Configuring Backup Data Lines and Remote Management

First Published: May 27, 2010, OL-20356-01
Last Updated: October 25, 2017

The Cisco Connected Grid Router 2010 supports remote management and backup data connectivity. The following sections describe how to configure backup data lines and remote management:

Configuring Backup Interfaces

This section describes how to configure back up interfaces for failover redundancy when the network goes down.

Configuring Gigabit Ethernet Failover Media

Cisco CGR 2010 routers have an SFP-GE port that supports either copper or fiber connections. Media can be configured for failover redundancy when the network goes down. To assign primary and secondary failover media on the SFP-GE port, perform these steps, beginning in EXEC mode.

Americas Headquarters:
Cisco Systems, Inc., 170 West Tasman Drive, San Jose, CA 95134-1706 USA

	Command	Purpose

Step 1	**configure terminal**
	
	Example:
	`Router> enable`
	`Router# configure terminal`
	`Router(config)#`
		Enters global configuration mode, when using the console port.
		
		Use the following to connect to the router with a remote terminal:
		`telnet` *`router name or address`*
		`Login:` *`login id`*
		`Password: *********`
		`Router> enable`

Step 2	**hostname** *name*
	
	Example:
	`Router(config)# hostname Router`
	`Router(config)#`
		Specifies the name for the router.

Step 3	**enable secret** *password*
	
	Example:
	`Router(config)# enable secret cr1ny5ho`
	`Router(config)#`
		Specifies an encrypted password to prevent unauthorized access to the router.

Step 4	**interface gigabitethernet** *slot/port*
	
	Example:
	`Router(config)# interface gigabitethernet 0/1`
	`Router(config-if)#`
		Enters interface configuration mode.

Step 5	**media-type sfp**
	
	Example:
	`Router(config-if)# media-type sfp`
	`Router(config-if)#`
	
	Example:
	`Router(config-if)# media-type rj45`
	`Router(config-if)#`
		Designates SFP port as the primary media.
		
		or
		
		Designates RJ45 as the primary media.

Step 6	**media-type sfp auto-fail-over**
	
	Example:
	`Router(config-if)# media-type RJ45`
	`auto-fail-over`
	`Router(config-if)#`
	
	Example:
	`Router(config-if)# media-type sfp`
	`auto-fail-over`
	`Router(config-if)#`
		System will automatically failover from RJ45 to SFP when it goes down, reloads, and is unable to bring up primary media. Port is configured with RJ45 as the primary media by default.
		
		or
		
		Configure the port with SFP as the primary media for automatic failover from SFP to RJ45 when the system goes down, reloads, and is unable to bring up primary media.

Step 7	**end**	Exits to global configuration mode.

Configuring Dial Backup and Remote Management Through the Console Port or Auxiliary Port

In dial backup, the switched circuit is used to provide backup service for another type of circuit, such as point-to-point or packet switching. The router is configured so that when a failure is detected on the primary circuit, the dial backup line is initiated. The dial backup line then supports the WAN connection until the primary circuit is restored. When this occurs, the dial backup connection is terminated.

A modem enables data to be transmitted over voice-grade telephone lines. At the source, digital signals are converted to a form suitable for transmission over analog communication facilities. At the destination, these analog signals are returned to their digital form. It is a simple modem-to-modem connection through a WAN.

When customer premises equipment, such as the Cisco Connected Grid Router 2010, are connected to an ISP, an IP address is dynamically assigned to the router, or the IP address is assigned by the router peer through the centrally managed function. The dial backup feature can be added to provide a failover route in case the primary line fails. The Cisco CGR 2010 can use the auxiliary port for dial backup and remote management.

The main WAN link of the Cisco CGR 2010 is the primary connection to the Internet service provider. A modem can serve as the dial backup that serves as a failover link for the Cisco CGR 2010 when the primary connection goes down. For remote management, the PC serves as dial-in access to allow changes or updates to Cisco IOS configurations.

To configure dial backup and remote management for the Cisco Connected Grid Router 2010, complete the following steps, beginning in global configuration mode:

SUMMARY STEPS

1. **ip name-server** *server-address*
2. **ip dhcp pool** *name*
3. **exit**
4. **chat-script** *script-name expect-send*
5. **interface** *type number*
6. **exit**
7. **interface** *type number*
8. **dialer watch-group** *group-number*
9. **exit**
10. **ip nat inside source** {**list** *access-list-number*} {**interface** *type number* | **pool** *name*} [**overload**]
11. **ip route** *prefix mask* {*ip-address* | *interface-type interface-number* [*ip-address*]}
12. **access-list** *access-list-number* {**deny** | **permit**} *source* [*source-wildcard*]
13. **dialerwatch-list** *group-number* {**ip** *ip-address address-mask* | **delay route-check initial** *seconds*}
14. **line** [**aux** | **console** | **tty** | **vty**] *line-number* [*ending-line-number*]
15. **modem enable**
16. **exit**
17. **line** [**aux** | **console** | **tty** | **vty**] *line-number* [*ending-line-number*]
18. **flowcontrol** {**none** | **software** [**lock**] [**in** | **out**] | **hardware** [**in** | **out**]}

DETAILED STEPS

	Command	Purpose
Step 1	**ip name-server** *server-address* **Example:** `Router(config)# ip name-server 192.168.28.12`	Enters your ISP DNS IP address. **Tip** You may add multiple server addresses if available.
Step 2	**ip dhcp pool** *name* **Example:** `Router(config)# ip dhcp pool 1`	Creates a DHCP address pool on the router and enters DHCP pool configuration mode. The *name* argument can be a string or an integer. Configure the DHCP address pool. For sample commands that you can use in DHCP pool configuration mode, see the "Example" section on page 52.
Step 3	**exit** **Example:** `Router(config-dhcp)# exit`	Exits DHCP pool configuration mode and enters global configuration mode.
Step 4	**chat-script** *script-name expect-send* **Example:** `Router(config)# chat-script Dialout ABORT ERROR ABORT BUSY "" "AT" OK "ATDT 5555102 T" TIMEOUT 45 CONNECT \c`	Configures a chat script for use in Dial-on-Demand Routing to give commands for dialing a modem and for logging in to remote systems. The defined script is used to place a call over a modem connected to the public switched telephone network.
Step 5	**interface** *type number* **Example:** `Router(config)# interface Async 1`	Creates asynchronous interface and enters configuration mode for the asynchronous interface. Configures the asynchronous interface. For sample commands that you can use in asynchronous interface configuration mode, see the "Example" section on page 52.
Step 6	**exit** **Example:** `Router(config-if)# exit`	Exits interface configuration mode and enters global configuration mode.
Step 7	**interface** *type number* **Example:** `Router(config)# interface Dialer 3`	Creates dialer interface and enters configuration mode for the dialer interface.
Step 8	**dialer watch-group** *group-number* **Example:** `Router(config-if)# dialer watch-group 1`	Specifies the group number for the dialer watch list.

	Command	Purpose
Step 9	**exit** **Example:** `Router(config-if)# exit`	Exits interface configuration mode and enters global configuration mode.
Step 10	**ip nat inside source** {**list** *access-list-number*} {**interface** *type number* | **pool** *name*} [**overload**] **Example:** `Router(config)# ip nat inside source list 101 interface Dialer 3 overload`	Enables dynamic translation of addresses on the inside interface.
Step 11	**ip route** *prefix mask* {*ip-address* | *interface-type interface-number* [*ip-address*]} **Example:** `Router(config)# ip route 0.0.0.0 0.0.0.0 22.0.0.2#`	Sets the IP route to point to the dialer interface as a default gateway.
Step 12	**access-list** *access-list-number* {**deny** | **permit**} *source* [*source-wildcard*] **Example:** `Router(config)# access-list 1 permit 192.168.0.0 0.0.255.255 any`	Defines an extended access list that indicates which addresses need translation.
Step 13	**dialerwatch-list** *group-number* {**ip** *ip-address address-mask* | **delay route-check initial** *seconds*} **Example:** `Router(config)# dialer watch-list 1 ip 22.0.0.2 255.255.255.255`	Evaluates the status of the primary link, based on the existence of routes to the peer. The address 22.0.0.2 is the peer IP address of the ISP.
Step 14	**line** [**aux** | **console** | **tty** | **vty**] *line-number* [*ending-line-number*] **Example:** `Router(config)# line console 0#`	Enters configuration mode for the line interface.
Step 15	**modem enable** **Example:** `Router(config-line)# modem enable`	Switches the port from console port to auxiliary port function.
Step 16	**exit** **Example:** `Router(config-line)# exit`	Exits line configuration mode and returns to global configuration mode.

	Command	Purpose
Step 17	**line** [**aux** | **console** | **tty** | **vty**] *line-number* [*ending-line-number*] **Example:** `Router(config)# line aux 0`	Enters configuration mode for the auxiliary interface.
Step 18	**flowcontrol** {**none** | **software** [**lock**] [**in** | **out**] | **hardware** [**in** | **out**]} **Example:** `Router(config-line)# flowcontrol hardware`	Enables hardware signal flow control.

Example

The following configuration example specifies an IP address for the T1 interface through PPP and IP Control Protocol (IPCP) address negotiation and specifies dial backup over the console port.

```
!
ip name-server 192.168.28.12
ip dhcp excluded-address 192.168.1.1
!
ip dhcp pool 1
 import all
 network 192.168.1.0 255.255.255.0
 default-router 192.168.1.1
!
! Need to use your own correct ISP phone number.
modemcap entry MY-USER_MODEM:MSC=&F1S0=1
chat-script Dialout ABORT ERROR ABORT BUSY "" "AT" OK "ATDT 5555102\T"
TIMEOUT 45 CONNECT \c
!
!
!
!
interface vlan 1
 ip address 192.168.1.1 255.255.255.0
 ip nat inside
 ip tcp adjust-mss 1452
 hold-queue 100 out
!
! Dial backup and remote management physical interface.
interface Async1
 no ip address
 encapsulation ppp
 dialer in-band
 dialer pool-member 3
 async default routing
 async dynamic routing
 async mode dedicated
 ppp authentication pap callin
!
interface Serial0/0/0
 no ip address
 shutdown
 clock rate 128000
!
!
dsl operating-mode auto
!
```

```
! Primary WAN link.
interface Dialer1
 ip address negotiated
 ip nat outside
 encapsulation ppp
 dialer pool 1
 ppp authentication pap callin
 ppp pap sent-username account password 7 pass
 ppp ipcp dns request
 ppp ipcp wins request
 ppp ipcp mask request
!
! Dialer backup logical interface.
interface Dialer3
 ip address negotiated
 ip nat outside
 encapsulation ppp
 no ip route-cache
 no ip mroute-cache
 dialer pool 3
 dialer idle-timeout 60
 dialer string 5555102 modem-script Dialout
 dialer watch-group 1
!
! Remote management PC IP address.
peer default ip address 192.168.2.2
no cdp enable
!
! Need to use your own ISP account and password.
ppp pap sent-username account password 7 pass
ppp ipcp dns request
ppp ipcp wins request
ppp ipcp mask request
!
! IP NAT over Dialer interface using route-map.
ip nat inside source route-map main interface Dialer1 overload
ip nat inside source route-map secondary interface Dialer3 overload
ip classless
!
! When primary link is up again, distance 50 will override 80 if dial backup
! has not timed out. Use multiple routes because peer IP addresses are alternated
! among them when the CPE is connected.
ip route 0.0.0.0 0.0.0.0 64.161.31.254 50
ip route 0.0.0.0 0.0.0.0 66.125.91.254 50
ip route 0.0.0.0 0.0.0.0 64.174.91.254 50
ip route 0.0.0.0 0.0.0.0 63.203.35.136 80
ip route 0.0.0.0 0.0.0.0 63.203.35.137 80
ip route 0.0.0.0 0.0.0.0 63.203.35.138 80
ip route 0.0.0.0 0.0.0.0 63.203.35.139 80
ip route 0.0.0.0 0.0.0.0 63.203.35.140 80
ip route 0.0.0.0 0.0.0.0 63.203.35.141 80
ip route 0.0.0.0 0.0.0.0 Dialer1 150
no ip http server
ip pim bidir-enable
!
! PC IP address behind CPE.
access-list 101 permit ip 192.168.0.0 0.0.255.255 any
access-list 103 permit ip 192.168.0.0 0.0.255.255 any
!
! Watch multiple IP addresses because peers are alternated
! among them when the CPE is connected.
dialer watch-list 1 ip 64.161.31.254 255.255.255.255
dialer watch-list 1 ip 64.174.91.254 255.255.255.255
dialer watch-list 1 ip 64.125.91.254 255.255.255.255
```

```
!
! Dial backup will kick in if primary link is not available
! 5 minutes after CPE starts up.
dialer watch-list 1 delay route-check initial 300
dialer-list 1 protocol ip permit
!
! Direct traffic to an interface only if the dialer is assigned an IP address.
route-map main permit 10
 match ip address 101
 match interface Dialer1
!
route-map secondary permit 10
 match ip address 103
 match interface Dialer3
!
! Change console to aux function.
line con 0
 exec-timedout 0 0
 modem enable
 stopbits 1
line aux 0
 exec-timeout 0 0
 ! To enable and communicate with the external modem properly.
 script dialer Dialout
 modem InOut
 modem autoconfigure discovery
 transport input all
 stopbits 1
 speed 115200
 flowcontrol hardware
line vty 0 4
 exec-timeout 0 0
 password cisco
 login
!
scheduler max-task-time 5000
end
```