

Configuring Snapshot Routing

Snapshot routing enables a single router interface to call other routers during periods when the line protocol for the interface is up (these are called “active periods”). The router dials to all configured locations during such active periods to get routes from all the remote locations.

The router can be configured to exchange routing updates each time the line protocol goes from “down” to “up” or from “dialer spoofing” to “fully up.” The router can also be configured to dial the server router in the absence of regular traffic if the active period time expires.

Snapshot routing is useful in two command situations:

- Configuring static routes for DDR interfaces
- Reducing the overhead of periodic updates sent by routing protocols to remote branch offices over a dedicated serial line

For a complete description of the snapshot routing commands in this chapter, refer to the *Dial Solutions Command Reference*. To locate documentation of other commands that appear in this chapter, use the command reference master index or search online.

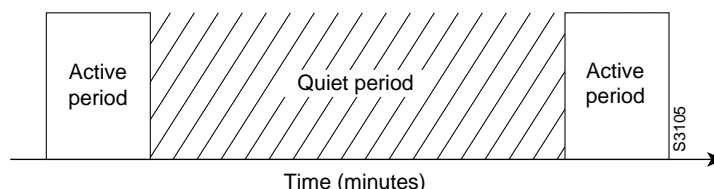
How Snapshot Routing Works

When configuring snapshot routing, you choose one router on the interface to be the client router and one or more other routers to be server routers. The client router determines the frequency at which routing information is exchanged between routers.

Routing information is exchanged during an active period. During the active period, a client router dials all the remote server routers for which it has a snapshot dialer map defined in order to get routes from all the remote locations. The server router provides information about routes to each client router that calls.

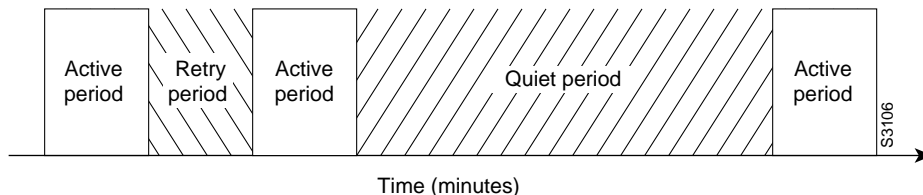
At the end of the active period, the router takes a snapshot of the entries in the routing table. These entries remain frozen during a quiet period. At the end of the quiet period, another active period starts during which routing information is again exchanged. See Figure 312.

Figure 312 Active and Quiet Periods in Snapshot Routing



When the router transitions from the quiet period to the active period, the line might not be available for a variety of reasons. For example, the line might be down or busy, or the PVC might be down. If this happens, the router has to wait through another entire quiet period before it can update its routing table entries. This wait might be a problem if the quiet period is very long—for example, 12 hours. To avoid having to wait through the quiet period, you can configure a retry period. If the line is not available when the quiet period ends, the router waits for the amount of time specified by the retry period and then transitions to an active period. See Figure 313.

Figure 313 **Retry Period in Snapshot Routing**



The retry period is also useful in a dial-up environment in which there are more remote sites than router interface lines that dial in to a Primary Rate Interface (PRI) and want routing information from that interface. For example, a PRI has 23 DS-0s available, but you might have 46 remote sites. In this situation, you would have more **dialer map** commands than available lines. The router will try the **dialer map** commands in order and will use the retry time for the lines that it cannot immediately access.

The following routed protocols support snapshot routing. Note that these are all distance-vector protocols.

- AppleTalk—Routing Table Maintenance Protocol (RTMP)
- Banyan VINES—Routing Table Protocol (RTP)
- IP—Routing Information Protocol (RIP), Interior Gateway Routing Protocol (IGRP)
- Novell IPX—RIP, Service Advertisement Protocol (SAP)

Configure Snapshot Routing

To configure snapshot routing, perform the tasks described in the following sections:

- Configure the Client Router
- Configure the Server Router

You can also monitor and maintain interfaces configured for snapshot routing. See the “Monitor DDR Connections and Snapshot Routing” section.

For an example of configuring snapshot routing, see the “Snapshot Routing Configuration Examples” section later in this chapter.

Configure the Client Router

To configure snapshot routing on the client router that is connected to a dedicated serial line, use the following command starting in global configuration mode:

| Step | Command | Purpose |
|------|---------------------------------------|-----------------------------|
| 1 | interface serial <i>number</i> | Specify a serial interface. |

| Step | Command | Purpose |
|------|---|------------------------------|
| 2 | snapshot client <i>active-time quiet-time</i> [suppress-statechange-updates] [dialer] | Configure the client router. |

To configure snapshot routing on the client router connected to an interface configured for DDR, use the following command starting in global configuration mode:

| Step | Command | Purpose |
|------|---|----------------------------------|
| 1 | interface serial <i>number</i> | Specify a serial interface. |
| 2 | dialer rotary-group <i>number</i> | Configure a dialer rotary group. |
| 3 | interface dialer <i>number</i> | Specify a dialer interface. |
| 4 | snapshot client <i>active-time quiet-time</i> [suppress-statechange-updates] [dialer] | Configure the client router. |
| 5 | dialer map snapshot <i>sequence-number dial-string</i> | Define a dialer map. |

Repeat for each map you want to define. Maps must be provided for all the remote server routers this client router is to call during each active period.

Because ISDN BRI and PRI automatically have rotary groups, you do not need to define a rotary group when configuring snapshot routing. To configure snapshot routing on the client router over an interface configured for BRI or PRI, use the following command:

| Step | Command | Purpose |
|------|---|------------------------------|
| 1 | interface bri <i>number</i> | Specify a BRI interface. |
| 2 | snapshot client <i>active-time quiet-time</i> [suppress-statechange-updates] [dialer] | Configure the client router. |
| 3 | dialer map snapshot <i>sequence-number dial-string</i> | Define a dialer map. |

Repeat for each map you want to define.

Configure the Server Router

To configure snapshot routing on the server router that is connected to a dedicated serial line, use the following command starting in global configuration mode:

| Step | Command | Purpose |
|------|---|------------------------------|
| 1 | interface serial <i>number</i> | Specify a serial interface. |
| 2 | snapshot server <i>active-time</i> [dialer] | Configure the server router. |

To configure snapshot routing on the associated server router connected to an interface configured for DDR, use the following commands beginning in global configuration mode:

| Step | Command | Purpose |
|------|---|------------------------------|
| 1 | interface serial <i>number</i> | Specify a serial interface. |
| 2 | interface dialer <i>number</i> | Specify a dialer interface. |
| 3 | snapshot server <i>active-time</i> [dialer] | Configure the server router. |

The active period for the client router and its associated server routers should be the same.

Monitor DDR Connections and Snapshot Routing

To monitor DDR connections and snapshot routing, use the following commands in privileged EXEC mode:

| Command | Purpose |
|--|--|
| <code>show dialer [interface type number]</code> | Display general diagnostics about the DDR interface. |
| <code>show interfaces bri 0</code> | Display information about the ISDN interface. |
| <code>clear snapshot quiet-time interface</code> | Terminate the snapshot routing quiet period on the client router within two minutes. |
| <code>show snapshot [type number]</code> | Display information about snapshot routing parameters. |
| <code>clear dialer</code> | Clear the values of the general diagnostic statistics. |

Snapshot Routing Configuration Examples

The following example configures snapshot routing on an interface configured for DDR on the client router. In this configuration, a single client router can call multiple server routers. It dials to all different locations during each active period to get routes from all those remote locations.

The absence of the **suppress-statechange-updates** keyword means that routing updates will be exchanged each time the line protocol goes from “down” to “up” or from “dialer spoofing” to “fully up.” The **dialer** keyword on the **snapshot client** command allows the client router to dial the server router in the absence of regular traffic if the active period time expires.

```
interface serial 0
  dialer rotary-group 3
!
interface dialer 3
  dialer in-band
  snapshot client 5 360 dialer

dialer map snapshot 2 4155556734
dialer map snapshot 3 7075558990
```

The following commands configure the server router:

```
interface serial 2
  snapshot server 5 dialer
```