Started
- ▶ Status and Statistics
- ▶ Administration
- ▶ Port Management
- ▶ Smartport
- ▶ VLAN Management
- ▶ Spanning Tree
- ▶ MAC Address Tables
- ▶ **Multicast**
- ▶ IP Configuration
- ▶ Security
- ▶ Access Control
- ▶ Quality of Service
- ▶ SNMP

- The menu will expand to show the MULTICAST options.

Click on "IPv4 Multicast Configuration" to expand it.



- ▼ **Multicast**
 - Properties
 - MAC Group Address
 - IP Multicast Group Address
 - ▼ IPv4 Multicast Configuration
 - IGMP Snooping**
 - IGMP VLAN Settings
 - ▶ IPv6 Multicast Configuration
 - IGMP/MLD Snooping IP Multicast Group
 - Multicast Router Port
 - Forward All
 - Unregistered Multicast

- Click on "IGMP SNOOPING" and the following show open up on the right pane.

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cisco Language
SG300-20 20-Port Gigabit Managed Switch

Getting Started
Status and Statistics
Administration
Port Management
Smartport
VLAN Management
Spanning Tree
MAC Address Tables
Multicast

IGMP Snooping

IGMP Snooping Status: ☐ Enable
IGMP Querier Status: ☒ Enable

Apply Cancel IGMP Snooping IP Multicast Group

IGMP Snooping Table

Entry No.	VLAN ID	IGMP Snooping Operational Status	MRouter Ports Auto Learn	Immediate Leave	Last Member Query Counter	IGMP Querier Status	IGMP Querier Election	IGMP Querier Version	Querier IP Address
☐ 1	1	Disabled	Enabled	Disabled	2	Disabled	Enabled	v2	

Copy Settings... Edit...

- Tick the "IGMP SNOOPING STATUS" to "ENABLE" and then click on "APPLY"

IGMP Snooping

IGMP Snooping Status: ☒ Enable
IGMP Querier Status: ☒ Enable

Apply Cancel IGMP Snooping IP Multicast Group

Make sure both options are enabled.

- On the "IGMP SNOOPING TABLE", click on the radio button to select the only one present and then click on "EDIT"

IGMP Snooping

IGMP Snooping Status: ☒ Enable
IGMP Querier Status: ☒ Enable

Apply Cancel IGMP Snooping IP Multicast Group

IGMP Snooping Table

Entry No.	VLAN ID	IGMP Snooping Operational Status	MRouter Ports Auto Learn	Immediate Leave	Last Member Query Counter	IGMP Querier Status	IGMP Querier Election	IGMP Querier Version	Querier IP Address
☒ 1	1	Disabled	Enabled	Disabled	2	Disabled	Enabled	v2	

Copy Settings... Edit...

- A new window will pop up with this screen....

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VLAN ID:

IGMP Snooping Status: ☐ Enable

MRouter Ports Auto Learn: ☒ Enable

Immediate Leave: ☐ Enable

★ Last Member Query Counter: ☒ Use Query Robustness (2)
☐ User Defined (Range: 1 - 7)

IGMP Querier Status: ☐ Enable

IGMP Querier Election: ☒ Enable

IGMP Querier Version: ☒ v2
☐ v3

Querier Source IP Address: ☒ Auto
☐ User Defined

- Tick the following options: (as shown in the picture) and click **APPLY**

VLAN ID:

IGMP Snooping Status: ☒ Enable

MRouter Ports Auto Learn: ☐ Enable

Immediate Leave: ☐ Enable

★ Last Member Query Counter: ☒ Use Query Robustness (2)
☐ User Defined (Range: 1 - 7)

IGMP Querier Status: ☒ Enable

IGMP Querier Election: ☐ Enable

IGMP Querier Version: ☒ v2
☐ v3

Querier Source IP Address: ☒ Auto
☐ User Defined

Thick the following IGMP options to enable them.

- It will then say its a **SUCCESS** and that you should save this to make it permanent. Click the link "**COPY/SAVE CONFIGURATION**" in order to do that.

✓ Success. To permanently save the configuration, go to the [Copy/Save Configuration](#) page or click the Save icon.

Click the link to go save your changes.

VLAN ID:

IGMP Snooping Status: ☒ Enable

MRouter Ports Auto Learn: ☐ Enable

Immediate Leave: ☐ Enable

★ Last Member Query Counter: ☒ Use Query Robustness (2)
☐ User Defined (Range: 1 - 7)

IGMP Querier Status: ☒ Enable

IGMP Querier Election: ☐ Enable

IGMP Querier Version: ☒ v2
☐ v3

Querier Source IP Address: ☒ Auto
☐ User Defined

- Now we will find our selfs in the save configuration menu, just click "**APPLY**"

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Getting Started

- Status and Statistics
- Administration
- System Settings
 - Console Settings
 - Management Interface
 - User Accounts
 - Idle Session Timeout
 - Time Settings
 - System Log
- File Management
 - Upgrade/Backup Firmware/Language
 - Active Image
 - Download/Backup Configuration/Log
 - Configuration Files Properties
 - Copy/Save Configuration
 - DHCP Auto Configuration/Image Update
 - Reboot
- Diagnostics
 - Discovery - Bonjour
 - Discovery - LLDP
 - Discovery - CDP
 - Ping
 - Traceroute

Copy/Save Configuration

All configurations that the switch is currently using are in the running configuration file which is volatile and is not retained between reboots. To retain the configuration between reboots, make sure you copy the running configuration file to the startup configuration file after you have completed all your changes.

Source File Name: ☒ Running configuration
☐ Startup configuration
☐ Backup configuration
☐ Mirror configuration

Destination File Name: ☐ Running configuration
☒ Startup configuration
☐ Backup configuration

Sensitive Data: ☐ Exclude
☒ Encrypted
☐ Plaintext
Available sensitive data options are determined by the current user's SSD rules

Save Icon Blinking: ☒ Enabled

Save your Running Configuration into Startup Configuration. This will make your current settings be loaded even if the switch is rebooted.

- By default, Green Ethernet settings are applied, this needs to be disabled.

Port Management > Green Ethernet > Properties

Untick both **Energy Detect Mode** and **Short Reach**.

Untick **802.3 Energy Efficient Ethernet (IEEE)**

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Properties

For the functions and/or parameters configured on this page to become effective, you may have to configure the corresponding port based parameters on [Port Settings](#) page.

Energy Detect Mode: ☒ Enable

Short Reach: ☒ Enable

Port LEDs: ☒ Enable

Power Savings: 66 %

Cumulative Energy Saved: 0 Watt Hour

802.3 Energy Efficient Ethernet (IEEE): ☒ Enable

- By default, our config files use the Basic **QoS Mode** but the **DSCP to Queue** are settings modified. Please check your current configuration and set them to the same as shown in this guide.
- QoS Mode: Basic MODE**

Quality of Service

- General
 - QoS Properties
 - Queue
 - CoS/802.1p to Queue
 - DSCP to Queue
 - Bandwidth
 - Egress Shaping Per Queue
 - VLAN Ingress Rate Limit
 - TCP Congestion Avoidance
 - QoS Basic Mode
 - Global Settings
 - Interface Settings
 - QoS Advanced Mode
 - QoS Statistics

QoS Properties

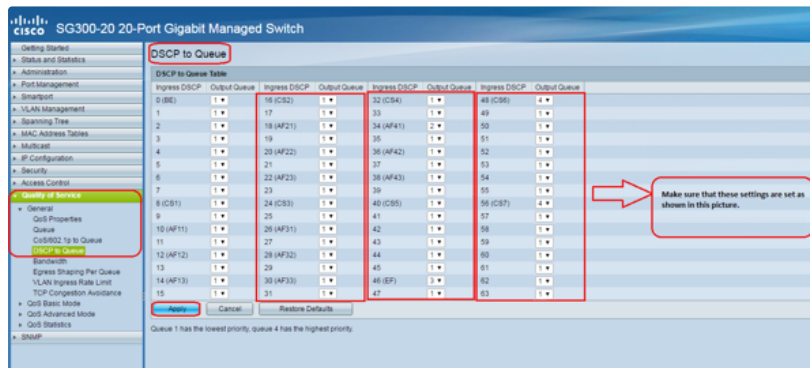
QoS Mode: ☐ Disable
☒ Basic
☐ Advanced

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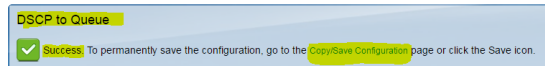
- On the **QoS Basic Mode / Global settings** the **Trust Mode** should be : DSCP



- Change the **DSCP to Queue Settings** as shown in the following picture and click **apply** to apply the new settings to the current **running configuration** :

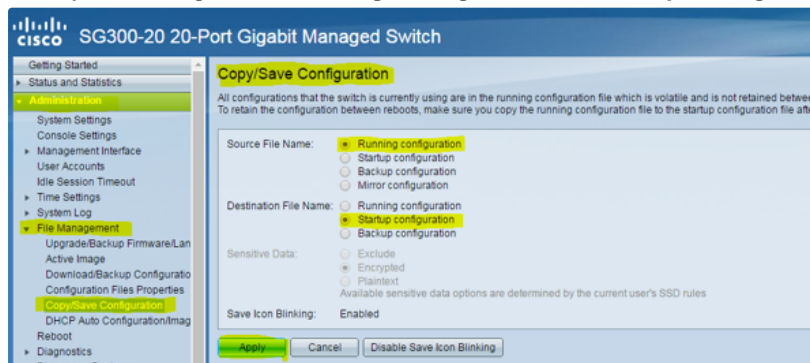


- Once you click apply the following appears at the top of the **DSCP to Queue** window.



Click on the **Copy/Save Configuration** link to go directly to the save configuration page.

- Save your settings from **Running Configuration** to **Startup Configuration** (click apply to save).



That will then apply the current settings to the startup configuration which will be run every time the switch reboots.

In other terms that makes the configuration permanent (unless a reset of the device is done).

3.Setup 2 - Dual VLAN

Adding VLANs.

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VLAN1 : will be used for regular networking.

VLAN2 : will be used for Ravenna AES67.

By default the switch already has VLAN1 created with defaults for regular networking.

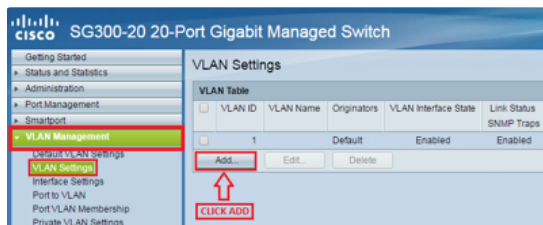
So we will be adding VLAN2 for the for the Ravenna AES67 networking.

- Adding a VLAN for Ravenna Networking.

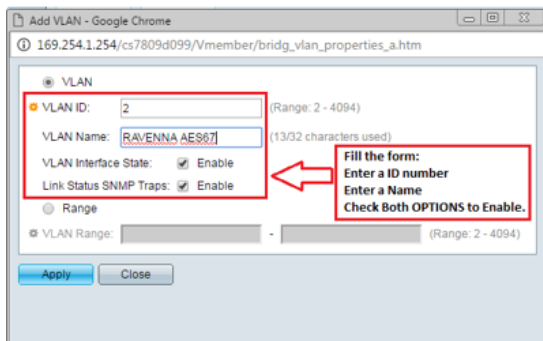
Click on "**CREATE VLAN**"



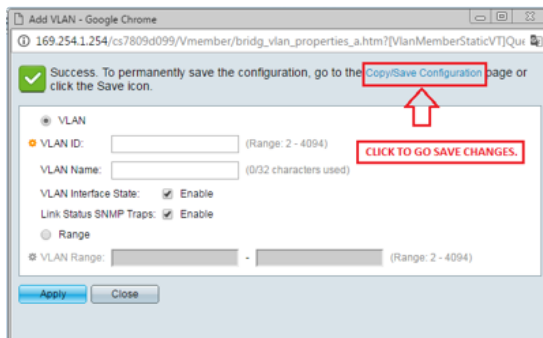
- Click on "**ADD**" to add a new "**VLAN**".



- Enter "**VLAN ID**": 2 (in this case 2) and Type a "**VLAN NAME**" (can be anything you want) and click "**Apply**"



- Click on the "**Copy/Save Configuration**" link to go save your changes.

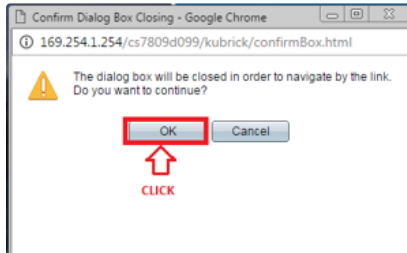


- Choose "**Running Configuration**" to "**Startup Configuration**" and click "**Apply**"

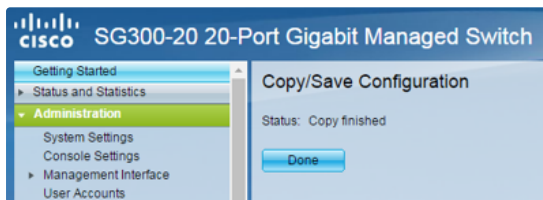
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- Click on "OK".



- Click on "DONE".



You might want to reboot your switch after this.

VLANs

First we will examine how distribute ports across VLANs in the switch (how we are going to split the ports between vlans)

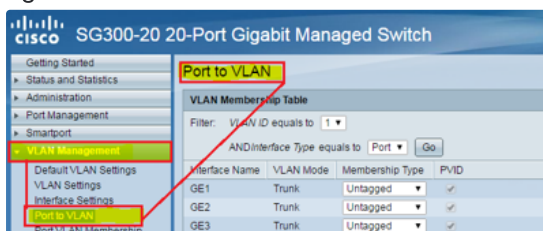
VLAN2 will use : **PORTS 9 to 16 and 18 and 20**

VLAN1 will keep: **PORTS 1 to 8 and 17 and 19**



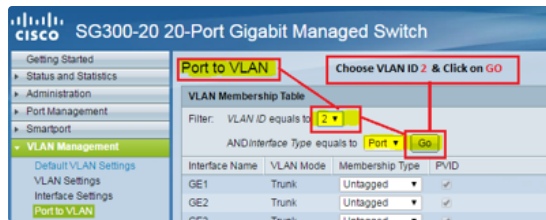
You can set this as you wish but by default this is how we will configure the VLAN2.

- Go to "**VLAN Management**" and click on "**PORT TO VLAN**" on the menu, it will open the port to vlan pane on the right.

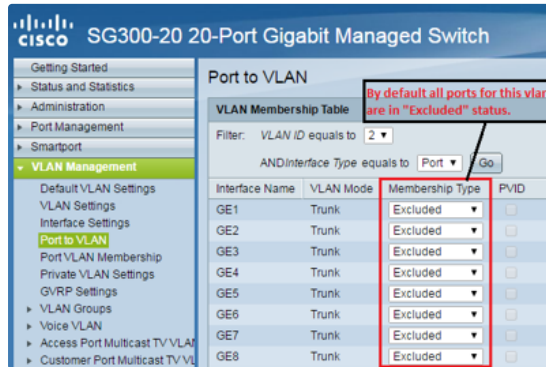


- Then select **2** in "**VLAN ID equals to**" and click on the "GO" button, it will open a new pane with VLAN2 config.

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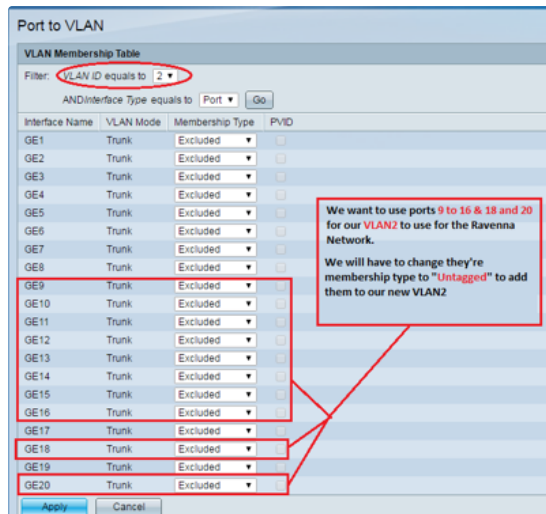


- As you can see by default all the ports for this VLAN are marked as excluded.

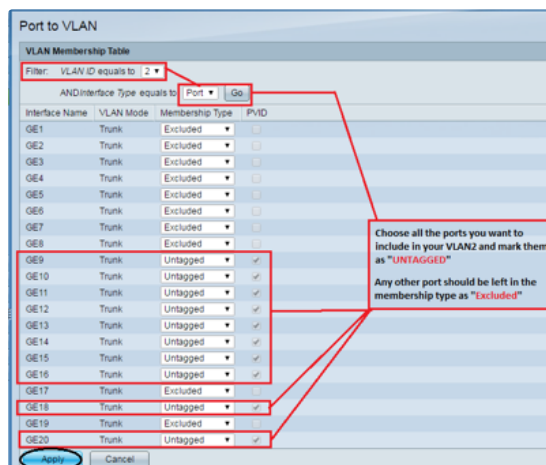


We want to change that to choose which ports we are going to use...

Check the following figure, representing what we want to do.

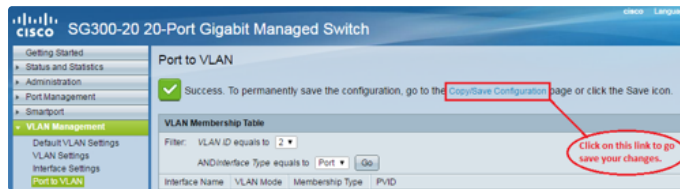


- Now we are going to add the ports to our new vlan, for that change the **Membership Type** of the ports we want to add to VLAN2 from "EXCLUDED" to "UNTAGGED" as show in the picture bellow and click on "APPLY" to validate our changes.

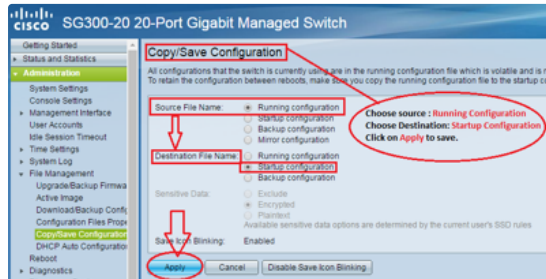


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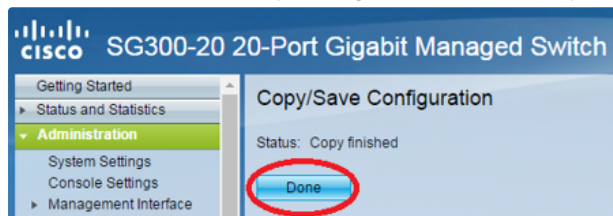
- Then click on the **"COPY/SAVE CONFIGURATION"** link to go save this configuration.



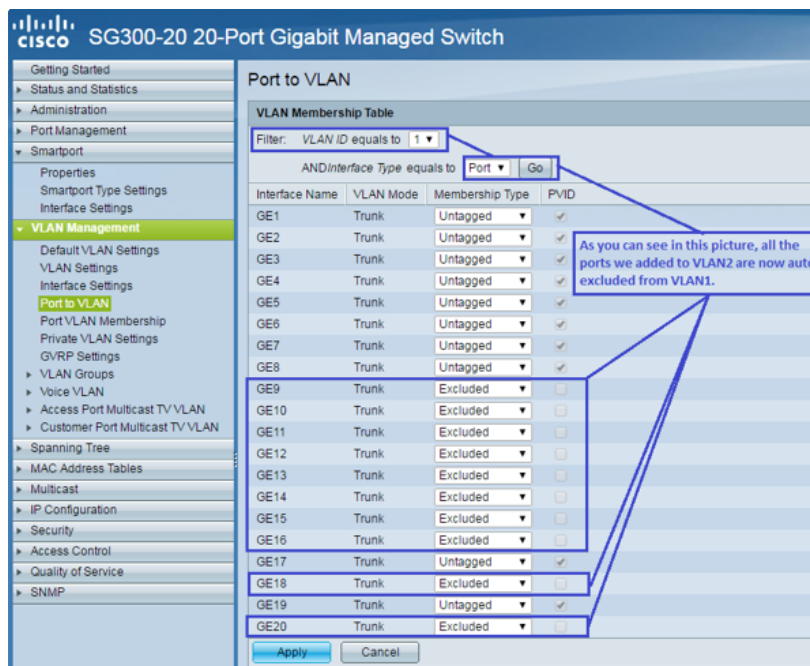
- Save the current configuration into your startup configuration so you don't lose any changes if the device is rebooted..



- Click **"DONE"** to finish, you might want to reboot your switch.

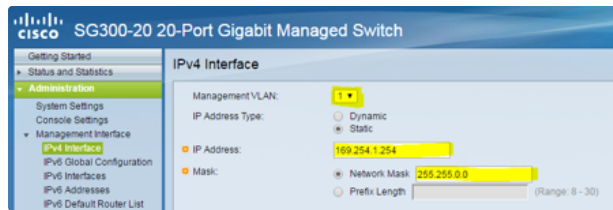


- After this is done if you check VLAN1 config you can see that all the ports from VLAN2 are now auto excluded from VLAN1.



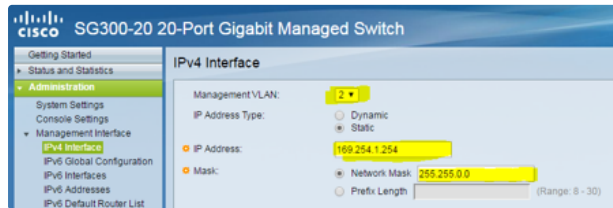
- That is it, you now have VLAN1 and VLAN2 and their traffic is independent from each other.
- Go to **"Administration"** then click **"Management Interface"** and then **"IPv4 Interface"**, the following pane will open in the right.

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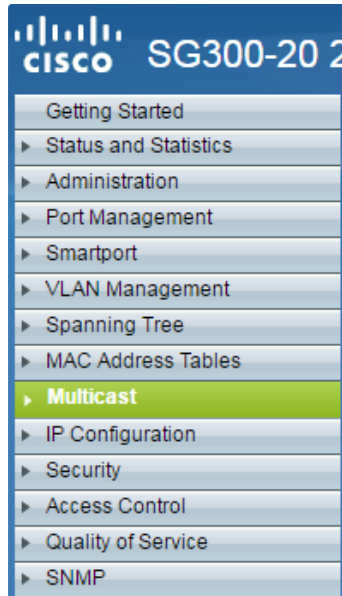
- In **Management VLAN** choose **2** and on **IP Address** type in the IP Address you want.
I suggest you use the settings as shown in the picture below.

Note For VLAN2 appear on "**Management VLAN**" you will have to have something connected to it (at least one port in USE).

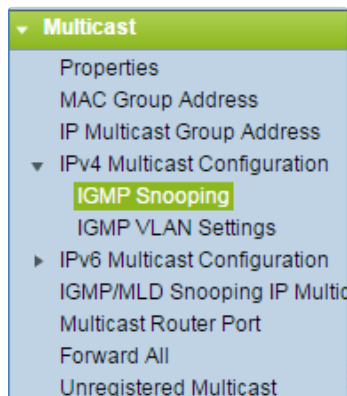


Save your settings, and reboot the device.

- Click on "MULTICAST" on the left menu.



- Click on "**IPv4 Multicast Configuration**" and then click on "**IGMP SNOOPING**".



- The following pane should show up in the right side.

Make sure "**IGMP SNOOPING STATUS**" & "**IGMP QUERIER STATUS**" are ticked "**ENABLE**" as show in the

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picture.

Entry No.	VLAN ID	IGMP Snooping	MRouter Ports	Immediate	Last Member	IGMP Querier	IGMP Querier	IGMP Querier	Querier
1	1	Enabled	Disabled	Disabled	2	Enabled	Disabled	v2	169.254.1.254
2	2	Enabled	Disabled	Disabled	2	Enabled	Disabled	v2	169.254.1.254

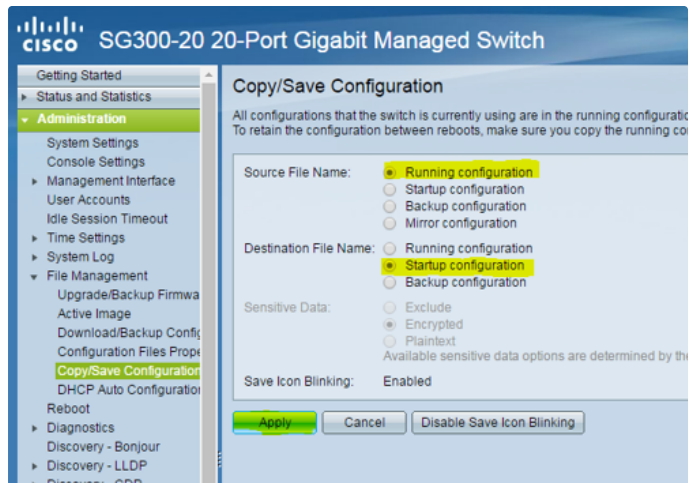
- Select the **"ENTRY 2"** (vlan id 2) and click on **"EDIT"** as shown on the picture below.

- In the window that just popped up edit the entries there (all the yellow marked entries, should be set as shown) and click **"APPLY"**

- Click on **Copy/Save Configuration** link (yellow marked) to go save your configuration .

- Choose **"Running Configuration"** and **"Startup Configuration"** and click **"Apply"**.

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- Click on **"DONE"**
- By default, Green Ethernet settings are applied, this needs to be disabled.

Port Management > Green Ethernet > Properties

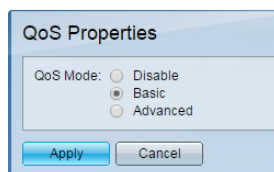
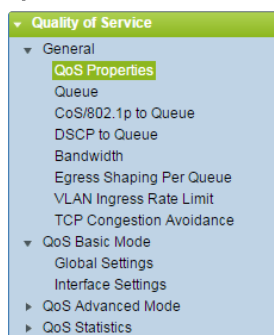
Untick both **Energy Detect Mode** and **Short Reach**.

Untick **802.3 Energy Efficient Ethernet (IEEE)**



- By default, our config files use the Basic **QoS Mode** but the **DSCP to Queue** are settings modified.

QoS Mode: Basic MODE



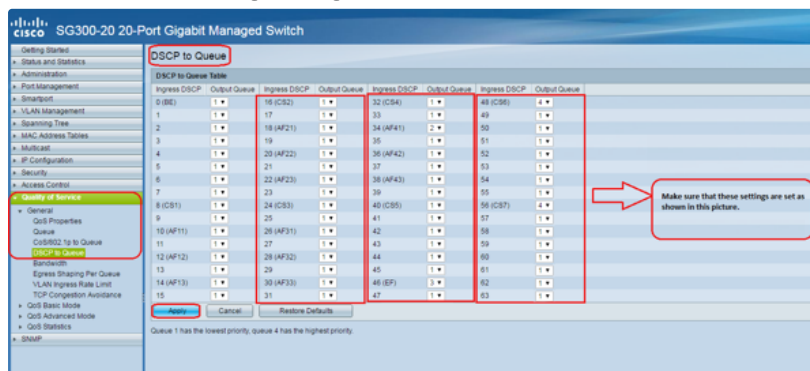
- On the **QoS Basic Mode / Global settings** the **Trust Mode** should be : **DSCP**

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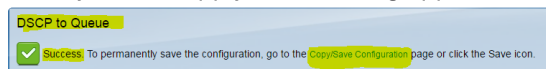


- By default these are the **DSCP to Queue** settings, **we will change that**.

Change the **DSCP to Queue Settings** as shown in the following picture and click **apply** to apply the new settings to the current **running configuration** :

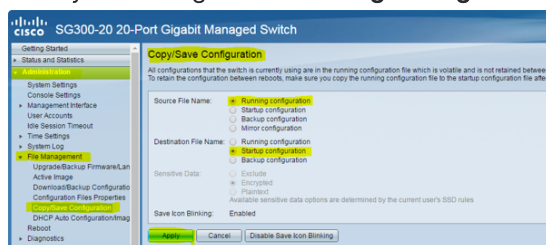


- Once you click apply the following appears at the top of the **DSCP to Queue** window.



Click on the **Copy/Save Configuration** link to go directly to the save configuration page.

- Save your settings from **Running Configuration** to **Startup Configuration** (click apply to save).



That will then apply the current settings to the start up configuration witch will be run every time the switch reboots.

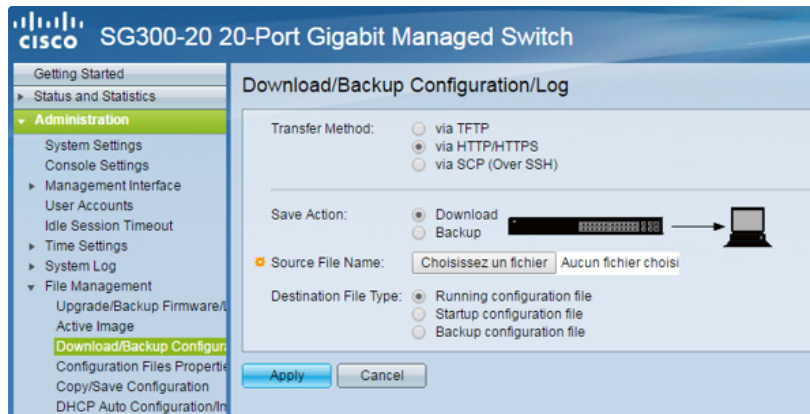
In other terms that makes that configuration to become permanent.

4.Backup Switch Configuration

- Go to "**Administration**" and click "**File Management**" to expand it.

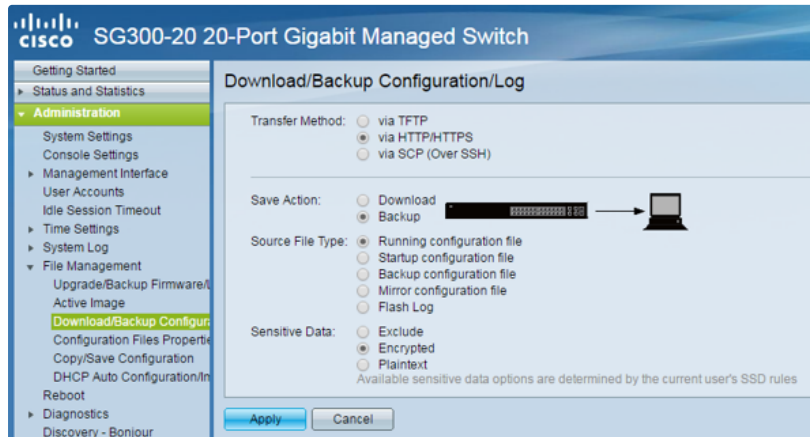
Then click on "**Download/Backup Configuration**" to open the "**Download/Backup**" configuration pane.

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- Click on **Backup**", in source file leave it on **"Running Configuration"** file (its the default).

In **"Sensitive Data"** choose **"Encrypted"** (its the default) and then click **"APPLY"**.



- Click **Done**" and that is it.



5.Import Switch Configuration

If you try to import a running-config.txt file into Running Config (the current one running, **it will fail.**)

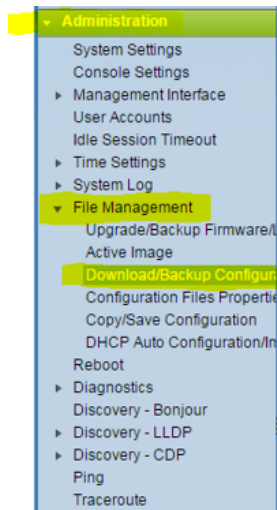
What you need to do is import from a **running-config.txt to the startup configuration file as a destination** and then reboot.

That will turn the running config into startup config witch will load at startup and become the running config.

This might sound a bit confusing, but if you follow the procedure bellow it will work fine.

- Go into **"Administration"** then click **"File Management"** to expand, then click **"Download/Backup Configuration"** to open its pane.

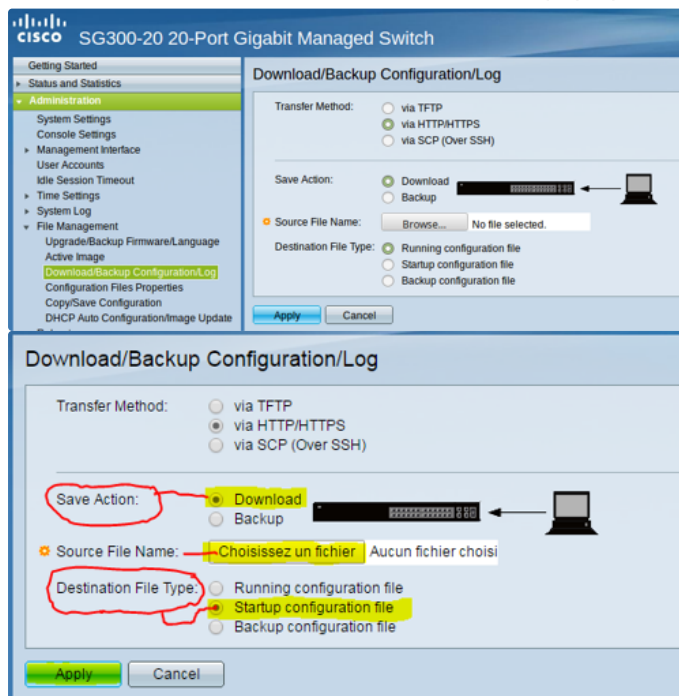
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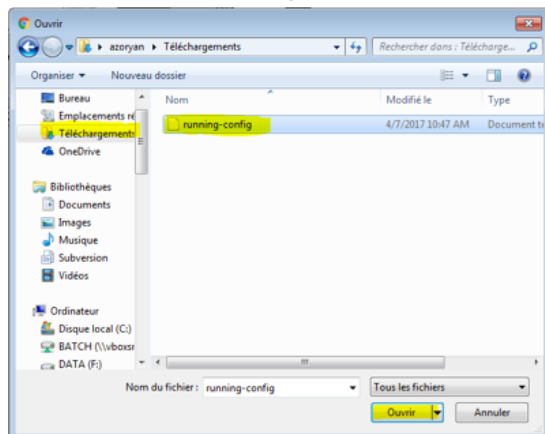
- In there in the **"Save Action"** click on **"Download"** (its chosen by default).

Then on **"Destination File Type"** choose **"STARTUP CONFIGURATION FILE"**

Then click on **BROWSE** and a new window will pop up.

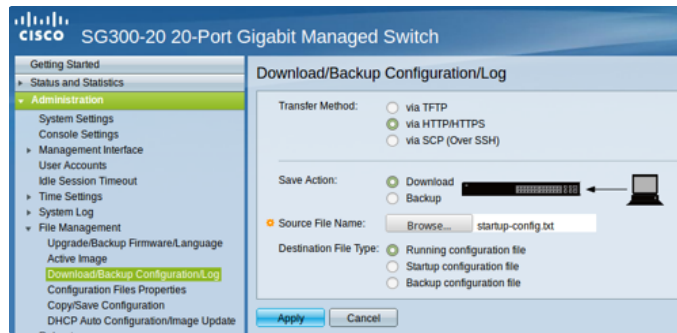


- In the **browse window** point to the location where your config file resides and choose it and click **"open"**.



- Then click **"Apply"** for it to load your configuration file into the **STARTUP CONFIG**.

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- Click "**Done**" to complete the procedure.
YOU WILL HAVE TO REBOOT FOR THE CHANGES TO TAKE PLACE.