Chapter 5: Dialer Profile (DDR)

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Objectives

Upon completion of this chapter, you will be able to perform the following tasks:

- Select appropriate dialup features for a given situation
- Configure rotary groups and dialer profiles in access servers
- Verify and troubleshoot rotary groups and dialer profiles
Chapter Activities

Legacy DDR

Legacy DDR is powerful and comprehensive. It supports Frame Relay, the International Organization for Standardization Connectionless Network Service (ISO CLNS), the Link Access Procedure Balanced (LAPB) protocol, snapshot routing, and all routed protocols that are supported on Cisco routers.

However, legacy DDR's limitations can adversely affect growth.

The problem with this method is that legacy DDR locks a physical interface into one configuration. For example, DDR BR10 can have only one Internet Protocol (IP) address, one encapsulation type, and one set of dialer timers.

Using legacy DDR, each physical interface is locked into a single configuration.
**Single Dialer Map w/ Legacy DDR**

**Using a Single Dialer Map with Legacy DDR**

- Legacy DDR configuration uses **dialer map** statements, which are convenient when one physical interface is responsible for calling one destination.
- As configured, the Basic Rate Interface (BRI) in Figure can only dial a host named RTB, and can only use Point-to-Point Protocol (PPP) with a **dialer idle-timeout** of 30 seconds when connected.

**Legacy DDR w/ Multiple Destinations**

**Legacy DDR with Multiple Destinations**

- The **dialer map** command can also be used if your router calls multiple destinations that all use the same communication parameters.
- Figure shows that three separate **dialer map** statements can be configured on the same interface. This means that each call must also use the other configured parameters, such as the dialer idle timer values and PPP authentication method.
Legacy DDR w/ Multiple Destinations

On the other hand, what if your router is responsible for reaching three separate locations that use different communication parameters?

Suppose that one location requires Password Authentication Protocol (PAP) authentication when another is doing Challenge Handshake Authentication Protocol (CHAP) authentication. One location might require an Integrated Services Digital Network (ISDN) speed of 56 kbps, whereas the other destinations communicate at 64 kbps.

Figure shows that specific call parameters must be defined under three separate physical interfaces, each of them connected to a separate line.

Using Dialer Profiles

A more efficient solution might be a mechanism in which physical interfaces are not locked in to permanent configurations.

Instead, this mechanism assumes call parameters on an as-needed basis (Figure ). When the call is finished, the same interface is freed of the previous configuration and is ready to service another calling destination. This method is called DDR with dialer profiles, and is discussed in the section "Dialer Profiles," later in this chapter.
Using Legacy DDR with Rotary Groups

What if you have multiple physical interfaces that all need to be configured with the exact same communication parameters?

For example, you may have eight asynchronous interfaces that each will answer calls using the same IP address, same encapsulation, and same dialer configuration commands.

The solution is to use dialer rotary groups (Figure ).

Using Legacy DDR with rotary groups, you can propagate a single logical configuration from the dialer interface to multiple physical interfaces.

Rotary Groups

You can propagate a single logical configuration from the dialer interface to multiple physical interfaces using rotary groups.
Dialer Rotary Groups

Dialer interface

Multiple BRI Rotary Group

interface bri 0
dialer rotary-group 1
interface bri 1
dialer rotary-group 1
interface bri 2
dialer rotary-group 1
interface bri 3
dialer rotary-group 1
interface dialer 1

- Order one phone number with a rollover or hunt group
Dialer Rotary Group Commands

Router(config)#interface dialer group-number
• Defines a dialer rotary group

Router(config-if)#dialer rotary-group group-number
• Includes the specified physical interface in a dialer rotary group

Dialer Interface Configuration Commands

Router(config-if)#dialer in-band
• Enables DDR on an interface with modems only

Router(config-if)#dialer string dial-string
• Specifies the destination telephone number

Router(config-if)#dialer hold-queue number
• Creates a dialer hold queue of a specified size
Dialer Timer Control Commands

Router(config-if)#dialer idle-timeout seconds
• Sets line idle time

Router(config-if)#dialer fast-idle seconds
• Sets idle time for high-traffic lines

Router(config-if)#dialer wait-for-carrier-time seconds
• Sets waiting time for carrier signal

Dialer Profiles

Remote LAN bridge/router
Single-user client with ISDN card
Single-user client with ISDN BRI TA or modem

• Enhance dial flexibility
**Dialer Profiles Overview**

```
Dialer Profile Elements
```

```
Dialer Profile Elements
```

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**Dialer Map Classes**

Dialer interfaces

- Interface dialer 1
- Interface dialer 2
- Interface dialer 3

Map classes (optional)

- **Eng**
  - dialer fast-idle 30
- **Market**
  - dialer idle-timeout 300
  - dialer isdn speed 56
- **Finance**
  - dialer isdn speed 56

• Map classes supply configuration parameters to dialer interfaces

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**Dialer Profile Configuration Concepts and Commands**

- **Dialer string…class**
- **dialer pool**

- **dialer pool-member**
  - BRI 2

- **Physical interface**
  - Dialer pool

Map class (optional)
**Typical Dialer Profiles**

**Application**

```
Network access server A
```

```
Dialer interface 1
10.1.1.1

Router B
10.1.1.2

Network 3
Network 4
Network 5

Dialer interface 1
10.1.1.1

Router C
10.2.2.2

Network 6
Network 7
Network 8

Dialer interface 2
10.2.2.1
```

**Configuring Dialer Interfaces**

```
interface dialer1
ip address 10.1.1.1 255.255.255.0
encapsulation ppp
dialer remote-name Smalluser
dialer string 5554540
dialer group 1
ppp authentication chap
ppp multilink
!
interface dialer2
ip address 10.2.2.1 255.255.255.0
encapsulation ppp
dialer remote-name Mediumuser
dialer string 5551234 class Eng
dialer hold-queue 10
dialer idle-timer 9999
!map-class dialer Eng
dialer isdn speed 56
```

```
interface dialer3
ip address 10.3.3.1 255.255.255.0
encapsulation ppp
dialer remote-name Poweruser
dialer string 4155551234 class Eng
dialer hold-queue 10
dialer idle-timer 9999
dialer group 1
ppp multilink
!map-class dialer Eng
dialer isdn speed 56
```

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### Configuring Physical Interfaces

```
interface bri0  
  encapsulation ppp  
  dialer pool-member 0 priority 100  
  ppp authentication chap  
  ppp multilink  
  !
interface bri1  
  encapsulation ppp  
  dialer pool-member 1 priority 150  
  ppp authentication chap  
  ppp multilink  
  !
interface bri2  
  encapsulation ppp  
  dialer pool-member 0 priority 50  
  dialer pool-member 1 priority 50  
  dialer pool-member 2 priority 50  
  ppp authentication chap  
  ppp multilink
```

### Dialer Profiles Configuration Example

```
interface dialer0  
  ip unnumbered loopback0  
  encapsulation ppp  
  dialer remote-name Remote0  
  dialer pool 1  
  dialer string 5551212  
  dialer-group 0  
  ppp multilink  
  !
interface dialer1  
  ip unnumbered loopback0  
  encapsulation ppp  
  dialer remote-name Remote1  
  dialer pool 1  
  dialer string 5551234  
  dialer-group 1  
  ppp multilink
```

```
interface bri0  
  encapsulation ppp  
  dialer pool-member 0 priority 100  
  ppp authentication chap  
  ppp multilink  
  !
interface serial0  
  ip unnumbered loopback0  
  backup interface dialer0  
  backup delay 5 10  
  !
interface serial1  
  ip unnumbered loopback0  
  backup interface dialer1  
  backup delay 5 10
```
### Verifying Dialer Profiles Operation

```plaintext
NASX#show dialer interface bri0
BRI0 - dialer type = ISDN

Dial String  Successes  Failures  Last called  Last status
5553872       6         0       19 secs    Successful
0 incoming call(s) have been screened.
BRI0: B-Channel 1
Idle timer (120 secs), Fast idle timer (20 secs)
Wait for carrier (30 secs), Re-enable (15 secs)
Dialer state is data link layer up
Dial reason: ip (src=10.1.1.8, dst=10.1.1.1)

Interface bound to profile Dialer0

Time until disconnect 102 secs
Connected to 5553872 (system)

BRI0: B-Channel 2
Idle timer (120 secs), Fast idle timer (20 secs)
Wait for carrier (30 secs), Re-enable (15 secs)
Dialer state is idle
```

### Laboratory Exercise: Visual Objective

- **Objective**
  - Microsoft Windows 95 PC
  - Modem
  - ISDN/Analog
  - Cisco 3640
  - Central site
  - Branch office
  - Small office
  - Cisco 1600
  - PRI
  - Analog host-LAN dialup

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Summary

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• Select appropriate dialup features for a given situation
• Configure rotary groups and dialer profiles in access servers
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Review Questions

• How do dialer profiles simplify configurations?
• What features do map classes provide to dialer interfaces?
• Describe a network that might not benefit from dialer profiles.