

## Release Note

# Software Release 2.4.2

## For AR300 Series Routers

### Introduction

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Allied Telesyn announces the release of Software Release 2.4.2 for AR300 Series routers.

This Release Note should be read with the following documents, available at [www.alliedtelesyn.co.nz/support/](http://www.alliedtelesyn.co.nz/support/) or on the *AR Series Router Documentation and Tools CD-ROM for Software Release 2.4.1*:

- AR300 Series Router Safety and Statutory Information
- AR300 Series Router Quick Install Guide
- AR300 Series Router Quick Start Guide
- AR Series Router Hardware Reference
- AR Series Router Software Reference



**WARNING:** *Information in this Release Note is subject to change without notice and does not represent a commitment on the part of Allied Telesyn International. While every effort has been made to ensure that the information contained within this document and the features and changes described are accurate, Allied Telesyn International can not accept any type of liability for errors in, or omissions arising from the use of this information.*

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### Software Release 2.4.2 File

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Software releases must be licenced and require a password to activate. To obtain a licence and password, contact your authorised Allied Telesyn distributor or reseller. The file for this software release is available from the support site at [www.alliedtelesyn.co.nz/support/](http://www.alliedtelesyn.co.nz/support/).

Table 1: File name for Software Release 2.4.2

Product name	Software release file
AR300 all models	8-242.rez

## Hardware Support

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Software Release 2.4.2 supports the AR300 Series routers:

- AR300L(S)
- AR300(S)
- AR310(S)
- AR320
- AR330
- AR350
- AR370(S)
- AR370(U)
- AR390
- AR395

## Software Features

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This release is based on Software Release 2.4.1 for AR300 Series routers, and includes the following improvements for TPAD over TCP/IP:

- [“Fast Disconnect” on page 3](#)
- Documentation for [“Support for Hayes Standard AT Command Set” on page 4](#)
- [“Chip and Pin” on page 5](#)
- [“Automatic Connection and Disconnection” on page 9](#)
- [“Automatic NUI Conversion” on page 9](#)

For full information about the software features and how to configure them using the CLI, see the *Software Reference*. For information about how to configure TPAD, see the *Transaction Packet Assembler Disassembler (TPAD)* chapter in the *Software Reference*.

## Fast Disconnect

The Fast Disconnect feature enables service switching. Retailers can use service switching if they use their transaction terminal or server to authorise transactions with more than one bank, or accept more than one type of credit card, and frequently need to terminate and establish new connections. If Fast Disconnect functionality is enabled on the router or switch, the till user only has to wait for a timeout on the till, rather than a timeout on the till and the router or switch. Therefore, the till user can process more transactions with different banks in a given time period.

Either the AT command ATH0, or the common short version ATH, are used to tell the router or switch to drop the ISDN call that the router or switch is using to call the authorisation service. All commands issued by the router or switch are acknowledged with a result code (see [“Support for Hayes Standard AT Command Set”](#)).

To enable Fast Disconnect functionality, use the command:

```
create tpad=name over=x25-interface fastdisconnect=on
      isdncall=isdn-call-name [other-options...]
```

To modify the Fast Disconnect configuration, use the command:

```
set tpad=name fastdisconnect={on|off}
      [isdncall=isdn-call-name] [other-options...]
```

where:

- *name* is a character string, 1 to 15 characters in length. Valid characters are any printable characters.
- *x25-interface* is the number of an X.25 DTE logical interface, in the range 0 to 7.
- *isdn-call-name* is the name of the ISDN call.

To display Fast Disconnect configuration information, use the commands:

```
show tpad[=name]
show tpad[=name] counter
```

Table 2: New parameters displayed in the output of the SHOW TPAD command.

Parameter	Meaning
Fast Disconnect (ATH)	Whether the TPAD instance is set to hang up its ISDN call when it receives an ATH or ATH0 command from the transaction terminal. One of “ON” or “OFF”.
ISDN Call	The name of the ISDN call that the TPAD instance will hang up if it receives an ATH or ATH0 command. This is only displayed if <b>fastdisconnect</b> is set to <b>on</b> .

## Support for Hayes Standard AT Command Set

A partial list of the Hayes Standard AT Command Set, or AT Command Set, has been supported on the router from the initial release of TPAD. AT Commands are used to control router or switch operations.

While the router or switch is in command mode, the transaction terminal may communicate directly with the router or switch using AT commands, and the router or switch executes these commands. The router or switch enters command mode when:

- It powers up.
- A connection is terminated.
- It executes a command other than a dial command.
- It receives the escape sequence, which consists of three consecutive “+++” characters, while the router or switch is in data mode.

The format for entering AT Commands from the transaction terminal or server is *ATXn*, where:

- *AT* is the prefix that initiates each command to the router or switch.
- *X* is the AT command.
- *n* is the specific value for the command.

The Alliedware AT Commands implemented on the router are shown in [Table 3](#) and the Alliedware TPAD result codes are shown in [Table 4](#).

Table 3: AT Commands supported by Alliedware.

Command	Description
AT	<i>Attention</i> : this command checks that the router is in control mode and that it will accept Hayes AT commands, and returns OK.
+++	<i>Escape Sequence</i> : this command is the escape sequence which allows the router to exit data mode and enter command mode.
ATDn	<i>Dial</i> : this command instructs the router to set the ISDN number of the call to which the TPAD, X.25 and LAPB are attached. The dial string <i>n</i> can be up to 30 characters long, and specifies the telephone number. The router will return CONNECT.
ATH0 or ATH	<i>Hook Control (also called “Hang-up”)</i> : this command instructs the router to terminate the ISDN call specified in the ISDNCALL parameter. This disconnects the ISDN call for the TPAD instance that the ATH or ATH0 command is received on if the TPAD instance has the FASTDISCONNECT parameter set to ON. This command usually follows the escape sequence.
ATV0 or ATV	<i>Result Code Format</i> : This command instructs the router to return results codes in numeric format.
ATV1	<i>Result Code Format</i> : This command instructs the router to return results codes in word (English) format. This is the default result code format.

Table 4: Alliedware TPAD Result Codes.

Result code	Numeric result code	Description
OK	0	Acknowledges the execution of a command line.
CONNECT	1	Confirms that ISDN number has been specified with ATDn.
NO CARRIER	2	Specifies that the router or switch has dropped the ISDN call, or that the call has failed to connect.
ERROR	4	Invalid command.

## Chip and Pin

The *Transaction Packet Assembler/Disassembler Protocol* (TPAD) provides a method for exchanging credit card transaction information between a transaction terminal (a swipe card machine or PC based emulation) or back office server and a credit card authorisation service. TPAD is defined by APACS (*Association for Payment Clearing Services*) Standards 30 and 40.

The TPAD standard now supports the “chip on card” verification method, which means that a chip is inserted onto EFT-POS cards and it is the chip which authenticates the user’s PIN for the account without having to contact the bank.

The router only pays a small part in the transaction. It does not have anything to do with the till and/or chip PIN authentication, it verifies the size of the transaction packet. The transaction length is generally longer, so this enhancement changes the maximum size of the packet received by the router from 128-bytes to 512-bytes per request.

TPAD uses an X.25 interface to communicate with the authentication service.

## Configuration Examples

The configuration examples in the TPAD chapter have been copied below, with the addition of the **maxdata** parameter shown in **bold** type. The **maxdata** parameter is set to 512 bytes, this deviates from the default of 128 bytes because of the Chip and PIN standard. Although the **maxdata** parameter is not required for Chip and PIN transactions, it will provide faster transaction speeds as X.25 only needs to ACK a single packet.

The following examples illustrate how to configure TPAD on the router. There are two basic steps:

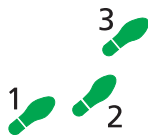
1. Configure the X.25 interface(s) that TPAD will use.
2. Create TPAD instances to use the X.25 interface(s).

## Configuring X.25 Interfaces

Three different X.25 configurations are supported:

1. X.25 over a synchronous interface. This may be appropriate for situations where the X.25 service provider supports multiple SVCs.
2. X.25 over the ISDN D channel. This scenario is appropriate where the level of TPAD traffic is low (the D channel has a bandwidth of only 16 Kbps) and the B channels are required for data or voice traffic. Note, however, that X.25 over the D channel is not supported by all ISDN service providers.
3. X.25 over the ISDN B channel. This scenario is appropriate where the level of TPAD traffic is too high to be supported by the D channel, or where the ISDN service provider does not support X.25 over the D channel. B channels can be reserved for voice and data traffic to ensure there are always channels available for transactions as well as telephony services.

The following examples illustrate how to configure an X.25 interface, `x25t0`, using each of these options.



### To create an X.25 interface over a synchronous interface:

#### 1. Configure LAPB over the synchronous interface.

Create LAPB interface 0 over synchronous interface 0 and enable dial-on-demand:

```
create lapb=0 over=syn0
```

#### 2. Create a set of call parameters for the X.25 interface.

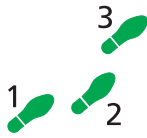
A call parameter set specifies characteristics of the calls made by the X.25 interface. In particular, if the transaction terminals are not capable of specifying the X.25 NUI in the TPAD call setup message, the NUI can be specified here and TPAD will automatically insert it in the X.25 Call Request. **The `maxdata` parameter is optional, but would speed up the chip transactions:**

```
add x25t cpar=1 nui=bt_host_1 maxdata=512
```

#### 3. Create the X.25 interface.

Create an X.25 interface over the LAPB interface and assign the call parameter set. Other X.25 parameters may also need to be set; in particular the router's DTE address and the channels to be used for calls may need to be specified to match those provided by the X.25 network:

```
create x25t=0 over=lapb0 defcpar=1 dteaddress=9876543
ltc=1024 htc=1056 npvc=0
```



## To create an X.25 interface over the ISDN D channel:

### 1. Configure LAPD.

A LAPD interface is automatically created for each ISDN interface on the router. LAPD interfaces are numbered starting from zero (0) and incrementing for each additional ISDN interface discovered during startup. For this example, the router has a single Basic Rate ISDN interface. Set the LAPD mode to **automatic**:

### 2. Create a set of call parameters for the X.25 interface.

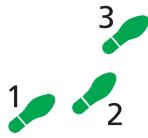
A call parameter set specifies characteristics of the calls made by the X.25 interface. In particular, if the transaction terminals are not capable of specifying the X.25 NUI in the TPAD call setup message, the NUI can be specified here and TPAD will automatically insert it in the X.25 Call Request:

```
add x25t cpar=1 nui=bt_host_1
```

### 3. Create the X.25 interface.

Create an X.25 interface over the LAPD interface and assign the call parameter set. Other X.25 parameters may also need to be set; in particular the channels to be used for calls may need to be specified to match those provided by the X.25 network:

```
create x25t=0 over=lapd0 defcpar=1 dteaddress=9876543  
ltc=1024 htc=1056 npvc=0
```



## To create an X.25 interface over the ISDN B channel:

### 1. Configure LAPD.

A LAPD interface is automatically created for each ISDN interface on the router. LAPD interfaces are numbered starting from zero (0) and incrementing for each additional ISDN interface discovered during startup. For this example, the router has a single Basic Rate ISDN interface. Set the LAPD mode to **automatic**:

```
set lapd=0 mode=automatic
```

### 2. Create an ISDN call definition.

The X.25 interface will use an ISDN call as its physical interface. When an X.25 call is made, and ISDN call is made over one of the B channels on the Basic Rate ISDN interface to carry the X.25 call. The important parameters are the calling number, called number, and precedence:

```
add isdn call=btb number=5552000 precedence=out
callingnumber=5551000
```

### 3. Configure LAPB over the ISDN call.

Create LAPB interface 0 over the ISDN call and enable dial-on-demand:

```
create lapb=0 over=isdn-btb dod=on
```

### 4. Create a set of call parameters for the X.25 interface.

A call parameter set specifies characteristics of the calls made by the X.25 interface. In particular, if the transaction terminals are not capable of specifying the X.25 NUI in the TPAD call setup message, the NUI can be specified here and TPAD will automatically insert it in the X.25 Call Request. **The maxdata parameter is optional, but would speed up the chip transactions:**

```
add x25t cpar=1 nui=bt_host_1 maxdata=512
```

### 5. Create the X.25 interface.

Create an X.25 interface over the LAPB interface and assign the call parameter set. Other X.25 parameters may also need to be set; in particular the channels to be used for calls may need to be specified to match those provided by the X.25 network:

```
create x25t=0 over=lapb0 defcpar=1 dteaddress=9876543
ltc=1024 htc=1056 npvc=0
```

Once an X.25 interface has been created, a TPAD instance must be created and configured to use the X.25 interface to communicate with the authentication service. Configuration examples for creating TPAD instances can be found in the TPAD chapter of your software reference.



## Automatic Connection and Disconnection

### Automatically connect X.25

When the router receives an APACS 30 standard message from a transaction terminal over a TCP port, by default it now automatically establishes an X.25 connection to the authorisation service specified by the **over** parameter, activating the LAPB and ISDN connections required for this X.25 interface. It uses the NUA (Network User Address) specified by the **autonua** parameter (by default **autonua=13**), and the NUI (Network User Information) specified by the **autonui** parameter (by default **autonui=natwest\_test**). To turn this automatic dialling (**autodial**) off or on, or to modify the NUA or NUI it uses to connect, use one of the commands:

```
create tpad=name over=x25-interface [autodial={yes|no}]
    [autonua=nua] [autonui=nui] [other-tpad-parameters]

set tpad=name [autodial={yes|no}] [autonua=nua] [autonui=nui]
    [other-tpad-parameters]
```

### Automatically disconnect call

The router can then automatically close the X.25 and ISDN connections, and the TCP session associated with the TPAD, when the TPAD instance has been idle for a specified time (**autodisconnecttime**). By default, **autodisconnecttime=0** — it does not timeout. To configure TPAD to automatically close an ISDN call or a TCP session, use one of the commands:

```
create tpad=name over=x25-interface
    [autodisconnecttime=0..65535] [other-tpad-parameters]

set tpad=name [autodisconnecttime=0..65535]
    [other-tpad-parameters]
```

## Automatic NUI Conversion

By default, when the TPAD router receives a character string from the transaction terminal, it converts strings like this:

*Nnui*

to strings like this:

*Anua:nui*

where:

- *nua* is the Network User Address (NUA) specified by the **autonua** parameter.

By default, it uses the NUA (Network User Address) **autonua=13**. To turn this automatic conversion off or on, or to modify the NUA, use one of the commands:

```
CREate TPAD=name OVer=x25-interface
    AUTONNuiconversion={YES|NO} [AUTONUA=nua]
    [other-tpad-parameters]

SET TPAD=name AUTONNuiconversion={YES|NO} [AUTONUA=nua]
    [other-tpad-parameters]
```

### Display New TPAD Settings

To display the TPAD automatic dialling, automatic disconnection and automatic conversion settings, use the command:

```
show tpad[=name]
```

Figure 1: Example output from the **show tpad** command.

```

TPAD Configuration
Status ..... ENABLED
List of Instances:
-----
OurBank:
  Status ..... Enabled
  Debug ..... Enabled
  Checksum ..... On
  Transfer Type ..... Multithread
  Tcp Port ..... 1024
  Over ..... x25t0
  Max-Transfer ..... 64
  Max-Connections ..... 8
  Source ..... All
  Number retries on Call ..... 2
  Fast Disconnect(ATH) ..... 2
  ISDN call Name ..... 2
  No Carrier Response ..... ON
  Silently Retry Call ..... OFF
  RL Automatic Dialling ..... ON
  RL Automatic NUA ..... 13
  RL Automatic NUI ..... natwest_test
  RL Automatic NNUI->ANUA:NUI ..... OFF
  RL Automatic Disconnect Time..... 0
-----

```

Table 5: New parameters displayed in the output of the **show tpad** command

Parameter	Meaning
RL Automatic Dialling	Whether the router automatically establishes an X.25 connection when it receives an APACS 30 message from a transaction terminal.
RL Automatic NUA	The NUA (network user address) that the router uses to convert NNUI to ANUA:NUI if <b>autonnuiconversion=yes</b> , and to establish the X.25 connection if <b>autodial=yes</b> .
RL Automatic NUI	The NUI (network user information) that the router uses to establish the X.25 connection if <b>autodial=yes</b> .
RL Automatic NNUI->ANUA:NUI	Whether the router automatically converts NNUI to ANUA:NUI.
RL Automatic Disconnect Time	How long, in seconds, the TPAD instance remains idle before the router automatically disconnects its X.25 and ISDN connections and the associated TCP session, or 0 if it does not timeout.