Supported Products:	NetworkHD 100, 200, 400
Supported NetworkHD Firmware:	V6.0 or higher
Supported Switch OS:	15.2(7)E1

Overview

The following information outlines how to configure Cisco Catalyst 3560CX series network switches for use with WyreStorm NetworkHD 100, 200 & 400 components.

⚠ Important! WyreStorm has only verified that the Catalyst 3560CX models work with NetworkHD components. It can be assumed that other Catalyst series switches running the same OS version will also operate but it cannot be guaranteed. Use of other Catalyst series is at your own risk.

Configuration Steps

The below configuration steps assume you have completed the basic setup of any Catalyst switches, including usernames, passwords and any general IP addressing.

If you need assistance connecting to the console port on a Catalyst switch refer to the link below.

Connecting to a Catalyst console port

For additional information on using the Cisco CLI refer to the link below.

Cisco IOS CLI Reference

The below steps also assume that NetworkHD resides in the default management VLAN ID 1. If NetworkHD will reside in a dedicated VLAN substitute commands that mention 'vlan 1' with the VLAN ID you have chosen.

Core Switch Configuration

1. Enter EXEC mode of the switch by typing en
2. Enter in the password you have programmed for EXEC mode
3. Enter configuration mode of the switch by typing conf t

```
nhdswitch>en
Password:
nhdswitch#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
```

4. Enable Global IGMP Snooping and IGMP Snooping for the VLAN NHD resides in by typing the commands below:

```
nhdswitch(config)#ip igmp snooping
nhdswitch(config)#ip igmp snooping vlan 1
nhdswitch(config)#ip igmp snooping vlan 1 immediate-leave
```

5. Enable the IGMP Querier and set the Querier VLAN, IP Address and Version. The Querier IP address should be set to the management IP address of the VLAN for NHD devices.

```
nhdswitch2(config)#ip igmp snooping querier
nhdswitch2(config)#int vlan 1
nhdswitch2(config-if)#ip igmp snooping querier
nhdswitch2(config)#ip igmp snooping querier address 10.0.0.1
nhdswitch2(config)#ip igmp snooping querier version 2
nhdswitch2(config)#end
nhdswitch2#
```

6. Disable IGMP Flooding on all switch ports part of the NHD VLAN. In the example below we are using a 12-port switch with 4 uplinks, so we have disabled flooding for all 16 ports. Adjust the interface range based on the number of ports your switch has.

```
nhdswitch2(config)#int range gi 1/0/1 - 16
nhdswitch2(config-if-range)#no ip igmp snooping tcn flood
nhdswitch2(config-if-range)#
```

7. NetworkHD 400 series requires jumbo frames to be enabled. Use the command below to enable an MTU of 9000

```
nhdswitch(config)#system mtu jumbo 9000
Changes to the system jumbo MTU will not take effect until the next reload is done
```

8. All configurations for the Core Switch are complete. Save the running configuration using the command below.

```
nhdswitch2#copy run start
Destination filename [startup-config]?
Building configuration...
[OK]
nhdswitch2#
```

Extended Switch(es)

Extended switches contain many of the same configuration steps as the core switch. You can repeat steps 1-4 as shown in the Core Switch Configuration section.

When configuring step 5, you will not enable the IGMP Querier for extended switches as the core switch has been programmed as the Querier. However, you will still need to enable IGMP Querying for the VLAN and point the Querier IP address to the core switch.

```
nhdswitch2(config)#int vlan 1
nhdswitch2(config-if)#ip igmp snooping querier
nhdswitch2(config)#ip igmp snooping querier address 10.0.0.1
nhdswitch2(config)#ip igmp snooping querier version 2
nhdswitch2(config)#end
nhdswitch2#
```

Once the above has been programmed you can also repeat steps 6 & 7 as shown in the above Core Switch Configuration section.

Testing & Verification

After all configurations have been completed, there are a number of commands that can be sent to the switches to verify settings have been enabled and NHD devices are registering on the switch(es) correctly.

Verifying IGMP Snooping Configuration.

```
nhdswitch2#show ip igmp snoop
Global IGMP Snooping configuration:
---------------------------------------
IGMP snooping                : Enabled
IGMPv3 snooping (minimal)    : Enabled
Report suppression           : Enabled
TCN solicit query            : Disabled
TCN flood PortFast           : Disabled
TCN flood query count        : 2
Robustness variable          : 2
Last member query count      : 2
Last member query interval   : 1000
Extended flooding after
  mrouter detected (sec)     : 0

Vlan 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
nhdswitch2#
```

Verify IGMP Querier Settings

```
nhdswitch2#show ip igmp snooping querier vlan 1 detail
IP address               : 10.0.0.1
IGMP version             : v2
Port                     : Switch
Max response time        : 10s


Global IGMP switch querier status
---------------------------------------------------
admin state                    : Enabled
admin version                  : 2
source IP address              : 10.0.0.1
query-interval (sec)           : 30
max-response-time (sec)        : 10
querier-timeout (sec)          : 180
tcn query count                : 2
tcn query interval (sec)       : 10

Vlan 1:   IGMP switch querier status
---------------------------------------------------
elected querier is 10.0.0.1        (this switch querier)
---------------------------------------------------
admin state                    : Enabled (state inherited)
admin version                  : 2
source IP address              : 10.0.0.1
query-interval (sec)           : 30
max-response-time (sec)        : 10
querier-timeout (sec)          : 180
tcn query count                : 2
tcn query interval (sec)       : 10
operational state              : Querier
operational version            : 2
tcn query pending count        : 0
nhdswitch2#
```

Verify NHD IGMP Groups are registering

```
nhdswitch2#show ip igmp snoop groups
Vlan      Group                   Type        Version     Port List
------------------------------------------------------------------------
1         224.0.1.129             igmp        v2          Te1/0/1
1         225.1.0.0               igmp        v2          Gi1/0/2, Gi1/0/4,
                                                          Gi1/0/5, Gi1/0/8,
                                                          Gi1/0/11, Te1/0/1
1         225.1.0.1               igmp        v2          Gi1/0/2, Gi1/0/4,
                                                          Gi1/0/5, Gi1/0/8,
                                                          Te1/0/1
1         226.1.0.0               igmp        v2          Gi1/0/2, Gi1/0/4,
                                                          Gi1/0/5, Te1/0/1
1         226.2.0.0               igmp        v2          Gi1/0/2, Gi1/0/4,
                                                          Gi1/0/5, Gi1/0/8,
                                                          Gi1/0/11, Te1/0/1
1         234.32.198.151          igmp        v2          Gi1/0/8
1         234.33.24.37            igmp        v2          Gi1/0/2, Gi1/0/4,
                                                          Gi1/0/5, Te1/0/1
1         234.48.198.151          igmp        v2          Gi1/0/8
1         234.49.24.37            igmp        v2          Gi1/0/2, Gi1/0/4,
                                                          Gi1/0/5, Te1/0/1
1         234.64.198.151          igmp        v2          Gi1/0/8
1         234.65.24.37            igmp        v2          Gi1/0/2, Gi1/0/4,
                                                          Gi1/0/5, Te1/0/1
1         234.96.198.151          igmp        v2          Gi1/0/2, Gi1/0/4,
                                                          Gi1/0/8, Te1/0/1
1         234.97.24.37            igmp        v2          Gi1/0/5, Te1/0/1
1         234.112.198.151         igmp        v2          Gi1/0/8
1         234.113.24.37           igmp        v2          Gi1/0/2, Gi1/0/4,
                                                          Gi1/0/5, Te1/0/1
1         239.255.61.71           igmp        v2          Te1/0/1
1         239.255.255.250         igmp        v2          Gi1/0/12
nhdswitch2#
```