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# Release Notes for Release 4.2(2) Feature Packs for Cisco 700 Series Routers

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These release notes describe the Cisco 700 Router software Release 4.2(2) feature packs. Table 1 lists the Cisco product numbers for the supported feature packs:

**Table 1          Feature Pack Product Numbers**

| | |
|---|---|
| CD076-IR-4.2= | Cisco 760/770 Series Internet Ready Feature Pack Release 4.2.2 |
| CD076-IRX-4.2= | Cisco 760/770 Series Internet Ready with X.25 over B&D Feature Pack Release 4.2.2 |
| CD076-RO-4.2= | Cisco 760/770 Series Remote Office Feature Pack Release 4.2.2 |
| CD076-ROX-4.2= | Cisco 760/770 Series Remote Office with X.25 over B&D Feature Pack Release 4.2.2 |

## Contents

These release notes discuss the following topics:

- Online Navigation, page 19

- Cisco Connection Online, page 19

- Documentation CD-ROM, page 20

# System Support

Cisco 700 series router software Release 4.2(2) supports the following routers:

| Cisco 760 Series | Cisco 770 Series |
| --- | --- |
| Cisco 761-CH | Cisco 771-CH |
| Cisco 762-CH | Cisco 772-CH |
| Cisco 765-CH | Cisco 775-CH |
| Cisco 766-CH | Cisco 776-CH |

# Cisco Feature Packs and Memory Requirements

This section explains the following:

- What Is a Feature Pack?

- Release 4.2(2) Feature Pack Descriptions and Memory Requirements

- Memory Requirements for Running X.25

## What Is a Feature Pack?

The heart of the Release 4.2(2) software feature pack for Cisco 700 series routers is a software image stored on CD-ROM. The feature pack box contains the following:

- CD-ROM disk containing a software image

- CD booklet of instructions for loading software from a CD-ROM

- Release notes (this document)

- Cisco Documentation CD-ROM, which contains electronic copies of all Cisco documentation, including *Cisco 700 Series Command Reference*.

## Release 4.2(2) Feature Pack Descriptions and Memory Requirements

Table 1 in this section identifies each feature pack as specified on the router software CD-ROM label and describes the feature sets in each feature pack. The table also lists the following: UNIX and DOS filenames of the images, router platform on which each feature set runs, and memory requirements for each feature set.

Images for software Release 4.0(1) and higher require 1.5 MB of dynamic RAM (DRAM). If you do not have enough DRAM to support the software, the router does not boot. Refer to the "National ISDN Capability Packages" section for instructions on checking the amount of DRAM. Instructions for increasing the amount of DRAM are in the *Cisco 700 Series Installation Guide*.

X.25 images require 1.5 MB of DRAM and 1 MB of Flash memory. If your router does not have enough Flash memory to run X.25 images, you must replace it with a Cisco 700M series router. The label on the bottom of the router identifies an M-series router. You can display the amount of Flash memory by using the **version** command. Refer to the *Cisco 700 Series Command Reference* for information about this command.

**Table 2        Cisco Feature Pack Image Filenames and Memory Requirements**

| Product Number | CD-ROM Title | Image Name (UNIX) | Image Name (DOS) | Flash Memory Required | Main Memory Required | RSL Installer Description |
|---|---|---|---|---|---|---|
| CD076-IR-4.2= | Cisco 760/770 Series Internet Ready Feature Pack Release 4.2.2 | c760-in.b-1TR6.42-2.bin | 80250302 | 0.5 MB | 1.5 MB | 760/770 Series Internet Ready 4 users, IP routing Feature Set for Germany |
| | | c760-in.b-INS.42-2.bin | 80250202 | 0.5 MB | 1.5 MB | 760/770 Series Internet Ready 4 users, IP routing Feature Set for Japan |
| | | c760-in.b-NET3.42-2.bin | 80250102 | 0.5 MB | 1.5 MB | 760/770 Series Internet Ready 4 users, IP routing Feature Set for Europe |
| | | c760-in.b-TPH.42-2.bin | 80250002 | 0.5 MB | 1.5 MB | 760/770 Series Internet Ready 4 users, IP routing Feature Set for Australia |
| | | c760-in.b-US.42-2.bin | 80349902 | 0.5 MB | 1.5 MB | 760/770 Series Internet Ready 4 users, IP routing Feature Set for U.S. |
| | | c760-in.b-MLS.42-2.bin | 80250902 | 0.5 MB | 1.5 MB | 760/770 Series Internet Ready 4 users, IP routing Feature Set for Malaysia |
| CD076-IRX-4.2= | Cisco 760/770 Series Internet Ready with X.25 over B&D Feature Pack Release 4.2.2 | c760-in.bxd-NET3.42-2.bin | 80249802 | 1 MB | 1.5 MB | 760/770 Series Internet Ready 4 users, IP routing, X.25/B& D Feature Set for Europe |
| | | c760-in.bxd-TPH.42-2.bin | 80249702 | 1 MB | 1.5 MB | 760/770 Series Internet Ready 4 users, IP routing, X.25/B& D Feature Set for Australia |
| | | c760-in.bxd-US.42-2.bin | 80249602 | 1 MB | 1.5 MB | 760/770 Series Internet Ready 4 users, IP routing, X.25/B& D Feature Set for U.S. |
| | | c760-in.bxd-MLS.42-2.bin | 80250702 | 1 MB | 1.5 MB | 760/770 Series Internet Ready 4 users, IP routing, X.25/B& D Feature Set for Malaysia |
| CD076-RO-4.2= | Cisco 760/770 Series Remote Office Feature Pack Release 4.2.2 | c760-in.r-1TR6.42-2.bin | 80249502 | 0.5 MB | 1.5 MB | 760/770 Series RO 1500 users, data comp, IP/IPX Feature Set for Germany |
| | | c760-in.r-INS.42-2.bin | 80249402 | 0.5 MB | 1.5 MB | 760/770 Series RO 1500 users, data comp, IP/IPX Feature Set for Japan |

**Table 2** **Cisco Feature Pack Image Filenames and Memory Requirements (Continued)**

| Product Number | CD-ROM Title | Image Name (UNIX) | Image Name (DOS) | Flash Memory Required | Main Memory Required | RSL Installer Description |
|---|---|---|---|---|---|---|
| | | c760-in.r-NET3.42-2.bin | 80249302 | 0.5 MB | 1.5 MB | 760/770 Series RO 1500 users, data comp, IP/IPX Feature Set for Europe |
| | | c760-in.r-TPH.42-2.bin | 80249202 | 0.5 MB | 1.5 MB | 760/770 Series RO 1500 users, data comp, IP/IPX Feature Set for Australia |
| | | c760-in.r-US.42-2.bin | 80249102 | 0.5 MB | 1.5 MB | 760/770 Series RO 1500 users, data comp, IP/IPX Feature Set for U.S. |
| | | c760-in.r-MLS.42-2.bin | 80250802 | 0.5 MB | 1.5 MB | 760/770 Series RO 1500 users, data comp, IP/IPX Feature Set for Malaysia |
| CD076-ROX-4.2= | Cisco 760/770 Series Remote Office with X.25 over B&D Feature Pack Release 4.2.2 | c760-in.rxd-NET3.42-2.bin | 80249002 | 1 MB | 1.5 MB | 760/770 Series RO 1500 users, data comp, IP/IPX, X.25/B & D for Europe |
| | | c760-in.rxd-TPH.42-2.bin | 80248902 | 1 MB | 1.5 MB | 760/770 Series RO 1500 users, data comp, IP/IPX, X.25/B & D for Australia |
| | | c760-in.rxd-US.42-2.bin | 80248802 | 1 MB | 1.5 MB | 760/770 Series RO 1500 users, data comp, IP/IPX, X.25/B & D for U.S. |
| | | c760-in.rxd-MLS.42-2.bin | 80250602 | 1 MB | 1.5 MB | 760/770 Series RO 1500 users, data comp, IP/IPX, X.25/B & D for Malaysia |

**Note** Internet Ready images do not support IPX routing.

## Memory Requirements for Running X.25

Running X.25 over the ISDN D channel requires 1 MB of Flash memory on a Cisco 700 router. If your router has a Flash memory size of 0.5 MB and you plan to run X.25 over the ISDN D channel, contact your Cisco Sales Representative to trade in your Cisco 700 router.

# Enhancements and New Commands

The Cisco 700 series router software Release 4.2(2) provides the following enhancements:

- Always On/Dynamic ISDN (AO/DI)

- PPP Authentication Enhancement

- IP RIP Update Timer Enhancement

- DHCP Address Lease Time

- X.121 Address Modification

- Terminal Endpoint Identifier Number Enhancement

- Netmask Modification

- IP Multicast TTL Modification

- Enhancements for RFC Compliance

The following sections provide details about Release 4.2(2) features and commands.

# Always On/Dynamic ISDN (AO/DI)

The Always On/Dynamic ISDN (AO/DI) networking service provides an always-available connection to packet-based services through the WAN. For the user, AO/DI reduces costs by using the D channel to make low-speed data transfers. For service providers, AO/DI removes a significant amount of data traffic from the voice network.

The D channel is an always-available, packet-oriented link between the remote office and the central office. The customer premises equipment (CPE) can use the D channel to pass Multilink Point-to-Point and TCP/IP protocols encapsulated in X.25. The D-channel X.25 packets are handled at the central office by the X.25 packet handler, so these packets can be routed without crossing the circuit-switched switch fabric.

When D-channel bandwidth exceeds a defined threshold, the router places one or more ISDN B-channel calls to increase bandwidth. When bandwidth requirements fall below a defined threshold, the B channels are released.

A maximum of four switched virtual circuits (SVCs) can be used for AO/DI. If a D-channel connection is not available, the router uses the first available B channel for a call. After the D channel PPP link is established, it is not torn down. If Bandwidth Allocation Control Protocol (BACP) is configured, Bandwidth on Demand (BOD) is negotiated using BACP.

Performance of the multilink protocol declines when the bandwidth of the underlying links varies widely; therefore, the router idles the D channel when the B channels are in use. (Packets that can be redirected using the multilink procedure are described in RFC 1990.) After the number of links drops to one and that link is idle, the router returns to normal operation.

The following command has been added to support AO/DI:

aodi

To turn AO/DI on, use the command **set aodi**.

    **SE**t **AO**di **ON** | **OF**f [**NUA**=*nua*] [**PO**werupenable]

### Syntax Description

| | |
|---|---|
| **ON** | AO/DI is configured. |
| **OF**f | AO/DI is not configured. |
| **NUA** | The X.121 address of the destination. This is a required parameter if AO/DI is **on**. |
| **PO**werupenable | The D channel X.25 SVC established at power up. The SVC is established only for active profiles. |

### Default
Off

### Command Mode
System or profile mode

### Usage Guidelines
To disconnect from the D-channel link, use the **disconnect** command.

The command **set** *link* **auto on** (where *link* = **D**) brings the D channel up on demand. By default, the D-channel link is set to **OFF**.

To configure AO/DI, Multilink PPP has to be configured first. Any available SVC can be used for the AO/DI call. The **demand** and **timeout** commands configure three links when AO/DI is configured.

If AO/DI is enabled when a call is made, the channel number for the first link of the call is 3. If AO/DI is disabled, the channel number is 1 or 2.

When configuring the **demand** command parameters for the D channel, the syntax is as follows:

   **DE**mand **D** [**TH**reshold=*kbs*] [**DU**ration=*seconds*] [**SO**urce=**LA**n | **WA**n | **BO**th]

The default **demand** command parameters are as follows:

| Link | Auto | Threshold | Duration | Source |
|------|------|-----------|----------|--------|
| D | On | 0 kbps | 1 | LAN |
| 1 | On | 7.5 kbps[1] | 1 | BOTH |
| 2 | On | 48 kbps | 1 | BOTH |

1. The value of 7.5 kbps for bringing up the first B channel is based on an assumption of 1.5 kbps per SVC. If the queue cannot be cleared in 5 seconds, B-channel bandwidth is used.

When configuring the **timeout** command parameters for the D channel, the syntax is as follows:

   **TI**meout **D** [**TH**reshold=**kbs**] [**DU**ration=**seconds**] [**SO**urce=**LA**n | **WA**n | **BO**th]

The timeout parameter for the D-channel link is set to **off** by default.

This feature is available only on the X.25 images.

### Example
The following example turns AO/DI on for the address of the remote device:

```
Host> set aodi on nua 14082221000
```

### Related Commands
**show config**
**show connection**
**show demand**
**show status**
**show timeout**

# PPP Authentication Enhancement

Cisco access servers require a specific authentication protocol to communicate with each type of dial-in device. For example, analog modem dial-in devices are authenticated by using PAP, and ISDN routers are authenticated by using CHAP.

By default, the Cisco access server proposes PAP in its line-control protocol configuration request. The Cisco 700 series router rejects PAP and waits for the Cisco access server to propose CHAP. When CHAP is proposed, the router proceeds with the authentication phase.

Cisco 700 series router software Release 4.2(2) solves the problem of a PAP proposal rejection and includes the flexibility of a fall-back order. You can specify a preference for a particular protocol. However, if the access server requires a protocol other than the preferred protocol, the router accepts it.

The following command has been added to support PPP Authentication:

## set ppp authentication accept

To specify a preferred authentication protocol, use the **set ppp authentication accept** command.

**SE**t **PP**p **AU**thentication **AC**cept [**CH**ap | **PA**p] | [**EI**ther]

### Syntax Description

**AC**cept        The Cisco 700 series router is the device being authenticated.

**CH**ap          CHAP is the preferred authentication protocol.

**PA**p           PAP is the preferred authentication protocol.

**EI**ther        Either CHAP or PAP can be used for authentication.

### Default

Accept either

### Command Mode

System or profile mode

### Usage Guidelines

This command cannot be used with the **set ppp chaprefuse** command because the parameter specifies that CHAP must be refused.

To set a preferred order of authentication for incoming calls, use the **set ppp authentication accept** command in system mode.

### Examples

The following example accepts CHAP only:

```
Host> set ppp authentication accept chap
```

The following example accepts PAP only:

```
Host> set ppp authentication accept pap
```

The following example accepts either protocol, with a preference for CHAP:

```
Host> set ppp authentication accept chap either
```

The following example accepts either protocol, with a preference for PAP:

```
Host> set ppp authentication accept pap either
```

The following example accepts either protocol, with no preference:

```
Host> set ppp authentication accept either
```

### Related Command
**show security**

# IP RIP Update Timer Enhancement

Before software Release 4.2(2), IP RIP packets were sent at a fixed interval of 30 seconds. With software Release 4.2(2), RIP version 1 and version 2 are configurable. The following commands have been added to set and display the IP RIP timer value.

set ip rip time

To change the IP RIP time, use the **set ip rip time** command.

**SEt IP RIP TIme** *seconds*

### Syntax Description

*seconds*       Any value between 1 and 4294967 seconds.

### Default
30 seconds

### Command Mode
System mode

### Usage Guidelines
If two RIP timers are on, updates are sent at alternate intervals with a period of half the interval between them. The remaining RIP timers (timeout, hold-down, and flush) are calculated relative to the RIP update timer.

### Example
The following example sets the interval to 120 seconds:

```
Host> set ip rip time 120
```

**Related Command**

**show ip rip time**

show ip rip time

To display the current IP RIP time value, use the **show ip rip time** command.

**SH**ow **IP RIP TI**me

**Command Mode**

System mode

**Example**

The following example shows the RIP time in seconds:

```
Host> show ip rip time
Rip Time Limit 120 secs.
```

**Related Command**

**set ip rip time**

# DHCP Address Lease Time

The previous Cisco 700 series router DHCP server implementation assigns an IP address to the DHCP client with an infinite lease time. With Cisco 700 series router software Release 4.2(2), you can specify the lease time for all the addresses.

The following commands have been added to support DHCP address lease time:

set dhcp leasetime

To set the IP address lease time, use the **set dhcp leasetime** command.

**SE**t **DH**cp **LE**asetime *minutes*

**Syntax Description**

*minutes*    0 (infinite) or a range from to 60 to 71000 minutes (approximately 50 days).

**Default**

0 minutes (a lease time of infinity)

**Command Mode**

System mode

### Usage Guidelines

Before software Release 4.2(2), all addresses were allocated an infinite lease time. With software Release 4.2(2), the lease-time value can be set to 0 or from 60 to 71000 minutes. The system time must be set accurately for the lease-time feature to function properly. When the lease time is set to 0, the lease time is infinite (the default value).

When a DHCP client needs an IP address, it sends a DHCP request packet to the network. The request packet can include the duration (lease time) during which the client would use the IP address. The router, acting as a DHCP server, allocates IP addresses from its pool (depending on availability). The lease time allocated to the client in the response packet depends on the lease time set on the router.

For example, a router with a lease time set to "infinite" (the default) responds to a DHCP client request as follows:

- Requests for lease time of 50 minutes get a lease time of infinity.

- Requests for a lease time of 75000 minutes get a lease time of infinity.

- Requests for a lease time of 1000 minutes get a lease time of 1000 minutes.

- Requests without a specified lease time get a lease time of infinity.

A router with a lease time set to a value of 100 minutes responds to a DHCP client request as follows:

- Requests for a lease time of 50 get a lease time of 100 minutes.

- Requests for a lease time of 75000 minutes get a lease time of 100 minutes.

- Requests for a lease time of 1000 get a lease time of 1000 minutes.

- Requests without a specified lease time get a lease time of 100 minutes.

### Example

The following example sets the lease time to 60 minutes:

```
Host> set dhcp leasetime 60
```

### Related Command

**show dhcp config**

show dhcp config

To display the DHCP configuration, use the **show dhcp config** command.

**SHow DHcp COnfig**

### Command Mode

System mode

**Examples**

The following example shows the DHCP configuration with an infinite (0) lease time:

```
Host> show dhcp config
Environment
  DHCP Server          ON
  DHCP Relay           OFF
IP Address Pool
  Start IP Address     10.0.0.2
  Count                128
  Lease Time (minutes) Infinite
Subnet Mask            255.0.0.0
DNS Configuration
  Primary DNS Server   NONE
  Secondary DNS Server NONE
  Domain               ""
Gateways
  Primary Gateway      10.0.0.1
  Secondary Gateway    NONE
WINS Configuration
  Primary WINS Server  NONE
  Secondary WINS Server NONE
  NetBios ScopeId      ""
Address In Use
  IP Address           Mac Address          Lease Expiration
  10.0.0.2             00a0c9931954         Infinite
  10.0.0.3             00a0c993191f         Infinite
2 IP addresses allocated, 126 free
```

The following example shows the DHCP configuration with 60-minute lease time:

```
Host> show dhcp config
Environment
  DHCP Server          ON
  DHCP Relay           OFF
IP Address Pool
  Start IP Address     10.0.0.2
  Count                128
  Lease Time (minutes) 60
Subnet Mask            255.0.0.0
DNS Configuration
  Primary DNS Server   NONE
  Secondary DNS Server NONE
  Domain               ""
Gateways
  Primary Gateway      10.0.0.1
  Secondary Gateway    NONE
WINS Configuration
  Primary WINS Server  NONE
  Secondary WINS Server NONE
  NetBios ScopeId      ""
Address In Use
  IP Address           Mac Address          Lease Expiration
  10.0.0.2             00a0c9931954         04/20/1998 15:27:01
  10.0.0.3             00a0c993191f         04/20/1998 15:26:00
2 IP addresses allocated, 126 free
```

**Related Command**

**set dhcp leasetime**

# X.121 Address Modification

The X.121 address can be added to packets sent over the D channel. The following commands has been added to support X.121 addressing:

## set x25d x121host

To change the X.121 address, use the **set x25d x121host** command.

**SE**t **X25**d **X121**host *address*

### Syntax Description

*address*    Data terminal equipment (DTE) X121 host address.

### Default
None

### Command Mode
System mode

### Usage Guidelines
This address is the calling-DTE address for all X.25 D-channel packets. The length of the X.121 address must not be greater than 16 decimal digits. After setting the X.121address, the router must be rebooted for the change to take effect. The **set defaults** command sets the X.121 address to an empty string.

The X.121 address is used only for X.25 D channel. The X.25 B-channel packets do not contain the X.121 address because calling DTE address suppression is required for TPAD operations (on X.25 over the B channel).

### Example
The following example sets an X.121 address:

```
set x25d x121host 1234567890
```

### Related Commands
**set defaults**
**upload**

# Terminal Endpoint Identifier Number Enhancement

The Terminal endpoint identifier (TEI) number can now be turned on or off using the command **set x25 tei**.

## set x25d tei

To set the terminal endpoint identifier (TEI) number, use the **set x25d tei** command.

    **SE**t **X25**d **TEI** [**ON** | **OF**f | *nnn*]

### Syntax Description

**ON**    TEI has a value of 255.

**OF**f    TEI has a value of 0.

*nnn*    TEI number or the support level.

### Default

None

### Command Mode

System mode

### Usage Guidelines

If set to off, there is no X.25 D channel support. If set to on, the value is 255; the central office assigns the TEI number dynamically. If *nnn* is less than 255 and greater than 0, the value for *nnn* is assigned to TEI. This command is not effective until the router is rebooted.

### Example

The following example sets the TEI number to 2:

```
Host> set x25d tei 2
```

### Related Commands

**reset x25d policy**
**set x25d policy**
**show x25d policy**

# IP Multicast TTL Modification

Before software Release 4.2(2), multicast IP support forwarded multicast packets after decreasing the TTL value. The router dropped multicast packets with a TTL value of 1, such as Internet Group Management Protocol. However, for user applications to function properly, these packets must be forwarded.

With software Release 4.2(2), multicast packets are forwarded without decreasing the TTL value. (Not decreasing the TTL is against the standards for multicast routing.) The downstream router that receives the multicast packet is signaled that the Cisco 700 series router is an edge multicast router. The downstream router must be a true multicast router and must not assume the Cisco 700 series router is an edge router. (There are no changes to the user interface.)

# Netmask Modification

Before software Release 4.2(2), the router used the default netmask associated with the negotiated IP address. Although you could specify a netmask, it was ignored, and the default netmask for the negotiated IP address was used. With software Release 4.2(2), you can specify that the netmask configured in the user profile should be used instead of the default netmask for the negotiated IP address.

The following command has been added to support the netmask modification:

### set ppp ip netmask local

To configure the netmask in a profile as the netmask for the WAN connection, use the **set ppp ip netmask local** command.

**SE**t **PPP IP NE**tmask **LO**cal **ON** | **OF**f

### Syntax Description

**ON**    Use the netmask configured in profile mode for the WAN connection using that profile.

**OF**f    Use the default netmask.

### Default

None

### Command Mode

Profile mode

### Usage Guidelines

None.

### Example

The following example sets the netmask to the negotiated value:

```
Host> set ppp ip netmask local off
```

### Related Command

**set ip address**
**set ip netmask**

## Enhancements for RFC Compliance

Cisco 700 series router software Release 4.2(2) is compliant with RFC 1974 and supports RFC 1990 for PPP, Stac LZS compression, and Multilink PPP. For the RFC 1990 implementation, if there is a link without both Endpoint Discrimination and Authentication, a second link is allowed for outgoing calls, but for security reasons, not for incoming calls.

Detailed information about the software features is in the *Cisco 700 Series Command Reference*. See the "Related Documentation" section in this document for more information.

## Limitations

This section provides the latest information about Cisco 700 series router software Release 4.2(2) limitations. Each item includes the Cisco DDTS tracking number, if applicable.

- During the upload of a configuration over ISDN the line, the DEMAND 1 DURATION statement is missed. (CSCdj80519)

- In the 1tr6 image, if you are connected on a voice call and flash, on occasion the message "Warning: Illegal dereference" displays. The router may reboot as a result. (CSCdk03329)

- AO/DI is available only on one connection. Even if it is enabled on multiple profiles, only one profile at a time can use it. (No Cisco DDTS tracking number is available.)

## Loading the Software

To save the router configuration file on your PC, load new software, and then reload the configuration to the router, refer to the "*Getting Started with Cisco 700 Series Software*" CD booklet shipped with your software feature pack.

The default image for Cisco 761, Cisco 765, Cisco 771, and Cisco 775 routers is NET3, IR. The default image for all other Cisco 700 series routers is U.S.

## Setting Switch Types

This section describes how to configure your router to operate with the network central office switch. Table 3 describes each switch type. The default switch type is dependent upon the system software version.

**Note** Not all switch settings are available to all users. The switch-type settings available depend on the type of software loaded into the router.

**Table 3    Switch Types**

| Switch Type | Description |
| --- | --- |
| 5ess | AT&T 5ESS |
| dms | Northern Telecom DMS-100 |
| ni-1 | National ISDN-1 |
| ins | Japan—NTT's Information Network System |
| net3 | Europe (also some areas in Asia)—ISDN BRI standard |
| 1tr6 | Germany—ISDN BRI standard |

| Switch Type | Description |
|---|---|
| tph | Australia |
| perm64 | Dedicated line service. Enables the unit to use a single 64-kbps data stream connected to one port. Channel 1 runs at 64 kbps, and channel 2 is not used. In Japan, NTT's super Digital service is the ISDN example of a leased line server. |
| perm128 | Dedicated line service. Enables the unit to use a single 128-kbps data stream connected to one port. Channels 1 and 2 are combined to run at 128 kbps. In Japan, NTT's HSD service is an example. |

To configure your router to operate with the network central office switch, use the command **set switch** from the system level command mode. The following example configures the ISDN switch type as DMS:

```
Host> set switch dms
```

Table 4 lists the commands available to use for each switch type and location:

**Table 4          Setting Switch Types**

| Switch Type | Location | Command to Set the Switch Type |
|---|---|---|
| 5ess, dms, ni-1 | U.S. | **SE**t **SW**itch {**5Ess** \| **DMS** \| **NI-1** \| **PERM64** \| **PERM128**} |
| ins | Japan | **SE**t **SW**itch {**INS** \| **PERM64** \| **PERM128**} |
| net3 | Europe | **SE**t **SW**itch {**NET3** \| **PERM64** \| **PERM128**} |
| 1tr6 | Germany | **SE**t **SW**itch {**lTR6** \| **PERM64** \| **PERM128**} |
| tph | Australia | **SE**t **SW**itch {**TPH** \| **PERM64** \| **PERM128**} |
| perm64, perm128 | U.S., Japan, Europe, Germany, Australia | **SE**t **SW**itch {**PERM64** \| **PERM128**} |

# Caveats

This section provides the latest information about Cisco 700 series router software Release 4.2(2) caveats. Each item includes the Cisco DDTS tracking number, if applicable.

- RIP updates keep the ISDN link up if the idle timeout is greater than the RIP timer value even if the RIP option is **linkup**. However, it does not cause the link to come up by itself. To correct the problem, use a filter for RIP traffic with the **ignore** option in the WAN profile.

  The system password is echoed over the ISDN connection the first time the connection is established. However, it is not echoed in subsequent connections.

  The upload command does not include the command **set ip route destination 0.0.0 propagate off conv1** in the configuration if a default route is entered in the user-defined profile before the connection is made. This occurs when the router connects to an Internet service provider, and obtains an IP address through IP Control Protocol (IPCP) negotiation. (No Cisco DDTS tracking number is available.)

- In previous versions, when a router configured as a DHCP server is power cycled, the IP address issued from the router is lost from the router table. A second PC trying to get an IP address from the router receives the IP address at the top of the list, duplicating the first PC IP address. This has been resolved in software Release 4.2(2). (CSCdj45244)

# Related Applications

This section describes the applications supported by the Cisco 700 series router software Release 4.2(2).

## CiscoSecure Authentication Agent Support

The CiscoSecure Authentication Agent (available for Windows 95 and Windows NT 4.0) application simplifies the use of token authentication over ISDN. There are two authentication modes: single authentication and double authentication.

The Cisco 700 series router operates in single authentication mode when Token Authentication Support (TAS) is enabled. CiscoSecure Authentication Agent is available on the World Wide Web (WWW). See the "Cisco Connection Online" section in this document for more information.

## Fast Step Support

Cisco 700 series router software Release 4.0(1) and higher supports Cisco 700 Fast Step. Cisco 700 Fast Step simplifies the setup, configuration, and monitoring of Cisco 700 series routers.

Cisco 700 Fast Step runs on Microsoft Windows 95 and Windows NT 4.0 systems. It is provided with your router on the Cisco Fast Step CD-ROM. The application is also available on CCO. See the "Cisco Connection Online" section in this document for more information.

## ClickStart Support

Cisco 700 series router software Release 4.0(1) and higher supports ClickStart EZSetup. It provides a web-based interface that guides you through a basic router configuration. (Communication between the Cisco 700 series router and the configuration terminal is accomplished through the Ethernet by connecting both devices to an Internet Protocol [IP] network.) ClickStart EZSetup is available on CCO. See the "Cisco Connection Online" section in this document for more information.

# National ISDN Capability Packages

A capability package is a set of standardized BRI line features that simplifies the process of configuring an ISDN line. The capability package ordering codes described in this section apply to NI-1 ISDN lines.

**Note**   The Cisco 765, Cisco 766, Cisco 775, and the Cisco 776 require two SPIDs for the analog telephone ports to operate correctly.

## Capability Package S

Package S provides alternate voice and circuit-switched data with no additional features. When a minimum feature set is needed, Package S is the preferred NI-1 capability package for Cisco 765, Cisco 766, Cisco 775, and Cisco 776 routers.

## Capability Package EZ-1 or U

Package EZ-1 (Capability Package U) provides alternate voice and circuit-switched data with all the features and capabilities of the router enabled. Package EZ-1 is the preferred NI-1 capability package for the Cisco 765, Cisco 766, Cisco 775, and Cisco 776 routers. The features include flexible calling (conference calling, call transfer, hold and retrieve), ACO (call waiting), and Call Forward Busy (CFB).

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**Note**   Multiple directory numbers per SPID are not supported with the 5ESS Custom.

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If you have any problems with your ISDN NI-1 provisioning, contact Cisco ISDN Support Services (United States only). To access this service or to obtain more information, call (800) 553-NETS (6387) and select the Customer Service option, or visit the Cisco ISDN web site at www.cisco.com/isdn.

When provisioning multiple directory numbers for a 5ESS NI-1, additional provisioning information that activates the distinctive ringing feature is available from Cisco ISDN Support Services. However, the flexible calling features (three-way conference calling, call transfer, hold and retrieve) are not available.

# ISDN Support Services

ISDN Support Services are only available in the United States. To access this service or to obtain more information, call 800 553-NETS (6387) and select the Customer Service option, or visit the Cisco ISDN Web site at www.cisco.com/isdn.

# Related Documentation

All documents mentioned in this section are available in electronic format. (See the section "Online Navigation" on page 19 for more information on accessing electronic documentation.)

The following documentation is related to these release notes:

- Cisco 700 Series Router Documentation
- Software Configuration Tips on the Cisco TAC Home Page

## Cisco 700 Series Router Documentation

The following documentation is provided with your Cisco 700 series router:

- *Release Notes for Cisco 700 Software Release 4.2(2)* provides the latest information on the router software. Release notes for previous versions of the software are on the Cisco Documentation CD-ROM.

- *Cisco 700 Quick Reference Guide* provides hardware installation instructions and includes a Cisco 700 Fast Step CD-ROM.

- *Cisco 700 Series Installation Guide* provides supplementary hardware installation instructions and examples of basic command-line configurations (the *Cisco 700 Quick Reference Guide* provides primary installation instructions). A paper copy of the document is provided with your router. The document is also available on the Cisco Documentation CD-ROM in HTML format and on the Cisco 700 Fast Step CD-ROM in PDF format.

- *Cisco 700 Series Command Reference* provides descriptions of the software commands, examples of advanced configurations, and discussions on networking topics related to the Cisco 700 series router. The document is available on the Cisco Documentation CD-ROM in HTML format and on the Cisco 700 Fast Step CD-ROM in PDF format. A paper copy of the document can be ordered from Cisco Systems, Inc. (Document Number DOC-700CR=).

## Software Configuration Tips on the Cisco TAC Home Page

The following URL contains links to access helpful tips to configure your Cisco products:

http://www.cisco.com/kobayashi/serv_tips.shtml

This URL is subject to change without notice. If it does change, point your web browser to http://www.cisco.com/ and follow this path: (button on left margin).

"Hot Tips" are popular tips and hints gathered from Cisco's Technical Assistance Center (TAC). Most of these documents are also available from the TAC's Fax-on-Demand service. To access Fax-on-Demand and receive documents at your fax machine, call 888-50-CISCO (888-502-4726). From international areas, call 415-596-4408.

The following sections are provided from the Technical Tips page:

- Field Notices—Designed to provide notification of critical issues regarding Cisco products. These include problem descriptions, safety or security issues, and hardware defects.

- Hardware—Technical Tips related to specific hardware platforms.

- Internetworking Features—Tips on using and deploying Cisco IOS software features and services.

- Sample Configurations—Actual configuration examples complete with topology and annotations.

- Software Products—MultiNet & Cisco Suite 100, Network Management, Cisco IOS Software Bulletins, CiscoPro Configurations.

- Special Collections—Other Helpful Documents. Frequently Asked Questions, Security Advisories, References & RFCs, Case Studies, and CiscoPro Documentation CD-ROM.

## Online Navigation

Cisco 700 router documentation is available as printed manuals and electronic documents. You can access Cisco 700 router documentation at Cisco Connection Online (CCO) on the World Wide Web and on the Cisco Documentation CD-ROM:

- Using a web browser, follow this path on CCO: *http://www.cisco.com/*, *Products & Ordering*, *Documentation*, *Cisco Documentation*, *Cisco Product Documentation*, *Access Servers and Access Routers*, *Fixed Configuration Access Routers*, *Cisco 700 Series Routers, Cisco 700 Series Router Software Release Notes, Feature Pack Information*.

- On the Documentation CD-ROM, follow this path: *Cisco Documentation*, *Cisco Product Documentation*, *Access Servers and Access Routers*, *Fixed Configuration Access Routers*, *Cisco 700 Series Routers*, *Cisco 700 Series Router Software Release Notes, Feature Pack Information*.

Additional information about CCO and the Documentation CD-ROM is in the sections "Cisco Connection Online" and "Documentation CD-ROM."

# Cisco Connection Online

Cisco Connection Online (CCO) is the Cisco Systems primary, real-time support channel. Maintenance customers and partners can self-register on CCO to obtain additional information and services.

Available 24 hours a day, 7 days a week, CCO provides a wealth of standard and value-added services to the Cisco customers and business partners. CCO services include product information, product documentation, software updates, release notes, technical tips, the Bug Navigator, configuration notes, brochures, descriptions of service offerings, and download access to public and authorized files.

CCO serves a wide variety of users through two interfaces that are updated and enhanced simultaneously: a character-based version and a multimedia version that resides on the World Wide Web (WWW). The character-based CCO supports Zmodem, Kermit, Xmodem, FTP, and Internet e-mail, and it is excellent for quick access to information over lower bandwidths. The WWW version of CCO provides richly formatted documents with photographs, figures, graphics, and video, as well as hyperlinks to related information.

You can access CCO in the following ways:

- WWW:  http://www.cisco.com
- WWW:  http://www-europe.cisco.com
- WWW:  http://www-china.cisco.com
- Telnet:  cco.cisco.com
- Modem:  From North America, 408 526-8070; from Europe, 33 1 64 46 40 82. Use the following terminal settings: VT100 emulation; databits: 8; parity: none; stop bits: 1; and connection rates up to 28.8 kbps.

For a copy of CCO Frequently Asked Questions (FAQ), contact cco-help@cisco.com. For additional information, contact cco-team@cisco.com.

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**Note**  If you are a network administrator and need personal technical assistance with a Cisco product that is under warranty or covered by a maintenance contract, contact the Cisco Technical Assistance Center (TAC) at 800 553-2447, 408 526-7209, or tac@cisco.com. To obtain general information about Cisco Systems, Cisco products, or upgrades, contact 800 553-6387, 408 526-7208, or cs-rep@cisco.com.

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# Documentation CD-ROM

Cisco documentation and additional literature are available in a CD-ROM package, which ships with your product. The Documentation CD-ROM, a member of the Cisco Connection Family, is updated monthly. Therefore, it might be more current than printed documentation. To order additional copies of the Documentation CD-ROM, contact your local sales representative or call customer service. The CD-ROM package is available as a single package or as an annual subscription. You can also access Cisco documentation on the World Wide Web at http://www.cisco.com, http://www-china.cisco.com, or http://www-europe.cisco.com.

If you are reading Cisco product documentation on the World Wide Web, you can submit comments electronically. Click **Feedback** in the toolbar, select **Documentation**, and click **Enter the feedback form**. After you complete the form, click **Submit** to send it to Cisco. We appreciate your comments.

This document is to be used in conjunction with the Cisco IOS Release 11.2 Configuration Guides and Command References publications.