

Configuring Dial Backup for Serial Lines

A backup interface is an interface that stays idle until certain circumstances occur; then it is activated. A backup interface for a serial interface can be an ISDN interface or a different serial interface. A backup interface can be configured to be activated when any of the following three circumstances occurs:

- The primary line goes down.
- The load on the primary line reaches a certain threshold.
- The load on the primary line exceeds a specified threshold.

To configure a dial backup to a serial interface, you must configure the interface to use the dial backup interface, specify the conditions in which the backup interface will be activated, and then configure the dial-backup interface for DDR. The DDR configuration specifies the conditions and destinations for dial calls. The serial interface (often called the *primary* interface) might be configured for DDR or for Frame Relay or X.25 over a leased line, but the backup tasks are the same in all three cases.

To configure a backup interface for an interface, complete the following general steps:

- Specify the interface and configure it as needed (for DDR, Frame Relay, or X.25). You can also specify and configure a Frame Relay subinterface.

See the “Configuring a Synchronous Serial Port” chapter, the “Configuring Frame Relay” chapter or the “Configuring X.25” chapter of the *Wide-Area Networking Configuration Guide* or the “Dial-on-Demand Routing” part of this manual for details.

- Configure the primary interface or subinterface by specifying the dial backup interface and the conditions for activating the backup interface, as described in this chapter.
- Configure the backup interface for DDR, as described in the “Dial-on-Demand Routing” part of this manual.

See the “Configuring Legacy DDR Spokes” chapter (for point-to-point Legacy DDR connections) or the “Configuring Legacy DDR Hubs” chapter (for point-to-multipoint Legacy DDR connections). If you have configured Dialer Profiles instead of Legacy DDR, see the “Configuring Dial Backup with Dialer Profiles” chapter for backup information.

This chapter describes how to configure the primary interface to use the dial backup interface.

For a complete description of the dial backup commands in this chapter, refer to the “Dial Backup Commands” chapter of the *Dial Solutions Command Reference*.

Prerequisite

For a backup serial interface, an external data communications equipment (DCE) device, such as a modem attached to a circuit-switched service, must be connected to the backup serial interface. The external device must be capable of responding to a DTR Active signal by automatically dialing the preconfigured telephone number of the remote site.

Dial Backup for Serial Interfaces Configuration Task List

You must decide whether to activate the backup interface when the primary line goes down, when the traffic load on the primary line exceeds the defined threshold, or both. The tasks you perform depend on your decision. Perform the tasks in the following sections as needed to configure dial backup:

- Specify the Backup Interface
- Define the Traffic Load Threshold
- Define Backup Line Delays

Then configure the backup interface for DDR, so that calls are placed as needed. See the “Dial-on-Demand Routing” part of this manual for more information.

For simple configuration examples, see the “Dial Backup for Serial Interfaces Configuration Examples” section later in this chapter.

Specify the Backup Interface

To specify a backup interface for a primary serial interface or subinterface, perform the following task in interface configuration mode:

Task	Command
Select a backup interface.	backup interface <i>type number</i> or backup interface <i>type slot/port</i> (For the Cisco 7500 series) or backup interface <i>type slot/port-adapter/port</i> (Cisco 7200 series)

Note When you use a Basic Rate Interface (BRI) for a dial backup, neither of the B channels can be used while the interface is in a standby mode. In addition, when a BRI is used as a backup interface and the BRI is configured for Legacy DDR, only one B channel is usable. Once the backup is initiated over one B channel, the second B channel is unavailable. When the backup interface is configured for Dialer Profiles, both B channels can be used.

When configured for Legacy DDR, the backup interface can back up only one interface. For examples of selecting a backup line, see the “Dial Backup Using an Asynchronous Interface Example” and the “Dial Backup Using DDR and ISDN Example” sections later in this chapter.

Define the Traffic Load Threshold

You can configure dial backup to activate the secondary line based on the traffic load on the primary line. The software monitors the traffic load and computes a 5-minute moving average. If this average exceeds the value you set for the line, the secondary line is activated and, depending upon how the line is configured, some or all of the traffic will flow onto the secondary dialup line.

To define how much traffic should be handled at one time on an interface, perform the following task in interface configuration mode:

Task	Command
Define the traffic load threshold as a percentage of the primary line's available bandwidth.	backup load { <i>enable-threshold</i> never } { <i>disable-load</i> never }

Define Backup Line Delays

You can configure a value that defines how much time should elapse before a secondary line status changes after a primary line status has changed. This means that you can define two delays:

- A delay that applies after the primary line goes *down* but before the secondary line is activated
- A delay that applies after the primary line comes *up* but before the secondary line is deactivated

To define these delays, perform the following task in interface configuration mode:

Task	Command
Define backup line delays.	backup delay { <i>enable-delay</i> never } { <i>disable-delay</i> never }

For examples of how to define backup line delays, see the sections “Dial Backup Using an Asynchronous Interface Example” and “Dial Backup Using DDR and ISDN Example” later in this chapter.

Dial Backup for Serial Interfaces Configuration Examples

The following sections present examples of backup interfaces configured to be activated in three different circumstances:

- The primary line goes down.
- The load on the primary line reaches a certain threshold.
- The load on the primary line exceeds a specified threshold.

Dial Backup Using an Asynchronous Interface Example

The following is an example for dial backup using interface async 1, which is configured for DDR:

```
interface serial 0
 ip address 172.30.3.4 255.255.255.0
 backup interface async1
 backup delay 10 10
!
interface async 1
 ip address 172.30.3.5 255.255.255.0
 dialer in-band
 dialer string 5551212
```

```
dialer-group 1
  async dynamic routing
!
dialer-list 1 protocol ip permit
!
chat-script sillyman "" "atdt 5551212" TIMEOUT 60 "CONNECT"
!
line 1
  modem chat-script sillyman
  modem inout
  speed 9600
```

Dial Backup Using DDR and ISDN Example

The following example of uses an ISDN interface to back up a serial interface.

Note When you use a BRI interface for dial backup, neither of the B channels can be used while the interface is in standby mode.

Interface BRI 0 is configured to make outgoing calls to one number. This is a legacy DDR spoke example.

```
interface serial 1
  backup delay 0 0
  backup interface bri 0
  ip address 1.2.3.4 255.255.255.0
!
interface bri 0
  ip address 1.2.3.5 255.255.255.0
  dialer string 5551212
  dialer-group 1
!
dialer-list 1 protocol ip permit
```

Note Dialing will occur only after a packet is received to be output on BRI 0. We recommend using the **dialer-list** command with the **protocol** and **permit** keywords specified to control access for dial backup. Using this form of access control specifies that all packets are interesting.

Dial Backup Service When the Primary Line Goes Down Example

The following example configures serial 1 as a backup line that becomes active only when the primary line (serial 0) goes down. The backup line will not be activated because of load on the primary line.

```
interface serial 0
  backup interface serial 1
  backup delay 30 60
```

The backup line is configured to activate 30 seconds after the primary line goes down and to remain on for 60 seconds after the primary line is reactivated.

The same example on the Cisco 7500 would be as follows:

Dial Backup Service When the Primary Line Reaches Threshold Examples

The following example configures the secondary line (serial 1) to be activated only when the load of the primary line reaches a certain threshold:

```
interface serial 0
  backup interface serial 1
  backup load 75 5
```

In this case, the secondary line will not be activated when the primary goes down. The secondary line will be activated when the load on the primary line is greater than 75 percent of the primary's bandwidth. The secondary line will then be brought down when the aggregate load between the primary and secondary lines fits within 5 percent of the primary bandwidth.

The same example on the Cisco 7500 would be as follows:

Dial Backup Service When the Primary Line Exceeds Threshold Examples

The following example configures the secondary line to activate once the traffic threshold on the primary line exceeds 25 percent:

```
interface serial 0
  backup interface serial 1
  backup load 25 5
  backup delay 10 60
```

Once the aggregate load of the primary and the secondary lines return to within 5 percent of the primary bandwidth, the secondary line is deactivated. The secondary line waits 10 seconds after the primary goes down before activating, and remains active for 60 seconds after the primary returns and becomes active again.

The same example on the Cisco 7500 is as follows:

