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## Release Notes Instructions

The following new functions are documented in these Release Notes for PTF01 for Version 3.2 of the IBM 2210.

**NOTE:** Customers using new function supported by this PTF01 for Version 3.2 need to upgrade their Configuration Program. The new Configuration Program is available on the PTF01 CD-ROM or on the Internet.

- Support for PPP Over Asynchronous leased lines
- TN3270E Enhancements

The following TN3270E enhancements are available with this PTF. Documentation for TN3270E Enhancements is contained in the Version 3.2 IBM 2210 software documentation. TN3270E enhancements include:

- TN3270E LU Pooling

LU pooling is an enhancement to the TN3270E Server function that makes it easier to configure some TN3270E Server networks. This function allows SNA LUs to be grouped into named "pools". TN3270E clients can then request a connection using the pool's name as an LU name. The TN3270E Server will then choose an LU from the specified pool to service the client's request.

- TN3270E Server Client IP Address to LU Name Mapping

The TN3270E Server Client IP Address to LU Name Mapping function provides a mechanism for administrators to control client access to the TN3270E Server's resources (ie LUs).

Mapping enhances central administration by allowing the administrator to configure which SNA resources(LUs/Pool) client IP address/subnets will map to and use without modifying client configurations.

- TN3270E Server and DDDL

The dynamic definition of dependent LUs (DDL) is a VTAM facility that allows the logical units to be known by VTAM when they connect to VTAM, rather than during the major node activation of the related PU.

If prompted by VTAM, the TN3270E Server function will use DDDL to create its local LUs in VTAM. Instead of sending all of the Reply PSID's when the ACTPU is received, the server will wait until the LU actually needs to be defined. The LU definition will occur when a TN3270 client connects in and needs an LU that has not been defined to VTAM.

- TN3270E Support for Multiple TCP ports.

This enhancement allows you to define multiple TCP ports for the TN3270E Server to "listen" on. This support allows clients to specify the SNA resource they want using a port number.

- Ability to Disable TN3270E Negotiation.

This enhancement allows you to specify whether the added port will negotiate to be a TN3270E server. If it is not an "E" Server, it will not support printing or system requests.

The following functional enhancement is included in this PTF:

- Changes to TFTP

The following documentation updates are included in this PTF:

- Configuring and Monitoring Layer 2 Tunneling Protocol
- The PPP protocol is currently the only data link layer protocol that can be used when booting over a WAN interface

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## Support for PPP Over Asynchronous Leased Lines

This enhancement provides asynchronous leased line support using a V.34 interface in the IBM 2210. The following topics identify changes to the current configuration documentation to support this enhancement and occur in the following publications:

- Chapter 22 of the “Nways Multiprotocol Routing Services Using and Configuring Features”
- Chapters 43 and 44 of the “Nways Multiprotocol Routing Services Software User's Guide”

Changes to the existing text are noted in underlined type. The headings in bold type match the headings found in the printed publication and in online versions of the publication.

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## Using and Configuring a Dial-In Access to LANs (DIALs) Server (*Features Publication*)

### Before Using Dial-In-Access

Before using Dial-In Access, you need:

- A workstation running the IBM DIALs Dial-In Client or another PPP dial-in client (referred to as the *dial-in client* or *PPP dial-in client* throughout the following sections).
- Completed protocol configurations on the client machine.
- ISDN interfaces, integrated modem interfaces, a null modem interface, or external V.34 modems connected to the WAN ports of the 2210 that you want to use for single user dial-in.
- A fully configured DIALs Server in your LAN.

### Before Configuring Dial-Out Interfaces

Before configuring and using dial-out interfaces on the 2210, you need:

- IBM Nways software with DIALs support loaded on a 2210.
- An external V.34 modem, an integrated modem, or a null modem, , or an ISDN interface if connecting to an available WAN port on the 2210. See “Using the V.34 Network Interface” in the for configuration information.
- A workstation connected to the LAN that has access to the 2210 DIALs Server.
- Software on the client such as telnet, a telnet redirector or the IBM DIALs Dial-Out clients. IP must be correctly configured on the client in order for the dial-out client to work.

## Null Modem Usage

When using a null modem, use D25NM-3 full handshake:

Pin mapping:

1 to 1	1 to 1
2 to 3	3 to 2
4 to 5	5 to 4
6 to 8, 20	8, 20 to 6
7 to 7	7 to 7

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## Configuring and Monitoring Dial Circuits (*Software User's Guide*)

Adding a dial circuit onto a leased line will set the following default values:

**SET ANY\_INBOUND**

**SET DESTINATION**                default\_address

**SET IDLE**                        0

**SET LIDS**                        no

**Note:** If you are configuring a V.34 interface to be in leased line mode, the following parameters cannot be configured:

- **callback**
- **calls**
- **destination** *name*
- **destination address/subaddress**
- **idle**
- **inbound destination**
- **lid\_used**
- **priority**

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## Using and Configuring the V.34 Network Interface (*Software User's Guide*)

The V.34 interface allows routers to establish serial connections over leased lines or over switched telephone lines using externally attached modems that support the standard AT command set or integrated modem adapters.

The IBM 2210 operates in leased line mode or in switched mode. If you are using switched mode, make sure that you have asynchronous modems that support the Hayes AT command set. Also, you must know the maximum DTE speed of each modem.

## Optional V.34 Parameters

The following are optional V.34 parameters you can set. For a complete description of these commands, see “V.34 Configuration Commands” on page 599.

- The V.34 interface allows routers to establish serial connections over leased lines or over switched telephone lines. Leased line mode uses a communications line dedicated to one destination. Switched mode gives you the potential to call other devices and not be dedicated to one destination.
- You can limit the number of successive calls to an address that is inaccessible or that refuses those calls. To do so, use the **set retries-no-answer** and the **set timeout-no-answer** commands.
- The **set disconnect-timeout** command controls the amount of time the router waits to initiate a call after dropping a signal from the previous call.
- The **set command-delay-timeout** command specifies the amount of time the router waits to initiate or answer a call after it turns on DTR.
- The **set connect-timeout** command specifies the number of seconds allowed for a call to be established.
- The **speed** command sets the maximum DTE speed for the modem.
- The **modem-init-string** command allows flexibility in modem configuration to accommodate user or external equipment requirements.
- When you have finished configuring the interface, you can use the **list** command to display your configuration.

## Set

Use the **set** command to configure local addresses, timeouts and delays for calls, retries and timeouts for non-responding addresses, and the HDLC cable type.

### Syntax:

**set**                    command-delay timeout . . . (switched mode only)  
                          connect-timeout . . .  
                          disconnect-timeout . . .  
                          speed . . .  
                          local-address . . . (switched mode only)  
                          mode . . .  
                          modem-init-string . . . (switched mode only)  
                          retries-no-answer . . . (switched mode only)  
                          timeout-no-answer . . . (switched mode only)

**Note:** If you are configuring a V.34 interface to be in leased line mode, the following parameters cannot be configured:

- **command-delay-timeout**
- **local-address** *address*
- **local-address** *name*
- **modem-init-string**

- **retries-no-answer**

**command-delay-timeout** # of milliseconds

After the router turns on DTR (Data Terminal Ready), it waits this amount of time before it initiates or answers a call. If you set this parameter to 0, the router waits for the modem to respond to DTR with the CTS (Clear to Send) signal before it issues commands. The range is 0 to 65535 milliseconds, and the default is 0.

**connect-timeout** # of seconds

Sets the number of seconds allowed for a call to be established. The range is 0 to 65535 seconds, and the default is 60. If you set this parameter to 0, the modem controls the connection timeout. You should initially set this parameter to 0 and then use ELS event V34B.027 to find out how long it takes to establish connections to various destinations. You can then set this parameter to a number slightly higher than the longest connect time.

**Note:** Normally government regulation limits modem manufacturers to a maximum length for call setup. This value is merely an optimization, although inter-operation with some DSUs may require that you change this parameter.

**disconnect-timeout** # of seconds

Specifies the amount of time, in seconds, that the router waits after dropping DTR before it initiates further calls. The range is 0 to 65535 seconds, and the default is 2. If you set this parameter to 0, the router waits for the modem to respond to the DTR drop by dropping CTS and DSR before it initiates the next call.

**speed** # bits per second

Specifies the DTE speed in bits per second for the modem. You should try to use the maximum speed supported by the modem, although some modems may not autobaud properly at all supported speeds. If you suspect there is a problem, try a lower speed.

**local-address** address name

Specifies the network address name of the local port. This address name must match one of the names that you defined at the Config> using the **add v34-address** command.

**mode** Specifies whether the interface is configured as a switched or leased line interface.

**Note:** You can use the **set mode** command to toggle between a value of *switched* and a value of *leased*.

If you have set the mode to a value of *switched*, this parameter is displayed as **mode-leased** and can be used to change the mode to *leased*.

If you have set the mode to a value of *leased*, this parameter is displayed as **mode-switched** and can be used to change the mode to *switched*.

**Default value:** Switched

**modem-init-string** *value*

This is an AT command string sent to the modem at the end of successful interface initialization. It can be used to tailor modem parameters for your application.

**retries-no-answer** *value*

Some telephone service providers impose restrictions on automatic recalling devices to limit the number of successive calls to an address that is inaccessible or that refuses those calls. This parameter specifies the maximum number of calls the router attempts to make to a non-responding address during the timeout period. The range is 0 to 10, and the default is 1.

**Note:** Government regulation may also impose limits on the modem manufacturer that would supersede this parameter.

**timeout-no-answer** *# of seconds*

After the router reaches the maximum number of **retries-no-answer** to a non-responding address, it does not initiate further calls to that address until this time has expired. This timeout period begins when the router attempts the first call to an address. The range is 0 to 65535 seconds, and the default is 0. If you set this parameter to 0, the modem controls the timeout period.

**Example for Switched Mode:**

```
list
    V.34 System Net Configuration:

Operating Mode                = Switched

Local Network Address Name    = v403
Local Network Address         = 1-508-898-2403

Non-Responding addresses:
Retries                       = 1
Timeout                      = 0 seconds

Call timeouts:
Command Delay                 = 0 ms
Connect                      = 60 seconds
Disconnect                   = 2 seconds

Modem strings:
Initialization string         = at&f&s111&d2&c1x3

Speed (bps)                   = 115200
```

**Example for Leased Mode:**

```
list
    V.34 System Net Configuration:

Operating Mode                = Leased

Call timeouts:
Connect                      = 60 seconds
Disconnect                   = 2 seconds

Speed (bps)                   = 115200
```



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## L2TP Documentation Changes

The following text provides information about the commands available at the L2TP interface configuration (L2TP n>) command prompt and which parameters can be set using the **set** command at the Layer-2-Tunneling Config> command prompt.

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### Accessing the L2TP Interface Configuration Prompt

The **add dev layer-2-tunneling** command must be followed by a **net x** command where the variable *x* represents the number of the L2TP interface on the router, for example 8. In this example, the command prompt becomes L2TP 8>.

To access the L2TP interface configuration prompt:

1. Enter **talk 6** at the OPCON (\*) prompt.
2. Enter **add dev layer-2-tunneling** at the Config> prompt.
3. Enter **n interface#** at the Config> prompt.

### L2TP Interface Configuration Commands

Table 1 summarizes the L2TP interface configuration commands. Enter these commands at the L2TP n> prompt, where *n* is the interface number.

Command	Function
? (Help)	Displays all the commands available for this command level or lists the options for specific commands (if available). See FORM='FULL'..
Disable	Disables interface attributes.
Enable	Enables interface attributes.
List	Displays information about the L2TP interface.
Set	Allows you to set various L2TP interface parameters.
Exit	Returns you to the previous command level. See FORM='FULL'..

#### Disable

Use the **disable** command to disable outbound calls from the L2TP access concentrator (LAC).

**Syntax:** disable outbound-calls-from-lac

#### **outbound-calls-from-lac**

Prevents a LAC from placing a call to initiate an L2TP tunnel.

#### Enable

Use the **enable** command to enable outbound calls from the L2TP access concentrator (LAC).

**Syntax:**

enable outbound-calls-from-lac

#### **outbound-calls-from-lac**

Allows a LAC to place a call to initiate an L2 tunnel. The software prompts you for session parameters.

**Example:**

```
L2TP 8> enable outbound-call-from-lac
Outbound Call Type (ISDN, V34)? [ISDN]
Outbound calling address: 1234
Outbound calling subaddress:
L2TP 8>
```

## List

Use the **list** command to display the state of the various L2T interface configuration parameters.

**Syntax:** `list`

```
L2TP 8>list
CONNECTION TYPE
-----
Connection Direction          INBOUND
Remote Tunnel Hostname       *ANY*
```

## Set

Use the set command to configure the L2T interface operational parameters.

**Syntax:** `set any-remote-hostname`  
`connection-direction`  
`idle`  
`remote-hostname`

### any-remote-hostname

Clears the outbound remote hostname and disables inbound remote host name matching on this net.

### connection-direction [inbound] or [outbound] or [both]

Specifies whether the connection can be initiated by the peer (inbound), the LAC (outbound) or either the peer or the LAC (both) on this net. If you specify both, you cannot specify 0 for the idle time.

**Default value:** inbound

### idle-time *seconds*

Specifies the number of seconds of inactivity after which L2 tunneling will disconnect the tunnel on this net. A value of 0 indicates that the tunnel is fixed and should not be disconnected.

**Valid values:** 0 to 1024

**Default value:** 0

### remote-hostname *hostname*

Specifies the remote-hostname used on this tunnel.

For an outbound tunnel, the hostname is sent to the peer when placing a call. The peer uses this hostname to determine whether the call should be completed. This hostname must be configured in the authentication subsystem for calls to complete successfully. See . for more information.

For an inbound tunnel, the hostname is used to verify whether a call received from a peer on this tunnel should be completed.

**Valid values:** Any name from 1 to 64 ASCII characters

**Default value:** None

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## Accessing the L2 Tunneling Configuration Prompt

The following **set** command is available at the Layer-2-Tunneling Config> command prompt.

To access the Layer-2- tunneling configuration command prompt:

1. Enter **talk 6** at the OPCON (\*) prompt.
2. Enter **feature layer-2-tunneling** at the Config> prompt.

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## Set

Use the set command to configure the L2 tunneling operational parameters.

**Syntax:** **set** buffers  
call-rcv-window  
max-calls  
max-tunnels  
transmit-retries  
tunnel-rcv-window

Descriptions of these parameters are in the IBM 2210 V3.2 documentation.



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## The PPP protocol is currently the only data link layer protocol that can be used when booting over a WAN interface

The following underlined text clarifies the Boot requirements for the IBM 2210:

Before booting the IBM 2210, note the following:

- In order to use the Boot procedures for the IBM 2210, you must have a terminal connected directly to the IBM 2210.
- The IBM 2210 is shipped with the boot file that is stored in the IBD.
- You cannot boot the IBM 2210 over the ISDN interface.
- You cannot boot the IBM 2210 over any interface other than an interface running the PPP protocol.
- If you are booting over the Token-Ring interface and there is no Token Ring link active, you receive the following message: lobe media test failed: function failure.



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## Changes to TFTP

The following functional changes have been made to TFTP:

- Increased the default amount of time that must pass before a transfer times out to approximately 5 minutes.
- Provided two new patch variables that allow you to control the retransmission interval and the time for a transfer to timeout.

**tftp-max-rxto-time** is a new patch variable you can use to specify the maximum time to wait for a response from the partner before failing the transfer. **Default value:** 300 seconds

**tftp-min-rexmtime** allows you to specify the smallest interval of time to wait for a response from the partner before retransmitting the last packet sent. **Default value:** 1 second.

The units for both of these patch variables are seconds.

- Transferring large amounts of data to multiple files if necessary.

This function is important for situations where the receiving TFTP server has a bug handling the block count. The TFTP protocol requires that a block count be transmitted with every data block. The acknowledgement for that data block carries the block number that was in the data block being acknowledged. The transmitter of the data won't send any more data until it receives an acknowledgement for the last data block sent. Once the receiver of the data sends the acknowledgement it expects to receive a data block with a block count that is one greater than the block count it previously received. This block count is two bytes long.

Some TFTP servers have improperly implemented this as a signed short word (two-byte variable where the high order bit being 1 indicates a negative value) and others as an unsigned long word (four byte variable).

If the amount of data to be transferred is so great that the block count wraps, then depending on how the receiver verifies the block count, it may or may not acknowledge the data. If the receiver uses a signed short, the problem will be experienced when the block count goes from 0x7fff to 0x8000. If the receiver uses an unsigned long, the problem will be experienced when the block count goes from 0xffff to 0x0000. In both cases the block count in the data block will appear to be less than the previously received block count and the receiver will not acknowledge.

The transmitting TFTP on the router will either receive an error packet or time out waiting for the receiver to respond. When this happens, TFTP on the router will realize that the block count had wrapped and will automatically recover by making a write request to the receiver for a new file. The new file name is derived from the original file name. The new file name is derived by overlaying the last two characters of the original file name with two decimal digits. Every time the block count wraps, a new file will be written until all the data has been transferred. Tools like **cat** can be used at the receiver to concatenate the files.

- The patch variable **tftp-blocks-per-file** was added so that you can specify the maximum number of blocks to transfer to a file at the receiver. This allows you to tell the router to automatically do a write request for a new file once the number of blocks specified has been sent. Doing this circumvents the auto-

matic recovery described above, speeding up the transfer by avoiding the 5 minute timeout period.

The only values that may be specified for this patch variable are: 0xffff (65535) and 0x7fff (32767).

This patch variable is useful if you know that the receiving server has problems handling the wrap of the block count.