Configuring the Cisco 2960X Series of Switches for Livewire®

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Introduction

Please note that this document applies **only** to the Cisco 2960X series of switches. While some of these settings will work with other switches, using these commands to program switches not in this series could yield unintended results.

This document is not intended to be an all-inclusive or even a step-by-step manual on how to configure this switch but is provided as a guide and makes some basic assumptions regarding the skill level of person doing the programming. If you are not comfortable hooking up serial cables, assigning IP addresses, typing in a command line interfaces, etc, you should contact your IT department for assistance.

 If this is the first time the switch has been configured, you will have to connect to the switch via a console cable and serial connection to enter into setup. After initial configuration of the switch, you can connect to the switch either via a Telnet session, or through a serial port.

During the initial setup, you will assign the switch an IP address, which will then allow you to connect to the switch via a Telnet session at a later time.

You can connect to this switch using a usb cable and a serial port driver from Cisco. As of the date of this writing the usb driver can be obtained from the [Cisco website](). Make sure you install the driver before connecting the switch to your USB ports. This will install a new COM port on your computer.

PuTTy is a free terminal program that can be used for configuration and can be downloaded [here]().

Configuration

This switch has been tested and the configuration is based on the following;
Cisco model: WS-C2960X-24TS-L
Version ID: V02
Software: 15.0(2)EX5

Programming

Once connected with the serial cable (default settings are 9600 baud), you should be able to see messages on the screen as the switch boots. This will confirm that your serial cable is working correctly. If you are prompted to enter any setup wizards, please answer 'No'.
A couple of other notes that might be helpful:

1) Many commands can be abbreviated and just need to be disambiguous. For example, the 'enable' command is often abbreviated as 'en' and 'configure terminal' is often abbreviated as 'config t'. All commands can be abbreviated.

2) The TAB key completes a work and checks it for correctness. For example, if you type 'en' and then press TAB it will spell out the word 'enable'.

3) The # (pound or hash sign) indicates you are in privileged mode. For example, if your prompt says Switch> and you try to type config t, you will receive and error because you are not in privileged mode. Typing the enable command will give you the Switch# prompt indicating privileged mode.

SET THE PASSWORDS

We suggest using a password of 'Livewire' or some other password that is easy to remember.

```
Switch>enable
Switch#configure terminal
Switch(config)#username AAAA password Livewire
Switch(config)#enable password Axia
```

SET THE HOSTNAME

We suggest setting the hostname of each switch to something descriptive. Suggestions might be AXIA CORE01, or AXIAEDGE01, etc. In this example we will use AXIA01.

To change the hostname from the default of 'Switch', type the following from the prompt;

```
Switch(config)#hostname AXIA01
AXIA01(config)#
```

SET THE IP ADDRESS ON VLAN 1

By default Livewire uses Vlan 1. It may be possible to use other Vlans however, support for that is outside of the scope of this document. Please contact your Cisco dealer or Cisco for support on using other Vlans.

A Word About IP Addressing
By default the IGMP Querier will be the lowest IP address switch in the subnet. For this reason, it is important to set your core switch lower than any other switch. Note, that this includes any Power Station, QOR, or xSwtich as well.

To set the IP address, type the following from the prompt (replace the IP address shown with one that is appropriate to your configuration):

```
AXIA01(config)#interface vlan1
```

```
AXIA01(config-if)#ip address 192.168.2.2 255.255.255.0
AXIA01(config-if)#end
```

Let's save our configuration:

```
AXIA01#wr
Building configuration...
[OK]
AXIA01#
```

CONFIGURE IGMP

To configure IGMP, type the following from the prompt:

```
AXIA01#config terminal
AXIA01(config)#ip igmp snooping querier
AXIA01(config)#ip igmp snooping vlan 1 immediate-leave
AXIA01(config)#ip igmp snooping querier max-response-time 25
AXIA01(config)#ip igmp snooping querier timer expiry 205
```

CONFIGURING GLOBAL QoS

```
AXIA01(config)#mls qos srr-queue output cos-map queue 1 threshold 1 6 7
AXIA01(config)#mls qos srr-queue output cos-map queue 2 threshold 1 5
AXIA01(config)#mls qos srr-queue output cos-map queue 3 threshold 1 0 1
AXIA01(config)#mls qos srr-queue output dscp-map queue 1 threshold 1 48
AXIA01(config)#mls qos srr-queue output dscp-map queue 2 threshold 1 46
AXIA01(config)#mls qos srr-queue output dscp-map queue 3 threshold 1 0
AXIA01(config)#mls qos map cos-dscp 0 8 16 24 32 46 48 56
AXIA01(config)#mls qos queue-set output 1 buffers 20 70 5 5
AXIA01(config)#mls qos
AXIA01(config)#end
AXIA01#wr
Building configuration...
[OK]
AXIA01#
```

CONFIGURING ACCESS PORTS

Access ports are used for connecting "end point" devices like Axia nodes, engines, computers, as well as any other devices that are not considered "switches" (see note in trunk port configuration section).

 To configure multiple access ports at once, type the following from the prompt:
*Note - Replace `GigabitEthernet1/0/1 - 22` with the ports that are appropriate to your configuration. In this example we are configuring ports 1 thru 24 as access ports.

```
AXIA01#config terminal
AXIA01(config)#interface range GigabitEthernet1/0/1 - 22
AXIA01(config-if-range)#switchport mode access
AXIA01(config-if-range)#switchport nonegotiate
AXIA01(config-if-range)#switchport voice vlan dot1p
AXIA01(config-if-range)#priority-queue out
AXIA01(config-if-range)#spanning-tree portfast
AXIA01(config-if-range)#mls qos trust dscp     *SEE NOTE BELOW*
AXIA01(config-if-range)#no ip igmp snooping tcn flood
AXIA01(config-if-range)#end
```

NOTE - for Engine, iPort, VX, or Omnia 8x versions **older** than 2011-06-15 use "mls qos trust cos"

Alternately, to configure a single access port, type the following from the prompt:
*Note - Replace `GigabitEthernet1/0/1` with the port that is appropriate to your configuration. In this example we are configuring port 1 as an Access port.

```
AXIA01#config terminal
AXIA01(config)#interface GigabitEthernet1/0/1
AXIA01(config-if)#switchport mode access
AXIA01(config-if)#switchport nonegotiate
AXIA01(config-if)#switchport voice vlan dot1p
AXIA01(config-if)#priority-queue out
AXIA01(config-if)#spanning-tree portfast
AXIA01(config-if)#mls qos trust dscp     *SEE NOTE BELOW*
AXIA01(config-if)#no ip igmp snooping tcn flood
AXIA01(config-if)#end
```

NOTE - for Engine, iPort, VX, or Omnia 8x versions **older** than 2011-06-15 use "mls qos trust cos"

CONFIGURING TRUNK PORTS

Trunk ports are used for connecting other switches or Axia devices with switches built in (like a PowerStation Main or QOR or xSwitch). Please note that when connecting to a PowerStation Main, only the GIG ports can be used and they must be properly configured for Trunk operation in the Ethernet Switch configuration of the Element Control Center. QOR based devices and xSwitch should only be connected to the GIG Ports.

 To configure multiple trunk ports at once, type the following from the prompt:
*Note - Replace `GigabitEthernet1/0/23 - 24` with the ports that are appropriate to your

configuration. In this example we are configuring ports 23 and 24 for Trunk.

```
AXIA01#config t
AXIA01(config)#interface range GigabitEthernet1/0/23 - 24
AXIA01(config-if-range)#switchport mode trunk
AXIA01(config-if-range)#priority-queue out
AXIA01(config-if-range)#mls qos trust dscp
AXIA01(config-if-range)#end
AXIA01#
```

Alternately, to configure a single trunk port, type the following from the prompt:
*Note - Replace `GigabitEthernet1/0/23` with the port that is appropriate to your configuration. In this example we are configuring port 23 for Trunk.

```
AXIA01#config t
AXIA01(config)#interface GigabitEthernet1/0/23 - 24
AXIA01(config-if)#switchport mode trunk
AXIA01(config-if)#priority-queue out
AXIA01(config-if)#mls qos trust dscp
AXIA01(config-if)#end
AXIA01#wr
Building configuration...
[OK]
AXIA01#
```

CONFIGURING TELNET ACCESS

To configure telnet access, type the following from the prompt:

```
AXIA01#configure terminal
AXIA01(config)#line vty 0 15
AXIA01(config-line)#password Livewire
AXIA01(config-line)#login
AXIA01(config-line)#end
AXIA01#wr
Building configuration...
[OK]
AXIA01#
```

CHECK YOUR CONFIGURATION

To check your switch configuration, type the following from the prompt:

```
AXIA01#show run
```