



## Configuring Dial Backup for Serial Lines

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This chapter describes how to configure the primary interface to use the dial backup interface. It includes the following main sections:

- Backup Serial Interface Overview
- Dial Backup Configuration Task List
- Dial Backup for Serial Interfaces Configuration Examples

For a complete description of the dial backup commands in this chapter, see the *Cisco IOS Dial Services Command Reference* publication. To locate documentation of other commands that appear in this chapter, use the command reference master index or search online.

### Backup Serial Interface Overview

For a backup serial interface, an external 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 data terminal ready (DTR) Active signal by automatically dialing the preconfigured telephone number of the remote site.

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 dial-on-demand routing (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.



**Note**

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Dial backup is also available using the Dialer Watch feature. Dialer Watch is based on routing characteristics instead of relying exclusively on interesting traffic conditions. For information about Dialer Watch, see the chapter “Configuring Dial Backup Using Dialer Watch” in this publication.

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To configure a backup interface for a serial interface based on one of the conditions listed, 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 chapters “Configuring Frame Relay” or “Configuring X.25” in the *Cisco IOS Wide-Area Networking Configuration Guide*. In this publication, see the chapter “Configuring Synchronous Serial Ports” and related chapters in the “Dial-on-Demand Routing” part 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 publication.

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

## Dial Backup 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 to configure dial backup:

- Specifying the Backup Interface (Optional)
- Defining the Traffic Load Threshold (Optional)
- Defining Backup Line Delays (Optional)

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

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

## Specifying the Backup Interface

To specify a backup interface for a primary serial interface or subinterface, use one the following commands in interface configuration mode:

Command	Purpose
<pre>backup interface type number</pre> <p>or</p> <pre>backup interface type slot/port</pre> <p>(Cisco 7500 series)</p> <p>or</p> <pre>backup interface type slot/port-adapter/port</pre> <p>(Cisco 7200 series)</p>	Selects a backup interface.

**Note**

When you enter the **backup interface** command, the configured physical or logical interface will be forced to standby mode. When you use a BRI for a dial backup (with Legacy DDR), neither of the B channels can be used because the physical BRI interface is in standby mode. However, with dialer profiles, only the logical dialer interface is placed in standby mode and the physical interface (BRI) still can be used for other connections by making it a member of another pool.

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

## Defining 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, use the following command in interface configuration mode:

Command	Purpose
<code>backup load {enable-threshold   never} {disable-load   never}</code>	Defines the traffic load threshold as a percentage of the available bandwidth of the primary line.

## Defining 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. 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, use the following command in interface configuration mode:

Command	Purpose
<code>backup delay {enable-delay   never} {disable-delay   never}</code>	Defines backup line delays.

For examples of how to define backup line delays, see the sections “Dial Backup Using an Asynchronous Interface” and “Dial Backup Using DDR and ISDN” at the end of 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 load on the primary line reaches a certain threshold.
- The load on the primary line exceeds a specified threshold.
- The primary line goes down.

## Dial Backup Using an Asynchronous Interface

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

The following example shows how to use an ISDN interface to back up a serial interface.



### Note

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

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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 Reaches Threshold

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
```

The secondary line will be activated when the load on the primary line is greater than 75 percent of the bandwidth of the primary line. 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 a Cisco 7500 series router would be as follows:

## Dial Backup Service When the Primary Line Exceeds Threshold

The following example configures the secondary line to activate when 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
```

When 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 a Cisco 7500 series router would be as follows:

## Dial Backup Service When the Primary Line Goes Down

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:

