

**20RFP092 - Campus LAN Switch Upgrades
Attachment B – Example Configuration Guide**

**Switch Installation and Configuration Guide for C9500-93000-2960X
Version 01, 10/11/2019**

Revision History

Version number	Day Changed	Approved by	Brief description
Version 00	10/11/2019		

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1 Switch IOS Information

Note: Configuration example and commands for the IOS version at other part of this document may not correspond exactly to the version stated here.

1.1 C9400 – Campus distribution Switch

- IOS version: as specified in the LAN sheet. Below is an example:

- **IOS File:**
- **IOS File Directory:** bootflash:

- **IOS in INSTALL Mode:**

After the IOS software installed, the following packages shows up in the bootflash directory. Below is an example of IOS version 16.06.06.

```
packages.conf
cat9k_iosxe.16.06.06.SPA.conf
cc_srdriver.16.06.06.SPA.pkg
cat9k-espbases.16.06.06.SPA.pkg
cat9k-guestshell.16.06.06.SPA.pkg
cat9k-rpbases.16.06.06.SPA.pkg
cat9k-rpboot.16.06.06.SPA.pkg
cat9k-sipbase.16.06.06.SPA.pkg
cat9k-sipspa.16.06.06.SPA.pkg
cat9k-srdriver.16.06.06.SPA.pkg
cat9k-webui.16.06.06.SPA.pkg
cat9k-wlc.16.06.06.SPA.pkg
```

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1.2 C9500 – Campus distribution Switch

- IOS version: as specified in the LAN sheet. Below is an example:

IOS File: cat9k_iosxe.16.12.01.SPA.bin

IOS File Directory: flash:cat9k_iosxe.16.08.01a.SPA.bin

- **IOS in INSTALL Mode:**

After the IOS software installed, the following packages shows up in the flash directory. Below is an example of IOS version 16.8.1a.

```
packages.conf
cat9k-cc_srdriver.16.08.01a.SPA.pkg
cat9k-esppbase.16.08.01a.SPA.pkg
cat9k-guestshell.16.08.01a.SPA.pkg
cat9k-rpbase.16.08.01a.SPA.pkg
cat9k-sipbase.16.08.01a.SPA.pkg
cat9k-sipspa.16.08.01a.SPA.pkg
cat9k-srdriver.16.08.01a.SPA.pkg
cat9k-webui.16.08.01a.SPA.pkg
cat9k-wlc.16.08.01a.SPA.pkg
cat9k-rpboot.16.08.01a.SPA.pkg
```

- You will need to verify/set the license boot level defined in the LAN sheet.
 - **Switch(config)# license boot level network-advantage**

1.3 C9300 – Campus Access Switch

- IOS version: as specified in the LAN sheet. Below is an example:

IOS File: CAT9K_IOSXE

IOS File Directory:

- **IOS in INSTALL Mode:**

After the IOS software installed, the following packages shows up in the flash directory. Below is an example of IOS version 16.06.06.

```
packages.conf
cat9k-esppbase.16.06.06.SPA.pkg
cat9k-guestshell.16.06.06.SPA.pkg
cat9k-rpbase.16.06.06.SPA.pkg
cat9k-sipbase.16.06.06.SPA.pkg
cat9k-sipspa.16.06.06.SPA.pkg
cat9k-srdriver.16.06.06.SPA.pkg
cat9k-webui.16.06.06.SPA.pkg
cat9k-wlc.16.06.06.SPA.pkg
cat9k-rpboot.16.06.06.SPA.pkg
```

- You will need to verify/set the license boot level defined in the LAN sheet.

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1.4 2960X - Fanless Access Switch for Portable and Library

- IOS version: as specified in the LAN sheet. Below is an example:
 - **IOS File:** c2960x-universalk9-tar.152-2.E.tar
 - **IOS File Directory:** flash:/ c2960x-universalk9-tar.152-2.E/ c2960x-universalk9-tar.152-2.E.bin

2 C9500 Switch hardware Installation and Configuration Procedures – Staging at the Warehouse

2.1 C9500 Switch Hardware Information

1) Parts and Part Numbers

Parts	Part Numbers	Description
Base systems	C9500-16X-EDU OR C9500-40X-EDU	Catalyst 9500 16/40-port 10Gig switch, Network Advantage
Expansion Module	C9500-NM-8X	Catalyst 9500 Series Network Module 8-port
Power Supplies	PWR-C4-950WAC-R	Two PSs in the Chassis.
Optic - SM to GAATN	SFP-10G-LR-S	10GBASE-LR SFP+
Optic - SM to access switch	SFP-10G-LRM=	For new campuses with single mode fiber connected to IDF access switches
Optic - SM to access switch	SFP-10GBase-SR	For campuses with multimode fiber connected to IDF access switches
DAC cable with Optics	SFP-H10GB-CU3M	(For multimode connections to MDF access switches)

2) Chassis and Module Hardware Configuration

C9500 base system with C9500-16X-EDU	
module 1	C9500-16X-EDU
module 2	

C9500 base system with C9500-16X-EDU and module2	
module 1	C9500-16X-EDU
module 2	C9500-NM-8X

C9500 base system with C9500-40X-EDU	
module 1	C9500-40X-EDU

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module 2	
-----------------	--

C9500 base system with C9500-40X-EDU and module2	
module 1	C9500-40X-EDU
module 2	C9500-NM-8X

2.2 Assemble, install and label

- 1) Install and secure Line Card modules and power supplies to the chassis according to design. Note that the switch will have dual power supplies (PS).
- 2) DO NOT insert the Optics yet; these parts are easy to damage in transit. They should only be installed after the hardware has been racked and installed at the school campus.
- 3) Switch labeling: label the switch as xyzc9501, where xyz is the campus number.
- 4) Asset tag placement: according to AISD WAN Network Labeling Standard.
- 5) Power cable labeling according to AISD WAN Network Labeling Standard.

2.3 Power on and check the switch

- 1) Check and verify the switch power-on self-test (POST) is successful. Check messages and switch log for abnormal activities and errors.
- 2) Show module to verify all the installed modules are in working condition without any errors.
- 3) Check all LED indicators and make sure there are no abnormal conditions.

2.4 Load IOS on the switch

IOS version: As specified in the AISD provided campus LAN.Install.xlsx excel workbook.

- 1) Set configuration register to **0x102** if it is not the factory default.
- 2) Load IOS to switch flash:

NOTE: you can copy the IOS file from the USB flash to the flash:

Specify the system image that the switch loads at startup, use one the following boot system global configuration commands.

c9501(config)#boot system

- 3) Perform a "wr mem" or "copy run start"
- 4) Reload the switch, then check and make sure the switch boots to the right IOS version.

2.5 Load Startup Configuration and Configure the Switch

Note:

- ✓ There will be TWO customized configuration files provided by AISD.
- ✓ The first one is a pre-config file consisting of a few commands that are intended to be copy-and-pasted directly from that file into the switch in global configuration mode. This pre-config file prepares the switch to be configured from the master config file.

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- ✓ The other one is the master configuration file, it will be copied to the startup configuration of the switch via USB flash or TFTP. **Don't copy-and-paste the master config to the switch!**

A. Copy the appropriate pre-config file to the switch

- 1) Load the appropriate pre-config file titled <switch-num>c9501_pre.cfg (e.g. **c9501_pre.cfg**) into a text editor.
- 2) Select all the text in the file and copy it to the clipboard
- 3) Enter configuration mode on the switch and paste the clipboard contents in. This will set up the vtp information, and create a crypto key.

B. Load the master configuration files to start-up configuration of the switch

a. Via USB flash – recommended method

- 1) Copy the master configuration file to your USB flash.
- 2) Insert the USB flash to the switch USB port
- 3) Check the directory name of the flash, and copy the master configuration file of the flash directory to the start-up configuration. Below is an example of the USB directory usbflash0: and the master configuration file is 252c9501.cfg
Switch#copy usbflash0:/ 116c9501.cfg startup-config
NOTE: DO NOT perform the “**wr mem**” or “**copy run start**” commands yet!
- 4) Perform a “**reload**” on the Cat C9500.
- 5) The CatC9500 should reboot and load the correct configuration.

b. Via TFTP Server

- 1) Copy the master configuration file to your TFTP server.
- 2) Establish a connection from your TFTP server to the switch.
- 3) Use the below command to copy to master configuration file to the switch
Switch#copy tftp startup-config
NOTE: DO NOT perform the “**wr mem**” or “**copy run start**” commands yet!
- 4) Perform a “**reload**” on the Cat C9500 switch.
- 5) The Cat C9500 should reboot and load the correct configuration.

C. Store the AISD Asset Tag number at the switch configuration

- 1) After rebooting, within the global configuration on the Cat C9500, store the AISD Asset Tag number in the “snmp contact” field:

XYZc9501(config)# **snmp-server contact** [#AssetTag#]
- 2) On the CatC9500, copy the running configuration to startup configuration.

2.6 C9500 switch staging at warehouse completed - Unofficial Checklist

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The below table is an Unofficial Checklist, to be performed after staged at warehouse

Action	Command	Verification	Result
Check hardware configuration	show module	Ensure that appropriate modules are all in correct slots, and all show “ Status: OK ”	
Check for POST failures	show post	Ensure that no failed test reported	
Check Switch logs	show log	Ensure no hardware failure and other error logs	
Check IOS	show version	Check IOS version: Package license: IOS mode: Install	
Check that pre-config file was copied and pasted successfully	show vtp status show vlan show crypto key mypubkey rsa	VTP domain should be set, mode should be transparent, VLANs in the 300s, 501 and 600s should be configured A crypto key should be displayed in the output	
Check that master config file was copied successfully via TFTP	Show ip int brief Show int status	VLAN interfaces (SVI) should be configured in 300s, 501, 600s, and should show Status/Protocol = “Up/Up” Configured downlink switchports should have correct description	
Asset tag set	show snmp contact	Should be set to AISD Asset Tag number	
Configuration is saved	copy run start <or> wr mem	Save it once more to be sure	

2.7 Installation and Configuration at the School Campus

- 1) Mount the switch on the rack according to rack design provided or approved by AISD.
- 2) Insert Optic as designed.
- 3) Make connections to GAATN, MDF/IDF access switches, portable access switches as design.
- 4) Label the inter-connection cables according to AISD WAN Network Labeling Standard.
- 5) Connect Switch PS-1A(1) to UPS, PS-1B(2) to house power.
- 6) Label the power cords according to AISD WAN Network Labeling Standard.
- 7) Power on the switch.
- 8) Check whatusp and make sure all the monitors for the switch are up. AISD support staff should be available to help the checking and troubleshooting if you need help.

2.8 Test and verify the correct power cord connection of the C9500

Unplug one of the power cords, then check the switch with the following command, make sure the command output has indicated the DOWN power supply with a system Pwr BAD

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```
188c9501#sh env all | be SW
SW  PID                Serial#      Status      Sys Pwr  PoE Pwr  Watts
--  -
1A  PWR-C4-950WAC-R      APS2223009D DOWN        Bad       Bad
1B  PWR-C4-950WAC-R      APS2223009E OK           Good      Good      950
```

3 C9500 Switch Checklist at the School Campus

Capture the console log showing the following commands. Email the log to wananalysts@austinisd.org.

3.1 C9500 switch Checklist

	Action	Check	
show version	Document output	Check IOS version: Package license: IOS mode: Install	
Check IOS file and PKGs	Document output	Make sure All the PKGs are listed at flash:	
show interface transceiver	Document output	Make sure all the 10 G links Optics Power Levels are within the normal range.	
show module	Document output	Make sure all the modules' status is "OK"	
Show REP topology	Document output		
show vlan	Check output	VLANs in the 300s, 501 and 600s should be configured	
show ip int brief	Check output	VLAN interfaces in the 300s, 501, and 600s should have IPs	
show etherchannel summary	Check output	Should match AISD campus network design, and active ports in etherchannels are active.	
show interface status	Check output	Switchports should have correct descriptions	
show interface trunk	Check output	Should match AISD campus network design	
show cdp neighbor	Check output	Should match AISD campus network design	
SSH to the device	Check SSH connection	While you are in the device console, enter command "ssh 10.xyz.255.1", provide the user name netsync1's credentials. Note that you only need a password if you already logon the switch.	

Note: You need to check and make sure the levels meet the below level. If not, investigation is needed:

Optical Transmit Power > -4dBm

Optical Receive Power > -6dBm

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NOTE: If you need to start over from scratch and reload a completely new configuration on a the C9500 switch, the following commands may be used to thoroughly delete the current configuration and return to factory defaults.

Switch# **erase startup-config** ! Will not erase VTP/VLAN info, SNMP ifIndexes, or crypto.
See below.

Switch# **delete flash:vlan.dat** ! Removes the VLAN.DAT file to delete all VTP and VLAN info

Switch# **delete nvram: ifIndex-table** ! Removes all SNMP ifIndexes – *important if you've added and removed line cards*

Switch(config)#**crypto key zeroize rsa** <switch hostname>-**rsa**key ! Erases crypto key

4 C9300 Switch Hardware Installation and Configuration Guideline

4.1 C9300 Switch Hardware Information

Switch model: C9300-48UN

Switch power Supply: PWR-C1-1100WAC-P=

Switch module: C9300-NM-8X

Optics: SFP-10G-LRM (for IDF switch to MDF distribution switch)

Note: Use 10G SFP+ Twinax cables for the C9300 access switch to the C9500 switch in the MDF, and all C9300 to C9300 connections in the MDF/IDF's.

4.2 C9300 Switch Interconnection

If the MDF/IDF has two or more C9300 switches, the C9300 switches are configured in a REP loop.

If closet only have one C9300 switch, no REP is configured, both Te1/1/1 and Te1/1/2 will be bundled into an ether-channel and uplink to C9500.

1) Closet REP Connection – C9300

- ✓ First node of the closet REP: C9300 switch with the lowest last IP octet
- ✓ Last node of the closet REP: C9300 switch with the highest last IP octet
- ✓ REP Alternate Port: to be determined
- ✓ REP Edge Port 1: First node switch port Te1/1/2
- ✓ REP Edge Port 2: Last node switch port Te1/1/1
- ✓ Closet REP interconnection
 - Node1-Te1/1/1 ↔ Node2-Te1/1/2
 - Node2-Te1/1/1 ↔ Node3-Te1/1/2

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Node3-Te1/1/1 ↔ Node4-Te1/1/2

...

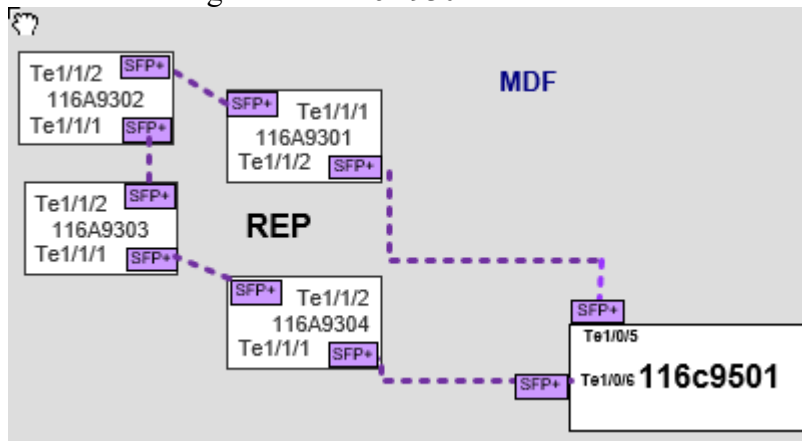
Below is an example of a 4-node closet REP loop in the MDF:

REP node 1 = 116A9301

REP node 4 = 116A9304

REP Edge Port 1: 116A9301-Te1/1/2

REP Edge Port 2: 116A9304-Te1/1/1



4.3 C9300 Switch Installation and Configuration Procedures – Staging at the Warehouse

1. Assemble and check the hardware (do not install optics yet!)

- 1) Install two power supplies and 10-G module to a switch
- 2) Power on the switch, check and verify the switch power-on self-test (POST) is successful:
Switch# **show post**
- 3) Check messages and switch log for abnormal activities and errors.
- 4) Check all the switch LED indicators and make sure there are no abnormal conditions.

2. Check IOS of the switch

- 1) System image file is installed at the flash.
Note: Keep the manufacturer default configuration register.

3. Label the Switch and Place AISD Asset Tag

According to AISD WAN Network Labeling Standard.docx

4. Load Startup Configuration and Configure the Switch

Note:

- ✓ There will be TWO customized configuration files is provided by AISD.

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- ✓ The first one is a pre-config file consisting of a few commands that are intended to be copy-and-pasted directly from that file into the switch in global configuration mode. This pre-config file prepares the switch to be configured from the master config file.
- ✓ The other one is the master configuration file, it will be copied to the startup configuration of the switch via USB flash or TFTP. **Don't copy-and-paste the master config to the switch!**

A. Copy the appropriate pre-config file to the switch

- 1) Load the appropriate pre-config file titled switch-hostname_pre.cfg (e.g. **116A9301_pre.cfg**) into a text editor.
- 2) Select all the text in the file and copy it to the clipboard
- 3) Enter configuration mode on the switch and paste the clipboard contents in. This will set up the vtp information and create a crypto key.

B. Load the master configuration files to start-up configuration of the switch

a. Via USB flash – recommended method

- 1) Copy the master configuration file to your USB flash.
- 2) Insert the USB flash to the switch USB port
- 3) Check the directory name of the USB flash, and copy the master configuration file of the flash directory to the start-up configuration. Below is an example of the USB with directory named usbflash0: and the master configuration file is 116A9301.cfg

Switch#copy usbflash0:116A9301.cfg startup-config

NOTE: DO NOT perform the “**wr mem**” or “**copy run start**” commands yet!

- 4) Perform a “**reload**” on the C9300.
- 5) The C9300 should reboot and load the correct configuration.

b. Via TFTP Server

- 1) Copy the master configuration file to your TFTP server.
- 2) Establish a connection from your TFTP server to the switch.
- 3) Use the below command to copy to master configuration file to the switch

Switch#copy tftp startup-config

NOTE: DO NOT perform the “**wr mem**” or “**copy run start**” commands yet!

- 4) Perform a “**reload**” on the C9300.
- 5) The C9300 should reboot and load the correct configuration.

C. Store the AISD Asset Tag number at the switch configuration

- 3) After rebooting, within the global configuration on the C9300, store the AISD Asset Tag number in the “snmp contact” field:

116A9301(config)# **snmp-server contact** [#AssetTag#]

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- 4) On the C9300, copy the running configuration to startup configuration.

4.4 C9300 switch staging at warehouse completed - *Unofficial Checklist*

(official checklist is performed and captured at Campus)

Action	Command	Verification	OK?
Check hardware configuration	Show switch detail	Ensure the switch is working properly. “Status: OK”	
Check for POST failures	show post	Ensure all test passed and no hardware failures are reported	
Check Switch logs	show log	✓ Ensure no hardware failure and other error logs	
Check that pre-config file was copied and pasted successfully	1) show vtp status 2) show vlan 3) show crypto key mypubkey rsa	✓ VTP domain should be set, mode should be transparent, VLANs in the 300s, 501 and 600s should be configured ✓ A crypto key should be displayed in the output	
Check that master config file was copied successfully via TFTP	1) Show ip int brief 2) Show int status 3) Show ip default-gateway	✓ There should be one management IP interface set up on VLAN 501, with a correct IP address ✓ Configured uplink switchports should have correct descriptions. User access ports should be defaulted to VLAN 305. ✓ There should be one default gateway configured	
Asset tag set	show snmp contact	Should be set to AISD Asset Tag number(s)	
Configuration is saved	copy run start <or> wr mem	Save it once more to be sure	

C9300 Staging at warehouse completed

4.5 Installation and Configuration at the School Campus:

- 1) Mount the switch(es) on the rack according to design provided by AISD. Start with REP node1, then node2... sequentially.
- 2) Insert the 10-G Optic.
- 3) Connect the 10G data ports of the switches together into a REP loop according AISD design.
- 4) Connect the uplink to distribution switch according to design.
- 5) Label the inter-switch cables according to AISD specs.
- 6) Power cord connection: each of the switches in a stack must have its power cord plugged in the power source.
- 7) Power cord connection: Connect Switch PS-A(1) to UPS, PS-B(2) to house power. Make sure that all power cords are labeled according to AISD specs.
- 8) Power on switches.

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- 9) Check whatsup and make sure all the monitors for the switches are up. AISD support staff should be available to help the checking and troubleshooting if you need help.
- 10) Set any ports necessary for security camera, etc., and add descriptions for these ports. **(For campus upgrade ONLY)**

To achieve this, you will need to save the vlan number and description from the port on the old switch that served the device.

Note: you must configure the port back to default interface configuration before applying macro.

```
(config)# default interface g1/0/32
```

```
(config)# int g1/0/32 <whatever port is appropriate>
```

```
(config-if)# macro apply 93-access-no-voi $desc "e.g. deviceName,IP" $vid <vlan-id>
```

- 11) Set any ports necessary for Wireless AP, add descriptions for these ports. To achieve this, you will need to save the vlan number and description from the port on the old switch that served the device.

Note: you must configure the port back to default interface configuration before applying macro.

- For AP:

```
(config)# default interface g3/0/20
```

```
(config)# int g3/0/20 <whatever port is appropriate>
```

```
(config-if)# macro apply 93-access-ap $desc "e.g. AP-name,Drop,location"
```

- 12) Write the configuration: “**copy run start**”

4.6 C9300 Switch Checklist at the School Campus

Capture the console log showing the following commands. Email this to wanaanalysts@austinisd.org.

C9300 Switch Stack Checklist

	Action	Check	
show version	Document output	Have the right IOS version and image on all the switches	
show interface transceiver	Document output	Make sure all the 10 G links Optics Power Levels are within the normal range.	
show boot system	Document output	For INSTALL mode, Each of the switch must have a boot variable “BOOT variable = flash:packages.conf;”	
sh ver inc INSTALL	Document output	Make sure IOS is in the INSTALL mode	
show switch	Document output	Make sure the switch is in the “OK” state.	
show env	Document output	Make the switch: All FAN are OK All PS-FAN are OK TEMPERATURE is OK Temperature State: GREEN POWER is OK	
Show REP topology	Check output	Check all nodes in an REP showed up	

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		Alternate port at the designed location.	
show etherchannel summary		For closet with only one switch: Make sure both Ten-gig ports are up and bundled at Po1.	
show vlan	Check output	VLANs in the 300s, 501 and 600s should be configured	
show rmon alarms	Check output	There should be 2 alarms configured	
show interfaces status	Check output	Switchports should have correct descriptions	
show interface trunk			
show cdp neighbor			
Sh log		Troubleshoot abnormal log message and drive for resolution with AISD.	
SSH to the device	Check SSH connection	While you are in the device console, enter command “ssh 10.xyz.240.1nm”, provide the user name netsync1’s credentials.	
Connectivity Testing (Wired)		Connect your laptop to an access port in VLAN305, verify that the laptop gets a DHCP address, and can access the network.	
Connectivity Testing (Wireless)		Set your laptop to connect to AISD wireless network guest. Verify that the laptop gets a DHCP address, and can access the network via wireless.	

2960X Fan-less Portable Switch Hardware Installation and Configuration Guideline

4.7 2960X Switch Hardware Information

WS-C2960X-24PSQ-L

- 1) Port Gi0/1 – 8 are PoE ports, the first two ports will assign to Access Point (AP), the other 6 ports will reserved for devices required PoE power, such as security camera, VoIP phones, etc.
- 2) Port Gi0/27 – Uplink to upstream switch.
- 3) Optics: 1000BaseSX SFP, DOM

2960X Switch Installation and Configuration Procedures – Staging at the Warehouse

5. Assemble and check the hardware

- 5) Power on the switch, check and verify the switch power-on self-test (POST) is successful:
Switch# **show post**
- 6) Check messages and switch log for abnormal activities and errors.
- 7) Check all the switch LED indicators and make sure there are no abnormal conditions.

6. Check IOS of the switch

- 2) System image file is installed at the flash.
Note: Keep the manufacturer default configuration register: 0xF

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7. Label the Switch and Place AISD Asset Tag

According to AISD WAN Network Labeling Standard.docx

8. Load Startup Configuration and Configure the Switch

Note:

- ✓ There will be TWO customized configuration files is provided by AISD.
- ✓ The first one is a pre-config file consisting of a few commands that are intended to be copy-and-pasted directly from that file into the switch in global configuration mode. This pre-config file prepares the switch to be configured from the master config file.
- ✓ The other one is the master configuration file, it will be copied to the startup configuration of the switch via USB flash or TFTP. **Don't copy-and-paste the master config to the switch!**

D. Copy the appropriate pre-config file to the switch

- 4) Load the appropriate pre-config file titled <switch-num>P2Xyz_pre.cfg (e.g. **252P2X61_pre.cfg**) into a text editor.
- 5) Select all the text in the file and copy it to the clipboard
- 6) Enter configuration mode on the switch and paste the clipboard contents in. This will set up the vtp information, and create a crypto key.

E. Load the master configuration files to start-up configuration of the switch

c. Via USB flash – recommended method

- 6) Copy the master configuration file to your USB flash.
- 7) Insert the USB flash to the switch USB port
- 8) Check the directory name of the USB flash, and copy the master configuration file of the flash directory to the start-up configuration. Below is an example of the USB with directory named usbflash0: and the master configuration file is 252P2X61.cfg

Switch#copy usbflash0:/ 252P2X61.cfg startup-config

NOTE: DO NOT perform the “**wr mem**” or “**copy run start**” commands yet!

- 9) Perform a “**reload**” on the Cat2960X.
- 10) The CatC9500 should reboot and load the correct configuration.

d. Via TFTP Server

- 6) Copy the master configuration file to your TFTP server.
- 7) Establish a connection from your TFTP server to the switch.
- 8) Use the below command to copy to master configuration file to the switch

Switch#copy tftp startup-config

NOTE: DO NOT perform the “**wr mem**” or “**copy run start**” commands yet!

- 9) Perform a “**reload**” on the Cat2960X.
- 10) The Cat2960X should reboot and load the correct configuration.

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F. Store the AISD Asset Tag number at the switch configuration

- 5) After rebooting, within the global configuration on the Cat2960X, store the AISD Asset Tag number in the “snmp contact” field:

252P2X61(config)# **snmp-server contact** [#AssetTag#]

- 6) On the Cat2960X, copy the running configuration to startup configuration.

4.8 Cat2960X Staging at warehouse completed - Unofficial Checklist:

(official checklist is performed and captured at Campus)

Action	Command	Verification	OK?
Check for POST failures	show log	Ensure that no hardware failures are reported	
Check IOS	show version	boot image should be the one specified in LAN Install sheet.	
Check that pre-config file was copied and pasted successfully	show vtp status show vlan show crypto key mypubkey rsa	VTP domain should be set, mode should be transparent, VLANs in the 300s, 501 and 600s should be configured A crypto key should be displayed in the output	
Check that master config file was copied successfully via TFTP	Show ip int brief Show int status Show ip default-gateway	There should be one management IP interface set up on VLAN 501, with the correct IP address set Configured uplink switchports should have correct descriptions. User access ports should be defaulted to VLAN 305. There should be one default gateway configured	
Asset tag set	show snmp contact	Should be set to AISD Asset Tag number(s)	
Configuration is saved	copy run start <or> wr mem	Save it once more to be sure	

4.9 Installation and configuration at the School Campus

- 1) Port assignment and Patch
 Gi0/1-2: for Access ports
 Gi0/3-4: for devices requires PoE power.
 Gi0/9-24: for end user equipment without PoE
 Gi0/27: for Active fiber uplink to C9500 switch.

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- 2) *Verify that the fiber link will come up before mounting the switch.*
 - a. *There may be issues with the links from the portables.*
 - b. Connect the uplink cable to switch port Gi0/27
 - c. If the link comes up, make a console connection, ping the C9500
 - d. Connect to an access port and verify internet access is working.
 - e. From the C9500 console, check this link for interface errors which may indicate link problems.
 - f. *If the link does not come up, use the LX/LH optics with mode conditioning patch cables to make the link. Then repeat steps c-e.*
- 3) Mount the switch to the portable classroom location according to AISD Guideline.
- 4) Connect the uplink cable to switch port Gi0/27
- 5) Set ports necessary for Wireless AP, add descriptions for these ports. To achieve this, you will need to save the vlan number and description from the port on the old switch that served the device.
 Note: you must configure the port back to default interface configuration before applying macro.

- For Aruba AP:


```
(config)# default interface g0/1
(config)# int g0/1 <whatever port is appropriate>
(config-if)# macro apply 29-access-ap $desc "e.g. AP-name,Drop,location"
```

- 6) Write the configuration: “copy run start” <or> “wr mem”

4.10 Test, Measure, and Document Optic power levels

- I. **Cat2960X Switch Checklist at the School Campus**
Capture the console log showing the following commands. Email this to wananalysts@austinisd.org.

Cat2960s Switch Checklist

	Action	Check	
show version	Document output	Have the right IOS version and image on the switch	
sh vlan	Check output	VLANs in the 300s, 501 and 600s should be configured	
sh interfaces status	Check output	Switch ports should have correct descriptions	
sh interface trunk			
sh cdp neighbor			
sh run inc contact		“snmp-server contact” includes AISD Asset Tag Number.	
sh run inc snmp-server location		“snmp-server location” includes portable ID, classroom# and classroom phone number	

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Check Optical levels	show interface transceiver	Document output Make sure the G0/27 links Optics Power Levels are within the normal range.	
SSH to the device	Check SSH connection	While you are in the device console, enter command “ssh 10.xyz.240.1nm”, provide the user name netsync1’s credentials. Note that you only need the password if you already logon the switch.	
Connectivity Testing (Wired)		Connect your laptop to an access port in VLAN305, verify that the laptop gets a DHCP address, and can access the network.	
Connectivity Testing (Wireless), if there is AP in the portable classroom.		Set your laptop to connect to AISD wireless network guest. Verify that the laptop gets a DHCP address, and can access the network via wireless.	

NOTE: If you need to start over from scratch and reload a completely new configuration on a CatC9300 or 2960, the following commands may be used to thoroughly delete the current configuration and return to factory defaults.

Switch# **erase startup-config** ! Will not erase VTP/VLAN info, or crypto. See below.

Switch# **delete flash:vlan.dat** ! Removes the VLAN.DAT file to delete all VTP and VLAN info

Switch(config)#**crypto key zeroize rsa** <switch hostname>-rsakey ! Erases crypto key

5 Credentials for Contractor

SSH credentials:

Username: your ACS user name

Password: your ACS password

Device credentials:

Enable password: cisco

Console password: cisco