3

Access the Switch Module from the Host Router

This chapter describes how to access the CGR 2010 ESM from the host CGR 2010 router, and contains the following topics:

Introduction

After the CGR 2010 ESM is installed on the router, you see a new Gigabit Ethernet interface *0/x/0* (where *x* is the slot number) recognized by the IOS. The output shown in Table 3-1 is taken after two switches are installed on the router:

```
Router1# show ip interface brief
```

Table 3-1   Output for Gigabit Ethernet Interface Recognized on the Switch Module

Interface	IP Address	OK?	Method	Status	Protocol
GigabitEthernet0/0	60.60.60.1	YES	NVRAM	down	down
GigabitEthernet0/1	80.80.80.1	YES	manual	up	up
GigabitEthernet0/0/0	100.0.0.1	YES	manual	up	up
GigabitEthernet0/2/0	200.0.0.1	YES	NVRAM	up	up

The **service-module gigabitethernet 0/x/0 session** command is the privileged EXEC mode command used to console into the switch module from the host router.

You need to console into the switch module to configure it. To console into the switch module, you must configure an IP address on the internal backplane Gigabit Ethernet interface, that is, GE0/0/0 or GE0/2/0, connected to the switch module.

- If you try to console into the switch module without assigning an IP address, you receive the following error message:

```
Router# service-module gigabitethernet 0/2/0 session
IP address needs to be configured on interface GigabitEthernet0/2/0
```

Accessing the Switch Module from the Host Router

This section covers the following topics:

Connected Grid Router and Ethernet Switch Module Relationship

The following diagram shows the relationship between the Connected Grid Router (CGR) and its GRWIC Ethernet Switch Module (ESM) and how to log into the CGR and into the ESM.

Figure 3-1   Connected Grid Router—Ethernet Switch Module Relationship
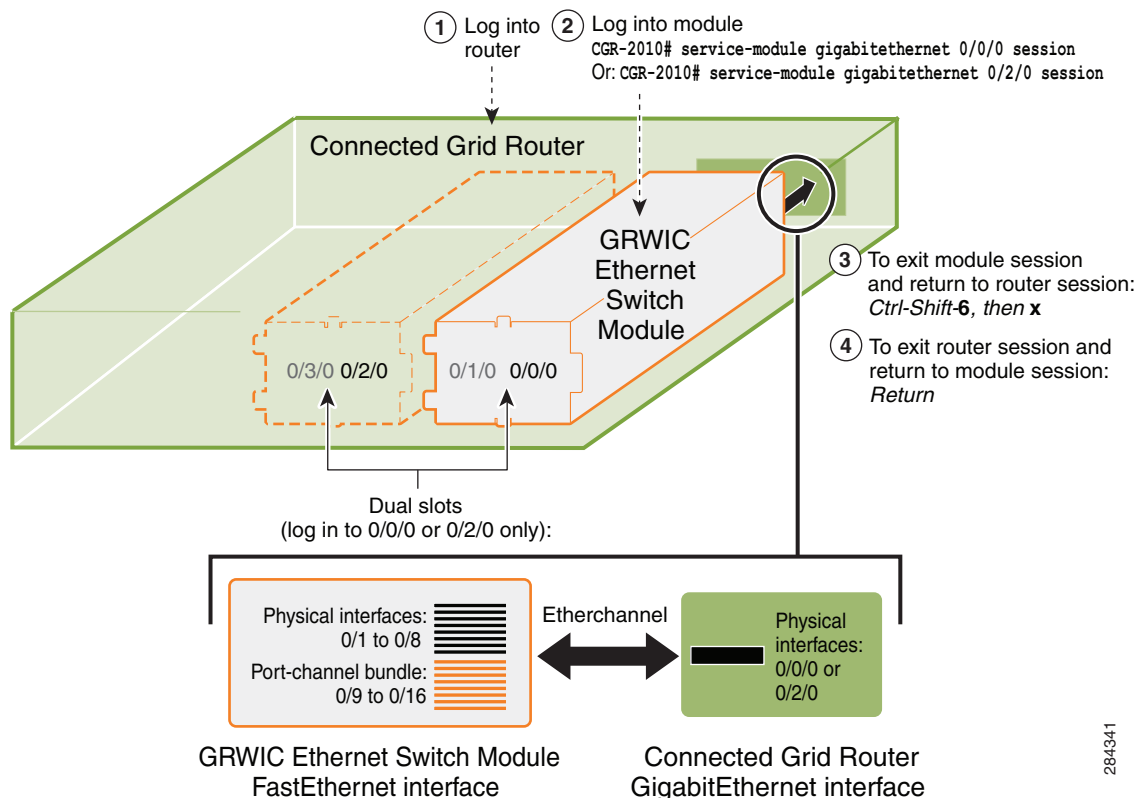
Example GRWICs

The following are example GRWICs:

Table 3-2   GRWIC Examples

GRWIC Type	Description
Copper model (Example: GRWIC-D-ES-2S-8PC)	Minimum-required OS version: 12.2(58)EY Interfaces (10 ports): • 8x 10/100 Fast Ethernet ports, • 1x dual-purpose port – (10/100/1000 Base-T copper RJ-45 and 100/1000 SFP fiber), • 1x 100/1000 SFP fiber-only port
SFP Fiber model (Example: GRWIC-D-ES-6S)	Minimum-required OS version: 12.2(58)EY Interfaces (6 ports): • 4x 100BASE-FX SFP-module ports, • 1x dual-purpose port (1x 10/100/1000Base-T copper RJ-45 port and 1x 100/1000 SFP fiber module port) (used to log into module) • 1x 100/1000 SFP fiber module port (used to log into module) • No physical console connection

Logging into a Module

Step 1   Configure the IP address of module.

```
CGR-2010(config)# interface g0/0/0
CGR-2010(config-if)# ip address 10.0.0.1 255.255.255.0
```

Step 2   Session into the module:

```
CGR-2010# service-module gigabitethernet 0/0/0 session
GRWIC-8PC>
```

Toggle Between Module Session and Router Session

After you have sessioned in to the module, you can toggle from the module session and to the router session by using the key combination of Cntrl-Shift-6, then x:

```
GRWIC-8PC>(Hit key combination Cntrl-Shift-6, then x.)
CGR-2010#
```

Similarly, you can toggle back to the module session by using the Return key:

```
CGR-2010# (Hit Return key.)
GRWIC-8PC>
```

To View OS Version on the Module

To view the OS version on the module, do the following:

```
GRWIC-8PC> enable
GRWIC-8PC# service-module gigabitethernet 0/0/0 status
```

To View OS Image Name of the Module

To view the name of the OS image on the module, do the following:

```
GRWIC-8PC> show version
```

Example image name: **grwicdes-ipservicesk9-mz.122-58.EY**

Note   An IP services image provides Layer 3 services.

To View Interfaces on the Module

```
GRWIC-8PC> enable
GRWIC-8PC# show ip interface brief
```

Or:

```
GRWIC-8PC# show running configuration
```

Either command displays a list of the available physical interfaces and the virtual bundled interfaces.

Bundled Interfaces

Cisco IOS Release 12.3(13a)BC first introduced support for virtual interface bundling on the Cisco uBR10012 universal broadband router and the Cisco uBR10-MC5X20S/U/H Broadband Processing Engine (BPE), and the Cisco uBR7246VXR router. In prior Cisco IOS releases, cable interface bundling was limited to physical interfaces as master or slave interfaces, and **show** commands did not supply bundle information.

Why use bundled interfaces? Virtual interface bundling introduces these advantages:

- Uses bundle interface and bundle members instead of master and slave interfaces.
- Is virtually defined, as with IP loopback addresses, for example.
- Supports bundle information in multiple **show** commands.
- Prevents loss of connectivity on physical interfaces should there be a failure, problematic online insertion and removal (OIR) of one line card in the bundle, or erroneous removal of configuration on the master interface.
- Supports and governs the following Layer 3 settings for the bundle member interfaces:
  - IP address
  - IP helper-address
  - Source-verify and lease-timer functions

    – Cable dhcp-giaddr (The giaddr field is set to the IP address of the DHCP client.)

    – Protocol Independent Multicast (PIM)

    – Access control lists (ACLs)

    – Sub-interfaces

To Access the CGR 2010 ESM

To access the CGR 2010 ESM from the host router:

Step		Command
Step 1	Log into the Cisco CGR 2010 router in privileged EXEC mode. Enter your password if prompted.	`Router> `**`enable`**
Step 2	Display the running interface of the router, which should have a Gigabit Ethernet interface representing the switch module.	`Router# `**`show running interface gigabitethernet0/`**`<slot>`**`/0`**
Step 3	Enter global configuration mode.	`Router# `**`configure terminal`**
Step 4	Enter interface configuration mode, and specifies the Gigabit interface used to access the switch module.	`Router(config)# `**`interface gigabitethernet 0/`**`<slot>`**`/0`**
Step 5	Configures the IP address and subnet mask for the interface.	`Router(config-if)# `**`ip address 20.0.0.1 255.255.255.0`**
Step 6	Enable the switch module port.	`Router(config-if)# `**`no shutdown`**
Step 7	Return to privileged EXEC mode.	`Router(config-if)# `**`end`**
Step 8	Establishes a session from the router over the internal backplane Gigabit Ethernet interface to the switch module.	**`Router# service-module`** `<interface>`**`<slot/subslot/port> session`** **Example:** `Router> `**`service-module gigabitethernet0/`**`<slot>`**`/0 session`**
Step 9	After you execute the **service-module** *<interface>* **session** command, the switch module prompt appears and you have full access to the switch module.	`Switch#`

For information about configuring the switch module for Telnet access, see the "Setting a Telnet Password for a Terminal Line" section on page 7-6. The switch module supports up to 16 simultaneous Telnet sessions. Changes made by one Telnet user are reflected in all other Telnet sessions.

For information about configuring the switch module for SSH, see the "Configuring the Switch Module for Secure Shell" section on page 7-38. The switch module supports up to five simultaneous secure SSH sessions.

After you connect through the console port, through a Telnet session or through an SSH session, the user EXEC prompt appears on the management station.

Disconnecting from the Switch Module and Returning to the Host Router

To disconnect from the CGR 2010 ESM and return to the host Cisco CGR 2010 router:

	Step	Command
Step 1	Enter privileged EXEC mode on the switch module.	`Switch> enable`
Step 2	Display the brief version of the switch module configuration information.	`Switch# show ip interface brief`
Step 3	Press **<Ctrl+Shift+6>**, then press **x**. This sequence returns you to the router console while keeping the console session to the switch module intact and then exits the console session to the switch module.	`Switch# <Ctrl+Shift+6> x`
Step 4	Terminate the console session to the switch module.	`Router# disconnect`
Step 5	If not disconnected, press **Enter** to confirm the disconnect.	`Router# <Enter>`
Step 6	Display the status of all the vital components of the switch module. For example output, see Table 3-3 below.	`Router# service-module gigabitethernet 0/<slot>/0 status`

Service-Module Command Syntax

This section summarizes the syntax and command options for the **service-module** command.

Table 3-3   Service Module Command Syntax

Command	Function
`Router# service-module gigabitethernet0/<slot>/0 reload`	**reload**: Performs a graceful halt and reload of the switch module operating system. The configuration of the switch module is saved before reload.
Router# **service-module gigabitethernet0/<slot>/0 reload**	**reset**: Performs a hardware reset of the switch module. ⚠ **Caution** Use reset only to recover from shutdown or a failed state.

Table 3-3   Service Module Command Syntax (continued)

Command	Function
	⚠️ **Warning May lose data on the NVRAM, nonvolatile file system or an unsaved configuration.**
Router# **service-module gigabitethernet0/**<*slot*>**/0 session**	**session**: Establishes a session from the router over the internal backplane Gigabit Ethernet interface to the switch module.