Cisco 3560 Configuration Guide for iSIS8000 Systems

Introduction

The following document deals purely with the configuration of 3560 switches used in ISIS8000 systems under nCC V5 control. It covers both TS data and TS output switches.

Cisco switches are becoming more and more common in TANDBERG systems as they are used to interface various products to customer IP networks. The switches can be used in many roles with in the system. The following document is designed to assist setting up Cisco equipment for use with nCompass Control and iSIS8000 systems

This document gives an overview of all the functions associated with Cisco switches when used with nCompass Control. The document is only to be used as a guide to assist engineers in setting up and configuring switches. The following instructions for setting up switches in the following modes are covered:-
- TS Data switch
- TS Output switch

Switch Types

Cisco switches can be used in nCompass Control to carry broadcast traffic over IP. nCompass can currently control specific Cisco switch models for device redundancy. The operation of the switch is controlled by SNMP.

nCompass can currently support the following switches for device control:-
- Cisco 3550/60 Series (3560 for iSIS8000)
- Cisco 4500 Series

There are currently two software versions available on the Cisco 3550/60. There is no difference in hardware between an SMI and EMI switch. The two software versions are Enhanced Multilayer Image (EMI) and Standard Multilayer Image (SMI). EMI provides more features such as enhanced security, Quality of Service (QoS), OSPF Routing and Protocol Independent Multicast (PIM). IP streamer and encoder systems can use an SMI switch unless specified otherwise.

Cisco 2950 switches are used for Management network redundancy only.

Initial Switch Configuration (3560)

The following is intended as a guide to configure Cisco catalyst switches to work with nCompass. If a GigE switch (i.e. Cisco 3560G) is being used the replace all instances of fa0/? With gi0/?

- <R> denotes the Return key.
- Switch> Prompt is the base menu.
- Switch# Prompt is the enable menu (type 'en' and password (if one is set) to get to this point from initial prompt). Type end to return to Switch>
- Switch(Config) Prompt is the configure mode. Type 'conf t' from enable menu, type 'end' to exit to enable menu.
- Switch(Config-IF) Prompt is a typical sub configuration menu. Type int fa0/1 to get to this point type 'exit' to return to Switch (Config) or 'end' to return to enable menu (Switch#)
- In the enable menu (Switch#) type 'sh ru' to view the existing configuration.
- The TAB key can be used to complete words i.e. sw <TAB> will complete to switchport etc.
- The up or down curser can be used to recall earlier commands for that menu. (Hyperterminal may prevent this if not set correctly. This feature will always work with Telnet).
- To cancel a command type 'no [command]' <R>.

TS Data Switch setup

The following gives a brief set of instructions for setting up a Cisco 3560 as a TS Data switch.

Clearing the Current Configuration

This is recommended if the switch has been previously used.

1. Connect to switch using console port on rear of unit.

2. Open a HyperTerminal session for 9600 8N1N.

3. Type 'en' <R> for enable.

4. Enter the enable password (default 'cisco') if applicable then <R>.

5. Type 'erase startup' <R>

6. You will be given a warning about erasing the nvram press <R> to

confirm

7. Press <R> again.

8. Type 'reload' to reboot switch.

9. You will be asked to "Proceed with reload" press <R> to confirm

10. The switch should now start in the default configuration this will take a few minutes and will involve the reloading of flash.

11 After reload is complete you will be asked to press <R> to begin, once this is done you will be asked to type "yes" or "no" to enter the initial configuration dialog, type "no" <R>

12 This will then put you at the switch> prompt

13. Type "en" <R> this will put you at the switch# prompt where commands can be entered

14 Type "show ru" this will show the current config, which should look like the following text (comments are in capitals and brackets)

```
Current configuration : 1312 bytes
!
version 12.2
no service pad
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname Switch                    (DEFAULT HOSTNAME)
!
!
no aaa new-model
ip subnet-zero
!
!
no file verify auto
spanning-tree mode pvst
spanning-tree extend system-id
!
vlan internal allocation policy ascending
!
interface GigabitEthernet0/1       (NO VLAN'S ASSIGNED)
!
interface GigabitEthernet0/2
!
interface GigabitEthernet0/3
!
interface GigabitEthernet0/4
!
interface GigabitEthernet0/5
!
interface GigabitEthernet0/6
!
interface GigabitEthernet0/7
!
interface GigabitEthernet0/8
!
interface GigabitEthernet0/9
!
interface GigabitEthernet0/10
!
interface GigabitEthernet0/11
!
 --More--
```

```
interface GigabitEthernet0/12
!
interface GigabitEthernet0/13
!
interface GigabitEthernet0/14
!
interface GigabitEthernet0/15
!
interface GigabitEthernet0/16
!
interface GigabitEthernet0/17
!
interface GigabitEthernet0/18
!
interface GigabitEthernet0/19
!
interface GigabitEthernet0/20
!
interface GigabitEthernet0/21
!
interface GigabitEthernet0/22
!
interface GigabitEthernet0/23
!
interface GigabitEthernet0/24
!
interface GigabitEthernet0/25
!
interface GigabitEthernet0/26
!
interface GigabitEthernet0/27
!
interface GigabitEthernet0/28
!
interface Vlan1
 no ip address
!
ip classless
ip http server
!
!
control-plane
!
!
```

```
line con 0
line vty 5 15
!
end

Switch#
```

Typing in the TS Data Switch Configuration

1. At the "switch#" prompt type "conf t" <R> to allow config parameters to be entered.
2. At the "switch(config)#" prompt type the following and press <R> after each line. Ignore any warnings following the "spanning-tree port fast" command. Any mistakes will be shown by a rejection of the command and a marker will show the illegal character(s).

```
!
interface GigabitEthernet0/1
 switchport access vlan 10
 switchport mode access
 spanning-tree portfast          REPEAT FOR EACH
 no cdp enable                   INTERFACE AN ENCODER
!                                WILL BE CONNECTED TO
interface GigabitEthernet0/2
 switchport access vlan 10
 switchport mode access
 spanning-tree portfast
 no cdp enable
!
interface GigabitEthernet0/24            IP ADDRESS FOR THE PORT TO BE
 no switchport                           USED AS THE MANAGEMENT PORT
 ip address 10.1.4.245 255.255.255.0     IN THIS CASE PORT 24
!
interface Vlan1
 no ip address
 shutdown
!
interface Vlan10
 description Multicast Source
!
!
ip classless
```

```
ip route 0.0.0.0 0.0.0.0 10.1.4.254
!
!
snmp-server community public RO
snmp-server community private RW
!
control-plane
!
!
line con 0
line vty 0 4
 password cisco
 no login
line vty 5 15
 password cisco
 no login
!
end
```

OPTIONAL GATEWAY ADDRESS FOR VLAN 10

VERY IMPORTANT THESE MUST BE ENTERED THE SAME AS IN nCC

THESE LINES ALLOW A TELNET SESSION INTO ANY INTERFACE ON THE SWITCH

After typing "end" above you will be returned to the "switch#" prompt.
The final thing to do is to enable IGMP snooping on the switch

IGMP snooping can be enabled on a switch to prevent a particular port being exposed to all multicasts on a network. For example suppose there where 100 5MBits multicast streams on the back plane of the switch and you connect a device with only a 10/100 baseT port then it will be unable to tune into a multicast since it will just see a mass of packets (broadcast storm). In order to prevent this the switch can listen into multicast joins and hosts and only allow specific multicast traffic to a port if a receiver attached requests it.
IGMP snooping is normally configured as a global command but can be assigned to specific interfaces.

To configure IGMP on for the entire switch.

1. Enter the enable menu by typing 'en' <R> to get to the "switch#" prompt

2. Type 'conf t' <R> to enter configure mode and enter a password if needed

3. Type 'ip igmp snooping' <R> This enables IGMP snooping on all ports.

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To configure IGMP on a specific VLAN.

1. Enter the enable menu by typing 'en' <R> to get to the "switch#" prompt

2. Type 'conf t' <R> to enter configure mode and enter a password if needed

3. Type 'ip igmp snooping vlan 10' <R> This enables IGMP snooping on vlan 10.

Finally an IGMP querier is required in order to provide the snooping function with a list of current IGMP join requests. The querier needs to be enabled on each VLAN i.e.

1. Enter the enable menu by typing 'en' <R> to get to the "switch#" prompt

2. Type 'conf t' <R> to enter configure mode and enter a password if needed

3. Type 'ip igmp snooping vlan 10 querier' <R> This enables IGMP snooping on vlan 10.

Type "wr" <R> to write the config to the switch.

You can now check the switch config from the "switch#" prompt by typing, "show ru" <R>

Backing up the Running Config File
The switch configuration can be backed up on the switch or onto a PC using a tftp server.
Backing up a config and storing it on a switch.
1. Go to the enable level type 'en' and the password so the Switch# prompt appears.
2. Type 'copy startup-config Backup_Config <R>
3. This will then store the file on the switch. Type 'dir' <R> to view.
4. The file can be used to overwrite the start up configs by copying it back i.e.
5. Type 'copy Backup_config startup-config
6. If you type 'reload' at this point then the original settings will be restored.

Backing up a configs onto a PC using a tftp server. A tftp server can be downloaded from the following: -
http://support.solarwinds.net/updates/New-customerFree.cfm?ProdId=52
You need to install this on the PC you want to copy the configs to. If you are running TDC/nCC then you will need to stop the TANDBERG TFTP services since this will conflict with the install application.

When running the tftp server for the first time you will need to go to the File>Configure/Security menu and enable 'Transmit and Receive' files. Any files received will arrive in the 'TFTP Root' directory as default.

1. Go to the enable level type 'en' and the password so the Switch# prompt appears.

2. Type 'copy startup-config tftp://pcipaddress/exampleconfig.txt <R>.

3. This should then copy the file across and store it in the TFTP-Root directory.

Uploading a Config File to the Switch using TFTP

1. Edit the config file accordingly, name it exampleconfig.txt.

2. Copy the file to the TFTP-Root directory.

3. Ensure that the TFTP server is running and has been enabled to transmit files.

4. Go to the enable level type 'en' and the password so the Switch# prompt appears.

5. Type 'copy tftp://pcipaddress/exampleconfig.txt startup-config

6. This will then copy the contents of exampleconfig.txt into the startup config. If the switch is rebooted at this point then the switch will boot up with the new config.

TS Output Switch setup

The output switch setup is similar to the data switch setup except that the input interfaces that connect to each mux must be assigned to a separate VLAN initially via the switch. On the nCC physical map the switch is configured such that each mux input is connected to the same output VLAN. This will reconfigure the switch when the physical map is uploaded to server. The following shows the configuration for an ouput switch .

```
TS Output Switch
!
version 12.2
no service pad
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname nCCOuput1
!
enable password cisco
!
no aaa new-model
ip subnet-zero
ip routing
no ip domain-lookup
!
no file verify auto
spanning-tree mode pvst
spanning-tree extend system-id
!
vlan internal allocation policy ascending
!
interface GigabitEthernet0/1
 switchport access vlan 10
 switchport mode access
 no cdp enable
 spanning-tree portfast
!
interface GigabitEthernet0/2
 switchport access vlan 11
 switchport mode access
 no cdp enable
 spanning-tree portfast
```

```
!
interface GigabitEthernet0/24
 no switchport
 ip address 10.1.4.246 255.255.255.0
!
interface GigabitEthernet0/25
!
interface GigabitEthernet0/26
!
interface GigabitEthernet0/27
!
interface GigabitEthernet0/28
!
interface Vlan1
 no ip address
 shutdown
!
interface Vlan10
 description TS_Out
 no ip address
 no ip mroute-cache
!
interface Vlan11
 description Redundant
 no ip address
!
ip classless
ip route 0.0.0.0 0.0.0.0 10.1.4.254
!
snmp-server community public RO
snmp-server community private RW
!
control-plane
!
line con 0
line vty 0 4
 password cisco
 login
line vty 5 15
 password cisco
 login
!
end
```