CHAPTER 5

Configuring Layer 2 Interfaces

The Cisco MWR 2941 has an onboard layer 2 Gigabit Ethernet switch and supports HWICs with layer 2 interfaces.To configure the layer 2 interfaces on the Cisco MWR 2941, complete the following tasks:

Configuring a Range of Interfaces

The **interface range** command allows you to configure multiple interfaces at once. Follow these steps to configure an interface range.

	Command	Purpose

Step 1	**enable**
	
	Example:
	`Router> enable`
	`Router#`
		Enter enable mode.

Step 2	**configure terminal**
	
	Example:
	`Router# configure terminal`
	`Router(config)#`
		Enter configuration mode.

Step 3	**interface range** *interface slot/port - port* **Example:** `Router(config)# interface range GigabitEthernet 0/1 - 3`	Use the **interface-range** command to select a range of interfaces to configure. You can specify a range that includes both VLANs and physical interfaces.

Defining a Range Macro

A range macro allows you to create a name that defines a range of interfaces on the Cisco MWR 2941. Follow these steps to configure an interface range macro.

	Command	Purpose

Step 1	**enable**
	
	Example:
	`Router> enable`
	`Router#`
		Enter enable mode.

Step 2	**configure terminal**
	
	Example:
	`Router# configure terminal`
	`Router(config)#`
		Enter configuration mode.

Step 3	**define interface-range macro** *interface slot/port - port* **Example:** `Router(config)# define interface-range first_three GigabitEthernet0/1 - 2`	Use the **define interface range** command to create the macro.

Configuring Layer 2 Optional Interface Features

Interface Speed and Duplex Configuration Guidelines

Use the following guidelines when you configure an interface speed and duplex mode:

- Speed and duplex commands apply only to FastEthernet interfaces. They do not apply to the onboard Gigabit Ethernet ports.
- If both ends of the line support autonegotiation, use the default autonegotiation settings.
- If one interface supports auto negotiation and the other end does not, configure duplex and speed on both interfaces; do not use the auto setting on the supported side.
- Both ends of the line need to be configured to the same setting; for example, both hard-set or both auto-negotiate. Mismatched settings are not supported.

Caution Changing the interface speed and duplex mode configuration might shut down and re-enable the interface during the reconfiguration.

Configuring the Interface Speed

Follow these steps to configure the speed of a layer 2 interface.

	Command	Purpose

Step 1	**enable**
	
	Example:
	`Router> enable`
	`Router#`
		Enter enable mode.

Step 2	**configure terminal**
	
	Example:
	`Router# configure terminal`
	`Router(config)#`
		Enter configuration mode.

Step 3	**interface** *interface slot/port* **Example:** `Router(config)# interface fastethernet 1/0`	Enter configuration mode for the interface that you want to modify.
Step 4	**speed [10 | 100 | auto]** **Example:** `Router(config-if)# speed auto`	Specify the interface speed. You can set an interface to 10 Mbps, 100 Mbps, or autonegotiate.

Configuring the Interface Duplex Mode

Follow these steps below to set the duplex mode of a layer 2 interface.

	Command	Purpose

Step 1	**enable**
	
	Example:
	`Router> enable`
	`Router#`
		Enter enable mode.

Step 2	**configure terminal**
	
	Example:
	`Router# configure terminal`
	`Router(config)#`
		Enter configuration mode.

	Command	Purpose
Step 3	**interface** *interface slot/port* **Example:** `Router(config)# interface fastethernet 1/0`	Enter configuration for the interface that you want to modify.
Step 4	**duplex [auto | full | half]** **Example:** `Router(config-if)# duplex auto`	Use the **duplex** command to set the interface to send traffic at full duplex, half duplex, or to autonegotiate its duplex setting.

Note If you set the port speed to auto on a 10/100-Mbps Ethernet interface, the interface auto-negotiates the speed and duplex settings. You cannot change the duplex mode of interfaces set to auto-negotiation.

Configuring a Description for an Interface

You can add a description of an interface to help you remember its function. The description appears in the output of the following commands: **show configuration**, **show running-config**, and **show interfaces**.

	Command	Purpose

Step 1	**enable**
	
	Example:
	`Router> enable`
	`Router#`
		Enter enable mode.

Step 2	**configure terminal**
	
	Example:
	`Router# configure terminal`
	`Router(config)#`
		Enter configuration mode.

Step 3	**interface** *interface slot/port* **Example:** `Router(config)# interface fastethernet 1/0`	Enter configuration for the interface that you want to modify.
Step 4	**description** *description* **Example:** `Router(config-if)# description newinterface`	Use the **description** command to assign a description to the interface.

Configuring a Layer 2 Interface as a Layer 2 Trunk

Follow these steps to configure an interface as a Layer 2 trunk.

	Command	Purpose

Step 1	**enable**
	
	Example:
	`Router> enable`
	`Router#`
		Enter enable mode.

Step 2	**configure terminal**
	
	Example:
	`Router# configure terminal`
	`Router(config)#`
		Enter configuration mode.

Step 3	**interface** *interface slot/port* **Example:** `Router(config)# interface fastethernet 1/0`	Enter configuration for the interface that you want to modify.
Step 4	**shutdown** **Example:** `Router(config-if)# shutdown`	Shut down the interface.
Step 5	**switchport mode trunk** **Example:** `Router(config-if)# switchport mode trunk`	Use the **switchport mode trunk** command to configure the interface as a Layer 2 trunk. **Note** The encapsulation is always set to dot1q.
Step 6	**switchport trunk native vlan** *vlan* **Example:** `Router(config-if)# switchport trunk native vlan 1`	If you are configuring an 802.1Q trunk, specify the native VLAN. Otherwise, proceed to the Step 7.
Step 7	**switchport trunk allowed vlan add** *vlan* **Example:** `Router(config-if)# switchport trunk allowed vlan add vlan1, vlan2, vlan3`	Use the **switchport trunk allowed vlan** command to configure the list of VLANs allowed on the trunk. The **add**, **except**, **none**, or **remove** keywords specify the action to take for the specified VLANs. **Note** All VLANs are allowed by default. You cannot remove any of the default VLANs from a trunk.

	Command	Purpose
Step 8	**no shutdown** **Example:** `Router(config-if)# no shutdown`	Activate the interface.

Step 9	**end**
	
	Example:
	`Router(config-if)# end`
	`Router#`
		Exit configuration mode.
		You can use the **show running-configuration** command to verify the layer 2 trunk configuration.

Configuring a Layer 2 Interface as Layer 2 Access

Follow these steps to configure a Fast Ethernet interface as Layer 2 access.

	Command	Purpose

Step 1	**enable**
	
	Example:
	`Router> enable`
	`Router#`
		Enter enable mode.

Step 2	**configure terminal**
	
	Example:
	`Router# configure terminal`
	`Router(config)#`
		Enter configuration mode.

Step 3	**interface** *interface slot/port* **Example:** `Router(config)# interface fastethernet 1/0`	Enter configuration for the interface that you want to modify.
Step 4	**shutdown** **Example:** `Router(config-if)# shutdown`	Shut down the interface.
Step 5	**switchport mode access** **Example:** `Router(config-if)# switchport mode access`	Use the **switchport mode access** command to configure the interface as a layer 2 access.
Step 6	**switchport access vlan** *vlan* **Example:** `Router(config-if)# switchport access vlan 1`	Use the **switchport access vlan** command to specify an access VLAN for access ports.

	Command	Purpose
Step 7	**no shutdown** **Example:** `Router(config-if)# no shutdown`	Activate the interface.

Step 8	**end**
	
	Example:
	`Router(config-if)# end`
	`Router#`
		Exit configuration mode.

Note You can use the **show running-config interface** command and the **show interfaces** command to verify layer 2 access configuration.