Cisco for Dummies Cheat Sheet

How to Configure a Cisco Network

Like all networks, a Cisco network needs to be properly configured. To do so, you need to know the configuration modes to use when configuring your network. You also should know how to configure an interface, configure a switch management interface, and configure an interface to use DHCP for your Cisco network.

Configuration modes for Cisco networking

When moving around in the Cisco IOS, you will see many prompts. These prompts change as you move from one configuration mode to another. Here is a summary of the major configuration modes:

User EXEC mode:

```
When you connect to a Cisco device the default configuration mode is user exec mode. With user exec
mode you can view the settings on the device but not make any changes. You know you are in User EXEC
mode because the IOS prompt displays a “>”.
```

Privileged EXEC mode:

```
In order to make changes to the device you must navigate to Privileged EXEC mode where you may be
required to input a password. Privileged EXEC mode displays with a “#” in the prompt.
```

Global Configuration mode:

```
Global Configuration mode is where you go to make global changes to the router such as the hostname.
To navigate to Global Configuration mode from Privileged EXEC mode you type “configure terminal” or
“conf t” where you will be placed at the “(config)#” prompt.
```

Sub Prompts:

```
There are a number of different sub prompts from Global Configuration mode you can navigate to such
as the interface prompts to modify settings on a specific interface, or the line prompts to modify
the different ports on the device.
```

Configure an interface for Cisco networking

When working with routers in particular, but also when dealing the management interface on switches, you will often need to configure network interfaces which will either match physical interface ports or virtual interfaces in the form of a virtual LAN (VLAN) interface (when dealing with switches).

For your router interfaces the following example will set speed, duplex and IP configuration information for the interface FastEthernet 0/0 (notice the interface reference as slot/port). In the case of the router, the interface is enabled using the no shutdown command in the final step; interfaces on switches are enabled by default.

```
Router1>enable
Router1#configure terminal
Router1(config)#interface FastEthernet0/0
Router1(config-if)#description Private LAN
Router1(config-if)#speed 100
Router1(config-if)#duplex full
Router1(config-if)#ip address 192.168.1.1 255.255.255.0
Router1(config-if)#no shutdown
```

Configure a switch management interface for Cisco networking

For your switches, to enable an IP address on your management interface, you will use something similar to this example. In this example, management is being performed over VLAN 1 – the default VLAN.

```
Switch1>enable
Switch1#configure terminal
Switch1#interface VLAN 1
Switch1(config-if)#ip address 192.168.1.241 255.255.255.0
```

Configure an interface to use DHCP for Cisco networking

If you want to configure either a router or switch to retrieve its IP configuration information from a network Dynamic Host Configuration Protocol (DHCP) server, then you can commands like the following example.

```
Router1>enable
Router1#configure terminal
Router1(config)#interface FastEthernet0/0
Router1(config-if)#ip dhcp
```

Creating a VLAN for Cisco Networking

When working with your Cisco network, you may want to separate users into different broadcast domains for security or traffic reduction. You can do this by implementing VLANs. The following example will create VLAN (VLAN2) and place the ports on a switch (from 1-12) into VLAN2.

```
Switch1>enable
Switch1#configure terminal
Switch1(config)#interface vlan 2
Switch1(config-if)#description Finance VLAN
Switch1(config-if)#exit
Switch1(config)#interface range FastEthernet 0/1 , FastEthernet 0/12
Switch1(config-if-range)#switchport mode access
Switch1(config-if-range)#switchport access vlan 2
```

If you are connecting two switches together, then you will want to allow all configured VLANs to pass between the two switches. This is accomplished by implementing a trunk port. To configure port 24 on your switch to be a trunk port, you will use the following code:

```
Switch1>enable
Switch1#configure terminal
Switch1(config)#interface FastEthernet 0/24
Switch1(config-if-range)#switchport mode trunk
```

Using EtherChannel for Cisco Networking

Don’t be afraid to use EtherChannel on your Cisco network. EtherChannel allows you to take up to eight network ports on your switch and treat them as a single larger link. This can be used to connect servers with multiple network cards that are bonded (or teamed) to a switch, or to connect multiple switches together. There are two main negotiation protocols, Port Aggregation Protocol (PAgP) which is a proprietary Cisco protocol and Link Aggregation Control Protocol (LACP) which is an open standards protocol.

To set EtherChannel to use with of the protocols you will configure it to support one of the following modes.

- auto: Sets the interface to respond to PAgP negotiation packets, but the interface will start negotiations on its own.

- desireable: Sets the interface to actively attempt to negotiate a PAgP connection.
- on: Forces the connection to bring all links up without using a protocol to negotiate connections. This mode can only connect to another device that is also set to on. When using this mode, the switch does not negotiate the link using either PAgP or LACP.
- active: Sets the interface to actively attempt to negotiate connections with other LACP devices.
- passive: Sets the interface to respond to LACP data if it receives negotiation requests from other systems.

The following example will configure EtherChannel to use group ports 11 and 12 on the switch together using PAgP as the protocol. The same type of command would be used on the switch to which Switch1 is connected.

```
Switch1> enable
Switch1# configure terminal
Switch1(config)# interface range FastEthernet0/11 -12
Switch1(config-if-range)# switchport mode access
Switch1(config-if-range)# switchport access vlan 10
Switch1(config-if-range)# channel-group 5 mode desirable
```

Working with Spanning Tree Protocol for Cisco Networking

Spanning Tree Protocol (STP) enables you to create redundant loops on your Cisco network for fault tolerance, and prevents inadvertent loops that may be created on your network from bringing the network to its knees.

The following code will enable the Cisco proprietary Rapid Per VLAN Spanning Tree Protocol (PVST) over the open standard of Multiple Spanning Tree Protocol (MSTP). In addition to configuring STP on the switch, you will also configure port 2 on the switch for portfast, which allows the port to immediately transition to forwarding mode.

```
Switch1> enable
Switch1# configure terminal
Switch1(config)#spanning-tree mode rapid-pvst
Switch1(config)#interface FastEthernet 0/2
Switch1(config-if)#spanning-tree portfast
%Warning: portfast should only be enabled on ports connected to a single
 host. Connecting hubs, concentrators, switches, bridges, etc... to this
 interface when portfast is enabled, can cause temporary bridging loops.
 Use with CAUTION
%Portfast will be configured in 10 interfaces due to the range command
 but will only have effect when the interfaces are in a non-trunking mode.
```

Managing Static Routing for Cisco Networking

When working with your routers on your Cisco network, it’s very likely that you’ll want to have your routers route data. The first step in having your router pass data from one interface to another interface is to enable routing; just use these commands.

```
Router1>enable
Router1#configure terminal
Router1(config)#ip routing
```

Whether or not you choose to use a dynamic routing protocol, you may add static routes to your router. The following will add a static route to Router1 to send data to the 192.168.5.0/24 network using the router with the IP address of 192.168.3.2.

```
Router1>enable
Router1#configure terminal
Router1(config)#ip routing
Router1(config)#ip route 192.168.5.0 255.255.255.0 192.168.3.2
```

Managing routing information protocol for Cisco networking

Routing Information Protocol (RIP) is widely used, with version 2 allowing you to use Variable Length Subnet Masks (VLSM) across your network. The following code will enable routing, enable RIP, set RIP to version 2, disable route summarization, defines the distributed network from this router as 192.168.5.0/24, and rather than broadcasting routes, it will send RIP data directly to 192.168.1.1.

```
Router2>enable
Router2#configure terminal
Router2(config)#ip routing
Router2(config)#router rip
Router2(config-router)#version 2
Router2(config-router)#no auto-summary
Router1(config-router)#network 192.168.5.0
Router2(config-router)#neighbor 192.168.1.1
```

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