

Configuring Backup Data Lines and Remote Management

This chapter describes configuring backup data lines and remote management in the following sections:

- [Configuring Backup Interfaces, page 4-1](#)
[Configuring Cellular Dial-on-Demand Routing Backup, page 4-3](#)
[Configuring Dial Backup and Remote Management Through the Console or Auxiliary Port, page 4-9](#)
[Configuring Data Line Backup and Remote Management Through the ISDN S/T Port, page 4-15.](#)

The Cisco 880Series Integrated Services Routers (ISRs) support backup data connectivity with a backup data line that enables them to mitigate WAN downtime.

**Note**

Voice backup is available on router models C881SRST and C888SRST. For information on configuring voice backup, see [Chapter 7, “Configuring Voice Functionality.”](#)

Cisco 880 ISRs also support remote management functions as follows:

- Through the auxiliary port on any Cisco 880 series ISRs
- Through the ISDN S/T port on the Cisco 880 series ISRs



On the Cisco 880 series ISRs the console port and the auxiliary port are on the same physical RJ-45 port. Therefore, the two ports cannot be activated simultaneously. You must use the command-line interface (CLI) to enable the desired function.

Configuring Backup Interfaces

Even if the backup interface comes out of standby mode, the router does not enable the backup interface unless the router receives the traffic specified for that backup interface.

Table 4-1 Model Numbers and Data Line Backup Capabilities

Router Model Number	ISDN	3G
881G	—	Yes
888G	—	Yes
888	Yes	—

	Command	Purpose
Step 1	interface <i>type number</i> Example: Router(config)# interface atm 0 Router(config-if)#	
Step 2	backup interface <i>interface-type interface-number</i> Router(config-if)# backup interface bri 0	
Step 3	exit Router(config-if)# exit Router(config)#	

Configuring Cellular Dial-on-Demand Routing Backup

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- [Configuring DDR Backup Using Dialer Watch](#) section on page 4-3.
- Floating Static Route—The route through the backup interface has an administrative distance that is greater than the administrative distance of the primary connection route and therefore would not be in the routing table until the primary interface goes down. When the primary interface goes down, the floating static route is used. See the [“Configuring DDR Backup Using Floating Static Route”](#) section on page 4-5


Note

You cannot configure a backup interface for the cellular interface and any other asynchronous serial interface.

Configuring DDR Backup Using Dialer Watch

SUMMARY STEPS

1. **configure terminal**
interface
dialer watch group *group-number*
4. **dialer watch-list** **ip** *ip-address address-mask*
5. **<dialer-group>** **<** **>** { **| deny | list** **<** **>** | **access-group** }
- 6.
7. **o**
- 8.

DETAILED STEPS

	Command or Action	Purpose
Step 1	<pre>configure terminal</pre> <p>Router# configure terminal</p>	
	<pre>Router(config)# interface type number</pre> <p>Router (config)# interface ATM0</p>	
	<pre>Router(config-if)# dialer watch-group group-number</pre> <p>Router(config-if)# dialer watch-group 2</p>	
	<pre>Router(config)# dialer watch-list ip ip-address address-mask</pre> <p>Router(config-if)# dialer watch-list 2 ip 10.4.0.254 255.255.0.0</p>	
	<pre>Router(config)# <dialer-group> <protocol-name> { deny list <access-list-number> }></pre> <p>Router(config)# dialer-list 2 protocol ip permit</p>	
	<pre>Router(config)# ></pre> <p>Router(config)# access list 2 permit 10.4.0.0</p>	

		Specifies the cellular interface.
or		CDMA only. Specifies the dialer script (defined using the <code>cdma</code> command).
		GSM only. Maps a dialer list to the dialer interface.
	<pre>Router (config-if)# dialer string cdma *** cdma ***</pre>	
or		
	<pre>Router (config-if)# dialer group 2 *** gsm ***</pre>	

Configuring DDR Backup Using Floating Static Route



Note

SUMMARY STEPS

- 1.
2. `network-number network-mask {ip address | interface} [administrative distance] [name]`

	<pre>Router#</pre>	Enters global configuration mode from the terminal.
	<pre>Router# configure terminal</pre>	
	<pre>Router(config)# network-number network-mask {ip-address interface} [administrative distance] [name]</pre>	
	<pre>Router (config)# ip route 0.0.0.0 Dialer 2 track 234</pre>	

Cellular Wireless Modem as Backup with NAT and IPsec Configuration



Note

```
Current configuration : 3433 bytes
!
version 12.4
no service pad
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
!
!
!
crypto isakmp policy 1
  encr 3des
  authentication pre-share
crypto isakmp key gsm address 128.107.241.234          *** or cdma ***
!
!
crypto ipsec transform-set gsm ah-sha-hmac esp-3des   *** or cdma ***
!
crypto map gsm1 10 ipsec-isakmp                       *** or cdma1 ***
  set peer 128.107.241.234
  set transform-set gsm                               *** or cdma ***
  match address 103
!
!
!
no ip dhcp use vrf connected
ip dhcp excluded-address 10.4.0.254
!
ip dhcp pool gsm1pool                                 *** or cdmapool ***
  network 10.4.0.0 255.255.0.0
  dns-server 66.209.10.201 66.102.163.231
  default-router 10.4.0.254
!
!
ip cef
!
no ipv6 cef
multilink bundle-name authenticated
chat-script gsm "" "atdt*98*1#" TIMEOUT 30 "CONNECT" *** or cdma ***
!
!
archive
  log config
```

```

hidekeys
!
!
controller DSL 0
mode atm
line-term cpe
line-mode 4-wire standard
line-rate 4608
!
!
!
!
interface ATM0
no ip address
ip virtual-reassembly
load-interval 30
no atm ilmi-keepalive
!
interface ATM0.1 point-to-point
backup interface Cellular0
ip nat outside
ip virtual-reassembly
pvc 0/35
pppoe-client dial-pool-number 2
!
!
interface FastEthernet0
!
interface FastEthernet1
!
interface FastEthernet2
!
interface FastEthernet3
!
interface Cellular0
ip address negotiated
ip nat outside
ip virtual-reassembly
encapsulation ppp
no ip mroute-cache
dialer in-band
dialer idle-timeout 0
dialer string gsm *** or cdma ***
dialer-group 1
async mode interactive
no ppp lcp fast-start
ppp chap hostname chunahayev@wwan.ccs
ppp chap password 0 B7uhestacr
ppp ipcp dns request
crypto map gsm1 *** or cdma1 ***
!
interface Vlan1
description used as default gateway address for DHCP clients
ip address 10.4.0.254 255.255.0.0
ip nat inside
ip virtual-reassembly
!
interface Dialer2
ip address negotiated
ip mtu 1492
ip nat outside
ip virtual-reassembly
encapsulation ppp
load-interval 30

```

```

dialer pool 2
dialer-group 2
ppp authentication chap callin
ppp chap hostname cisco@dsl.com
ppp chap password 0 cisco
ppp ipcp dns request
crypto map gsm1                                     *** or cdma1 ***
!
ip local policy route-map track-primary-if
ip forward-protocol nd
ip route 0.0.0.0 0.0.0.0 Dialer2 track 234
ip route 0.0.0.0 0.0.0.0 Cellular0 254
no ip http server
no ip http secure-server
!
!
ip nat inside source route-map nat2cell interface Cellular0 overload
ip nat inside source route-map nat2dsl interface Dialer2 overload
!
ip sla 1
icmp-echo 209.131.36.158 source-interface Dialer2
timeout 1000
frequency 2
ip sla schedule 1 life forever start-time now
access-list 1 permit any
access-list 2 permit 10.4.0.0 0.0.255.255
access-list 3 permit any
access-list 101 permit ip 10.4.0.0 0.0.255.255 any
access-list 102 permit icmp any host 209.131.36.158
access-list 103 permit ip host 166.136.225.89 128.107.0.0 0.0.255.255
access-list 103 permit ip host 75.40.113.246 128.107.0.0 0.0.255.255
dialer-list 1 protocol ip list 1
dialer-list 2 protocol ip permit
!
!
!
route-map track-primary-if permit 10
match ip address 102
set interface Dialer2
!
route-map nat2dsl permit 10
match ip address 101
match interface Dialer2
!
route-map nat2cell permit 10
match ip address 101
match interface Cellular0
!
!
control-plane
!
!
line con 0
no modem enable
line aux 0
line 3
exec-timeout 0 0
script dialer gsm                                     *** or cdma ***
login
modem InOut
no exec
line vty 0 4
login
!

```

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

When customer premises equipment, such as a Cisco 880 series ISR is connected to an ISP, an IP address is dynamically assigned to the router, or the IP address may be 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 880 series ISRs can use the auxiliary port for dial backup and remote management.

Figure 4-1 shows the network configuration used for remote management access and for providing backup to the primary WAN line.

Figure 4-1 *Dial Backup and Remote Management Through the Auxiliary Port*



1		A	Main WAN link; primary connection to Internet service provider
2		B	
3		C	

	Command	Purpose
Step 1	<code>ip name-server server-address</code>	Tip
Step 2	Example:	Creates a DHCP address pool on the router and enters DHCP pool configuration mode. The argument can be a string or an integer. <ul style="list-style-type: none"> Configure the DHCP address pool. For sample commands that you can use in DHCP pool configuration mode, see the “Example” section on page 4-12.
	<code>script-name expect-send</code>	Exits config-dhcp mode and enters global configuration mode.
	<pre>ERROR ABORT BUSY "" "AT" OK "ATDT 5555102 T" TIMEOUT 45 CONNECT \c Router(config)#</pre>	
	<pre>Router(config)# interface Async 1 Router(config-if)#</pre>	
	<pre>Router(config-if)# exit Router(config)#</pre>	
	<pre>Router(config)# interface Dialer 3 Router(config-if)#</pre>	

	<pre>Router(config-if)# dialer watch-group 1 Router(config-if)#</pre>	
Step 9	Example:	
Step 10	<pre>type number name</pre>	
	Example:	
Step 11	<pre>prefix mask ip-address interface-type interface-number ip-address</pre>	
	Example:	
Step 12	<pre>access-list-number source source-wildcard</pre>	
	Example:	
Step 13	<pre>group-number ip-address address-mask</pre>	

Router(config-line)# modem enable Router(config-line)#	
Router(config-line)# exit Router(config)#	
Router(config)# line aux 0 Router(config)#	
Router(config)# flowcontrol hardware Router(config)#	

Example

```
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 ATM0
  mtu 1492
  no ip address
  no atm ilmi-keepalive
  pvc 0/35
  pppoe-client dial-pool-number 1
!
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-timeout 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
```

Configuring Data Line Backup and Remote Management Through the ISDN S/T Port

Figure 4-2 Data Line Backup Through CPE Splitter, DSLAM, and CO Splitter



4			
5		C	
6			
7			
8		—	

Figure 4-3 Data Line Backup Directly from Router to ISDN Switch





<i>switch-type</i>	Australia, Europe, and the United Kingdom. For details on other supported switch types, see the Cisco IOS Dial Technologies Command Reference .
<i>type number</i>	
<i>encapsulation-type</i>	
<i>number</i>	
<i>switch-type</i>	
<i>dialer-rotary-group-number</i>	

Step 8	Example:	
Step 9	Example:	
Step 10	Example:	
Step 11	<i>dial-string# :</i>	
	dialer-group	(1–10).
		Exits dialer 0 interface configuration mode, and enters global configuration mode.
	{ } 	Creates a dialer list for packets of interest to be forwarded through the specified interface dialer group. In the example, dialer-list 1 corresponds to dialer-group 1. For details about this command and additional parameters that can be set, see the

The aggregator is typically a concentrator router where your Cisco router ATM PVC terminates. In the following configuration example, the aggregator is configured as a PPPoE server.

The ISDN peer router is any router that has an ISDN interface and can communicate through a public ISDN network to reach your Cisco router ISDN interface. The ISDN peer router provides Internet access for your Cisco router during the ATM network downtime.

