

Technologies Covered

1. Connecting to a POD
2. Basic Commands & Navigating with the Command Line
3. Saving Current & Clearing a Device's Configuration

The purpose of this lab is to familiarize you with the basic configuration of Cisco IOS devices. You will learn how to connect to a POD, save & erase configurations, basic commands, and general Cisco IOS techniques. Do not worry about not fully understanding how everything works for this lab. This lab is merely for introducing you to the devices.

Connecting to your pod

[SecureCRT scripts](#)

If you are using SecureCRT, simply run the connecting script for your pod. This will connect you to every device, and label the tabs appropriately. If you are using another telnet client, you need to connect to each device. The IP address to telnet to is 128.213.10.X where X is your pod number plus 100 (e.g. for Pod 1, X is 101, and you would connect to 128.213.10.101). Located at 128.213.10.X is a terminal access server that is connected to the console ports of each device. To connect to Router 1, telnet to 128.213.10.X port 2001. Router 2 is connected to port 2002, ect... Port numbers are show on the physical lab diagrams as red numbers in yellow boxes. After connecting to your devices, you may be presented with something similar to the following.

--- System Configuration Dialog ---

Would you like to enter the initial configuration dialog? [yes/no]: no

This is the default prompt that is presented anytime a Cisco IOS device boot with a default configuration. The initial configuration dialog is a fairly useless tool, and we will not be using it. It helps you set very basic configuration information in a very laborious way, and we will be teaching you how to do all of that using the command line. When prompted for this, type no. If asked if you would like to terminate auto install, simply press enter, accepting the default 'Yes.'

Basic Commands & Navigating with the Command Line

After connecting to your pod, you should be presented with a prompt looking something like this on your routers:

Router>

And this on your switches:

Switch>

The > means that you are in user mode, and the Router / Switch is the hostname of that device. User mode has limited privileges and cannot make any configuration changes. To go from user mode to privileged mode, use the enable command.

Router>enable

Router#

If there is a password set, it will prompt you for one.

Router>enable

Password:

Router#

Privileged mode is denoted by a pound sign (#) after the hostname. To go from privilege mode to user mode, type exit.

Router#exit

Router con0 is now available

Press RETURN to get started.

Router>

Privilege mode is where you can access all information about a device's status. You can issue various show commands from privileged mode. To see a list of show commands available to you, use the show ? command.

Router#show ?

aaa Show AAA values

aal2 Show commands for AAL2

access-expression List access expression

access-lists List access lists

accounting Accounting data for active sessions

adjacency Adjacent nodes

alarm-interface Display information about a specific Alarm

...

whoami Info on current tty line

wrr-queue WRR queue

x25 X.25 information

x28 X.28 rotary information

x29 X.29 information

xconnect xconnect information

xtagatm XTagATM information

zone Zone Information

zone-pair Zone pair information

There are hundreds of show commands available to you to verify, test, and diagnose your configuration. Some of these commands have multiple options as well. Use the show ip ? command to see a list of commands related to the IP configuration and status of the device.

Router#show ip ?

access-lists List IP access lists

accounting The active IP accounting database

admission Network Admission Control information

aliases IP alias table

arp IP ARP table

as-path-access-list List AS path access lists

auth-proxy Authentication Proxy information

...

ssh Information on SSH

tcp TCP/IP header-compression statistics

traffic IP protocol statistics

traffic-export Show ip traffic-export statistics

trigger-authentication Trigger-authentication host table

urlfilter IOS URL Filtering Information

virtual-reassembly IP Virtual Fragment Reassembly (VFR) information

vrf VPN Routing/Forwarding instance information

wccp WCCP information

We will only be covering a tiny subset of these commands in class. The question mark (?) is a very helpful tool on Cisco devices. It will give you a list of all commands that you can use in that mode. Its helpfulness cannot be emphasized enough. If you don't know, or can't remember the command to use for something, it is often helpful to use the question mark to see a list of available commands. It is also very helpful on Cisco certification exams when you can't remember exactly the syntax of a command. Another useful IOS technique is tabbing. It is a command completion method similar to tab completion in linux.

```
Router#sh
```

```
Router#show
```

Pressing tab after sh completes the command for you, this becomes very useful when dealing with longer commands. Some commands run differently on different IOS images or different routers. Most likely you won't run into these issues. However to see important information such as Model Number and IOS Version use the show version command.

```
Router#show version
```

```
Cisco IOS Software, 3700 Software (C3725-ADVENTERPRISEK9-M), Version 12.4(15)T9,  
RELEASE SOFTWARE (fc5)
```

```
Technical Support: http://www.cisco.com/techsupport
```

```
Copyright (c) 1986-2009 by Cisco Systems, Inc. echnical Support:  
http://www.cisco.com/techsupport
```

```
Compiled Tue 28-Apr-09 16:14 by prod_rel_team
```

```
...
```

```
Cisco 3725 (R7000) processor (revision 0.1) with 236544K/25600K bytes of memory.
```

This is a sample. Note the version and the equipment type you are using. All like devices should be running the same version of IOS in the lab. If you find that two devices of the same model are not running the same version of IOS, please tell your lab TA. Cisco IOS devices store configuration information in two different files. One is the currently running configuration, stored in the running-config file, and the other is the startup configuration, stored in the startup-config file. On Cisco devices, any configuration changes that are made are made directly to the running-config file, and take effect immediately. When a router boots, it copies the contents of the startup-config to the running-config file. To view the contents the running configuration, use the `show running-config`, or `show run` command.

```
Router#show run
```

```
Building configuration...
```

Current configuration : 879 bytes

!

version 12.4

service timestamps debug datetime msec

service timestamps log datetime msec

no service password-encryption

!

hostname Router

!

boot-start-marker

boot-end-marker

!

!

no aaa new-model

memory-size iomem 20

!

!

ip cef

!

!

!

!

voice-card 0

no dspfarm

!

!

!

!

interface FastEthernet0/0

no ip address

```
shutdown
duplex auto
speed auto
!
interface FastEthernet0/1
no ip address
shutdown
duplex auto
speed auto
!
interface Serial0/0/0
no ip address
shutdown
no fair-queue
!
interface Serial0/0/1
no ip address
shutdown
clock rate 2000000
!
!
ip http server
no ip http secure-server
!
!
!
control-plane
!
!
!
!
```

```
line con 0
line aux 0
line vty 0 4
login
!
scheduler allocate 20000 1000
!
End
```

Use the show startup-config or show start to see the boot config file. Now, most of the time you will be configuring these devices. To enter configuration mode, type the `configure terminal` command.

```
Router#configure terminal
```

```
Router(config)#
```

Here is a simple example of changing the name of your device:

```
Router(config)#hostname R1
```

```
R1(config)#
```

There is a great command that allows you to run show commands at any time during configuration. Show commands for instance, are only available in privileged mode. Once you enter configuration mode, show commands become unavailable. Pre-pending any show command with `do` will allow you to perform a show command within configuration mode. NOTE Not all devices support this command.**

```
R1(config)#do show run
```

```
Building configuration...
```

```
...
```

You will also need to know how to get out of configuration mode and its sub modes. There are three commands to accomplish this: exit, end and ctrl + z. The exit command will bring

you back one step every time, meanwhile the end and ctrl+z command will bring you back to privilege mode.

```
Router(config-if)#exit
```

```
Router(config)#
```

```
Router(config-if)#end
```

```
Router#
```

Saving and Clearing a Device's Configurations

To save your configuration on the device, use the `copy running-config startup-config` or `copy run start` command.

```
Router#copy run start
```

```
Destination filename [startup-config]?
```

```
Building configuration...
```

```
[OK]
```

```
Router#
```

This saves your configuration to the device for the next boot. Some times when you start work on a pod there will already be a configuration from a previous student. Before starting any lab, or pasting in any previous configuration, you want to always clear the device. For routers, there is just one file that you want to erase, the startup-config file. To do this, use the erase startup-config command.

```
Router#erase startup-config
```

```
Erasing the nvram filesystem will remove all configuration files! Continue? [confirm]
```

```
[OK]
```

```
Erase of nvram: complete
```

```
Router#
```

```
*Aug 27 17:54:14.341: %SYS-7-NV_BLOCK_INIT: Initialized the geometry of nvram
```

```
Router#reload
```

```
Proceed with reload? [confirm]
```

You may be able to clear the VLANs from you pod by just deleting the VLANs that have been configured previously. You can see the previously configured VLANs by performing a show

VLAN command. If there are more than a few, see below to wipe the VLAN.DAT file to clear out the VLANs.

Switch#show vlan

VLAN Name	Status	Ports

1 default	active	Gi0/1, Gi0/2, Gi0/3, Gi0/4 Gi0/5, Gi0/6, Gi0/7, Gi0/8 Gi0/9, Gi0/10, Gi0/11, Gi0/12 Gi0/13, Gi0/14, Gi0/15, Gi0/16 Gi0/17, Gi0/18, Gi0/19, Gi0/20 Gi0/21, Gi0/22, Gi0/23, Gi0/24
10 acct	active	
20 VLAN0020	active	
100 MGMT	active	
1002 fddi-default	act/unsup	
1003 token-ring-default	act/unsup	
1004 fddinet-default	act/unsup	
1005 trnet-default	act/unsup	

VLAN Type	SAID	MTU	Parent	RingNo	BridgeNo	Stp	BrdgMode	Trans1	Trans2

1	enet	100001	1500	-	-	-	-	0	0
10	enet	100010	1500	-	-	-	-	0	0
20	enet	100020	1500	-	-	-	-	0	0
100	enet	100100	1500	-	-	-	-	0	0
1002	fddi	101002	1500	-	-	-	-	0	0

--More--

Perform a Show Interfaces Trunk.

Switch#

Switch#show int trunk

Switch#

Any trunks that are currently established should also be set to default. Use the interface default command to accomplish this:

Switch>en

Switch#conf t

Enter configuration commands, one per line. End with CNTL/Z.

Switch(config)#default interface gigabitEthernet 0/13

Interface GigabitEthernet0/13 set to default configuration

Switch(config)#

If there are multiple VLANs, and you want to start from absolute scratch, for VLAN configurations, you need to delete the vlan configuration as well. To do this, use the `delete vlan.dat` command.

Switch#erase startup-config

Erasing the nvram filesystem will remove all configuration files! Continue? [confirm]

[OK]

Erase of nvram: complete

Switch#

1w4d: %SYS-7-NV_BLOCK_INIT: Initialized the geometry of nvram

Switch#delete vlan.dat

Delete filename [vlan.dat]?

Delete flash:vlan.dat? [confirm]

Switch#reload

Proceed with reload? [confirm]

The devices are now cleared, and ready for you to begin the lab your first lab.