

# Bull DPX/20

## TPAD-HPAD

### Reference Manual

AIX

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## TPAD-HPAD

### Reference Manual

AIX

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## Software

June 1996

**Bull Electronics Angers S.A.**

**CEDOC**

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# About This Book

The TPAD–HPAD Reference Manual supplies users with detailed information about how to install, configure and manage the PAD software. The information provided includes the following:

- An introduction to TPAD–HPAD and its communications interface,
- Installation of the PAD, its activation and license control,
- Configuring the PAD using SMIT,
- Configuring the PAD using commands,
- Configuring the PAD over PVC,
- Configuring and using the PAD over a LAN/WAN gateway,
- PAD printing,
- Command functions and the KERMIT protocol,

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## Audience

This manual is intended for system administrators charged with the installation and configuration of TPAD–HPAD and for users of TPAD–HPAD services.

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## Operating System Level

This document is at Revision 4 level, which applies to AIX Version 4.1.4 or higher version.

Migration from an earlier version of AIX is detailed in the OSI Communications Porting Guide.

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## Document Overview

This manual is structured in nine chapters, seven appendices, a glossary and a general index:

- |                  |   |
|------------------|---|
| <b>Chapter 1</b> | <b>Introducing TPAD–HPAD</b><br>Describes the TPAD–HPAD software architecture, the communications hardware interface and the various uses of the product over a LAN (Ethernet, Token Ring or FDDI) or WAN (X.25) network. |
| <b>Chapter 2</b> | <b>Installing TPAD–HPAD</b><br>Describes the installation the PAD package using SMIT and the activation of TPAD and HPAD  |
| <b>Chapter 3</b> | <b>Administering TPAD–HPAD Using SMIT</b><br>Describes configuration of TPAD–HPAD and general administration tasks using SMIT.  |
| <b>Chapter 4</b> | <b>Configuring TPAD–HPAD Using Commands</b><br>Describes how to configure TPAD–HPAD using commands.   |
| <b>Chapter 5</b> | <b>Running TPAD–HPAD</b><br>Describes the use of command functions to run TPAD–HPAD.  |
| <b>Chapter 6</b> | <b>Using TPAD–HPAD over PVC</b><br>Describes how to configure and use TPAD–HPAD over PVC (Permanent Virtual Circuit).   |

<b>Chapter 7</b>	<b>Using a LAN / WAN gateway</b> Describes how to configure a LAN / WAN gateway and use the SPAG Y/13 profile.
<b>Chapter 8</b>	<b>PAD Printing</b> Describes an extension to the spooling system enabling access to printers connected via PAD concentrators.
<b>Chapter 9</b>	<b>Kermit Through TPAD–HPAD</b> Describes the KERMIT file transfer protocol.
<b>Appendix A</b>	<b>Files and Data Formats</b> Server PAD application files.
<b>Appendix B</b>	<b>TPAD Profiles and SPAG Y/13 packet</b> Definitions in compliance with X.3 CCITT recommendations. Structure of SPAG Y/13 packet.
<b>Appendix C</b>	<b>Error Codes and Messages</b> Command return codes and error messages.
<b>Appendix D</b>	<b>Using TPAD with Minitel</b> Using TPAD with Minitel.
<b>Appendix E</b>	<b>Using a TRANSPAC Public Pad</b> Using TPAD with TRANSPAC.
<b>Appendix F</b>	<b>Migrating from an Earlier Version</b> Moving from an earlier version of TPAD–HPAD.
<b>Appendix G</b>	<b>Bibliography</b> Provides a bibliography of further source information.
	<b>Glossary</b>
	<b>Index</b>

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## Conventions Used in This Document

The following typographic conventions are used in this document:

<b>Bold</b>	Bold characters are used to highlight key words command, subroutines or important words.
<i>Italic</i>	Italic characters represent file names and user supplied values.
<code>Courier</code>	Courier characters are used in examples and for user commands entered on the terminal keyboard.
<b>*Mandatory</b>	The names of fields a user must complete are presented in bold type and with an asterisk (*) to the left.

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## References to Standards

Applicable Standards are listed in Standards, on page G-3.

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## Bibliographical References

Reference documents, cited in the text, are listed in the “Bibliography” on page G-1.

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## Terminology

The term “machine” is used to indicate the proprietary hardware, in this case the DPX/20 family of single- and multi-processors.

The term “Operating System” is used to indicate the proprietary operating system software, in this case AIX.

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## Revision 04 Modifications

**With respect to Revision 03:**

- Two chapters are new:
  - “Using a LAN / WAN gateway”, describing how to configure and use connections using SPAG Y/13 profile.
  - “Using TPAD–HPAD over PVC”, describing how to configure and use connections on Permanent Virtual Circuits.
- The chapter “Cookbook” has been removed. Its contents is transferred in the new document *TPAD–HPAD Cookbook* (86 A2 82GX).
- The changes concerning the trace tool have been introduced in “Running TPAD–HPAD” and “Configuring TPAD–HPAD with SMIT”.
- TPAD interactive commands have been added/revised: debug, help, iclr, lang, open, rpar?, rset?.
- Other minor changes and corrections have been done.

**To help you access information:**

- An index, listing the management functions, together with configurator menu FastPath and document reference pages is provided at the beginning of Chapter 3.





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# Chapter 1. Introducing TPAD–HPAD

Introduces the TPAD–HPAD software architecture.

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## Overview

This chapter contains general information about TPAD–HPAD and its communications interface in following sections:

- TPAD–HPAD Software Architecture, on page 1-2,
- TPAD–HPAD Protocols, on page 1-5,
- TPAD–HPAD over OSI lower layers, on page 1-7,
- PAD Communication Hardware interface, on page 1-9,
- Uses of PAD Over an X.25 Network, on page 1-10,
- Uses of PAD Over a LAN, on page 1-12,
- Use of PAD Over a LAN / WAN, on page 1-12.

# Purpose and Software Architecture

## Software Architecture

TPAD–HPAD software allows an asynchronous terminal user to connect and communicate with, by means of packet exchanges, a remote host application as a network virtual terminal, as described in Figure 1.

TPAD–HPAD processing involves two complementary services:

- the TPAD (Terminal Packet Assembly Disassembly) service,
- the HPAD (Host Packet Assembly Disassembly) service.

Each of these services features a client/server type application, i.e., one TPAD process (client) and one HPAD process (server) are simultaneously activated for each terminal using the TPAD–HPAD service.

TPAD–HPAD architecture comprises two main functional entities:

- the **TPAD** module that manages information transmitted by an asynchronous terminal, and the emission/reception packets to/from the HPAD module. It is implemented in the machine supporting the terminal connection, for instance DPX/20 (directly or via a modem).
- the **HPAD** module that receives and processes the packets sent by the various PAD modules (and particularly TPAD modules) and sends back packets to them. It is implemented in the remote Host system accessed by the terminal, i.e., Bull DPX/20 or Bull DPS machines.

The TPAD and HPAD modules can communicate by means of packet exchanges either via an **X.25 network** (private or public) or a **LAN** (ETHERNET, Token Ring or FDDI network), or even **LAN / WAN via a gateway**. The software architecture over a LAN, or a WAN, is shown in Figure 1.

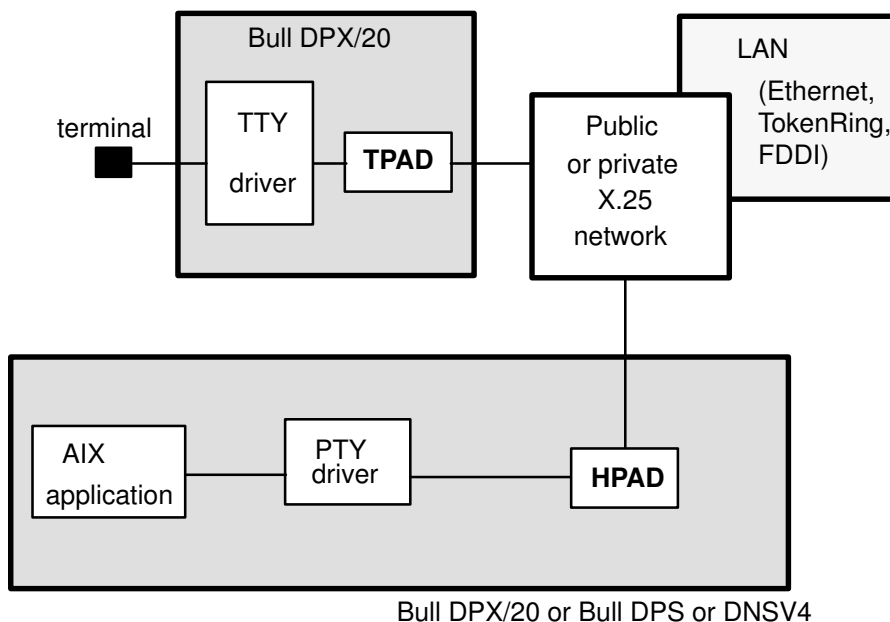


Figure 1. TPAD–HPAD Software Architecture

## What TPAD–HPAD enables users to do

### Using Various Accesses

**HPAD** provides an access to a service from:

- a remote asynchronous terminal via a TPAD,
- a remote application via a TPAD,
- a remote terminal via a public or private PAD (terminal is either an asynchronous or a videotex terminal),
- a remote application via a public or private PAD.

A service is identified by an addressing profile. It corresponds to an application (login application or user application). It includes security control access and connection parameters.

**TPAD** enables a user from an asynchronous terminal or user application to access:

- a remote HPAD service,
- a remote application via a public or private PAD.

Underlying networks can be:

- **LAN** networks,
- **WAN** X25 networks, including support of PVCs (Permanent Virtual Circuit),
- WAN networks accessed thru a **LAN/WAN Gateway** (SPAG Y/13 profile).

The use of TPAD–HPAD over **PVC** is the matter of chapter 6.

The use of **LAN/WAN Gateway** with PAD is the matter of chapter 7.

### Accessing a Remote Machine

The HPAD entity, implemented in a host system, enables a remote character–mode terminal to use a sort of 'remote login' on the PAD connection or to use a more advanced user application.

### Running Automatic Sessions

This is a specific BULL PAD feature.

It is possible to specify the name of a script file to be executed during the `tpad` activation phase. It can contain a script of commands making automatic the connection to a remote host and the user login entry. See `'-f cfile'` option of `tpad` on page 0 and Customized Start–Up File (`$HOME/padrc`) on page A-16.

### Using PAD Printing

A user who has a remote access to a machine wants his request to be printed on a printer not physically near the machine but near his workstation. He then uses what is called PAD printing. Once the configuration has been done, he submits his print requests exactly as if it were a local printer and the connection management and data transfer are done automatically. A PAD printer can also be used for remote printing over a WAN.

### Using a Connection to Transfer Files

A user can transfer files by using the TPAD interactive commands or by accessing the **kermit** file transfer program in transparent mode over a TPAD–HPAD connection through a LAN or WAN network. It is the matter of chapter 9.

## Interconnecting with PAD services

TPAD–HPAD offers a PAD service on AIX, compliant with X3–X28–X29 (1988). It allows interconnection with platforms implementing a PAD service, such as:

- LAN and WAN connection with DATANET/DNSV4 and CPNET to access to DPS/6, DPS/7 and DPS/8,
- LAN and WAN connection with DPX/2,
- LAN and WAN connection with other UNIX machines available on the market (IBM, NCR, HP, DEC, UNISYS, SUN...),
- WAN connection with Terminal Servers such as CPNT 2500, OST ECOM25, MEGAPAC, MCX 09/TRT...,
- WAN connection with public PAD including "videotex" terminals.



---

## TPAD–HPAD Protocols

The Packet Assembler/Disassembler (PAD) is a device that assembles packets from character streams, and disassembles into character streams. It provides an interface between asynchronous character mode devices and the X.25 protocol used to access a public switched network.

The CCITT has defined PAD related recommendations which state how a terminal should be connected to a PAD, the range of user–definable services the PAD should offer, and how the host communicates with the PAD over the network:

- the TPAD parameters are defined by CCITT recommendation X.3.

The recommendation X.3 defines the PAD operating characteristics for a given DTE–C, such as terminal operating speed, echo of characters, editing, flow control, etc.. A user can select a set of PAD parameter values (PAD profile) for a particular DTE–C. The 1988 recommendation of CCITT lists 22 user selectable parameters.

BULL's PAD also supports some BULL specific parameters like 95, 96, 97, 98, 99 about which more description will be given later. All of them are listed in TPAD Profile Parameters, on page B-1

- the dialogue between a DTE–C (Data Terminal Equipment–Character mode) and the TPAD module implemented on the DTE–P (Data Terminal Equipment–Packet mode) is handled by a protocol which complies with recommendation X.28. The recommendation X.28 defines the way in which a terminal communicates with the PAD. In this exchange of control information:

– Messages sent from the terminal to the PAD are called (by X.28 ):  
COMMAND SIGNALS.

– Messages sent from the PAD to the Terminal are called:  
PAD SERVICE SIGNALS.

These signals take the form of encoded character streams as defined by International Alphabet Number 5 (IA5).

- the dialogue between the TPAD and the HPAD modules is handled by a protocol which complies with CCITT recommendations X.29, X.29M and SPAG Y/13 profile.

The recommendation X.29 defines the exchange of control information across the network between the PAD and the host DTE. When a virtual circuit is established linking a DTE–C to a host DTE, the host DTE might have to tell the PAD how to operate with a particular application. Thus the host DTE must have the capability to read and modify the remote PAD parameters. X.29 achieves this control by using DATA packets with the Q–bit set to 1 (QUALIFIED PACKETS). These packets are called: PAD MESSAGES.

The dialogue between the TPAD and HPAD modules may also be done over a LAN / WAN, i.e. through a gateway. A particular calling packet is then used (SPAG Y/13 packet).

Various X3, X28 and X29 error codes and messages are listed in Error Codes and Messages, on page C-1.

The network protocols used by TPAD-HPAD are shown in figure 2.

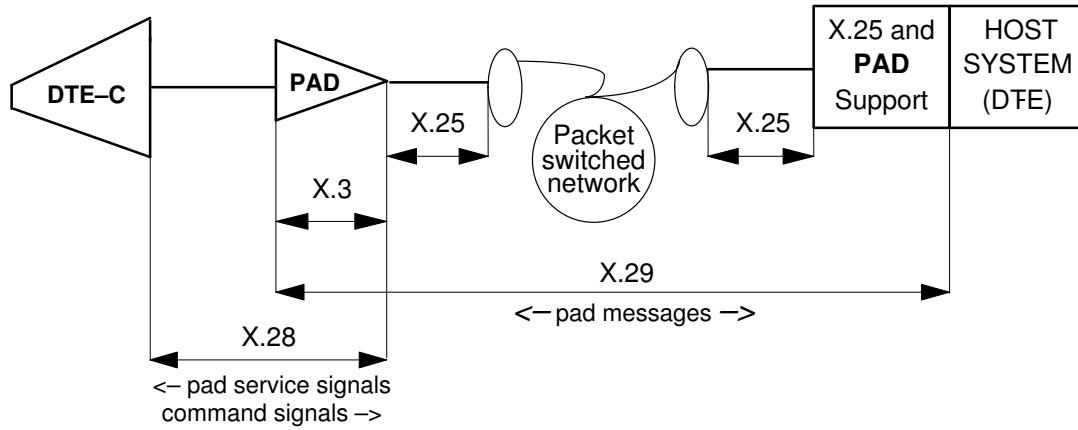


Figure 2. TPAD-HPAD protocols

# TPAD-HPAD over OSI lower Layers

Stack hooks used by TPAD-HPAD are **X25.3** services and **OSI COTP** Class 4, as shown in Figure 3.

TPAD-HPAD uses the following API to access OSI Stack Lower Layers:

- **COTP API** (Connection Oriented Transport Protocol) to access COTS service (**LAN** connection)
- **X25-3 API** to access X25-3 service (**WAN** connection).

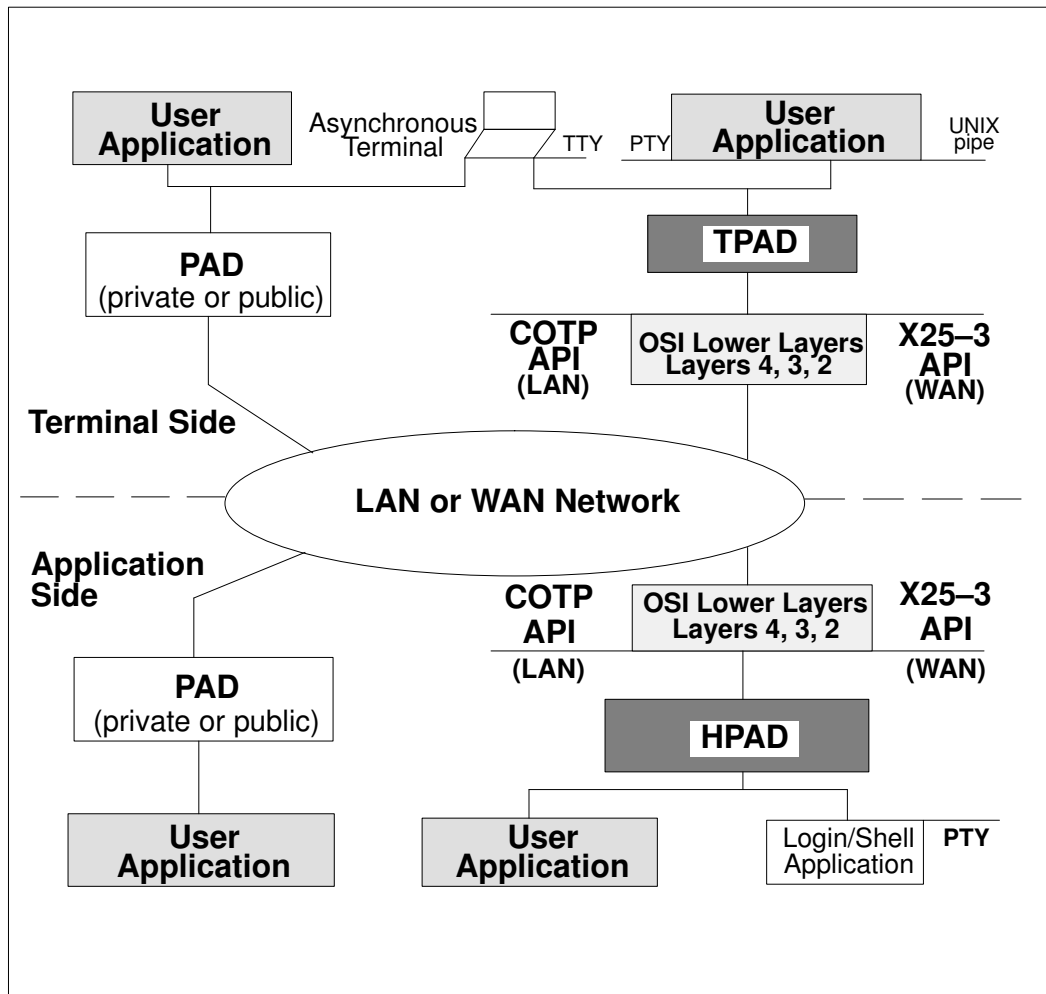


Figure 3. TPAD-HPAD Architecture Overview

## COTP API for LAN

TPAD–HPAD does not support the full ISO addressing for LAN connection (network type 3).

### X.25.3 Access Method for WAN

This access method enables the user to develop applications that directly access level 3 of the X.25 network. It offers a packet–level service based on X.25 protocols in compliance with CCITT recommendation X.25 Year 1988; it is used to handle switched and permanent virtual circuits.

This programming interface can be used to request either **public or private X.25** network services.

X.121 addresses and additional addressing facilities are handled by the X25.3 Access Method programming interface (in particular all the facilities offered by the TRANSPAC French public network).

For details, refer to the *MAX25-3 API Programmer's Guide*, see Bibliography, on page G-1.

---

## PAD Communication Hardware Interface

Details of the physical devices used by the TPAD and HPAD modules to communicate over an **X25** or **LAN networks** are provided in the hardware documentation delivered with the operating system and/or the adapters, see Bibliography, on page G-1.

# PAD Uses Over an X.25 Network or LAN

## Prerequisite

TPAD–HPAD is designed to manage communications over X.25 networks or LAN between asynchronous terminals linked to a machine and a remote host.

This requires the following operations:

- installation of the TPAD module on the system supporting the asynchronous terminals,
- access to the remote system equipped with a HPAD module.

## Uses of PAD over an X.25 network

### Access from an asynchronous terminal with a modem to a remote station

An asynchronous terminal, connected to a public X.25 network (i.e. TRANSPAC in FRANCE) and using a modem, can access a remote machine via a public PAD, as shown in Figure 4.

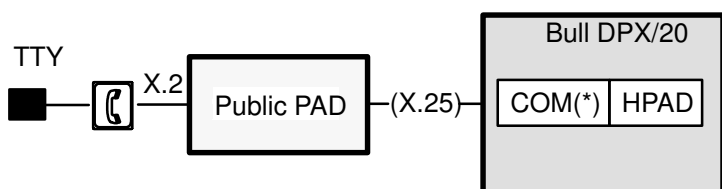


Figure 4. Access from a asynchronous terminal to a remote machine

### Access from a Videotex terminal to a remote Station

It is possible to access a machine connected to a public X.25 network (i.e. TRANSPAC in France) from a videotex terminal (e.g. Minitel in France) through the PAV (Videotex Access Point) included in the public PAD, as shown in Figure 5.

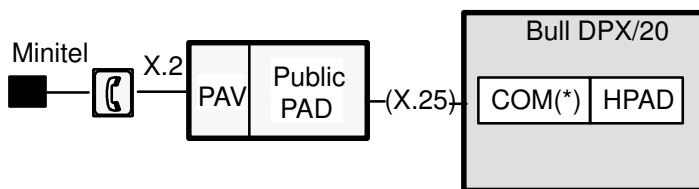


Figure 5. Access from a VIDEOTEX terminal to a remote machine

**Note:** The term “COM” covers the different boards available (see Bibliography, on page G-1).

Types of Minitel supported:

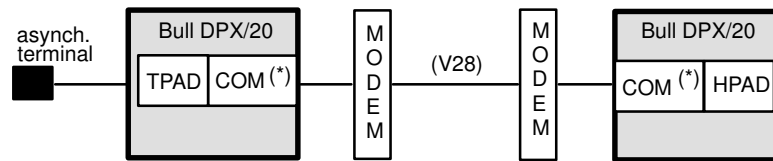
Minitel 1	Minitel 10B(**)	Minitel 2	Minitel 5
Minitel 1B(**)	Minitel 10	Minitel 12	

**Note:** The “B” type stands for “Bi–standard”, i.e., Minitel supporting Teletel and Tele–informatic modes.

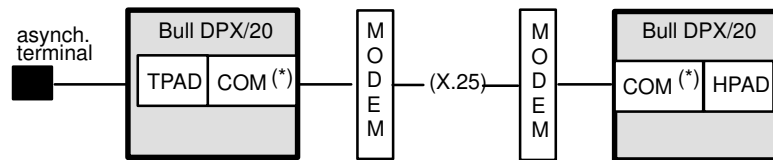
## Access from an asynchronous terminal to Bull systems

As shown in Figure 6, a machine equipped with the TPAD module can access another remote System (i.e. DPX/20 or Bull DPS) through either a public or private X.25 network.

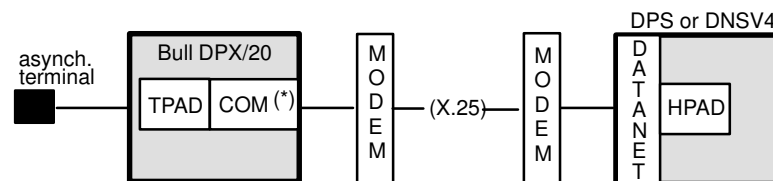
### Access to a remote Bull DPX/20 through a private X.25 network:



### Access to a Bull DPX/20 through a public X.25 network:



### Access to a Bull DPS or DNSV4:



Note: the connection to DPS is not automatic. You have to access to the DATANET with the PAD and connect the DPS to the DATANET (unlike in a connection on LAN).

Figure 6. Various accesses from a DPX/20 through a X.25 network

## Supported Terminals

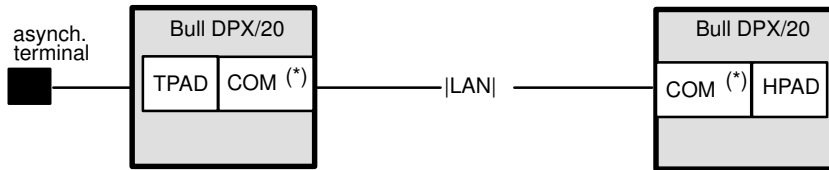
Terminals which can be used with TPAD–HPAD are those supported by the operating system on the server (hpad) side.

Details of terminals supported by TPAD–HPAD are provided in *Terminals & Printers, Installation & Configuration Guide*, see Bibliography, on page G-1.

## Uses of PAD over a LAN

TPAD–HPAD makes it possible to dialogue (communicate and receive information) with another remote system belonging to the same local area network, as shown in Figure 7.

### Access from a Bull DPX/20 terminal to a Bull DPX/20



### Access from a Bull DPX/20 terminal to a Bull DPS

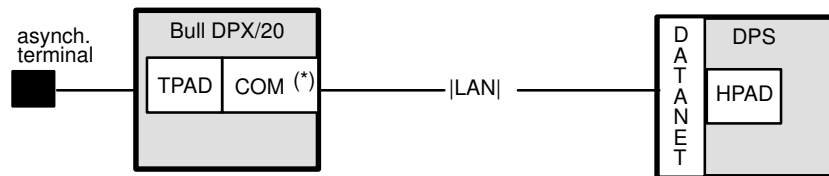


Figure 7. Various accesses from a DPX/20 through a LAN

## Use of PAD over a LAN / WAN

TPAD–HPAD enables also to dialogue with a remote system through a LAN / WAN, i.e. via a machine used as a gateway on which the module HPAD runs automatically the tpad session to access the end system. This can be done using the SPAG Y/13 profile. This is shown in Figure 8.

### Access from a BULL DPX/20 terminal to a BULL DPX/20 via another DPX/20

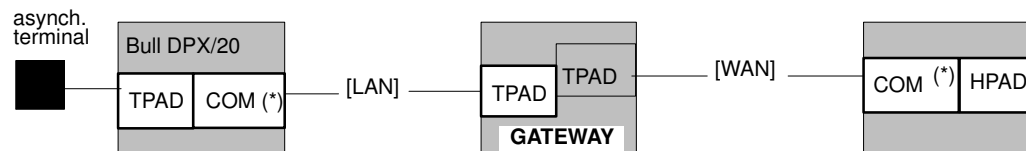


Figure 8. Use of PAD over a LAN / WAN



---

## Chapter 2. Installing TPAD–HPAD

This chapter describes how to install the TPAD–HPAD package using SMIT.

---

### Installing TPAD–HPAD: Overview

Software packaging and installation details are to be found in the *AIX Installation Guide* mentioned in Bibliography, on page G-1.

You can find more information in:

- Preparing to install TPAD–HPAD, on page 2-2
- Installing TPAD–HPAD, on page 2-4
- After installing TPAD–HPAD, on page 2-5
- De-installation Procedure, on page 2-6

---

## Preparing to install TPAD–HPAD

Before starting to install TPAD–HPAD, you should check that the package contents are complete and that the operating system requirements have been fulfilled. You can find more information about pre–installation requirements in:

- Early versions of TPAD–HPAD, on page 2-2,
- Package Contents, on page 2-2,
- Prerequisite Software, on page 2-2.

### Early versions of TPAD–HPAD

This present version of TPAD–HPAD can be installed on top of earlier versions. Some parameters of earlier configurations may be rejected by the new configurator. Non–compatible data can be identified by using the PAD Configuration Check Tool menu, on page 3-43. Error codes and messages resulting from the use of this tool are listed in Errors and Responses, on page C-6.

### Package Contents

The TPAD–HPAD package consists of one Licensed Program Product (LPP) providing:

- TPAD–HPAD applications,
- TPAD–HPAD configurator,
- TPAD–HPAD installation / de–installation procedures.
- PAD printing application.

The LPP contains two Optional Program Products (OPP):

- *tpad\_hpad.rte*
- *tpad\_hpad.padprint*

### Documentation

*TPAD–HPAD Software Release Bulletin*, and *TPAD–HPAD Pocket Guide 86 A2 56GX*, delivered as part of the software package.

This present document, *TPAD–HPAD Reference Manual*.

### Prerequisite Software

Option you are installing	Prerequisite software (Install before or <b>with</b> option you are installing)	
osi_frame.rte	AIX 4.1.4 or higher	Operating System
osi_frame.odit	osi_frame.rte	stack framework
osi_low.rte osi_low.max3	osi_frame.rte	stack framework
tpad_hpad.rte	osi_low.rte osi_frame.rte	stack low layers stack framework
tpad_hpad.padprint	tpad_hpad.rte	

## **Migration Installation Instructions**

When migrating from an earlier version of the OSI Stack or when re-installing the same version of the OSI Stack, refer to the *OSI Communications Porting Guide*, see Bibliography, on page G-1.

## **Disk Space Required**

For disk space requirement, refer to the Software Release Bulletin file, delivered as part of the software package.

---

## Installing TPAD–HPAD

The LPP is installed using SMIT. The LPP package can be installed only on standalone stations.

### External Interface

The external interface is provided by a user interface using the SMIT tool and the **installp** command.

### Standalone Stations

The tradename “standalone station” refers to stations which have local disks used to store the boot image. It can boot without needing any external resources or network attachment. All these resources are managed locally.

### Standalone Station Installation

**CAUTION:**

**This procedure addresses the system administrator only.**

The LPP is installed using the software installation procedures under SMIT. These procedures are detailed in the *AIX Installation Guide* see Bibliography, on page G-1.

---

## After Installing TPAD–HPAD

After installation you should check that the TPAD–HPAD files have been installed in the correct directories and you must activate the PAD services.

### PAD Activation Procedure

- **To activate TPAD–HPAD on server side:**
  - First go to the HPAD Server Configuration menu, as described on page 3-9: to define a configuration with the options and profile wanted and to load it.
  - Go to the TPAD–HPAD Start/Stop menu, as described on page 3-44: to start the HPAD server daemon (optionally to add the start at stack loading for next times)
    - >HPAD server is ready.
- **To activate TPAD–HPAD on client side:**
  - First go to the TPAD Client Configuration menu, as described on page 3-28,
  - Complete the configuration procedure,
  - Activate, by using the command **tpad**. Its syntax is on page 5-8.
    - >You can now use TPAD interactive commands to open a connection and use it.

**Note:** There is no need to reboot the machines.

### License Control – iFOR/LS

This product uses iFOR/LS encrypted license keys for license management. It supports the 'Nodelocked' license type only. License status is validated only when the product is used, thus permitting installation and configuration without need of the license key. Refer to the iFOR/LS Installation Notice and Password Order Form delivered with your Communications Product. Refer to the SRB file for details on how the product uses the license key.

---

## De-installation Procedure

**CAUTION:**

**Before attempting de-installation, ensure that no TPAD-HPAD functions are running.**

LPPs can be de-installed using the standard procedure under SMIT.

---

## Chapter 3. Administering TPAD–HPAD Using SMIT

This chapter describes how to configure the PAD and perform general administration tasks using the SMIT PAD configurator.

---

### Administering TPAD–HPAD Using SMIT: Overview

The configuration management tasks can be performed in two different ways:

SMIT is a resident tool using menus and dialog boxes, and which can run in of the following two interfaces:

- **by the use of the resident interactive tool SMIT** (with graphic interface or ASCII interface):
  - User Graphic (AIXwindows) Interface – menus are manipulated using standard mouse–driven window conventions. Options are selected by mouse, mnemonics or accelerators.
  - American National Standard Code for Information Exchange (ASCII) (or Curses) Interface – menus are manipulated using the cursor keys. Options are selected by mnemonics or accelerators.
- **by the use of elementary commands:**

The user can enter command functions via the ASCII interface, using elementary keystroke commands. These are the commands which lie hidden behind the SMIT interface. The commands are identified after each configuration procedure.

This chapter introduces the basic concepts of **PAD configuration using SMIT**. All the examples assume that the user is using the SMIT configuration tool. The associated command is shown for reference only.

You can find more information in:

- PAD Configurator menu structure and SMIT screen example, on page 3-2,
- Management functions – quick reference, on page 3-4,
- HPAD Server Configuration, on page 3-9,
- TPAD Client Configuration, on page 3-28,
- TPAD–HPAD Configuration Check Tool, on page 3-43,
- TPAD–HPAD Trace Tool, on page 3-49,
- TPAD–HPAD Server Running Management, on page 3-44,
- TPAD–HPAD Status, on page 3-56.

The commands used for configuring TPAD–HPAD are detailed in Configuring TPAD–HPAD Using Commands, on page 4-1.

Other "tasks of administration", such as configuring and using TPAD–HPAD:

over PVC,  
using a Gateway,  
for PAD Printing,

are detailed in other sections of this document.

---

# PAD Configurator Menu Structure

Here below is the PAD configurator menu structure in a graphic form, showing inter-dependencies and **FastPath** access (when available):

```
Start SMIT <-- smit ASCII:smit -C
           <-- smit Windows:smit

|
| Communications Applications & Services
|
| TPAD-HPAD (FastPath = padmenu)
|
| — TPAD-HPAD Configuration (FastPath = padconf)
|   |
|   | — HPAD server configuration (FastPath = padsrv)
|   | -- TPAD client configuration (FastPath = padclt)
|   | -- TPAD-HPAD configuration check tool
|
| — TPAD-HPAD Start/Stop (FastPath = padproc)
|   |
|   | -- Start HPAD server daemon
|   | — Stop the HPAD server daemon
|   | -- Add start of HPAD server daemon at stack loading
|   | -- Suppress start of HPAD server daemon at stack loading
|
| — TPAD-HPAD trace (FastPath = padtrace)
|   |
|   | — List trace parameters of HPAD configurations
|   | — Change/Show trace parameters on a HPAD server configuration
|   | — Change trace level on a running HPAD connection
|   | — PAD Printing Problem Determination (FastPath = padprpb)
|   | -- Remove all the PAD trace files
|
| — TPAD-HPAD Status
```

**Note:** Useful and detailed *help-on-line* are available in all SMIT sub-menus.

- The main accesses to PAD managing functions (**padconf**, **padproc**, **padtrace**), and the **management functions** themselves that user can find through this menu structure are listed on page 3-4, in **Management functions – Quick Reference**, and detailed in the following sections.
- The sub-menu 'SMIT/Print Spooling' relating to TPAD-HPAD is detailed on page 8-8.



The Figure 9 hereafter is given as an **example** of a SMIT window, as it can be displayed to user when using **SMIT in graphic mode**. The function selected here through SMIT menus is **"Change/Show PAD server configuration"**. When all values are designated, SMIT runs the command and shows the result in a Command Output Status Screen:

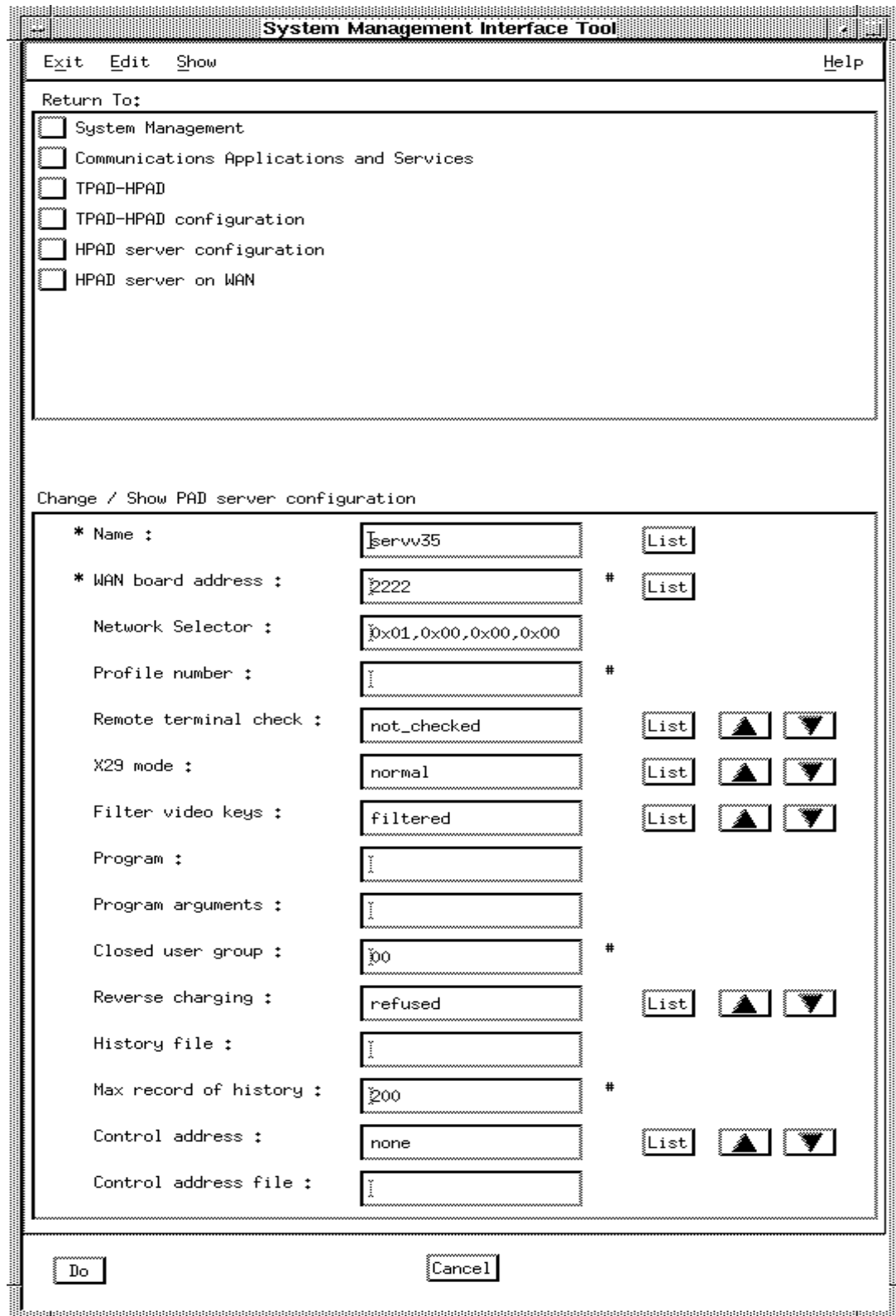


Figure 9. Example of SMIT menu: Change/Show PAD server configuration

---

# Management Functions

The various functions (and SMIT accesses to functions) of PAD management available to user through SMIT menu structure are listed alphabetically:

## **Accessing TPAD–HPAD Configuration**

Gives access to configuration management operations, for client configuration as well as server configurations. See page 3-7.

TPAD Client Configuration, page 3-28.

HPAD server configuration, page 3-9.

## **Accessing HPAD server daemon management**

Gives access to the management of the daemon process of the PAD server (start/add/remove...PAD at stack loading, etc..). See page 3-44.

## **Accessing TPAD–HPAD trace tool**

Gives access to the PAD trace tool available on HPAD. See page 3-49.

## **Accessing TPAD–HPAD status**

Gives the number of HPAD sessions, of TPAD sessions, and the status of the HPAD daemon. See page 3-56.

## **Add a PAD server site on LAN**

Permits the creation of a named server site profile, see page 3-38.

## **Add a PAD server site on WAN**

Permits the creation of a named server site profile, see page 3-31.

## **Add PAD server configuration on LAN**

Adds a new configuration, see page 3-23.

## **Add PAD server configuration on WAN**

Adds a new configuration, see page 3-13.

## **Add start at reboot of PAD server daemon**

Adds the PAD server starting daemon in the */etc/inittab* file, see page 3-46.

## **Addressing a PAD server site on LAN with TPAD**

Addressing a PAD server site on LAN manages the association between a generic name and a PAD server site on LAN. The generic name refers to a set of information that allows the access to a PAD server site. The information set contains: generic name, boards addresses, X3 profile to be loaded, Transport selector and Calling user data, see page 3-36.

## **Addressing a PAD server site on WAN with TPAD**

Addressing a PAD server site on WAN manages the association between a generic name and a PAD server site on WAN. The generic name refers to a set of information that allows the access of a PAD server site. The information set contains: generic name, boards addresses, X3 profile to be loaded, X25 facilities and Calling user data, see page 3-29.

## **Addressing a PAD server site on WAN via a LAN/WAN Gateway**

Addressing a PAD server site using the SPAG Y/13 profile, i.e. access a PAD server site on WAN by using a PAD LAN / WAN Gateway site on LAN. See on page 7-7.

## **Addressing a WAN PAD server site on PVC**

Addressing a PAD server site on WAN for Permanent Virtual Circuits. See on page 6-5.

**Change PAD server configuration password on WAN**

Changes the configuration password, see page 3-20.

**Change/Show PAD server configuration on LAN**

Changes/shows a configuration (selected by its name), to change some of its parameters, see page 3-25.

**Change/Show PAD server configuration on WAN**

Changes/shows a configuration (selected by its name), to change some of its parameters, see page 3-17.

**Change/Show a PAD server site on WAN**

Permits the edition of named server site profiles, see page 3-33.

**Change/Show a PAD server site on LAN**

Permits the edition of named server site profiles, see page 3-40.

**Change/Show trace parameters on a HPAD server configuration**

Enables administrator to manage trace options for the selected HPAD configuration, see page 3-51.

**Change trace level on a running HPAD connection**

Enables the administrator to change the trace level for a given HPAD connection, see page 3-54. **Warning:** this menu is strictly reserved for experts.

**Definition of a default address for outgoing calls**

Definition of a default address for outgoing calls is only meaningful on WAN. It is useful that the user has access to a PAD server with its address instead of its generic name. If a PAD server is reachable from the default address, the user has only to provide the PAD server address, see page 3-42.

**List PAD server configuration on LAN**

Lists names of configurations on LAN, see page 3-22.

**List PAD server configuration on WAN**

Lists names of configurations on WAN, see page 3-12.

**List PAD server site on LAN**

Lists the names of all PAD servers on LAN, see page 3-37.

**List PAD server site on WAN**

Lists the names of all PAD servers on WAN, see page 3-30.

**List trace parameters of HPAD configurations**

Lists the trace parameters which are selected for each configuration, see page 3-50.

**Reload PAD server configuration**

Reloads PAD server configuration, see page 3-27.

**Remove PAD server configuration on LAN**

Removes one or more named configuration, see page 3-26.

**Remove PAD server configuration on WAN**

Removes one or more named configurations, see page 3-19.

**Remove PAD server site on LAN**

Permits the removal of named server site profiles, see page 3-41.

**Remove PAD server site on WAN**

Permits the removal of named server site profiles, see page 3-35.

**Start PAD server daemon**

Starts the **hpadd** daemon, see page 3-45.

**Status of the PAD server daemon**

Shows the state of the PAD server daemon, see page 3-56.

**Stop the PAD server daemon**

Stops the PAD server daemon, see page 3-48.

**Suppress start at reboot of PAD server daemon**

Deletes the PAD server starting daemon, see page 3-47.

**WAN PAD server configuration over PVC**

Enables to manage a PAD configuration on WAN for permanent virtual circuit (PVC), see page 6-7.

---

# Accessing TPAD–HPAD Configuration

## Access

From the Communications Applications and Services menu, select:

### TPAD–HPAD

**FastPath:** `padconf`

## Overview

This menu allows access to the TPAD–HPAD configuration management operations using the options shown below:

TPAD–HPAD
HPAD server configuration TPAD client configuration TPAD–HPAD configuration check tool

## Description

This menu allows the system administrator to manage TPAD–HPAD applications that offer a PAD service (CCITT X3–X28–X29 and SPAG Y/11–Y/12–Y13) with a PAD client and a PAD server. The PAD client allows any user to access, from a terminal, the resources of a remote platform that runs a PAD server.

The PAD client is a process running the program `/usr/bin/tpad`. The PAD server is made up of two processes. The first one runs the program `/usr/bin/hpadd`, that accepts the incoming call concerning PAD service. The second one (`/usr/bin/hpad`) handles the connection up to its termination.

The PAD server running state can be managed with the PAD server running management. The following actions are allowed: status, start, add start at reboot, suppress start at reboot, stop.

The PAD server behavior depends on a set of parameters that can be set up with the PAD server configuration. A configuration of the PAD server is made up of a named set of these parameters. Parameters are: boards from which calls are accepted, password, closed user group, program to execute, management of history...

The PAD server makes a major difference between WAN and LAN configurations. All LAN boards are seen as a unique board. That means that the system administrator may define one or several configurations for all LAN boards, but isn't able to designate one configuration for a specific LAN board. For WAN boards, the system administrator is able to designate one or several configurations for a specific WAN board.

The PAD client uses a local name server base that is managed with the PAD client configuration. This base aims to associate a logical name of a host with all parameters that can be involved in the connection. These parameters are: caller/calling addresses, X.3 profile used, call user data to be sent... The main objective of a name server is to allow a PAD client to access to a PAD server, by naming it with a logical name instead of its network characteristics.

The PAD client on WAN also uses a local board address known as default outgoing address. If a user only gives a remote PAD server address, the default outgoing address is used to established the connection.

A tool is available to check the validity of the PAD configurations (client or server). In fact it may occur that some files, used by the PAD configurator, are corrupted. This may happen

after a system crash or a direct modification of these files (with an editor). This tool controls the validity of:

- Names (PAD server configuration and PAD server site)
- Number of X3 profile
- Access control
- Addressing parameters.

If an error is detected in PAD configurations, a message is edited in order to help the administrator to correct the corrupted files. For details about corrective actions, see Error Codes and Messages, on page C-1.

#### **HPAD server configuration**

Allows the administrator to manage the PAD service LAN and WAN. Once configured, it can be loaded through this menu. You can find more information in:

- HPAD server on WAN (SVC), see page 3-11
- HPAD server on WAN / PVC, see page 6-7
- HPAD server on LAN, see page 3-21
- Reload HPAD server configuration, see page 3-27

#### **TPAD client configuration**

Allows the administrator to manage a local name server for easy access to the remote PAD server on LAN and WAN. You can find more information in:

- Addressing a PAD server site on WAN with TPAD (SVC), see page 3-29
- Addressing a PAD server site on WAN/PVC with TPAD, see page 6-5
- Addressing a PAD server site on LAN with TPAD, see page 3-36
- Addressing a PAD server site on WAN with a LAN / WAN gateway, see on page 7-7
- Definition of a default address, see page 3-42

#### **TPAD–HPAD configuration check tool**

Provides a control of conflicts of configuration names and contents. You can find more information in:

- TPAD–HPAD Configuration Check Tool, see page 3-43

---

# Accessing HPAD Server Configuration

## Access

From the TPAD–HPAD configuration menu, select:

### HPAD server configuration

**FastPath:** padsrv

## Overview

This menu allows the system administrator to define one or more configurations using the options shown below.

HPAD server configuration
HPAD server on WAN (SVC) HPAD server on WAN / PVC HPAD server on LAN Reload HPAD server configuration

## Description

Enables the administrator to define one or more configurations of the PAD server on each communications adapter board available on the machine. A configuration is identified with its name.

A configuration of the PAD server consists in a named set of initialized parameters such as: subscription, NSEL/TSEL, closed user group, password, program to execute, management of a history.

The boards supported are:

HiSpeed WAN Comm.  
Ethernet High–Performance,  
On–board integrated Ethernet,  
Token–Ring,  
FDDI.

The administrator can designate a WAN configuration to a specific X25 subscription. But he cannot designate a LAN configuration on a specific LAN board. In fact, each LAN configuration is available on all LAN boards. It is possible to define several LAN configurations, but all these configurations are available, at the same time, on all LAN boards.

The administrator can also require the PAD server daemons to reload the complete configuration.

The actions available on PAD server configuration are:

list configurations previously created,  
create a new one,  
edit a configuration previously created,  
delete a configuration.

The name DFLTX25 is reserved for internal use.

The PAD server offers the PAD service on the platform. A service is attached, in telecommunications, with a "Selector". This selector is called NSEL on WAN and TSEL on LAN. These NSEL/TSEL are tunable parameters of a configuration. So on LAN/WAN, the administrator may define several configurations on several NSEL/TSEL.

The menu options are described below:

#### **HPAD server configuration on WAN (SVC):**

From an OSI stack point of view, a WAN configuration is identified with two of its parameters that are: subscription and NSEL

**Note:** The OSI stack cannot handle any differences between two WAN configurations that are waiting on the same subscription and on the same NSEL. An incoming call on the couple subscription–NSEL, is randomly treated by one of the two WAN configurations. It is the reason why a PAD configuration refuses to define two WAN configurations that have the same couple subscription–NSEL.

You can find more information in:

- List HPAD server configuration, see page 3-12
- Add HPAD server configuration, see page 3-13
- Change/Show HPAD server configuration, see page 3-17
- Remove HPAD server configuration, see page 3-19
- Change HPAD server configuration password, see page 3-20

#### **HPAD server on WAN / PVC:**

Enables the administrator to manage a PAD server configuration on WAN for permanent virtual circuit (PVC).

You can find more information in the chapter relating to PVC:

- List WAN HPAD server on PVC, see page 6-7
- Add WAN HPAD server on PVC, see page 6-7
- Change/Show a WAN HPAD server on PVC, see page 6-7
- Remove WAN HPAD server on PVC, see page 6-10

#### **HPAD server configuration on LAN:**

From an OSI stack point of view, a LAN configuration is identified with a parameter that is: TSEL.

**Note:** Note that the Stack cannot handle any difference between two LAN configurations that are waiting on the same TSEL. An incoming call on the TSEL is randomly treated by one of the two LAN configurations. This is the reason why a PAD configuration refuses to define two LAN configurations on the same TSEL.

You can find more information in:

- List HPAD server configuration, see page 3-22
- Add HPAD server configuration, see page 3-23
- Change/Show HPAD server configuration, see page 3-25
- Remove HPAD server configuration, see page 3-26

#### **Reload HPAD server configuration:**

Requires the PAD server daemons to reload the configuration from the */etc/hpadd.conf* file. This option is mainly designed for when the PAD server configuration is changed. Care must be taken that it has no effect on connections already established.

You can find more information in:

- Reload PAD server configuration, see page 3-27



---

## Accessing HPAD Server Configuration on WAN (SVC)

### Access

From the HPAD Server Configuration menu, select:

### HPAD server on WAN

**FastPath:** padsrv\_wan

### Overview

This menu enables the administrator to manage a PAD server configuration on WAN.

A configuration is a named set of parameters, that defines the behavior of the PAD server. A configuration is known by its name, which is unique. Once a configuration is created, It is taken into account by requiring the PAD server daemons to load the complete configuration. One of the configuration parameters is the telecom board address. The administrator must attached a WAN configuration to a specific board; this is a major difference with a LAN configuration. The following actions on WAN configurations are allowed:

HPAD server on WAN (SVC)
List HPAD server configuration Add HPAD server configuration Change/show HPAD server configuration Remove HPAD server configuration Change HPAD server configuration password

### Description

The menu options are described below:

#### List HPAD server configuration

Lists names of configurations on WAN. See page 3-12.

#### Add HPAD server configuration

Adds a new configuration. See page 3-13.

#### Change/Show HPAD server configuration

Changes/shows a configuration (selected by its name), to change some of its parameters. See page 3-17.

#### Remove HPAD server configuration

Removes one or more named configurations. See page 3-19.

#### Change HPAD server configuration password

Changes the configuration password. See page 3-20.

# How to List HPAD Server Configurations on WAN

## Access

From the HPAD Server on WAN (SVC) menu, select:

## List PAD server configuration

## Command

```
padsrvwan -l see page 4-4.
```

## Overview

Lists all configurations on WAN of the HPAD server application. A configuration is a named set of parameters that define the PAD server behavior.

## Successful Result

Shows the names of all HPAD server configurations on WAN.

## Example:

```
List PAD server configurations on WAN
```

```
Wconfig1
```

```
Wconfig2
```

# How to Add a HPAD Server Configuration on WAN

## Access

From the HPAD Server on WAN (SVC) menu, select:

## Add HPAD server configuration

### Command

`padsrvwan -c` see page 4-4.

```
padsrvwan -c ConfigurationName [-a AdapterAddress] [-s NetworkSelector]
  [-p Profile Number]
  [-t {checked | not_checked | filtered_no_init | transparent} ]
  [-x {normal | rlogin | no_message} ]
  [-v {filtered | not_filtered | filtered_no_init | transparent} ]
  [-E ProgramPathname [-o ProgramArguments] [-g ClosedUserGroup]
  [-R {accepted|refused}] [-h HistoryFile] [-H RecordNumber] ]
  [-m ControlAddressMode [-f ControlAddressFile ]]
```

### Overview

Enables the administrator to create a configuration on WAN for the PAD server. A configuration is a named set of parameters, that defines the PAD server behavior. A configuration is known by its name, which is unique. Once a configuration is created, it is taken into account by requiring the PAD server daemons to load the complete configuration. The configuration on WAN contains two types of parameters.

A minimum set of parameters describes the service offered by the PAD server (program to execute, board address, selector, X.3 profile, X29 mode and remote terminal check).

A second set describes security features that the administrator can set up. This last point is seen in How to Change a HPAD Server Configuration Password, page 3-20

**Note:** The OSI stack cannot handle any differences between two WAN configurations, that are waiting on the same subscription and on the same NSEL (Network Selector). An incoming call on the couple subscription–NSEL, is randomly treated by one of the two WAN configurations. This is the reason why a PAD configuration refuses to define two WAN configurations that have the same couple, WAN board address–Network Selector.

### Dialog Fields

\* **Name** Name of the new configuration. It is a string limited to 32 characters. The name DFLTX25 is reserved for internal use. The syntax of this field is [a-zA-Z][a-zA-Z0-9]\*.  
Default: none.  
Mandatory.

**Note:** Creation of a new name creates a new configuration.  
If the 'new' name already exists, then the newly–created configuration replaces the file previously stored under that name.

\* **WAN board address**

Is the address of a WAN board. The current configuration is going to be attached to this board. That means, when a incoming call occurs on this WAN address with an NSEL selector that the program specified via the program fields is executed with its running parameters (profile, X29 mode...).

Its range is a number of maximum 15 digits.

Default: none.

Mandatory.

### Network selector

This is a selector that identifies the PAD server configuration from the OSI stack. A PAD client trying to access this PAD server configuration should specify the selector that identified the configuration. The normalized PAD

server selector is 0x01,0x00,0x00,0x00 and the specified value must begin with 0x01. It is forbidden to define a configuration with the couple, (WAN board address–Network selector), already used by another configuration. Its range of values is zero to four digits, with the 0xnn format, separated with a comma ‘,’. if no value is provided, the default is taken (0x01,0x00,0x00,0x00). The length of the network selector is  $\leq 4$ .  
Default: 0x01,0x00,0x00,0x00.

#### **Profile number**

Is the number of an X3 profile defined in the file /etc/PROFPAD. X.3 defines a set of parameters that defines the behavior of PAD service. A given X.3 profile associates a value to each X3 parameter.  
The X.3 profile range of values is [1–127].  
Default: none.

#### **Remote terminal check**

If set, the PAD server will require the PAD client to send the value of its environment variable TERM. Its range is [checked|not\_checked].  
Default: not\_checked.

#### **X29 mode**

Defines the use of X29 message that will be made by the PAD server. If set to "Normal", the PAD server is going to send X29 messages according to a change of value of PTY/termio. If set to "No message", the PAD server does not send any X29 message at connection time. If set to "Rlogin mode", the PAD server sends a unique X29 message, that requires the PAD client to run like rlogin (each character keyed is sent). The "rlogin" is not recommended on WAN due to the load over the network and response time.  
Its range is: normal, no\_message, rlogin mode.  
Default: normal.

#### **Filter video keys**

This parameter allows to choose filter and presentation mode:  
**Filter mode:** the PAD server filters the function keys (Envoi, retour, répétition, guide, annulation, sommaire, correction, suite) coming from a videotex terminal (minitel).

**Initialisation mode:** the PAD changes presentation parameters (80 columns, scrolling,...)

The possible values of the 'Filter video keys' parameter are:

**transparent:** neither filter nor initialisation operation is performed.

**not\_filtered:** initialisation is performed but functions keys are not filtered

**filtered\_no\_init:** no initialisation but function keys are filtered.

**filtered:** both filter and initialisation operation are performed.

Default: filtered.

#### **Program**

Pathname of the program to be run. If no value is provided, the program run by hpad is the "login" program.  
Default: none.

#### **Program arguments**

List of arguments to the program whose name is specified in "Program" field. The PAD server can provide the values of some internal variables. These variables can be accessed through keywords:

**PTY:** specifies the pty file opened by the HPAD process.

**ADDRESS:** specifies the calling address

**CUD:** specifies the Calling user data

**NSEL:** specifies the Network selector.

Example: "-g 1003 PTY -a ADDRESS". The program specified in the "Program" parameter is going to be called with the option "-g 1003 /dev/pts/123 -a 13802002". /dev/pts/123 is the file name of the opened pty. 13802002 is the address of the caller. Applicable only if the Program parameter is set.  
Default: none.

### **Closed user group**

If set, this parameter aims to check that the PAD client's call requires the specified CUG. Calls made with a CUG different, than the one specified in the configuration, are rejected. The CUG 00 allows all CUG. The CUG is a X25 facility, and must be supplied by the administrator, to the public network provider. X25 facilities are specified in the facility field of the call packet. It isn't meaningful to control CUG if the subscription can't support this CUG. Its range of values is 00-99. Default: 00.

### **Reverse Charging**

If accepted, this parameter allows a PAD client to make a call requiring the reverse charging facility. If refused, calls with reverse charging are rejected. The reverse charging is a X25 facility that must be supplied, by the administrator, to the public network provider. X25 facilities, are specified in the facility field of the call packet. It isn't meaningful to control Reverse charging if the subscription can't support it. Its range of values is [accepted|refused].  
Default: refused.

### **History file**

Contains the pathname of the file that stores the history logs of the incoming calls. If this parameter is not set, no history file is created for this configuration. This history is managed as a circular file. Its range of values is a pathname of a file that can be accessed (read/write) by the PAD server (super user rights).  
Default: none.

### **Max record of history**

It contains the maximum number of records of the history file. Its range of values is [1-4000]. Applicable only if history file parameter is set.  
Default: none.

### **Control address**

Enables the administrator to filter incoming calls, according to the caller address. Its range of values is [none/denied/allowed]. If set to "none", this function is inactive. If set to "denied" a denied address list contains all caller addresses that have to be rejected. If set to "allowed" a allowed address list contains the only caller address that are accepted. The allowed/denied address list is a file which pathname is defined in the parameter "Control address file". If set to "none", the "control access file" parameter must not be set. If set to "denied" or "allowed", the "control access file" parameter must be set.  
Default: none.

### **Control address file**

This is the pathname of a file that contains addresses. This parameter must be set only if "control address" is set to "denied" or "allowed". Suppose "control address" sets to "denied" and "control access file" sets to "/tmp/foo". When a call occurs, if the caller address matches one of the address specified in "/tmp/foo", then the call is rejected; else it is accepted. Suppose "control address" sets to "allowed" and "control access file" sets to "/tmp/foo". When a call occurs, if the caller address doesn't match any address specified in "/tmp/foo", then the call is rejected; else it is accepted.  
**Caution:** This file is not managed by the PAD configurator. So, this file must be updated with an editor like "vi", "ed" or "emacs". The format of a record is

an address pattern on each line. Meta-characters like '?' and '\*' are allowed.

Example of a record: 12345 or 12?4?6 or \*37 or 12?7\*.

Default: */etc/secure/log/HPAD*. If the control address is set to "allowed", the file is */etc/secure/log/HPADallowed*. If the control address is set to "denied", the file is */etc/secure/log/HPADdenied*.

### Successful Result

Creation of HPAD server configuration on WAN.

#### Example:

Command	
<code>padsrvwan -c Wconfig1 -a 138</code>	
<code>-s 0x01,0x00,0x00,0x00 -p 127 -t checked -x normal -v filtered</code>	
<code>-E /bin/login -g 00 -R refused -h /etc/secure/log/138/-H 200</code>	
<code>-m denied -f/etc/secure/log/denied138</code>	
Output	
* Name	<input type="text" value="Wconfig1"/> <input type="button" value="List"/>
* WAN board address	<input type="text" value="138"/> <input type="button" value="List"/>
Network selector	<input type="text" value="0x01,0x00,0x00,0x00"/>
Profile number	<input type="text" value="127"/>
Remote terminal check	<input type="text" value="checked"/> <input type="button" value="List"/> <input type="button" value="▲"/> <input type="button" value="▼"/>
X29 mode	<input type="text" value="Normal"/> <input type="button" value="List"/> <input type="button" value="▲"/> <input type="button" value="▼"/>
Filter video keys	<input type="text" value="filtered"/> <input type="button" value="List"/> <input type="button" value="▲"/> <input type="button" value="▼"/>
Program	<input type="text" value="/bin/login"/>
Program Arguments	<input type="text"/>
Closed user groups	<input type="text" value="00"/>
Reverse charging	<input type="text" value="refused"/> <input type="button" value="List"/> <input type="button" value="▲"/> <input type="button" value="▼"/>
History file	<input type="text" value="/etc/secure/log/138"/>
Max record of history	<input type="text" value="200"/>
Control address	<input type="text" value="Denied"/> <input type="button" value="List"/> <input type="button" value="▲"/> <input type="button" value="▼"/>
Control address file	<input type="text" value="/etc/secure/log/denied138"/>

# How to Change/Show a HPAD Server Configuration on WAN

## Access

From the HPAD Server Configuration on WAN (SVC) menu, select:

## Change/show HPAD server configuration

### Command

`padsrvwan -e` see page 4-4.

```
padsrvwan -e ConfigurationName [-a AdapterAddress] [-s NetworkSelector]
[-p Profile Number] [-t {checked|not_checked}]
[-x {normal|rlogin|no_message}] [-v {filtered|not_filtered}]
[-E ProgramPathname] [-o ProgramArguments] [-g ClosedUserGroup]
[-R {accepted|refused}] [-h HistoryFile] [-H RecordNumber]
[-m ControlAddressMode] [-f ControlAddressFile]
```

### Overview

Enables the administrator to edit a named configuration on WAN. If the name of the configuration is changed, a new WAN configuration is created. A configuration is a named set of parameters, that defines the PAD server behavior. A configuration is known by its name, which is unique. Once a configuration is modified/created, it is taken into account by requiring the PAD server daemons to load the complete configuration. The configuration on WAN contains two types of parameters. A minimum set of parameters describes the services offered by the PAD server (program to execute, board address, selector, X.3 profile, X29 mode and remote terminal check). A second set describes security features that the administrator can set up.

**Note:** The OSI stack cannot handle any differences between two WAN configurations that are waiting on the same subscription and on the same NSEL (Network selector). An incoming call on the couple subscription–NSEL, is randomly treated by one of the two WAN configurations. A PAD configuration refuses to define two WAN configurations that have the same couple, WAN board address–Network Selector.

### Dialog Fields

Dialog Fields are explained in How to add a PAD server configuration on WAN, see page 3-13.

### Successful Result

Display or modification of PAD server configuration on WAN.

Example:

Select one item from

- Wconfig1**
- Wconfig 2

**Example:**

```
Command padsrvwan -e Wconfig1 -a 138
        -s 0x01,0x00,0x00,0x00 -p 127 -t checked -x normal -v filtered
        -E /bin/login -g 00 -R refused -h /etc/secure/log/138 -H 200
        -m denied -f /etc/secure/log/denied138
```

**Output**

* Name	<input type="text" value="Wconfig1"/>	<input type="button" value="List"/>	
* WAN board address	<input type="text" value="138"/>	<input type="button" value="List"/>	
Network selector	<input type="text" value="0x01,0x00,0x00,0x00"/>		
Profile number	<input type="text" value="127"/>		
Remote terminal check	<input type="text" value="checked"/>	<input type="button" value="List"/>	<input type="button" value="▲"/> <input type="button" value="▼"/>
X29 mode	<input type="text" value="Normal"/>	<input type="button" value="List"/>	<input type="button" value="▲"/> <input type="button" value="▼"/>
Filter video keys	<input type="text" value="filtered"/>	<input type="button" value="List"/>	<input type="button" value="▲"/> <input type="button" value="▼"/>
Program	<input type="text" value="/bin/login"/>		
Program Arguments	<input type="text"/>		
Closed user groups	<input type="text" value="00"/>		
Reverse charging	<input type="text" value="refused"/>	<input type="button" value="List"/>	<input type="button" value="▲"/> <input type="button" value="▼"/>
History file	<input type="text" value="/etc/secure/log/138"/>		
Max record of history	<input type="text" value="200"/>		
Control address	<input type="text" value="Denied"/>	<input type="button" value="List"/>	<input type="button" value="▲"/> <input type="button" value="▼"/>
Control address file	<input type="text" value="/etc/secure/log/denied138"/>		



# How to Remove a HPAD Server Configuration on WAN

## Access

From the HPAD Server Configuration on WAN (SVC) menu, select:

## Remove HPAD server configuration

## Command

```
padsrvwan -d <config name>* see page 4-4.
```

## Overview

This menu permits one or more HPAD server configurations, selected from a list, to be removed.

## Dialog Field

- \* Name** Name of the configurations to be removed.  
The syntax of this field is [a-zA-Z][a-zA-Z0-9\_]\*.  
Default: none  
Mandatory.
- List** Name: the list option displays all WAN configuration names already defined.  
It is a multi-select list of strings. Each string is limited to 32 characters.

## Successful Result

Removal of selected configurations.

Result must be acknowledged by the administrator.

Example:

Command	<pre>padsrvwan -d Wconfig1 Wconfig2</pre>	
Output	* Name	<input type="text" value="Wconfig 1 Wconfig2"/> <input type="button" value="List"/>

# How to Change a HPAD Server Configuration Password

## Access

From the HPAD Server on WAN menu, select:

### Change HPAD server configuration password

**FastPath:** padpasswd

## Overview

This is a security feature that controls incoming calls according to an access key. Enables the administrator to change the access key code for a named HPAD server configuration. This key is commonly called a password and is provided by the PAD client in the calling user data of the call packet. The password can only be changed. It is input without echoing the keyed characters. When this menu is accessed and the change of password performed, the function <PASSCHECK> is validated. See HPAD Connection Configuration Filepage A-9 for further information.

## Dialog Field

### \* Configuration Name

The name of a configuration that the administrator wants to limit the access according to a key. It is a list of strings. Each string is limited to 32 characters.

The syntax of this field is [a-zA-Z][a-zA-Z0-9\_]\*.

The list option display all WAN configuration names already defined.

Default: none.

Mandatory.

## Successful Result

Change of PAD server configuration password.

Result must be acknowledged by the administrator.

Example:

Select one item from

**Wconfig1**

Wconfig 2

Change password of Wconfig1 configuration

The password length is limited to 12 characters

New password :

Confirm your password :

---

# Accessing HPAD Server Configuration on LAN

## Access

From the HPAD Server Configuration menu, select:

### PAD server on LAN

**FastPath:** padsrv\_lan

## Overview

This menu enables the administrator to manage a HPAD server configuration on LAN. A configuration is a named set of parameters that defines the behavior of the PAD server. A configuration is known by its name, which is unique. Once a configuration is created, it is taken into account by requiring the HPAD server daemons to load the complete configuration and is available on all LAN communications adapter boards.

HPAD server configuration on LAN
List HPAD server configuration Add HPAD server configuration Change/show HPAD server configuration Remove HPAD server configuration

## Description

The menu options are described below:

### List HPAD server configuration

Lists names of configurations on LAN see page 3-19.

### Add HPAD server configuration

Adds a new configuration see page 3-23.

### Change/Show HPAD server configuration

Changes/shows a configuration (selected by its name), to change some of its parameters see page 3-25.

### Remove HPAD server configuration

Removes one or more named configurations see page 3-26.

## How to List HPAD Server Configurations on LAN

### Access

From the HPAD Server Configuration on LAN menu, select:

### List HPAD server configuration

### Command

```
padsrvlan -l see page 4-7.
```

### Overview

Lists all configurations on LAN of the PAD server application.  
A configuration is a named set of parameters that defines the PAD server behavior.

### Successful Result

Shows the names of all PAD server configurations on LAN.

### Example:

List of PAD configurations on LAN

```
Lconfig1  
Lconfig2
```

# How to Add a HPAD Server Configuration on LAN

## Access

From the HPAD Server on LAN menu, select:

## Add HPAD server configuration

### Command

`padsrvlan -c` see page 4-7.

```
padsrvlan -c ConfigurationName [-p ProfileNumber]  
[-t {checked | not_checked} ] [-x {normal | rlogin | no_message} ]  
[-E ProgramPathname [-o ProgramArguments] ]  
[-s TransportSelector]
```

### Overview

Enables the administrator to create a configuration on LAN for the PAD server. A configuration is a named set of parameters, that defines the PAD server behavior. A configuration is known by its name, which is unique. Once a configuration is added, it is taken into account by requiring the PAD server daemons to load the complete configuration.

**Note:** The OSI stack cannot handle any differences between two LAN configurations that are waiting on the same TSEL (Transport Selector). An incoming call on the TSEL is randomly treated by one of the two LAN configurations. This is the reason why a PAD configuration refuses to define two LAN configurations on the same TSEL.

### Dialog Fields

\* **Name** Name of the new configuration. It is a string limited to 32 characters. The name DFLTX25 is reserved for internal use. The syntax of this field is [a-zA-Z][a-zA-Z0-9]\*.  
Default: none.  
Mandatory.

**Note:** Creation of a new name creates a new configuration.  
If the 'new' name already exists, then the newly-created configuration replaces the file previously stored under that name.

### Profile number

Is a number of an X.3 profile defined in the file /etc/PROFPAD. X3 defines a set of parameters that defines the behavior of the PAD service. A given X.3 profile associates a value to each X3 parameter.  
The X.3 profile range of values is [1 -127].  
Default: none.

### Remote terminal check

If set, the PAD server will require the PAD client to send the value of its environment variable TERM. Its range is [checked|not\_checked]  
Default: not\_checked.

### X29 mode

Defines the use of X29 message that will be given by the PAD server. If set to "Normal", the PAD server is going to send X29 messages according to a change of value of PTY/termio. If set to "No message", the PAD server won't send any X29 message. If set to "Rlogin mode", the PAD server is going to send a unique X29 message, that requires the PAD client to run like rlogin (each character keyed is sent).  
Its range is: normal, no\_message, rlogin mode.  
Default: normal.

### Program

Pathname of the program to be run.  
Default: none.

### Program arguments

List of arguments to the program whose name is specified in "Program" field. The length must not exceed 63 characters. The PAD server can provide the value of an internal variable. This variable can be accessed through the keyword:

**PTY:** specifies the pty file opened by the HPAD process.

**Example:** "-g 1003 PTY ". The program specified in the "Program" parameter is going to be called with the option "-g 1003 /dev/pts/123". /dev/pts/123 is the file name of the opened pty.

Applicable only if the Program parameter is set.

Default: none.

### \* Transport Selector

The selector is a telecommunication identifier from which the PAD server is waiting for an incoming call. This selector allows the OSI stack to route an incoming call from a PAD client to the PAD server. Its length is less than 8 characters. It is forbidden to use a Transport selector already used by another configuration. Its value can be input in two ways: either a string of alphanumeric characters or an hexadecimal string like 0x68,0x65,0x6c,0x6c,0x6f ("hello").

Default: 0x40,0x01,0x50,0x41,0x44,0x31

Mandatory.

**Caution:** Routing of call, according to selector value, depends on several parameters. The selector value is automatically defined in the Stack at the start of the PAD server daemon.

### Successful Result

Creation of HPAD server configuration on LAN.

### Example:

Command		padsrvlan -c Lconfig1 -p 127 -t checked	
		-x normal -E /bin/login -s PADSEL1	
Output			
* Name	<input type="text" value="Lconfig1"/>	<input type="button" value="List"/>	
Profile number	<input type="text" value="127"/>		
Remote terminal check	<input type="text" value="checked"/>	<input type="button" value="List"/>	<input type="button" value="^"/> <input type="button" value="v"/>
X29 mode	<input type="text" value="Normal"/>	<input type="button" value="List"/>	<input type="button" value="^"/> <input type="button" value="v"/>
Program	<input type="text" value="/bin/login"/>		
Program Arguments	<input type="text"/>		
* Transport Selector	<input type="text" value="PADSEL1"/>		

# How to Change/Show a HPAD Server Configuration on LAN

## Access

From the HPAD Server on LAN menu, select:

## Change/show HPAD server configuration

### Command

`padsrvlan -e` see page 4-7.

**padsrvlan -e** *ConfigurationName* [**-p** *ProfileNumber*]  
[**-t** {checked | not\_checked} ] [**-x** {normal | rlogin | no\_message} ]  
[**-E** *ProgramPathname* [**-o** *ProgramArguments*] ]  
[**-s** *TransportSelector*]

### Overview

Enables the administrator to edit a named configuration on LAN. If the name of the configuration is changed, a new LAN configuration is created. A configuration is a named set of parameters, that defines the PAD server behavior. A configuration is known with its name, which is unique. If the name of the configuration is changed, a new LAN configuration is created. If a PAD configuration already exists with this new name, it will be overwritten. Once a configuration is created/modified, it is taken into account by requiring the PAD server daemons to load the complete configuration.

**Note:** The OSI stack cannot handle any differences between two LAN configurations that are waiting on the same TSEL(Transport Selector). An incoming call on the TSEL, is randomly treated by one of the two LAN configurations. This is why PAD configurations refuse to define two LAN configurations on the same TSEL.

### Dialog Fields

Dialog Fields are explained in How to add a HPAD server configuration on LAN see page 3-23.

### Successful Result

Display or modification of HPAD server configuration on LAN.

Example: for `Lconfig1` configuration selected:

Command		<code>padsrvlan -e Lconfig1 -p 127 -t checked</code>	
		<code>-x normal -E /bin/login</code>	
Output			
* Name	<input type="text" value="Lconfig1"/>	<input type="button" value="List"/>	
Profile number	<input type="text" value="127"/>		
Remote terminal check	<input type="text" value="checked"/>	<input type="button" value="List"/>	<input type="button" value="▲"/> <input type="button" value="▼"/>
X29 mode	<input type="text" value="Normal"/>	<input type="button" value="List"/>	<input type="button" value="▲"/> <input type="button" value="▼"/>
Program	<input type="text" value="/bin/login"/>		
Program Arguments	<input type="text"/>		
* Transport Selector	<input type="text" value="PADSEL1"/>		

# How to Remove a HPAD Server Configuration on LAN

## Access

From the HPAD Server on LAN menu, select:

## Remove HPAD server configuration

## Command

```
padsvlan -d <config name>* see page 4-7.
```

## Overview

This menu removes one or more HPAD server configuration on LAN.

## Dialog Field

- \*Name** Name of the configurations to be removed.  
The syntax of this field is [a-zA-Z][a-zA-Z0-9\_]\*.  
Default: none  
Mandatory.
- List** Name: the list option displays all LAN configuration names already defined.  
It is a multi-select list of strings. Each string is limited to 32 characters.

## Successful Result

Removal of selected configurations.

Result must be acknowledged by the administrator.

## Example:

Command	
padsvlan -d Lconfig1 Lconfig2	
Output	
* Name	<input type="text" value="Lconfig 1 Lconfig2"/> <input type="button" value="List"/>



## How to Reload the HPAD Server Configuration

### Access

From the HPAD Server configuration menu, select:

### Reload the HPAD server configuration

### Command

```
padproc -l    see page 4-2.
```

### Overview

Requires all PAD server daemons to reload the configuration from the file */etc/hpadd.conf*. This operation is necessary to take into account a modification made in this file with the menu HPAD server configuration on WAN and the HPAD server configuration on LAN.

This operation has no effect on PAD server daemons that handle connections already established.

If no PAD server daemon is running, it does nothing.

### Successful Result

Reloads the HPAD server configuration.

---

# Accessing TPAD Client Configuration

## Access

From the TPAD–HPAD menu, select:

### TPAD client configuration

**FastPath:** padclt

## Overview

This menu allows the system administrator to define two addressing facilities. The first one is a generic name for a set of addressing information about a remote PAD server (on WAN and LAN). The second one allows an address of a local WAN board to be defined, as the most often used for outgoing calls. This is shown below:

TPAD client configuration
Addressing a PAD server site on WAN with TPAD (SVC) Addressing a PAD server site on WAN / PVC with TPAD Addressing a PAD server site on LAN with TPAD Addressing a PAD server site on WAN via a LAN / WAN gateway Definition of a default address

## Description

### Addressing a PAD server site on WAN with TPAD (SVC)

Addressing a PAD server site on WAN manages the association between a generic name and a PAD server site on WAN. The generic name refers to a set of information that allows the access to a PAD server site. The information set contains: generic name, boards addresses, X3 profile to be loaded, X25 facilities and Calling user data. See page 3-29.

### Addressing a PAD server site on WAN / PVC with TPAD

Addressing a PAD server site on WAN for Permanent Virtual Circuit (PVC). This is detailed in a separate chapter relating to PVC. See Addressing PAD server site on PVC on page 6-5.

### Addressing a PAD server site on LAN with TPAD

Addressing a PAD server site on LAN manages the association between a generic name and a PAD server site on LAN. The generic name refers to a set of information that allows the access to a PAD server site. The information set contains: generic name, boards addresses, X3 profile to be loaded, Transport selector and Calling user data. See page 3-36.

### Addressing a PAD server site on WAN via a LAN / WAN gateway

Addressing a PAD server site on WAN via a LAN / WAN gateway consists in using the SPAG Y/13 profile. It enables a TPAD client on LAN to access a PAD server site on WAN known by its name, unique, referring to a set of informations: generic name, board addresses, X3 profile, X25 facilities and call user data. This menu is detailed Addressing a PAD server site on WAN via a LAN/WAN gateway on page 7-7.

### Definition of a default address

Definition of a default address for outgoing calls is only meaningful on WAN. It is useful that the user has access to a PAD server with its address instead of its generic name. If a PAD server is reachable from the default address, the user has only to provide the PAD server address. See page 3-42.

---

## Addressing a PAD Server Site on WAN with TPAD (SVC)

### Access

From the TPAD Client Configuration menu, select:

### Addressing a PAD server site on WAN with TPAD (SVC)

**FastPath:** padclt\_wan

### Overview

Enables the administrator to manage the addressing of a PAD server site on WAN. The addressing is a named set of information that enables an end user of the PAD client to access to a PAD server known by its name. The name is unique.

The set of information defining a named site profile is:

a generic name,

board addresses,

X.3 profile,

facilities (reverse charging, charging information, closed user group and others),

call user data.

The following actions allowed are shown in this illustration below.

Addressing a PAD server site on WAN with TPAD (SVC)
List PAD server site on WAN Add PAD server site on WAN Change/Show a PAD server site on WAN Remove PAD server site on WAN

### Description

#### List PAD server sites on WAN

Lists the names of all PAD servers on WAN. See page 3-30.

#### Add a PAD server site on WAN

Permits the creation of a named server site. See page 3-31.

#### Change/Show a PAD server site on WAN

Permits the edition of a named server site. See page 3-33.

#### Remove PAD server site on WAN

Permits the removal of named server sites. See page 3-35.

## How to List PAD Server Site on WAN

### Access

From the Addressing a PAD Server Site on WAN with TPAD (SVC) menu, select:

### List PAD server site on WAN

### Command

```
padcltwan -l see page 4-9.
```

### Overview

Lists all the names of PAD servers on WAN accessed by TPAD. The name identifies a named set of information that enables an end user of a PAD client to identify and access a PAD server.

### Successful Result

Shows the names of all PAD server sites on WAN accessed directly by TPAD.

Example::

Command
padcltwan -l
Output
<u>List of PAD sites on WAN</u>
Wserver1
Wserver2

# How to Add a PAD Server Site on WAN

## Access

From the Addressing a PAD Server Site on WAN with TPAD (SVC) menu, select:

## Add a PAD server site on WAN

### Command

`padcltwan -c` see page 4-9.

```
padcltwan -c PADServerName  
[-l Local WANAdapterAddress] [-r RemoteWANAdapterAddress]  
[-p ProfileNumber] [-R {asked | not_asked}] [-C {asked | not_asked}]  
[-g ClosedUserGroup] [-F FreeFacilities] [-d CallingUserData]
```

### Overview

Enables the administrator to create a named set of information that identifies a PAD server on WAN. Once created, the name is associated with a set of information that contains:

- board addresses,
- X.3 profile,
- facilities (reverse charging, charging information, closed user group and others)
- calling user data.

### Dialog Fields

- \* **Name** Name of the PAD server. It is a string limited to 32 characters. The name DFLTX25 is reserved for internal use. The syntax of this field is [a-zA-Z][a-zA-Z0-9\_]\*.  
Default: none.  
Mandatory.
- \* **Local WAN address** The address of the board from where the connection request is sent. Its range is a number of maximum 15 digits. A digit has a value 0–9.  
Default: none.  
Mandatory.
- \* **Remote WAN address** The address of the board from where the connection request is received. Its range is a number of maximum 15 digits. A digit has a value 0–9.  
Default: none.  
Mandatory.
- \* **Profile number** A number of an X.3 profile defined in the file /etc/PROFPAD. X.3 defines a set of parameters determining the behavior of PAD service. A given X.3 profile associates a value to each X.3 parameter. The X.3 profile range of value is [1–127].  
Default:127.  
Mandatory.

### Reverse charging

A facility that requires the charging of the called party, on public WAN. It is set in the facility field of call packet. Its range of values is [asked|not\_asked].  
Default: not\_asked.

### Charging information

A facility that requires charging information from a public WAN. It is set in the facility field of the call packet. Its range of values is [asked|not\_asked].  
Default: not\_asked.

### Closed user group

A facility that requires a closed user group to a public network. It is set in the facility field of the call packet.

Its range of values is a number in the range [1–99].

Default: none.

### Other facilities

Enables the administrator to add some other free facilities, as defined in the X25 recommendations.

This field filled with a hexadecimal string like 0x01,0x02,0x03...

Default: none.

**Note:** “Reverse charging”, “Charging informations”, “Closed user group” are facilities, and are concatenated with “Other facilities” in the facility field of the call packet. The length of the facility field is limited to 109 characters, so length of “Reverse charging”, “Charging information”, “Closed user group” and “Other facilities” must be less than 109 characters.

### Calling user data

A character string that is sent in the calling user data of the call packet. The length is limited to 12 characters. Its value can be input in two ways. It is an alphanumeric character string or hexadecimal string like

0x68,0x65,0x6c,0x6c,0x6f (“hello”).

Default: none.

Example:

Command	
<pre>padcltwan -c Wserver1 -l 138020025 -r 192030666 -p 127 -R not_asked -C not_asked -g 93 -F 0x01,0x02,0x03 -d hello</pre>	
Output	
*PAD server name	<input type="text" value="Wserver1"/> <input type="button" value="List"/>
* Local WAN address	<input type="text" value="138020025"/> <input type="button" value="List"/>
* Remote WAN address	<input type="text" value="192030666"/>
Profile number	<input type="text" value="127"/>
Reverse charging	<input type="text" value="not_asked"/> <input type="button" value="List"/> <input type="button" value="▲"/> <input type="button" value="▼"/>
Charging information	<input type="text" value="not_asked"/> <input type="button" value="List"/> <input type="button" value="▲"/> <input type="button" value="▼"/>
Closed user group	<input type="text" value="93"/>
Other facilities	<input type="text" value="0x01,0x02,0x03"/>
Calling user data	<input type="text" value="hello"/>

# How to Change/Show a PAD Server Site on WAN

## Access

From the Addressing a PAD Server Site on WAN with TPAD menu, select:

## Change/show PAD server site on WAN

### Command

`padcltwan -e` see page 4-9.

**padcltwan -e** *PADServerName*

[ **-l** *Local WANAdapterAddress* ] [ **-r** *RemoteWANAdapterAddress* ]

[ **-p** *ProfileNumber* ] [ **-R** {asked | not\_asked} ] [ **-C** {asked | not\_asked} ]

[ **-g** *ClosedUserGroup* ] [ **-F** *FreeFacilities* ] [ **-d** *CallingUserData* ]

### Overview

Enables the administrator to edit a named set of information defining a server site on WAN. If the name is changed, a new named PAD server is created.

**Note:** If a PAD configuration already exists with this new name, it will be overwritten.

### Dialog Fields

Dialog Fields are explained in How to add a PAD server site on WAN, on page 3-31.

### Successful Result

Display or modification of PAD server site on WAN.

Example:

Select one item from
<b>Wserver1</b>
Wserver 2

Example:

Command	
<pre>padcltwan -e Wserver1 -l 138020025 -r 1920309666 -p 127 -R asked -C asked -g 93 -F 0x01,0x02,0x03 -d hello</pre>	
Output	
*PAD server name	<input type="text" value="Wserver1"/> <input type="button" value="List"/>
* Local WAN address	<input type="text" value="138020025"/> <input type="button" value="List"/>
* Remote WAN address	<input type="text" value="1920309666"/>
Profile number	<input type="text" value="127"/>
Reverse charging	<input type="text" value="asked"/> <input type="button" value="List"/> <input type="button" value="▲"/> <input type="button" value="▼"/>
Charging information	<input type="text" value="asked"/> <input type="button" value="List"/> <input type="button" value="▲"/> <input type="button" value="▼"/>
Closed user group	<input type="text" value="93"/>
Other facilities	<input type="text" value="0x01,0x02,0x03"/>
Calling user data	<input type="text" value="hello"/>



# How to Remove a PAD Server Site on WAN

## Access

From the Addressing a PAD Server Site on WAN with TPAD menu, select:

## Remove PAD server site on WAN

## Command

```
padcltwan -d <PAD server name>* see page 4-9.
```

## Overview

This menu permits one or more named PAD servers, selected from a list, to be deleted.

## Dialog Fields

**\* Name** Name of the configurations to be removed.  
Default: none  
Mandatory.

**List** Name: the list option displays all WAN configuration names already defined.  
It is a multi-select list of strings. Each string is limited to 32 characters.

## Successful Result

Removal of selected sites.

Result must be acknowledged by the administrator.

Example:

Command	
padcltwan -d Wserver1 Wserver2	
Output	
* Name	<input type="text" value="Wserver1 Wserver 2"/> <input type="button" value="List"/>

---

# Addressing a PAD Server Site on LAN with TPAD

## Access

From the TPAD Client Configuration menu, select:

### Addressing a PAD server site on LAN

**FastPath:** padclt\_lan

## Overview

Enables the administrator to manage the addressing of a PAD server site on LAN. The addressing is a named set of information that enables an end user of the PAD client to access to a PAD server known by its name. The name is unique.

The set of information defining a named site is:

- a generic name,
- board addresses,
- X3 profile.

The following actions allowed are shown in this illustration below.

Addressing a PAD server site on LAN with TPAD
List PAD server sites on LAN Add a PAD server site on LAN Change/Show a PAD server site on LAN Remove PAD server site on LAN

## Description

### List PAD server sites on LAN

Lists the names of all PAD servers on LAN, see page 3-37.

### Add a PAD server site on LAN

Permits the creation of a named server site profile, see page 3-38.

### Change/Show a PAD server site on LAN

Permits the edition of named server site profiles, see page 3-40.

### Remove PAD server site on LAN

Permits the removal of named server site profiles, see page 3-41.

## How to List PAD Server Sites on LAN

### Access

From the Addressing a PAD Server Site on LAN with TPAD menu, select:

### List PAD server site on LAN

### Command

```
padcltlan -l see page 4-11.
```

### Overview

Lists all the names of PAD servers on LAN. The name identifies a named set of information that enables an end user of a PAD client to identify and access a PAD server.

### Successful Result

Shows the names of all PAD server sites on LAN.

Example:

Command
padcltlan -l
Output
<u>List of PAD sites on LAN</u>
Lserver1
Lserver2

# How to Add a PAD Server Site on LAN

## Access

From the Addressing a PAD Server Site on LAN with TPAD menu, select:

## Add a PAD server site on LAN

### Command

`padcltlan -c` see page 4-11.

`padcltlan -c PADServerName`  
[`-l LocalLANAdapterAddress`] [`-r RemoteLANAdapterAddress`]  
[`-p ProfileNumber`] [`-s TransportSelector`] [`-d CallingUserData`]  
[`-S <special format CUD Y/N>`]

### Overview

Enables the administrator to add a named set of information that identifies a PAD server on LAN. Once created, the name is associated with a set of information that contains:

- board addresses,
- X3 profile.

### Dialog Fields

#### \* PAD server name

Name of the PAD server. It is a string limited to 32 characters. The name DFLTX25 is reserved for internal use. The syntax of this field is [a-zA-Z][a-zA-Z0-9\_]\*.  
Default: none.  
Mandatory.

#### \* Local LAN address

The address of the board from where the connection request is sent. Its range is a number of maximum 12 digits. A digit has a hexadecimal value (from 0–9 and a–f).  
Default: none.  
Mandatory.

#### \* Remote LAN address

The address of the board from where the connection request is received. Its range is a number of maximum 12 digits. A digit has a hexadecimal value (from 0–9 and a–f).  
Default: none.  
Mandatory.

#### \* Profile number

A number of an X.3 profile defined in the file /etc/PROFPAD. X.3 defines a set of parameters determining the behavior of PAD service. A given X.3 profile associates a value to each X.3 parameter. The X.3 profile range of value is [1–127].  
Default:127.  
Mandatory.

#### \*Transport Selector

The selector is a telecommunications identifier of a service. This selector is the transport selector of the remote machine, it allows the OSI stack to route the call to a PAD server. Its length is less than or equal to 8 characters. Its value can be input by two ways: a string of alphanumeric characters or hexadecimal string like 0x68,0x65,0x6c,0x6c,0x6f (“hello”).  
Default: 0x40,0x01,0x50,0x41,0x44,0x31.  
Mandatory.

### Calling user data

A character string that is sent in the calling user data field of the call packet. The length is limited to 6 characters. Its value can be input in a hexadecimal string like 0x68,0x65,0x6c,0x6c,0x6f ("hello").

**Note:** Calling user data is required because LAN does not support a password.

Default: none.

### Special formatted user data

This field is reserved for the expert use, especially the particular use of a SPAG profile over a LAN. When selected, the LAN calling packet will be able to convey another frame of data: the calling user data field will be extended to 12 alphanumeric characters.

Possible values: 'Y' or 'N'. Default: 'N'.

### Example:

Command	
<pre>padctlan -c Lserver1 -l 08003820c230 -r 08003820de55 -p 127 -s PADSEL1 -d""</pre>	
Output	
*PAD server name	<input type="text" value="Lserver1"/> <input type="button" value="List"/>
* Local LAN address	<input type="text" value="08003820c230"/> <input type="button" value="List"/>
* Remote LAN address	<input type="text" value="08003820de55"/>
* Profile number	<input type="text" value="127"/>
* Transport selector	<input type="text" value="PADSEL1"/>
Calling user data	<input type="text"/>
Special formatted user data [Y/N]	<input type="text" value="N"/>

# How to Change/Show a PAD Server Site on LAN

## Access

From the Addressing a PAD Server Site on LAN with TPAD menu, select:

## Change/show PAD server site on LAN

### Command

`padcltlan -e` see page 4-11.

**padcltlan -e** *PADServerName*  
[-I *LocalLANAdapterAddress*] [-r *RemoteLANAdapterAddress*]  
[-p *ProfileNumber*] [-s *TransportSelector*] [-d *CallingUserData*]  
[-S <*special format CUD Y/N*>]

### Overview

Enables the administrator to edit a named set of information defining a server site on LAN. If the name is changed, a new named PAD server is added.

**Note:** If a PAD configuration already exists with this new name, it will be overwritten.

### Dialog Fields

Fields are explained in How to add a PAD server site on LAN, see page 3-38.

### Successful Result

Display or modification of PAD server site on LAN.

Example:

Select one item from

**Lserver1**

Lserver 2

Command		
<pre>padcltlan -e Lserver1 -I 08003820c230 -r 08003820de55 -p 127 -s SELPAD1 -d ""</pre>		
Output		
*PAD server name	<input type="text" value="Lserver1"/>	<input type="button" value="List"/>
* Local LAN address	<input type="text" value="08003820c230"/>	<input type="button" value="List"/>
* Remote LAN address	<input type="text" value="08003820de55"/>	
* Profile number	<input type="text" value="127"/>	
* Transport selector	<input type="text" value="SELPAD1"/>	
Calling user data	<input type="text" value="[ ]"/>	
Special formatted user data [ Y / N ]	<input type="text" value="[ N ]"/>	

# How to Remove a PAD Server Site on LAN

## Access

From the Addressing a PAD Server Site on LAN with TPAD menu, select:

## Remove a PAD server site on LAN

## Command

```
padcltlan -d <PAD server name>* see page 4-11.
```

## Overview

This menu permits one or more named PAD servers, selected from a list, to be deleted.

## Dialog Field

**\* Name** Name of the configurations to be removed.  
Default: none  
Mandatory.

**List** Name: the list option displays all LAN configuration names already defined.  
It is a multi-select list of strings. Each string is limited to 32 characters.

## Successful Result

Removal of selected sites.

Result must be acknowledged by the administrator.

## Example:

Command	
<code>padcltlan -d Lconfig 1 Lconfig 2</code>	
Output	
* Name	<input type="text" value="Lconfig 1 Lconfig 2"/> <input type="button" value="List"/>

---

# Defining a Default Address

## Access

From the TPAD Client Configuration menu, select:

## Definition of a default address

**FastPath:** paddef

## Command

`paddefault -c 138020025` see page 4-13.

## Overview

Enables the administrator to manage the default address for outgoing calls. This address is only meaningful on a WAN. It is useful for a user to access a PAD server with its address instead of its generic name. If a PAD server is reachable from the default address, the user has only to provide the PAD server address.

## Dialog Field

### Default outgoing address

The address of a WAN board available on the platform. An outgoing call made only with the PAD server address is achieved from this board.

Default: The address associated with record named DFLTX25, in the file */etc/isohosts*. If DFLTX25 doesn't exist, this field is empty.

### List

Displays the addresses of all WAN boards available on the machine. It also displays an empty address; if this empty field is selected, then no default outgoing address is defined.

## Successful Result

Displays default outgoing address.

## Example:

Command	
paddefault -c 138020025	
Output	
Default outgoing address	<input type="text" value="138020025"/> <input type="button" value="List"/>



---

# Accessing the TPAD-HPAD Configuration Check Tool

## Access

From the TPAD-HPAD configuration menu, select:

### TPAD-HPAD configuration check tool

## Overview

This menu allows the system administrator to check the validity of PAD client and server configurations. This menu should be used under the following circumstances to check:

- Compatibility of configurations created with earlier versions of TPAD-HPAD.
- Configuration parameters following a crash of the machine.
- Parameters of a newly-created configuration.

## Description

Enables the administrator to control the validity of PAD configurations (client and server). This tool checks the configuration name, numbering of X.3 profiles, access control coherence, the validity of addressing parameters and the validity of gateway use.

If an error is detected in a PAD configuration, a message is edited in order to help the administrator to correct the corrupted files, see PAD Configuration Check Tool errors on page C-6.

## Example:

TPAD-HPAD configuration check tool	
Output	Checking configuration name _____
	Checking X3 profiles _____
	Checking access control _____
	Checking addressing parameters _____
	Checking gateway use _____

---

# Accessing HPAD Server daemon Management

## Access

From the TPAD–HPAD menu, select:

### TPAD–HPAD start/stop

**FastPath:** padproc

## Overview

This menu allows the system administrator to manage all daemon processes using the options shown below:

TPAD–HPAD start/stop
Start HPAD server daemon Stop HPAD server daemon Add start of HPAD server daemon at stack loading Suppress start of HPAD server daemon at stack loading

## Description

The menu options are described below:

### Status of the PAD server daemon

Displays the state of the PAD server daemon process (active or not), and the number of sessions (incoming calls) currently opened, see page 3-56.

### Start PAD server daemon

Runs the PAD server daemon. One PAD server daemon is sufficient to satisfy incoming calls. However, due to delay of processing, it may happen that one incoming call can be rejected if several incoming calls occur at the same time. So, more than one PAD server daemon is allowed to run. The system load must be carefully controlled, see page 3-45.

### Stop the PAD server daemon

Stops PAD server daemons that are running, see page 3-48.

### Add start of PAD server daemon at stack loading

Allows the OSI Stack to start the PAD server daemon at loading, see page 3-46.

### Suppress start of PAD server daemon at stack loading

Does not allow the OSI Stack to start the PAD server daemon at loading, see page 3-47.

## How to Start the PAD Server Daemon

### Access

From the PAD Server Running Management menu, select:

### Start PAD server daemon

### Command

```
padproc -r    see page 4-2.
```

### Overview

Starts the **hpadd** daemon of PAD service. One PAD server daemon is sufficient to satisfy incoming calls. However, processing delays may cause an incoming call to be rejected if several occur at the same time. So more than one PAD server daemon is allowed to run.

### Successful Result

Gives the result of the operation.

Result must be acknowledged by the administrator.

## How to Start PAD Server Daemon at Stack Loading

### Access

From the PAD Server Running Management menu, select:

### Add start of PAD server daemon at stack loading

### Command

`padproc -a` see page 4-2.

### Overview

This menu allows the OSI Stack to start the PAD server daemon at loading.

### Successful Result

Gives result of operation.

Result must be acknowledged by the administrator.

### Example:

Add start of PAD server daemon at stack loading (state ON)

Start tpad\_hpad on osiload.

## How to Suppress Start of PAD Server Daemon at Stack Loading

### Access

From the PAD Server Running Management menu, select:

### Suppress start of PAD server daemon at stack loading

### Command

`padproc -d` see page 4-2.

### Overview

This menu does not allow the OSI Stack to start the PAD server daemon at loading.

### Successful Result

Gives result of operation.

Result must be acknowledged by the administrator.

### Example:

Suppress start of PAD server daemon at stack loading (state OFF)

Do not start tpad\_hpad on osiload

## How to Stop the PAD Server Daemon

### Access

From the PAD Server Running Management menu, select:

### Stop the PAD server daemon

### Command

```
padproc -k see page 4-2.
```

### Overview

This menu stops the PAD server daemons by sending them a signal SIGTERM. If no daemons are running, this action has no effect.

### Successful Result

Stop of PAD server daemons.

Result must be acknowledged by the administrator.

---

## Accessing the PAD trace tool

### Access

From the TPAD–HPAD menu, select:

### TPAD–HPAD trace

**FastPath:** padtrace

### Overview

This menu allows the system administrator to access the PAD trace tool available on HPAD, i.e. on server side, as shown below:

TPAD–HPAD trace
List trace parameters of HPAD configuration Change/Show trace parameters on a HPAD server configuration Change trace level on a running HPAD connection PAD Printing Problem Determination Remove all the PAD trace files

### Description

**The administrator on HPAD**, i.e. on server side, can use SMIT to set trace levels and get informations about different events concerning PAD application: connection and disconnection, network or system errors, site table, facilities, X29 messages, X3 parameters... Each one is called a level.

Three default trace modes are predefined: Inactive, Limited and Full. This is detailed in Change/Show trace parameters on a HPAD server configuration, on page 3-51.

The information can be recorded in a file or displayed on stderr.

As the size of those trace files can be very big, the administrator must choose carefully the trace level he wants and use the 'Remove all the PAD trace files' as soon as his problem is solved.

**Warning:** the menu 'Change trace level on a running HPAD connection' is strictly reserved for experts.

You can find more information in:

**List trace parameters of HPAD configuration**, on page 3-50,

**Change/Show trace parameters on a HPAD server configuration**, on page 3-51,

**Change trace level on a running HPAD connection**, on page 3-54,

**PAD Printing Problem Determination**, on page 8-20,

**Remove all the PAD trace files**, on page 3-55.

# How to List Trace Parameters of HPAD Configurations

## Access

From the TPAD–HPAD trace menu, select:

### List trace parameters of HPAD configurations

#### Overview

Gives a list of all the LAN and WAN PAD server configurations and for each of them, the associated trace parameters:

- TRACE           Is set to 1 (Full or Limited trace mode) or nothing (Inactive trace mode).
- DEBUG           Can be set to the trace mask–value specified for the configuration.
- FILE            Used to give the full pathname of the chosen trace file. By default, trace informations are written in the file **/tmp/hpad\_trace.\$PID**.

#### Example:

##### List trace parameters of HPAD configurations

```
WAN -padw1 : TRACE = : DEBUG = : FILE = /tmp/padw1_t
LAN -padl1 : TRACE = 1 : DEBUG = 0x90001ffe : FILE = /tmp/padl1_t
LAN -padl3 : TRACE = 1 : DEBUG = 0x90001ffe : FILE =
LAN -padl2 : TRACE = 1 : DEBUG = 0x90001ffe : FILE = /tmp/padl2_t
```

For further information on trace mask–value meaning, see:

**debug PAD command**, on page 5-18,

**Change/Show trace parameters on a HPAD server configuration** SMIT menu, described on page 3-51.



# How to Change/Show Trace Parameters on a HPAD Server Configuration

## Access

From the TPAD–HPAD trace menu, select:

## Change/Show trace parameters on a HPAD server configuration

### Overview

Enables the administrator to manage trace options for the selected HPAD configuration. To make it easier for the administrator, three preselected trace modes are defined and must be chosen by the administrator (dialog field 'Select trace mode').

The same parameters can be managed with the *mask-value* argument of the PAD interactive command **debug**.

**Warning:** those parameters will be taken into account only on the next run of HPAD.

### Dialog Fields

**\*Name** Name of the configuration whose trace parameters are going to be modified.

#### \*Select trace mode

Enables the administrator to select a trace mode among the predefined modes {Inactive, Limited, Full}. [default value: inactive].

- **Inactive mode:** no trace files. The various levels are ineffective.
- **Limited mode:** when this mode is set, the preselected levels are 'Trace of connection – Deconnection', 'Trace system errors', 'Trace network errors'. The other levels are not taken into account and the administrator cannot set them to 'yes'. Information about connection–deconnection, network and system errors, site table and facilities is displayed.
- **Full mode:** when this mode is set, all the levels are preselected. The administrator can set to 'no' the levels of trace he does not want. Information is displayed according to his choice on the levels (from 'Trace X3 parameters to 'Trace internal functions').

In Limited or Full mode, the information is displayed on a file or on stderr according to the choice on the dialog fields 'Trace in a file' and 'Name of the trace file'.

#### Trace in a file

Enables the user to keep trace information in a file. If this flag is not set, trace will be displayed on stderr.

#### Name of the trace file

To be used to choose the full pathname of the trace file. By default trace information is written in the file /tmp/hpad\_trace.PID. [default value: /tmp/hpad\_trace.\$PID]

#### Trace X3 parameters

To get the X3 parameters used during the connection.

#### Trace of connection – Deconnection

Gives information about connection/Deconnection steps.

#### Messages from network to PAD (Q=1)

To trace the stream of X29 messages from network to PAD.

**Messages from PAD to network (Q=1)**

To trace the stream of X29 messages from PAD to network.

**Messages from network to PAD (Q=0)**

To trace the stream of unqualified messages from network to PAD.

**Messages from PAD to network (Q=0)**

To trace the stream of unqualified messages from PAD to network.

**Dump data**

Enables the user to get data with the specific PAD information.

**Line discipline information**

To get information about the line discipline used during the connection.

**Messages from TTY/PTY to PAD**

To trace the stream of messages from PTY/TTY to PAD.

**Messages from PAD to TTY/PTY**

To trace the stream of messages from PAD to PTY/TTY.

**Trace system errors**

Gives information about hypothetical system errors.

**Trace network errors**

Gives information about hypothetical network errors.

**Trace other messages**

Other miscellaneous messages: syntax error, invalid hostname...

**Trace time information**

To trace the time information in addition to the basic trace.

**Trace internal functions**

Trace the routines executed. Reserved for experts or for development purposes. May generate very big trace files.

**Successful result**

For a selected server configuration, setting of the various trace parameters.

**Example:**

For the selected configuration servlan1:

```
*Name of the configuration [servlan1]
*Select trace mode [Full]
Trace in a file [Y]
Name of the trace file [ ]
...Trace X3 parameters [Y]
...Trace of connection - Deconnection [Y]
...Messages from network to PAD (Q=1) [Y]
...Messages from PAD to network (Q=1) [Y]
...Messages from network to PAD (Q=0) [Y]
...Messages from PAD to network (Q=0) [Y]
...Dump data [Y]
...Line discipline information [Y]
...Messages from TTY/PTY to PAD [Y]
...Messages from PAD toTTY/PTY [Y]
...Trace system errors [Y]
...Trace network errors [Y]
...Trace other messages [Y]
...Trace time information [Y]
...Trace internal functions [Y]
```

# How to Change Trace Level on a Running HPAD Connection

## Note:

This menu is strictly reserved for experts.

## Access

From the TPAD–HPAD trace menu, select:

### Change trace level on a running HPAD connection

## Overview

This menu, strictly reserved for experts, allows the administrator of the machine on which HPAD is running, to change the trace level for a given HPAD connection. The connection is identified with the process–id (PID) of the HPAD process.

## Dialog Fields

### \* PID of the running HPAD

The administrator must type the F4 Key to have a list of PIDs of the HPAD processes running. Then he must select the process on which the new level is to be applied.

### \* New trace level

contains the mask–value for the new level trace to be used.

## Example:

```
* PID of the running HPAD          [ ]      +
* New trace level                    [ ]
```

**Warning:** This menu is strictly reserved for experts.

## How to Remove All The PAD Trace Files

### Access

From the TPAD–HPAD trace menu, select:

### Remove all the PAD trace files

### Overview

This menu allows the administrator of both machines (i.e. the machine on which HPAD is running, as well as the machine on which tpad is used) to remove the trace files generated by the PAD:

- **tpad\_trace.\$PID** for TPAD
- **hpad\_trace.\$PID** for HPAD
- **dpad\_trace.\$PID** for hpadd

**Warning:** This menu removes only the files recognized as PAD files, i.e. default file names. So when the administrator has chosen other trace file names, particularly for **hpad\_trace.\$PID**, he must remove those files by himself.

---

## Accessing TPAD–HPAD Status

### Access

From the TPAD–HPAD menu, select:

### TPAD–HPAD Status

### Command

```
padproc -t -n -c see page 4-2.
```

### Overview

This command menu shows TPAD–HPAD status: the state of the daemon, the number of PAD sessions currently active (incoming calls) and the number of TPAD clients currently active. One PAD server daemon is sufficient to satisfy incoming calls. However, due to delay of processing, it may happen that one incoming call can be rejected if several incoming calls occur at the same time. So, more than one PAD server daemon is allowed to run.

### Successful Result

Gives the state of the PAD server daemon (active, inactive) and the number of TPAD sessions and HPAD sessions currently active.

### Example:

TPAD–HPAD Status
Number of HPAD sessions: 0
Number of TPAD sessions: 0
HPAD daemon status: 1 [active]

---

# Chapter 4. Configuring TPAD–HPAD Using Commands

This chapter describes how to configure TPAD–HPAD using commands.

---

## Configuring TPAD–HPAD Using Commands Overview

This section details the UNIX user interface of configuration commands belonging to the TPAD–HPAD configurator. These commands can be called:

From the administration tool SMIT

From shell scripts or shell commands.

However, it is highly recommended to call them from SMIT for its look, feel and help on–line.

The syntax, for the description of the configuration commands, uses the following common notations:

[x]: x is an optional argument

{x|y}: the argument value is in the range x or y

<x>: x is the description of an argument

<x>\*: x is the description of an argument, and it can be repeated 1 to n times

You can find more information in:

- padproc, see page 4-2
- padsrvwan, see page 4-4
- padsrvlan, see page 4-7
- padcltwan, see page 4-9
- padcltlan, see page 4-11
- paddefault, see page 4-13
- padcheck, see page 4-14
- padsrv\_pvc, see page 6-7
- padclt\_pvc, see page 6-5

---

## padproc Command

### Purpose

The **padproc** command manages the daemon process of the PAD server.

### Syntax

```
padproc [-n] [-t] [-l] [-c] (call with at least one option)
padproc {-a|-d}
padproc {-r|-k}
```

### Description

Manages the daemon process of the PAD server:

- daemon status
- start daemon
- stop daemon
- add daemon to processes to start at reboot
- remove daemon from processes to start at reboot
- reload daemon configuration.

This daemon has to wait for incoming calls on the PAD service.

Root authority is required to use the **padproc** command.

### Flags

- n** Displays the number of PAD sessions currently active (incoming calls).
- t** Displays the status of the PAD server daemon.  
If no PAD server daemon is running, the status is 'inactive', else it displays the number of PAD server daemons presently 'active'.
- l** Requires the PAD server daemon to load its configuration from the file */etc/hpadd.conf*.  
No action if the daemon is not running.  
"PAD daemon configuration reloaded"
- c** Displays the number of PAD sessions currently active (outgoing calls).
- r** Starts the PAD server daemon, if it was not already running.  
"Starting PAD daemon"
- k** Stops the PAD server daemons.  
No action if no daemons are running.
- a** Adds the PAD server daemon in */etc/inittab*.  
No action if the daemon was already present in this list.
- d** Suppresses the PAD server daemon from */etc/inittab*.  
No action if the daemon was not present in this list.

### Command Outputs

The outputs of sub-commands are:

- n**: "*Number of HPAD sessions: <number>*".
- t**: "*HPAD daemon status: <number of PAD server daemon> [active | inactive]*".
- l**: "PAD daemon configuration reloaded"
- n**: "*Number of TPAD sessions: <number>*".
- r**: "Starting PAD daemon"



- k: “PAD daemon stopped”
- a: “Add automatic start daemon”, then if no problem “Start PAD daemon added in */etc/inittab*”
- d: “Suppress automatic start daemon”, then if no problem “Start PAD server daemon suppressed from */etc/inittab*”.

## Files

*/etc/inittab* List file of processes to start at reboot.

*/etc/hpadd.conf* Configuration file.

## Implementation Specifics

This command is part of tpad\_hpad LPP.

## Suggested Reading

### Related Information

The **padsrvwan** command, **padsrvlan** command, **padcltwan** command, **padcltlan** command, **paddefault** command, **padcheck** command.

## padsrvwan Command

### Purpose

The **padsrvwan** command manages a PAD server configuration on WAN.

### Syntax

**padsrvwan -l**

**padsrvwan -c** *ConfigurationName* [-a *AdapterAddress*] [-s *NetworkSelector*] [-p *Profile Number*] [-t {checked | not\_checked}] [-x {normal | rlogin | no\_message}] [-v {filtered | not\_filtered | transparent | filtered\_no\_init}] [-E *ProgramPathname* [-o *ProgramArguments*] [-g *ClosedUserGroup*] [-R {accepted | refused}] [-h *HistoryFile*] [-H *RecordNumber*]] [-m *ControlAddressMode* [-f *ControlAddressFile*]]

**padsrvwan -e** *ConfigurationName* [-a *AdapterAddress*] [-s *NetworkSelector*] [-p *Profile Number*] [-t {checked | not\_checked}] [-x {normal | rlogin | no\_message}] [-v {filtered | not\_filtered | transparent | filtered\_no\_init}] [-E *ProgramPathname* [-o *ProgramArguments*] [-g *ClosedUserGroup*] [-R {accepted | refused}] [-h *HistoryFile*] [-H *RecordNumber*]] [-m *ControlAddressMode* [-f *ControlAddressFile*]]

**padsrvwan -d** *ConfigurationName\**

### Description

Manages a PAD server configuration on WAN: list, create, modify, delete.

A configuration is a named set of parameters, that defines the behavior of the PAD server. A configuration is known by its name, which is unique. Once created, a configuration is taken into account when the PAD server daemon loads its configuration.

A WAN configuration has to be attached to a specific communications adapter. A WAN configuration is identified by the OSI stack with two parameters, WAN adapter address and network selector. To avoid random access to several WAN configurations, it is forbidden to define a configuration with a couple, WAN adapter address–Network selector, already in use.

Root authority is required to use the **padsrvwan** command.

### Flags

- l lists the configurations defined for a PAD server on WAN.
- c *ConfigurationName* adds a new configuration, with a given name, for a PAD server on WAN.
- e *ConfigurationName* modifies a named configuration according to the option values.
- d *ConfigurationName* suppresses named configurations of PAD server on a WAN.

The following flags are associated with **-c** and **-e** options.

- a *AdapterAddress* address of a WAN adapter. The named configuration is associated with this adapter. Note, the address isn't compare with WAN adapters addresses present on the platform. The control on this address is rejected at the PAD server execution

- s** *NetworkSelector*  
 identifies the WAN PAD service on the system. Its normalized value is 0x01,0x00,0x00,0x00.  
 If this option is used, the network selector value must begin with 0x01.  
 Enables a PAD client trying to call a PAD server with a specific network selector. The call is only accepted if the PAD client specifies the exact network selector. The length of the network selector is less or equal to 4.
- p** *ProfileNumber*  
 specifies an X.3 profile in the file */etc/PROFPAD*.  
 When an incoming call arrives, the X.3 profile of the PAD client is updated according to the specified profile.
- t** { *checked* / *not\_checked* }  
 requires the PAD server to set the environment variable TERM.  
 This feature is only available if the PAD client is coming from a DPX.
- x** { *normal* | *rlogin* | *no\_message* }  
 controls the use of X29 messages from the PAD server. These messages are mainly used to adapt the editing of character of the PAD client, according to the application runs by the user.  
 If set to "No message" the PAD server won't send any message.  
 If set to "Normal", the PAD server will allowed/denied edition of characters from PAD client according to application behavior.  
 If set to "Rlogin mode", the PAD server switch the PAD client into a "rlogin" mode. That means all characters keyed by the user are sent by the PAD client to the PAD server. This last option is only recommended on LAN.
- v** { *filtered* | *not\_filtered* | *transparent* | *filtered\_no\_init* }  
 PAD server can filter or not the function keys sent by a Videotex terminal (Minitel) and change or not the presentation parameters:

  - transparent:** neither filter nor initialisation operation is performed.
  - not\_filtered:** initialisation is performed but functions keys are not filtered.
  - filtered\_no\_init:** no initialisation but function keys are filtered.
  - filtered:** both filter and initialisation operation are performed.
- E** *ProgramPathname*  
 pathname of the program to run.
- o** *ProgramArguments*  
 list of arguments of the program specified with the option **-E**.
- g** *ClosedUserGroup*  
 controls the access of the PAD server. Only calls with this closed user group are accepted.  
 A closed user group is a decimal number of two digits.
- R** { *accepted* | *refused* }  
 accepts or rejects a call (from PAD client) with the reverse charging facility.
- h** *HistoryFilePathname*  
 specifies a file that contains history log of connections on this PAD server configuration. This file is managed as a circular file.
- H** *RecordNumber*  
 specifies the maximum number of records which may be contained in the history log file. This option requires the definition of a history file (**-h** option).

# padsrvwan

## **-m** *ControlAddressMode*

specifies the control to be performed on the caller's address.

If set to **none**, no controls are made and control address must be defined (option **-f**).

If set to **Denied**, all PAD client addresses present in the control address file (option **-f**) are forbidden.

If set to **Allowed**, only PAD client addresses present in the control address file (option **-f**) are allowed.

If control address mode is set to **Denied** or **Allowed**, a control address file must be defined (option **-f**).

**Note:** If 'none' specified, HPAD takes the following Control Address default files:

*/etc/secure/log/HPADdenied* file for denied address

*/etc/secure/log/HPADallow* file for allowed address.

## **-f** *ControlAddressFile*

pathname of a file whose content is a list of addresses. These addresses will be compared with caller's address. According to the control address mode, the call is accepted or rejected.

This option is only set if control address mode is defined.

## Command Outputs

The outputs of sub-commands are:

**-l:** Displays configuration names that are defined on WAN:

```
padsrvwan -l
List of PAD configurations on WAN
Wconfig1
Wconfig2
...
```

**-c:** no output

**-e:** no output

**-d:** no output

## Implementation Specifics

This command is part of tpad\_hpad LPP.

## Suggested Reading

### Related Information

The **padproc** command, **padsvlan** command, **padcltwan** command, **padcltlan** command, **paddefault** command, **padcheck** command.

## padsrvlan Command

### Purpose

The **padsrvlan** command manages a PAD server configuration on LAN.

### Syntax

**padsrvlan -l**

**padsrvlan -c** *ConfigurationName* [**-p** *ProfileNumber*]  
 [**-t** {checked | not\_checked} ] [**-x** {normal | rlogin | no\_message} ]  
 [**-E** *ProgramPathname* [**-o** *ProgramArguments*] ]  
 [**-s** *TransportSelector*]

**padsrvlan -e** *ConfigurationName* [**-p** *ProfileNumber*]  
 [**-t** {checked | not\_checked} ] [**-x** {normal | rlogin | no\_message} ]  
 [**-E** *ProgramPathname* [**-o** *ProgramArguments*] ]  
 [**-s** *TransportSelector*]

**padsrvlan -d** *ConfigurationName\**

### Description

Manages a PAD server configuration on LAN:  
 list,  
 create,  
 modify,  
 delete.

A configuration is a named set of parameters, that defines the behavior of the PAD server. A configuration is known by its name, which is unique. Once a configuration is added, it is taken into account by starting the PAD server daemon or requiring it to load its configuration. A configuration of PAD server on LAN is available on all LAN communications adapters.

A configuration is identified by the OSI stack with the parameter Transport Selector. To avoid random access to several configurations, it is forbidden to define a configuration with a Transport selector already in use.

Root authority is required to use the **padsrvlan** command.

### Flags

- l** lists the configurations defined for a PAD server on LAN.
- c** *ConfigurationName*  
adds a new configuration, with a given name, for a PAD server on LAN.
- e** *ConfigurationName*  
modifies a named configuration according to the option values.
- d** *ConfigurationName*  
deletes named configurations of a PAD server on a LAN.

The following flags are associated with **-c** and **-e** options.

- p** *ProfileNumber*  
specifies an X.3 profile in the file */etc/PROFPAD*.  
When an incoming call arrives, the X.3 profile of the PAD client is updated according to the specified profile.
- t** { checked / not\_checked }  
Requires the PAD server to set the environment variable TERM.  
This feature is only available if the PAD client is coming from a DPX.

## padsrvlan

- x** { normal | rlogin | no\_message}  
controls the use of X29 messages from the PAD server. These messages are mainly used to adapt the editing of character of the PAD client, according to the application run by the user.  
If set to "No message" the PAD server won't send any message.  
If set to "Normal", the PAD server will allowed/deny edition of characters from PAD client according to application behavior.  
If set to "Rlogin mode", the PAD server switch the PAD client into a "rlogin" mode. That means all characters keyed by the user are sent by the PAD client to the PAD server. This last option is only recommended on LAN.
- E** *ProgramPathname*  
Pathname of the program to run.
- o** *ProgramArguments*  
List of arguments of the program specified with the option **-E**.  
**Note:** The list must be entered between quotes " ".
- s** *TransportSelector*  
specifies the LAN PAD service on the system. This selector enables the OSI stack, to route an incoming call from a PAD client, to the PAD server. The value can be input by two ways: a string of alphanumeric characters, or an hexadecimal string like 0x68,0x65,0x6c,0x6c,0x6f ("hello"). Its length is limited to 8 characters.

## Command Outputs

The outputs of sub-commands are:

- l:** Displays configuration names that are defined on LAN:

```
local_prompt>padsrvlan -l
List of PAD configurations on LAN
Lconfig1
Lconfig2
...
```

- c:** no output
- e:** no output
- d:** no output

## Implementation Specifics

This command is part of tpad\_hpad LPP.

## Suggested Reading

### Related Information

The **padproc** command, **padsrvwan** command, **padcltwan** command, **padcltlan** command, **paddefault** command, **padcheck** command.

## padcltwan Command

### Purpose

The **padcltwan** command manages addressing of a PAD server site on WAN.

### Syntax

**padcltwan -l**

**padcltwan -c** *PADServerName*

[**-l** *Local WANAdapterAddress*] [**-r** *RemoteWANAdapterAddress*]  
 [**-p** *ProfileNumber*] [**-R** {asked | not\_asked}] [**-C** {asked | not\_asked}]  
 [**-g** *ClosedUserGroup*] [**-F** *FreeFacilities*] [**-d** *CallingUserData*]

**padcltwan -e** *PADServerName*

[**-l** *Local WANAdapterAddress*] [**-r** *RemoteWANAdapterAddress*]  
 [**-p** *ProfileNumber*] [**-R** {asked | not\_asked}] [**-C** {asked | not\_asked}]  
 [**-g** *ClosedUserGroup*] [**-F** *FreeFacilities*] [**-d** *CallingUserData*]

**padcltwan -d** *PADServerName\**

### Description

Manages addressing of a PAD server site on WAN:  
 list,  
 create,  
 modify,  
 delete.

The addressing is a named set of parameters that enables an end user of a PAD client to access to a PAD server known by its name, which is unique.

Root authority is required to use the **padcltwan** command.

### Flags

**-l** lists the names of a defined PAD server sites on WAN.

**-c** *PADServerName*

adds the named set of parameters allowing a user to access a PAD server on WAN.

**-e** *PADServerName*

modifies the named set of parameters identifying a PAD server on WAN.

**-d** *PADServerName*

deletes the named set of parameters identifying PAD servers on WAN.

The following flags are associated with **-c** and **-e** options

**-l** *LocalWANAdapterAddress*

X25 address that identifies the adapter and network used to access the PAD server.

This address is not compared with WAN adapters addresses present on the system. The control on this address is rejected at connection try.

**-r** *RemoteWANAdapterAddress*

X25 address that identifies the PAD server adapter.

**-p** *ProfileNumber*

specifies an X.3 profile, in the file */etc/PROFPAD*.

When the PAD server is called (option **-n**), the specified X.3 profile is loaded by the PAD client .

## padcltwan

- R** {asked | not\_asked}  
A call to the PAD server (option **-n**) is made with the reverse charging facility.  
This option is meaningful on a public network only. The call made by the PAD client may be rejected if the PAD server or its subscription refused this facility.
- C** {asked | not\_asked}  
A call to the PAD server may be made or not with the charging information facility.  
This option is meaningful on a public network only. The call may be rejected if the PAD client subscription refused this facility.
- g** *ClosedUserGroup*  
A call to the specified PAD server (option **-n**) is made with the closed user group facility. The value of the closed user group is two decimal digits. The call may be rejected if the PAD server, PAD server subscription, or PAD client subscription refused this facility.
- F** *FreeFacilities*  
Enables a user to add some special facilities, additional to Closed User Group, Reverse Charging and Charging Information.  
The length is limited to 109 characters.  
This field is a list of bytes described with hexadecimal coding:  
0x68,0x65,0x6c,0x6c,0x6f ("hello").
- d** *"CallingUserData"*  
Character string sent in the calling user data of the call packet. The length is limited to 12 characters. Two types of strings may be used: alphanumeric character strings or a hexadecimal string like 0x68,0x65,0x6c,0x6c,0x6f ("hello").

## Command Outputs

The outputs of sub-commands are:

- l**: Displays the name of the PAD server on WAN. Each name is associated with a set of information that enables access to the PAD server.

```
padcltwan -l
List of PAD sites on WAN
Wserver1
Wserver2
...
```

- c**: no output
- e**: no output
- d**: no output.

## Implementation Specifics

This command is part of tpad\_hpad LPP.

## Suggested Reading

### Related Information

The **padproc** command, **padsrvwan** command, **padsrvlan** command, **padcltlan** command, **paddefault** command, **padcheck** command.



## padciltlan Command

### Purpose

The **padciltlan** command manages addressing of a PAD server site on LAN.

### Syntax

**padciltlan -l**

**padciltlan -c** *PADServerName*

**[-l** *LocalLANAdapterAddress* ] **[-r** *RemoteLANAdapterAddress* ]  
**[-p** *ProfileNumber* ] **[-s** *TransportSelector* ] **[-d** *CallingUserData* ]  
**[-S** *<special format CUD Y/N>*]

**padciltlan -e** *PADServerName*

**[-l** *LocalLANAdapterAddress* ] **[-r** *RemoteLANAdapterAddress* ]  
**[-p** *ProfileNumber* ] **[-s** *TransportSelector* ] **[-d** *CallingUserData* ]  
**[-S** *<special format CUD Y/N>*]

**padciltlan -d** *PADServerName\**

### Description

Manages addressing of a PAD server site on LAN:  
 list,  
 create,  
 modify,  
 delete.

The addressing is a named set of parameters that enables an end user of a PAD client to access to a PAD server known by its name. This name is unique.

Root authority is required to use the **padciltlan** command.

### Flags

**-l** lists the names of a defined PAD server sites on LAN.

**-c** *PAD ServerName*

adds the named set of parameters allowing a user to access a PAD server on LAN.

**-e** *PAD ServerName*

modifies the named set of parameters identifying a PAD server on LAN.

**-d** *PAD ServerName*

deletes the named set of parameters identifying PAD servers on LAN.

The following flags are associated with **-c** and **-e** options

**-l** *LocalLANAdapterAddress*

LAN address that identifies the adapter and network used to access the PAD server.

This address is not compared with LAN adapters addresses present on the system. The control on this address is rejected at connection try.

**-r** *RemoteLANAdapterAddress*

LAN address that identifies the PAD server adapter.

**-p** *ProfileNumber*

specifies an X.3 profile, in the file */etc/PROFPAD*.

When the PAD server is called (option **-n**), the specified X.3 profile is loaded by the PAD client.

# padcltlan

## **-s** *TransportSelector*

Telecommunication identifier of a service.

This selector allows the telecom stack to route the call to a PAD server. This value can be input by two ways: either a string of alphanumeric characters or an hexadecimal string like 0x68,0x65,0x6c,0x6c,0x6f ('hello'). Default: 0x40,0x01,0x50,0x41,0x44,0x31. Its length is limited to 8 characters. Mandatory.

## **-d** *CallingUserData*

Character string sent in the calling user data of the connect request. The length is limited to 6 decimal digits.

## **-S** *special format CUD*

This field is reserved for the expert use, especially the particular use of a SPAG profile over a LAN. When selected, the LAN calling packet will be able to convey another frame of data: the calling user data field will be extended to 12 alphanumeric characters.

Possible values: 'Y' or 'N'. Default: 'N'.

## Command Outputs

The outputs of sub-commands are:

**-l:** Displays the name of the PAD server on LAN. Each name is associated with a set of information that enables access to the PAD server.

```
padcltlan -l
List of PAD sites on LAN
Lserver1

Lserver2

...
```

**-c:** no output

**-e:** no output

**-d:** no output.

## Implementation Specifics

This command is part of tpad\_hpad LPP.

## Suggested Reading

### Related Information

The **padproc** command, **padsrvwan** command, **padsrvlan** command, **padcltwan** command, **paddefault** command, **padcheck** command.

## paddefault Command

### Purpose

The **paddefault** command manages the default address for outgoing calls.

### Syntax

```
paddefault -l
paddefault -c DefaultOutgoingAddress
paddefault -d DefaultOutgoingAddress
```

### Description

The following actions are managed for the default address for outgoing calls:

create,  
modify,  
delete.

The default outgoing address is meaningful on WAN only. It is useful for a user who wants to access a PAD server with its address instead of its generic name. If a PAD server is reachable from the default address, the user has only to provide the PAD server address.

Root authority is required to use the **paddefault** command.

### Flags

**-l** Displays the default outgoing address, if it is defined.

**-c *DefaultOutgoingAddress***  
Creates the default outgoing address, if it does not exist.  
Modifies it to *DefaultOutgoingAddress*, if it already exists.  
Suppresses the default outgoing address, if *DefaultOutgoingAddress* is not provided or equal to an empty string ("").

**-d *DefaultOutgoingAddress***  
Suppresses the default outgoing address. It is equivalent to the command **paddefault -c ""**.

### Command Outputs

The outputs of commands are:

**-l**: Displays the default outgoing address, if it is defined.

```
padcltlan -l
138020025
```

**-c**: no output

**-d**: no output

### Implementation Specifics

This command is part of tpad\_hpad LPP.

### Suggested Reading

#### Related Information

The **padproc** command, **padsrvwan** command, **padsrvlan** command, **padcltwan** command, **padcltlan** command, **padcheck** command.

---

## padcheck Command

### Purpose

The **padcheck** command controls the validity of PAD (client and server) configurations.

### Syntax

**padcheck**

### Description

This command enables the administrator to control the validity of the PAD configurations (client and server).

It may occur that some files, used by the PAD configurator, are corrupted. This may happen after a system crash or a direct modification of these files (with an editor)... .

This tool checks the naming of a configuration, numbering of X.3 profiles, access control coherence and validity of addressing parameters. If an error is detected in a PAD configuration, a message is edited in order to help the administrator to correct the corrupted files.

Details about corrective actions are shown in Errors from PAD Configuration Check Tool on page C-6.

Root authority is required to use the **padcheck** command.

### Command Outputs

The outputs of commands are:

Checking configuration name.

Checking X.3 profiles.

Checking access control.

Checking addressing parameters.

### Implementation Specifics

This command is part of tpad\_hpad LPP.

### Suggested Reading

#### Related Information

The **padproc** command, **padsrvwan** command, **padsrvlan** command, **padcltwan** command, **padcltlan** command, **paddefault** command.

---

# Chapter 5. Running TPAD–HPAD

This chapter describes the use of command functions to run TPAD–HPAD.

---

## Overview

Command functions are detailed here.

You can find more information in:

- TPAD Start–Up, on page 5-2,
- Specifications of TPAD Called Address, on page 5-4,
- Declaration of TPAD Terminal Type, on page 5-6,
- hpadd Command, on page 5-7,
- tpad Command, on page 5-8,
- TPAD Interactive Commands, on page 5-12,

Interactive commands, such as request of connection, opening and closing, choice of profile, redirection of standard input/output files, ... and Kermit File Transfer are given in alphabetical order.

- Kermit File Transfer, on page 5-29,
- TPAD Reports on User Connection Requests, on page 5-59,
- TPAD Reports on Called DTE–P Requests, on page 5-60.

---

## TPAD Start-Up

TPAD is accessed with the following command:

```
> tpad [options]
```

Each time a user terminal requests access to the TPAD service, a TPAD process is created and associated with the user terminal (therefore, each user terminal can be connected with specific TPAD parameters).

The identification of the user terminal is performed during the **login** phase (name, password and terminal type checks).

When TPAD start-up is requested without specifying a called address, the TPAD context is displayed on the user terminal screen. In this local TPAD session mode, interactive commands may be used to call specific services such as connection opening, virtual circuit reset, profile parameter setting, etc.

However, when the TPAD start-up command includes, as an optional parameter, the called address, the TPAD process automatically initiates the HPAD connection with the host address and other options specified in the start-up command. The user then is directly connected to the remote host.

In all cases, it is possible to escape from the remote host connection context and return to the TPAD context by using the "escape sequence" (for example to switch from "connected mode" to "local mode"):

```
<Ctrl>+p    (^p keys)
```

**Note:** In UNIX conventions, the <Ctrl> key is represented by the "^" character.

The TPAD prompt character displayed on the user terminal screen depends on the syntax of the start-up command used.

Examples:

Start-up command	TPAD prompt displayed
\$ tpad	tpad>
\$ /usr/bin/tpad	/usr/bin/tpad>

### Start-up command syntax and available options

The syntax of the start-up command is the following:

```
tpad [-!] [t] [n] [8] [-uucp] [-r bufsize] [-d debugmask] [-f  
cfile] [-sNSEL] [-pprofile] [address]
```

The **tpad** command must be entered in lowercase.

The square brackets ("[]") must not be included, they only indicate that the bounded parameters are optional.

Available options:

- !** invalidate the execution of the Bull specific interactive commands during the TPAD session.
- n** inhibits access to the **.padrc** file. This file, located in the "\$HOME" directory, may be used to personalize the TPAD operating mode. It contains the most frequently called addresses, full or abbreviated. For more information, see "Customized Start-up File" section, on page A-16.
- 8** informs TPAD that data is to be transferred over 8 bits (used for printing operations). Default value is 7 bits.

- uucp** Is used to transfer data in "block" mode (in order to improve TPAD data transfer speed). TPAD does not process any character, X3 parameters values have no influence on TPAD behaviour.
- r bufsize** Allows to modify the read buffer of tpad. This buffer is used in "block" mode to read a block on the tty. The default value of the buffer is BUFSIZ (4096). With the **-uucp** option, this buffer is set at 80 and it cannot be changed.
- f cfile** \* may be used to specify the name of the script file *cfile* to be executed during the TPAD activation phase. It can contain a script of commands making automatic the connection to a remote host and the user login entries (see an example of use in "STRSYNC or WAIT" commands, on page 5-50 and 5-54) and also the most frequently called addresses, full or abbreviated.
- sNSEL** may be used to specify a particular NSEL (Network SElector) connection as declared in the **/etc/hpadd.conf** file.  
  
The NSEL value must always begin by "01" followed by three bytes maximum, i.e. the NSEL format is "01xxxxx". See the **NSEL** entry description of the **/etc/hpadd.conf** file in "HPAD Connection Configuration File", on page A-9.
- pprofile** used to request loading of a particular *profile* specified by its number as declared in the **/etc/PROFPAD** file, see "TPAD Profile File", on page A-14. The profile specified with the **-p** option takes precedence over the one, if any, declared in the **/etc/isohosts** file.  
  
Default: if no profile is declared for the connection (neither in the configuration file, nor in the start-up command), then standard *profile* 127 is used.  
  
Once the connection is set up, the remote host accessed can modify the non-consistent parameters of the loaded profile sending X.29 messages see HPAD Connection Configuration File on page A-9.
- t** reserved for debugging operations, must be used only when requested by the technical support staff.  
  
Provides additional addressing or error report information.
- d debugmask** reserved for debugging operations, must be used only when requested by the technical support staff.  
  
Provides complementary debugging information. See debug command on page 5-18 for further information on *debugmask* possible values.
- address** specifies the addresses and complementary services requested, see next section.

---

## Specifications of TPAD Called Address

The requested connection may be specified either by its full address, or its abbreviated address. However, complementary service requests, such as reverse charging or charging information, can be included in the call packet containing the called address specifications. These facility requests take precedence over the ones, if any, defined in the **/etc/isohosts** file.

It is also possible to include call user data (for example password connection) in echoed or non echoed mode.

These services must be specified after the called address entry using the corresponding parameter:

- "-R"** for Reverse charging,
- "-C"** for Charging information,
- "-P"** for non echoed mode (secret mode),
- "-D"** for echoed mode and
- "-c"** for specifying access to a Closed User Group number.

### tpad Command Syntax

The syntax to be used is illustrated in the following formats:

- call to a specific PAD address. (The local address must be defined as the default outgoing address), see Defining a Default Address for Outgoing Calls, on page 3-42.

```
tpad 138454545
```

or

```
tpad OSCAR
```

"OSCAR" is a mnemonic address (abbreviated address) associated with a Public PAD number subscription in the **/etc/isohosts** file.

- full calling and called addresses without sub-address:

```
tpad [138020012]138020011
```

- full called address with charging information (-C):

```
tpad 123456789 -C
```

- full called address with echoed call user data (-DHello):

```
tpad 123456789 -DHello
```

or

```
tpad 123456789*DHello
```

- full called address with non echoed call user data (-P----)

```
tpad
```

```
tpad> 123456789 -P----
```

or

```
tpad
```

```
tpad> 123456789*P----
```

- full called address with access to a Closed Used group number (-c07):

```
tpad 123456789 -c07
```



- abbreviated called address with reverse charging (-R):

```
tpad OSCAR -R
```

## Non-Echoed Mode

The non echoed mode (**-P**) is particularly used for the connection password entry (mandatory entry when the **PASSCHECK** function is validated in the */etc/hpadd.conf* file). It is efficient only if the following rules are applied:

- the data are entered within a TPAD session (only in local mode),
- connection status is LIBRE/FREE,
- the first character in the command line must not be "!" (i.e. different from the escape to the Shell command),
- the character preceding the prefix "P" is either "-" or "\*\*",

In this last case, all the characters entered after the letter "P" are echoed as a "-" character on the terminal screen until a space character or TAB (tabulation) or CR (Carriage Return) is entered.

---

## Declaration of TPAD Terminal Type

Generally, the declaration of the type of terminal used is requested and set interactively during the **login** phase. However, the current TPAD–HPAD version can automatically set this variable as soon a user terminal connection is requested from the current TPAD module to the current HPAD module.

### Standard terminal type declaration

When the remote terminal type checking facility is not effective, the remote terminal type declaration must be specified by the user at the initialization of the connection.

As the **TERM** variable is not exported in the HPAD host context, each time the user want to access certain applications in connected mode (e.g. for using, once connected, Advanced Interactive Executive utilities such as the "vi" editor, "more", etc.). The user has to specify this value.

Therefore, it is recommended to set this variable under the remote Shell, using the corresponding following commands:

- For "csh" (Cshell):

```
set term=remote_terminal_type
tset
```

- For "sh" (BOURNE Shell):

```
TERM=remote_terminal_type
export TERM
tset
```

### Remote terminal type checking

The current TPAD–HPAD version can automatically set the terminal type as soon as a user terminal connection is requested from the current TPAD module to the current HPAD module. To be applicable, this facility must be specified in the called connection configuration parameters, i.e. the current Remote terminal check entry in the **/etc/hpadd.conf** file.

When a connection is requested, with the remote terminal check facility, between the current TPAD–HPAD modules and other modules (provided by previous versions or non–Bull versions), the host **TERM** variable check is set with the value of the local **TERM** variable.

When the remote terminal check facility is not required, or is not available, the user must enter the following command under host shell:

```
host> export TERM=<terminal_type>
```

where *<terminal\_type>* is the value of the local **TERM** variable.

# hpadd Command

## Purpose

hpadd & hpad – Host PAD, PAD manager.

## Syntax

## Description

The **hpadd** and **hpad** enables a remote terminal connected via a PAD to a WAN (Wide Area Network: X25 or X21) or a LAN (Local Area Network) network to communicate with a DPX process.

**hpadd** is the unique daemon for all connections. **hpad** is the server for each connection.

**hpad** is the server for the `tpad(1C)` program. The server provides a remote login facility. **hpad** allocates a pseudo terminal (see **pty(7)**) and manipulates the file descriptors so that the slave half of the pseudo terminal is associated with the **stdin**, **stdout** and **stderr** of the login process. The login process is an instance of the `/bin/login(1)` program, invoked with the “-h” option. The **hpad** process manipulates the master side of the pseudo terminal, operating as an intermediary between the login process and the client instance of a `tpad` program.

Before the logging phase, **hpad** may send to the remote `tpad` the text of a customized banner; this text is in a specific user file called `/etc/pad.banner`. **hpad** handles the reset of the X.3 parameters via the `hpad` environment variable, the **SIGUSR2** signal.

If the application sends a **SIGUSR2** signal to its `hpad` server using the `/etc/PROFPAD` file and load the associate profile and send it in an X.29 message to the remote `tpad`.

## Flags

All the option flags for connection are read from the `/etc/hpadd.conf` file.

- t**                    activates trace mode. Used alone, this option activates trace mode with display on `stderr`.
- f filename**        define the file trace (by default, `/tmp/dpad_trace.$pid`)

## Files

<code>/etc/hpadd.conf</code>	configuration of <code>hpadd</code> and <code>hpad</code> host
<code>/etc/isohosts</code>	local LAN & X25 site tables.
<code>/etc/PROFPAD</code>	initial profile for remote PAD.
<code>/etc/rc.pad</code>	starts <code>hpad</code> daemon.
<code>/etc/pad.banner</code>	specific banner.

## Application Usage

In-line editing within **ksh** can be used only if option “No more X29 Message” is validated in the `/etc/hpadd.conf` file.

## Suggested Reading

## Related Information

The **tpad** command.

---

# tpad Command

## Purpose

tpad – PAD terminal

## Syntax

```
/usr/bin/tpad [-!] [-t] [-n] [-8] [-uucp] [-r bufsize] [-d debugmask]  
[-f cfile] [-s NSEL] [-p profile] [address]
```

## Description

**tpad** is used to communicate with another host using the X3, X28 and X29 CCITT recommendations suite, and using the SPAG Y/13 profile. The **tpad** command activates a process which manages a terminal connected by a simultaneous two-way asynchronous link and enables a dialog over a WAN (Wide Area Network: X25 or X21) or a LAN (Local Area Network) network. If **tpad** is invoked without arguments, it enters command mode, indicated by its prompt (tpad>). In this mode, it accepts and executes the commands listed below. If it is invoked with the address argument, it performs a connection request with this argument.

Once a connection has been opened, **tpad** enters an input mode. All text is echoed locally and (normally) only completed lines are sent to the remote host.

While connected to a remote host, **tpad** command mode may be entered by typing the **tpad** escape characters sequence (initially: ^P). When in command mode, the normal terminal editing conventions are available.

## Flags

- !** Invalidates the execution of the Bull specific interactive commands (i.e. **from**, **to**, **shell**, etc.).
- n** Prevents access to the **.padrc** file which may contain the most often used address.
- 8** Specifies that data is to be transferred on eight bits (normally used for printers).
- uucp** Is used to transfer data in "block" mode (in order to improve TPAD data transfer speed). TPAD does not process any character, X3 parameters values have no influence on TPAD behaviour.
- r *bufsize*** Allows to modify the read buffer of tpad. This buffer is used in "block" mode to read a block on the tty. The default value of the buffer is BUFSIZ (4096). With the **-uucp** option, this buffer is set ot 80 and it cannot be changed.
- f *cfile*** Is used to specify a *cfile* file to read the commands from, instead of *stdin*.
- s *NSEL*** Is used to specify the *NSEL* to be used on the connection.
- p *profile*** Specifies a profile described in the **/etc/PROFPAD** file.
- t** Provides supplementary addressing or error report information.
- d <*debugmask*>**  
Provides debugging information for Technical Support.  
<*debugmask*>is a mask value for specifying various debug levels. (trace file */tmp/tpad\_trace.\$pid* or stderr according to the mask-value.

## TPAD Commands

The following commands are available. A complete description of TPAD commands (in alphabetical order) is provided on page 5-13.

**Note:** The interactive **tpad** commands can be abbreviated and entered in either lower or upper case letters.

- break** Send a break signal to the PAD.
- bye** Quits the **tpad** command (synonym for **end**).
- capture** [*filename*]  
Starts and stops the redirection of the standard output in filename. Without any argument, the command stops the redirection (synonym for **to**).
- clr** Releases the virtual circuit.
- debug** [*mask-value*]  
This command is used to provide debugging information for Bull technical support. [*mask-value*] is a mask specifying the various debug levels required. According to the value of the mask, the trace is displayed on stderr (i.e. the screen), or in a file. The default trace file is */tmp/tpad\_trace.\$pid*. See the detailed syntax of the **debug** command.
- end** A synonym for **bye**.
- escape** *value* Modifies the escape character (initially ^p) with the value specified.
- from** *filename* Takes content of *filename* as standard entry (synonym for **send**).
- h** A synonym for **help**.
- help** Displays on-line information on commands, profiles and parameters.
- hosts** [*name*] Name is an entry name of a host table site included in */etc/isohosts* file. This command gives the addressing characteristic of this entry. If no name is given, all the entries are listed. This name can contain wildcards ? and \*.
- iclr** [*timeout*]  
Sends a request to have the active virtual circuit closed by remote host, within a number of seconds eventually given by *timeout*.
- int** Sends an interruption request on the virtual circuit.
- KER** Kermit file transfer protocol.
- lang** Selects a language for PAD dialogue.
- lib** A synonym for **clr**.
- open** [*<fac\_req\_block>*] *<address>* [*<call\_usr\_data>*]  
or [**open**] *<address>* *<open\_options>*  
Connects a local terminal to a remote machine.
- par?** Shows local PAD parameter values.
- prof** *profile number*  
Loads a specific profile.
- q** A synonym for **bye**.
- quit** A synonym for **bye**.
- reset** Resets an active virtual circuit to a DTE-C.
- rpar?** Shows remote PAD parameter values.
- rset?** Sets and reads PAD profile parameters of remote host
- send** A synonym for **from**.

**set** *par\_i:val\_i[,par\_j:val\_j, ...]*  
 Sets *par\_i* parameter to *val\_i* value and so on.

**set?** *par\_i:val\_i[,par\_j:val\_j, ...]*  
 Sets local PAD profile parameters and displays their values.

**sh**                   Runs a shell.

**sleep** *n\_sec*       Inactivating the processing for *n\_sec* seconds.

**stat**                 Displays communication status.

**strsync** *string*   Waits for receiving string (synonym for **wait**). Wildcards \* and ? are allowed.

**to** *filename*       A synonym for **capture**.

**trace**               Trace mode on/off.

**wait**                A synonym for **strsync**.

**!** *shellcmd*       (exclamation point) Executes the shell command *shellcmd* specified as argument and returns to TPAD context.

**?**                    A synonym for **help**.

**? command**          Help on a specific command.

**#**                    Comment.

*address*            is directly implemented as a connection request command.

## Examples for direct connection request

```
tpad> 138000011
```

Full address of the called party.

```
tpad> HOSTNAME
```

Abbreviated address of the called party (located in the /etc/isohosts file).

```
tpad> [138000011]138000022
```

Full addresses of the calling and called parties.

```
tpad> 138000011 -Dwelcome.
```

Call with user data. "welcome" is echoed if in command mode.

```
tpad> ADDR -P-----
```

Call with abbreviated address and with a password control.

```
tpad> <address> [-R] [-C] [-cNN]
```

Request for facilities:  
*R* for reverse charging, *C* for charging information, *cNN* for access to *NN* Closed User Group.

## Diagnostics

Messages indicating network problems and command error reports.

## Files

**\$HOME/.padrc** address most often used.

**/etc/isohosts** local and remote abbreviated X25 & LAN addresses.

**/etc/PROFPAD** PAD profiles.

## Application Usage

Commands can be abbreviated and case is ignored.

User data entered with “P” is echoed when address is used as a **tpad** argument.

The **tpad** process does not propagate the client terminal’s baud rate and terminal type.

Full or abbreviated address of the caller must precede the called address if the call request does not go out via the **DFLTX25** local address.

Commands are provided to redirect *stdin* (**from**) and *stdout* (**to**).

## Suggested Reading

### Related Information

The **hpadd** command.

---

## TPAD Interactive Commands

The TPAD interactive commands allow the user to request specific functions of the TPAD service. They offer, in addition to the functions in compliance with CCITT X.28 recommendation (such as connection opening, choice of profile, reset of virtual circuits, etc.), specific TPAD–HPAD services (such as redirection of the input and output standard file, execution of a shell command, activation of the trace mode, etc.). In addition, a **help** command is supplied allowing the user to obtain information on all the TPAD interactive commands.

These commands can be called only in the TPAD local mode. This context automatically occurs at TPAD activation when the start–up command is executed without any optional parameters. However, when a connection is set–up (i.e. in connected mode), the user can return to the TPAD context by entering the TPAD escape sequence (default escape sequence is “<CTRL> + p”).

**Note:** The interactive commands can be abbreviated and entered in either lower or upper case letters.

### List of Commands:

BREAK	Sending a break signal to PAD
BYE	Terminating TPAD
CAPTURE *	Redirecting the Remote Output file
CLR	Clearing the virtual circuit
DEBUG *	Switching over to debug mode
END	Terminating TPAD
ESCAPE	Modifying the TPAD escape sequence
FROM	Redirecting the Remote Input File
HELP	Help on line
H	Help on line
HOSTS *	Obtaining information on a host site
ICLR	Sending a request to clear the virtual circuit by remote
INT	Interrupting a virtual circuit
KER	Kermit file transfer protocol
LANG	Selecting a language for PAD dialogue
LIB	Clearing the virtual circuit
OPEN	Opening a connection
PAR?	Reading a local PAD profile parameter
PROF	Choosing a PAD profile
QUIT	Terminating TPAD
Q	Terminating TPAD
RESET	Resetting the virtual circuit
RPAR?	Reading a remote PAD parameter value
RSET?	Setting and reading a remote PAD profile parameter
SEND	Redirecting the Remote Input File
SET	Setting a PAD profile parameter
SET?	Setting and reading a local PAD profile parameter
SH *	Escaping from TPAD to the local Shell
SLEEP *	Inactivating the processing momentarily
STAT	Connection status
STRSYNC *	Waiting for expected string reception
TO *	Redirecting the Remote Output file
TRACE	Switching over to trace mode
WAIT	Waiting for expected string reception
! *	Executing a Shell
?	Help on line
#*	Inserting comments in a TPAD script
“address”	Requesting connection with a called address

**Note:** The BULL specific commands are presented with an asterix to the right.



---

## BREAK Command (Sending a BREAK Signal to the PAD)

### Purpose

This function allows the DTE–C user to send a break signal to the PAD. The processing of the signal depends on the value of parameter 7. See TPAD Profiles, on page B-1.

This function is used in connected mode.

### Syntax

**BREAK**

### Report

- If the syntax is incorrect, the message "ERR" is displayed.

## BYE Command (Terminating TPAD)

---

### Purpose

This function terminates a TPAD session.

### Syntax

**BYE**

### Alias

**END**

**QUIT**

**Q**

### Report

- If no more connections are set-up (all the established connections have been cleared), TPAD is terminated.
- If connections are still set-up (non cleared), an error indication "**ERR**" is displayed.

## CAPTURE Command (Redirecting the Remote Output File)

### Alias

TO

### Purpose

This function allows the DTE-C to start and stop the redirection of the *stdout* file of the remote system to a local DTE-C file whose name is specified in the command.

### Syntax

**CAPTURE** [-c or -C] [-d or -D] [<file\_name>]

<file\_name> name of the local file to be set as the new output file of the remote system (instead of *stdout*).

**-C** or **-c**      **LF** (Line Feed) and **CR** (Carriage Return) are not converted into **LF** when writing to the disk file.

**-D** or **-d**      no echo to screen when writing to the disk file (all the characters are written to the disk file, including **NULL** characters).

Without any argument, the command stops redirection.

### Report

Writing to <file\_name>

### Examples

Command:                    TO example

redirects *stdout* to the *example* file, deletes **NULL** characters and converts **CR LF** into **LF**.

Command:                    TO -c example

redirects *stdout* to the *example* file, deletes **NULL** characters but does not convert **CR LF** to **LF**.

Command:                    TO -d example

redirects to the *example* file without deleting the **NULL** characters and with conversion of **CR LF** into **LF**.

No screen echo since the redirection has been stopped.

Command:                    TO -CD example

writes data into *example* file without deleting the **NULL** characters and without converting **CR** into **LF**.

No screen echo since the redirection has been stopped.

Command:                    TO

stops the redirection of the remote system output file.

#### Example: ASCII file transfer from host to terminal

Command:

```
host#
^p
TO term_file_to
host# cat host_file_from
host#
^p
```

TO  
host#

Command line comments:

- The TPAD context is activated using **^p**.
- On the terminal, with the TPAD **TO** command, the host standard output file is redirected to the *term\_file\_to* local file.
- On the host, the **cat** command print the *host\_file\_from* file to the output file which is not any more *stdout* file but the *term\_file\_to* local file.
- The transfer is displayed on the screen with conversion of **CR LF** into **CR**.
- Reaching the end of the *host\_file\_from* file, the host prompt is displayed again.
- The TPAD context is activated once more using **^p**.
- The output file redirection is interrupted and the host output is the *stdout* file again.
- The host prompt is displayed on the terminal but not print in *term\_file\_to*.

**Note:** In this transfer case, some characters which do not belong to the host file (as such **LF**, prompt, **cat** command, Shell errors) are included in the destination file and must be removed to obtain an exact copy of the original host file.

**Note:** This command is BULL specific.

---

## CLR Command (Clearing the Virtual Circuit)

### Purpose

This function allows a DTE-C to clear the active virtual circuit. If the command is accepted, TPAD sends a clear packet to the corresponding DTE-P.

### Syntax

**CLR**

### Alias

**LIB**

### Report

If the connection is set-up, the command is handled by TPAD and the message "**CLR CONF**" is displayed.

If there is no virtual circuit set-up or if the command is incorrect, the error indication "**ERR**" is displayed.

### Example

Command: CLR

---

## DEBUG Command (Switching Over to Debug Mode)

### Purpose

This function allows a DTE–C user to switch over to debug on/off mode with a mask value. This command must be used only when requested by Technical Support. When used without a parameter, it gives debug status.

### Syntax

**DEBUG** [*<mask-value>* | 0 ]

- 0                      disables debug mode.
- <mask-value>*      mask-value specifying a filter and a combination of several trace levels. Each level is associated with a bit in a word of 32 bits. It overwrites the previous value of the debug mask.

Without a parameter, it gives debug status.

The various debug level settings are:

- 0x00000001 : Dump user data
- 0x00000002: CDX: connection/Deconnection
- 0x00000004: SRR: System errors
- 0x00000008: NRR: Network errors
- 0x00000010: QNP: X29 messages from net to pad
- 0x00100020: QPN: X29 messages from pad to net
- 0x00000040: X3P: X3 parameters
- 0x00000080: LGC: Line discipline
- 0x00000100: PTN: Messages from pad to net
- 0x00000200: NTP: Messages from net to pad
- 0x00000400: TTP: Messages from Xty to pad
- 0x00000800: PTT: Messages from pad to Xty
- 0x00001000: NMG: Messages from network
- 0x00002000: MSG: Other messages
- 0x08000000: Reserved
- 0x10000000: Trace with time informations
- 0x20000000: HLP: informations for developers
- 0x40000000: Reserved
- 0x80000000: Record trace informations in a file

### Note

Bits 31, 28 and 0 cannot be used alone.

### Report

Indicates the current debug mode status and, if debug mode is ON, the debug level, i.e. the mask-value.

**Note:** This command is BULL specific.

## Example

```

Command:  debug 0x8fffffff
Report:   -> debug on, level= 0x8fffffff
Command:  debug
Report:   -> debug on, level= 0x8fffffff
Command:  debug 0
Report:   -> debug off
Command:  debug
Report:   -> debug off
Command:  d 0x33
Report:   -> CDX: lectcmd: etat      = 6      (0x00000006)
          CDX: lectcmd: etatcnx   = 0      (0x00000000)
          CDX: lectcmd: etatre    = 0      (0x00000000)
          CDX: connection trial
          toto: invalid host name
          CLR CONF
          CDX: lectcmd: etat      = 6      (0x00000006)

Command:  d
Report   -> debug level = 33
Command:  d 0
Report:   -> debug level = 0

```

---

# END Command (Terminating TPAD)

## Alias

See **BYE** command.



# ESCAPE Command (Modifying the TPAD Escape Sequence)

## Purpose

This function allows the DTE–C user to modify the character key used with the <Ctrl> key to invoke a TPAD escape sequence (by default the character key is the "p" key). The escape sequence allows the user to escape from the remote host connection and return to the TPAD context. This function is particularly used to stack several TPADs.

## Syntax

**ESCAPE** ^ <char>

Where:

^: is the <ctrl> key

<char>: any ASCII character.

## Report

Escape character is <char>.

## Example

Command:

```
host#
  ^P
tpad> ESCAPE ^O
host#
...
  ^O
tpad> ESCAPE ^P
host#
```

Comment of each command:

- The remote DPX/20 prompt is displayed.
- The TPAD local mode is activated.
- TPAD escape character is replaced by O.
- back on the remote DPX/20
- ... any DPX/20 command
- The TPAD local mode is activated again with ^O
- TPAD escape character is reset to ^p
- back on the remote DPX/20.

---

# FROM Command (Redirecting the Remote Input File)

## Alias

SEND

## Purpose

This function allows the DTE–C to redirect the *stdin* file of the remote system using as the source a DTE–C local file whose name is specified in the command. The redirection is automatically stopped at the end of the file.

## Syntax

**FROM** [-c] [-d] [-p] <file\_name>

<file\_name> name of the local file to be set as the new input file of the remote system (instead of *stdin* file).

-c no conversion of **LF** (Line Feed) into **CR** (Carriage Return).

-d no simultaneous display on screen during redirection.

-p remote printing mode, data are read by block of BUFSIZ (4096)

## Report

Input from <file\_name>.

## Examples

Command: FROM example

the local *example* file takes the place of *stdin* with display on the screen and conversion of **LF** into **CR**.

Command: FROM -c example

the local *example* file takes the place of *stdin* with display on the screen without conversion of **LF** into **CR**.

Command: FROM -d example

the local *example* file takes the place of *stdin* with conversion of **LF** into **CR** and no screen display.

Command: FROM -cd example

the local *example* file takes the place of *stdin* with no display and no conversion.

Command: FROM

stops redirection.

### Example: ASCII file transfer from the terminal to the host

Command:

```
host# cat > host_file_to
^p
FROM term_file_from
^D
host#
```

Command line comments:

- On the host, the *stdin* file is redirected to the *host\_file\_to* file, using the UNIX **cat** command.
- The TPAD context is activated using **^p**.
- On the terminal, with the TPAD **FROM** command, the host standard output file, which is not any more the *stdout* file but the *host\_file\_to* file, is filled from the *term\_file\_from* local file.
- The transfer is displayed on the screen with conversion of **CR LF** into **CR**.
- Reaching the end of the *term\_file\_from* file, the TPAD redirection is automatically stopped.
- On the host, the **cat** redirection is stopped using **^D**.

**Note:** For binary file transfer, use **uuencode(1)** and **uudecode(1)** procedures.

---

# HELP Command (Help on Line)

## Purpose

This command is used to obtain information on the use of TPAD commands, on parameters and profiles.

## Alias

**H** [*<help-subject>*]

**?** [*<help-subject>*]

## Syntax

**HELP** [*<help-subject>*]

Without a parameter, it gives a help on the HELP command

*<help-subject>* is the subject on which the user wants to get on-line help.

The *<help-subject>* can be one of the following:

*help* : gives a help on the HELP command.

*list* : gives the list of available help subjects.

*command* : gives the list of existing signal commands.

*parameter* : gives the list of the PAD parameters.

*parameter <param-number>* :

gives a description of the referenced parameter (the possible values of the parameter, their significance and explanation).

*<param-number>* is in the range [1-22] or [95-99].

*profiles* : gives the list of the available standard profiles.

*profile <profile\_number >* :

gives a description of the referenced PAD profile.

*<profile-number>* is in the range [0-128].

*<any-PAD-command>* :

gives a description of a specific PAD command.

The possible values for *<any-PAD-command>* are listed in TPAD interactive Commands, on page 5-12.

## Example

Command: help clr.

Response: clr Closes the current connection if the connection is set up.  
This command is used in connected mode.

Alias lib

Syntax clr

Report: CLR CONF if the connection is set up

ERR if no connection is set up

---

## H Command (Help on Line)

### Alias

See **HELP** command.

# HOSTS Command (Obtaining Information on a Host Site)

## Purpose

This function allows a DTE–C user to obtain the configuration parameters of a host site (display of the host site table). The site table of this host must be included in the `/etc/isohosts` file.

## Syntax

**HOSTS** [*<host\_site\_name>*]

where:

*<host\_site\_name>* is the host abbreviated address as specified in the `/etc/isohosts` file (meta-characters such as "\*" or "?" can be used bound with simple quotes to be not interpreted by the shell).

Without arguments, this function lists all pad entries.

**Note:** This command is BULL specific.

## Example

### on LAN:

Command: HOSTS mou\*

Response: mou1 prof : 127 network :COTS on LAN (DSA)  
ltsap: 0x40,0x01,0x50,0x41,0x44,0x31  
rtsap: 0x40,0x01,0x50,0x41,0x44,0x31

### on WAN:

Command: HOSTS dist\*

Response: dist1 prof : 127 network :CONS  
laddr: 1234  
laddr: 4321

### on LAN / WAN:

Command: HOSTS dist2

Response: dist2 prof : 127 network CONS via COTS on LAN (DSA)  
laddr: 1234  
laddr: 4321

---

# ICLR Command (Request to Clear Virtual Circuit by Remote Host)

## Purpose

This command allows the DTE–C to request the clearing of the active virtual circuit by the remote host.

The optional parameter `<timeout>` is the time that the local PAD waits for the remote close. After this timeout, the local PAD clears the virtual circuit.

This command is used in connected mode.

## Syntax

**ICLR** [`<timeout>`]

`<timeout>` time that the local PAD waits for the remote host to clear the virtual circuit

After this timeout, the local PAD clears the virtual circuit.

If no timeout is specified, a default timeout of 60 seconds is taken.

## Report

- **"CLR PAD"** if the remote close was performed in time.
- **"Exit on inactivity  
CLR CONF"** after timeout expiration, if the remote host did not answer.
- **"ERR"** if no connection is set up.

## Example

Command: ICLR

Response: CLR PAD (remote PAD close done)

Command: ICLR

Response: ERR (no active connection)

Command: ICLR 10

Response: Exit on inactivity

CLR CONF (remote host has not answered)





---

## KER Command (Accessing Kermit File Transfer Services)

### Purpose

This function is used to run a KERMIT file transfer session over TPAD–HPAD. When KERMIT is activated, its prompt is displayed on the user's screen.

### Syntax

**KER** *<address>*

where:

*<address>* is the X.25 or LAN address, or remote site name, of the remote system.

### Example

Command:                   KER 138020011

### Reference

For more details, refer to Kermit Overview on page 9-1.

# LANG command (Language Selection)

## Purpose

This command allows the DTE-C to choose the language in which the PAD service signals (i.e. what is output by the PAD in response to a command), will be displayed. This command also sets the parameter 6 to the appropriate value.

## Syntax

**LANG** [*lang\_str*]

Without a parameter, it gives the status of the dialogue mode (i.e. extended or standard).

[<*lang\_str*>] is the language chosen for dialogue mode.

The <*lang\_str*> can be one of the following:

*fre[nch]* sets extended dialogue mode to french.

*eng[lish]* sets extended dialogue mode to english.

*nolang[uage]* unsets extended dialogue mode.

## Example

Command: lang eng

Response:

```
Extended dialogue mode
      English Language
```

Command: lang fre

Response:

```
Mode dialogue etendu
      Langage en francais
```

Command: lang nolang

Response:

```
Return in standard dialogue mode
```

Command: lang

Response:

```
Extended dialogue is not set
```

Command: lang mylang

Response:

```
ERR Usage: lang [french] [english] [nolanguage]
```

---

## LIB Command (Clearing the Virtual Circuit)

### Alias

See CLR.

# OPEN Command (Opening a Connection)

## Purpose

This function allows a DTE–C user to connect his local terminal to the remote system on a LAN or WAN network.

## Syntax

**[OPEN]** [*<fac\_req\_block>*] *<address>* [*<call\_usr\_data>*]

or **[OPEN]** *<address>* *<open\_options>*

where:

*<address>* is the WAN or LAN address, or the remote site name as defined with the configurator.

*<open\_options>* is one, or a list of options between spaces, among the following:

- R* for reverse charging request
- C* for charging information
- c<group-number>* for closed user group access.  
*<group-number>* is a value in the range 0 to 99.
- P <user-data>* Call user data are not echoed (secrete mode). It is used for passwords.
- D <user-data>* Call user data are echoed.

*<call\_usr\_data>* is :

- C or D <call\_usr\_data>* Call user Data:
  - 12 characters are available for a normal select.
  - 124 characters are available for a fast select.

*<fac\_req\_block>* is :

- N <NUI string>* NUI facility request
- T <RPOA string>* Transit Network
- R* Reverse charging request
- G <index>* Closed User Group
- O <index>* Closed User Group with outgoing access
- C* Charging Information request
- E <CAE>* Called Address extension facility
- F* Fast select with no restriction on response
- Q* Fast select with restriction on response
- S* Called DTE reselection prevention

## Report

A report indicates whether the connection is successful or not by displaying a coded indication.

If the connection is successful, the coded indication is: **"COM"**.

If the connection is rejected, another coded indication is displayed.

For the meaning of the coded indications displayed, refer to TPAD Reports on User Connection Requests, on page 5-59.

## Example

Command: tpad> OPEN 138020011

Response: COM

Command: tpad> OPEN loopv35

Response: COM

Command: tpad> OPEN loopv35 -R

Response: WAN Network layer (x25-3):  
facility code not allowed

CLR PAD

ERR <- Not an X25 subscription with reverse charging...

Command: tpad> OPEN loopv35 -D0x01,0x02

Response: COM

Bull DPX machines - AIX 4.1  
PAD services (mac\_name)

Command: tpad> OPEN Q loopv35

Response: COM

---

# PAR? Command (Reading a Local PAD Profile Parameter)

## Purpose

This function allows a DTE–C to check the current values of the PAD profile parameters.

## Syntax

**PAR?** [*<par\_1>*,*<par\_2>*,...*<par\_n>*]

*<par\_i>* reference of the PAD parameter profile, in the range 1 to 22 and 95 to 99.  
The values are separated by commas.

The meanings of these parameter values are described in Profile Parameters, on page B-1.

If no parameter reference is specified, the current values of all the PAD profile parameters are indicated.

## Report

- In all cases, "PAR" is displayed on the screen.
- If everything is correct, the parameter reference is displayed followed by the value of the parameter. Is also displayed a short explanation of the parameter if the extended dialogue mode is set (parameter 6 : value 17 or 33). See **LANG** command, on page 5-30.
- If the parameter reference is incorrect, the reference is displayed followed by "INV".
- If the syntax is incorrect, the message "ERR" is displayed.

## Examples

Command: PAR?

Response:

```
                parameter references
                / / / / /
PAR 1:1,2:0,3:126,4:0,5:1,...
                \ \ \ \ \
                parameter values
```

In the case above, the values of the 22 PAD profile parameters and the 5 local TPAD parameters are displayed.

Command: PAR?1,2,3

Response:

```
                parameter references
                / / /
PAR 1:1,2:1,3:0
                \ \ \
                parameter values
```

Here above, only parameters 1, 2 and 3 are displayed.

Command: PAR?30

Response:

*parameter references*

```
PAR      /
          30:INV
          \ parameter values
```

In this case, the parameter reference is incorrect.

Command: PAR? 2,9

Response: PAR 2:1 - echo: Echo,  
          9:0 - CRpad: Padding after carriage return

In this last case, the command ran correctly. Short explanations of the parameters 2 and 9 were displayed because the extended dialogue mode was set.

---

## PROF Command (Choosing a PAD Profile)

### Purpose

This function allows the DTE–C to choose a particular profile. Only the profile of the DTE–C which uses this command is modified.

### Syntax

**PROF** <Profile\_number>

Where:

<Profile\_number> is an integer corresponding to a profile number included in the **/etc/PROFPAD** file see TPAD Profile File, on page A-14.

### Report

- If the syntax is correct, the value of each parameter is reset to that of the specified profile.
- If the requested profile does not exist (the available profiles are stored in the **/etc/PROFPAD** file) or if the syntax is incorrect, "**ERR**" is displayed.

### Example

Command:                                    PROF 1



## QUIT Command (Terminating TPAD)

---

### Alias

See **BYE** command.

## Q Command (Terminating TPAD)

---

### Alias

See **BYE** command.

---

## RESET Command (Resetting the Virtual Circuit)

### Purpose

This function allows a DTE–C to request a reset of the active virtual circuit. If the command is accepted, TPAD sends a reset packet to the corresponding DTE–P.

### Syntax

**RESET**

### Report

- If the syntax is correct and there is a connection, the command is handled by TPAD.
- If there is no virtual circuit set–up or if the command is incorrect, the **"ERR"** error indication is displayed.

### Example

Command:                      RESET

---

# RPAR? Command (Reading a Remote PAD Profile Parameter)

## Purpose

This function allows a DTE-C to check the current values of the PAD profile parameters of the remote host and displays their values on the local terminal.

## Syntax

**RPAR?** [*<par\_1>*,*<par\_2>*,...*<par\_n>*]

*<par\_i >* reference of the PAD parameter profile, in the range 1 to 22 and 95 to 99. The values are separated by commas. The meanings of these parameter values are described in Profile Parameters, on page B-1.

*<par\_i >* reference of the PAD parameter profile, in the range 1 to 22 and 95 to 99. The values are separated by commas.

If no parameter reference is specified, the current values of all the PAD profile parameters are indicated.

## Report

The report message of the PAD service may have various formats, according to the case:

- **"RPAR par\_1:val\_1 [ - <text\_val\_1>] , par\_2:val\_2 [ - <text\_val\_2>] , ...,par\_n:val\_n [ <text\_val\_n>]"**

*<text\_val\_i >* is a short explanation of the parameter displayed only if the extended dialogue mode is set (parameter 6 : value 17 or 33). See **LANG** command, on page 5-30 for further information.

- **"ERR"**

If the syntax is incorrect. An error text can be displayed if PAD receives an X29 error message.

- **"ERR – Unrecognized message code in received PAD message"**

if the remote PAD has not implemented X29 READ message

- **"RPAR par\_i:INV [ - <text\_val\_i>]"**

if there is an error in the parameter value specified

*<text\_val\_i >* is a short explanation of the parameter displayed only if the extended dialogue mode is set (parameter 6 : value 17 or 33). See **LANG** command, on page 5-30 for further information.

- **"RPAR Remote PAD has not answered"**

in case the remote PAD has not answered after 10 seconds or 'parameter 95 value' seconds.

## Examples

Command: RPAR?

Response: RPAR 1:1,2:0,...,22:0,95:10,96:0,97:0,98:0,99:4

In the case above, the values of the 22 PAD profile parameters and the 5 local TPAD parameters are displayed.

Command: RPAR? 2, 3  
*parameter references*

Response: RPAR 2:0, 3:126  
*parameter values*

Here above, only parameters 2 and 3 are displayed.

Command: RPAR? 2, 24  
Response: RPAR 2:0, 24:INV

In this case, the parameter reference is incorrect.

Command: RPAR? 2, 9  
Response: RPAR 2:1 - echo: Echo,  
9:0 - CRpad: Padding after carriage return

In this last case, the command ran correctly. Short explanations of the parameters 2 and 9 were displayed because the extended dialogue mode was set.

---

# RSET? Command (Setting and Reading a Remote PAD Profile Parameter)

## Purpose

This function allows a DTE-C to change dynamically the current values of the PAD profile parameters of the remote host and also displays the new values on the local terminal. This command is used in connected mode.

## Syntax

**RSET?** <par\_1>:<val\_1>[,<par\_2>:<val\_2>, ..., <par\_n>:<val\_n>]

<par\_i> reference of the PAD parameter profile, in the range 1 to 22 and 95 to 99.  
The values are separated by commas.

<val\_i> value assigned to the corresponding parameter par\_i.  
The meanings of these parameter values are described in Profile Parameters, on page B-1.

## Report

The report messages of the PAD service may have various formats:

- **RPAR par\_1:val\_1 [ - <text\_val\_1> ] , par\_2:val\_2 [ - <text\_val\_2> ] , ..., par\_n:val\_n [ <text\_val\_n> ]**

<text\_val\_i> is a short explanation of the parameter par\_i. It is displayed only if the extended dialogue mode is set (parameter 6: value 17 or 33).  
See **LANG** command, on page 5-30 for further information.

- **ERR**

If the syntax is incorrect. An error text can be displayed if PAD receives an X29 error message.

- **ERR – Unrecognized message code in received PAD message**

if the remote PAD has not implemented X29 READ message.

- **RPAR par\_i:INV [ - <text\_val\_i> ]**

if there is an error in the parameter value specified.

<text\_val\_i> is a short explanation of the parameter par\_i. It is displayed only if the extended dialogue mode is set (parameter 6: value 17 or 33).  
See **LANG** command, on page 5-30 for further information.

- **RPAR Remote PAD has not answered**

in case the remote PAD has not answered after 10 seconds or 'parameter 95 value' seconds.

## Examples

Command: RSET? 2:0,3:126  
*parameter references*

Response: RPAR 2:0,3:126  
*parameter values*

Command: RSET? 2:4,3:126  
Response: RPAR 2:INV,3:126

In this case, the value specified for parameter 2 is incorrect.

---

## SEND Command (Redirecting the Remote Input File)

### Alias

See **FROM** command.



---

# SET Command (Setting a Local PAD Profile Parameter)

## Purpose

This function enables the DTE-C to dynamically assign special values to one or more local X3 PAD parameter values.

## Syntax

**SET** <par\_1>:<val\_1>,<par\_2>:<val\_2>,...,<par\_n>:<val\_n>

<par\_i> reference of the PAD parameter profile, in the range 1 to 22 and 95 to 99.

The values are separated by commas (","). The meanings of the parameter values are described in TPAD Profiles, on page B-1.

<val\_i> value assigned to the corresponding parameter par\_i.

To know about the validity of a parameter value, type **HELP PARAMETER** <par\_i>

See **HELP** command, on page 5-24.

## Report

- If the parameter or parameter value is incorrect, an error indication "**INV**" is displayed.
- If the syntax is incorrect, an error indication "**ERR**" is displayed.

## Example

Command:

*parameter references*  
/        /  
SET1:0,4:4  
  \     \  
      *values to assign*

# SET? Command (Setting and Reading a Local PAD Profile Parameter)

## Purpose

This function enables the DTE-C to both assign a special value to a parameter and check if the new value has been correctly set.

## Syntax

**SET?** <par\_1>:<val\_1>,<par\_2>:<val\_2>,...,<par\_n>:<val\_n>

<par\_i> reference of the PAD parameter profile, in the range 1 to 22 and 95 to 99.

<val\_i> value assigned to the corresponding parameter par\_i.

The values are separated by commas (","). The meanings of the parameter values are described in TPAD Profiles, on page B-1.

## Report

- In all cases, "PAR" is displayed on the screen.
- If everything is correct, the parameter reference is displayed followed by the new value of the parameter. Is also displayed a short explanation of the parameter if the extended dialogue mode is set (parameter 6: value 17 or 33). See **LANG** command, on page 5-30.
- If the parameter reference is incorrect, the reference is displayed followed by "INV".

## Examples

Command: SET? 23:0  
Response: PAR 23:INV  
Response interpretation: Invalid parameter reference.

Command: SET? 2:3  
Response: PAR 2:INV  
Response interpretation: Invalid parameter value.

Command: SET? 1:1,2:0  
Response: PAR 1:1,2:0  
Response interpretation: In this case, the command ran correctly, the parameter 1 was assigned the value 1 and the parameter 2 the value 0.

Command: SET? 2:1,9:0  
Response: PAR 2:1 - echo: Echo,  
9:0 - CRpad: Padding after carriage return

Response interpretation: In this last case, the command ran correctly, the parameter 2 was assigned the value 1, and the parameter 9 the value 0. Short explanations of the parameters 2 and 9 were displayed because the extended dialogue mode was set.

---

## SH Command (Escaping from TPAD to the Local Shell)

### Purpose

This function allows the DTE-C to momentarily escape from the TPAD context and work in the local Shell environment. The return to TPAD is automatic on existing the Shell (`exit` command).

This command is not available when TPAD is activated with the ("`!`") option invalidating Bull specific interactive command execution.

### Syntax

**SH**

**Note:** This command is BULL specific.

### Example

Command:

```
SH
<shell-command>
...
exit
```

## SLEEP Command (Momentarily Inactivating the Processing)

---

### Purpose

This function is used to inactivate the processing for a period of  $n$  seconds.

### Syntax

**SLEEP**  $\langle n\_sec \rangle$

Where :

$\langle n\_sec \rangle$  is the time to sleep in seconds.

**Note:** This command is BULL specific.

---

## STAT Command (Connection status)

### Purpose

This function allows a DTE-C to request the status of the current TPAD connection.

### Syntax

**STAT**

### Report

- If the syntax is correct, this command returns the status of the current connection:  
**ENGAGED**     there is a virtual circuit set-up between the DTE-C and the DTE-P,  
**FREE**            there is no virtual circuit.
- If the syntax is incorrect, the message "**ERR**" is displayed.

### Example

Command:                    STAT  
Response:                    FREE (or) ENGAGED

---

# STRSYNC Command (Waiting for Expected String Reception)

## Purpose

This function is used to momentarily interrupt input data processing until the expected string is received. This command is particularly used in the scripts of the automatic **login** in order to synchronize the **login** phase requests with the automatic entries of the user identification parameters (name, password, etc.).

## Syntax

**STRSYNC** *<expected\_string>*

**WAIT** *<expected\_string>*

where:

*<expected\_string>* defines the expected string that must be received before input data processing starts again. Meta-characters, such as '\*' and '?' may be used bound with simple quotes ( ' ') not to be interpreted by the shell.

## Examples

Script file making automatic the connection to "MACH1" host and the user login entries.

This example shows that it is possible to insert command lines with the prefix '#'. (The character '#' is a comment line prefix when the PAD is in command mode).

```
# Interruption processing
set 7:21
# connection to remote "MACH1"
MACH1
^p# waiting for the prompt of the Login
^pwait *ogin*
^P# entry of the user logname "boby"
boby
^p# synchronization with the password
^pwait *assw*
jupiter
```

**Note:** The user can automate the execution of this script during each TPAD activation by including it in his **\$HOME/.padrc** file see Customized Start-up File, on page A-16.

See # Command, on page 5-57 for syntax of the comments.

### CAUTION:

If an "exit" command is put in the script file, it is possible that the connection is closed before the result of this command has returned from the network. To prevent this occurrence, a synchronization can be added to the prompt before exiting.

**Note:** This command is BULL specific.

**Example:** See overleaf.

**Example:**

Connection to MACH1 and cat the "/etc/passwd" file before exiting.

```
MACH1
wait *ogin*
^P# entry of the user logname "boby"
boby
P# synchronization with the passwd
^Pwait *passwd*
jupiter
^P# synchronization with the prompt : boby>
^Pwait *boby>*
# run the command: cat "/etc/passwd"
cat /etc/passwd
^P# wait for the prompt before exiting
^Pwait *boby>*
exit
```

## TO Command (Redirecting the Remote Output File)

---

### Alias

See **CAPTURE** command.



---

## TRACE Command (Switching Over to Trace Mode)

### Purpose

This function allows a DTE–C user to switch between trace on / trace off mode in order to obtain additional addressing or error report information as required. This option should be used only when requested by Technical Support.

### Syntax

**TRACE**

### Report

Indicates the current trace mode status.

### Examples

Initial trace mode is OFF.

Command:                   TRACE

Response:                   TRACE MODE ON.

The trace mode is set from OFF to ON.

Command:                   TRACE

Response:                   TRACE MODE OFF.

The trace mode is set from ON to OFF.

---

## WAIT Command (Waiting for Expected String Reception)

### Alias

See **STRSYNC** command.

---

## ! Command (Executing a Shell Command)

### Purpose

This function is used to momentarily escape from the TPAD context to execute a Advanced Interactive Executive command in the local Shell environment. The return to TPAD is automatic at the end of the Shell command.

This command is not available when TPAD is activated with the ("!") option invalidating specific interactive command execution.

### Syntax

`! <shell_command>`

Where:

`<shell_command>` is the called Shell command.

**Note:** This command is BULL specific.

### Example

Command: `! lc /usr/bin/p*`

---

## ? Command (Help on Line)

### Alias

See **HELP** command.

---

## # Command (Inserting Comments in a TPAD Script)

### Purpose

This function allows the insertion of a comment line inside a TPAD script. All the characters included in the comment line are ignored.

### Syntax

```
# <comment_line>
```

where:

<comment\_line> is the line of characters set-up as a comment.

^P is the TPAD Escape Character. In connection mode, the TPAD escape character avoid the comment line to be sent to the remote host as a data string.

**Note:** This command is BULL specific.

### Example

In command mode:

```
Command:          # This is a comment line
```

In connected mode:

```
Command:          # Interrupt processing
                  set 7:21
                  # Host connection
                  host
                  ^P# Login synchronization
                  ^Pwait *ogin*
                  root
                  ^P# Passwd synchronization
                  ^Pwait *assw*
                  <mypasswd>
                  ...
```

---

## “*address*” Command (Requesting Connection with a Called Address)

### Purpose

This function allows a DTE–C to specify the called address for connection.

### Syntax

*<called\_address\_specification>*

Command without name.

The formats of the available called address specification are described in Specifications of TPAD Called Address, on page 5-4.

### Report

Indicates whether the connection is successful or not by displaying a coded indication. For the meaning of the coded indications displayed, see TPAD Reports on User Connection Requests, on page 5-59.

### Examples

Command: 138020011

Response: COM

Command: xyz

Response: tpad: bad address CLR PAD.

---

# TPAD Reports on User Connection Requests

## Connection set-up report

**COM** the called connection request is accepted.

## Connection rejected reports

**CLR OCC** the called DTE-P connection is busy and cannot accept an incoming call.

**CLR INV** the service requested by the calling DTE is not valid.

**CLR NC** the network is temporarily congested or out of order.

**CLR DER** the calling subscriber line is out of order.

**CLR NA** the calling DTE is not allowed to set-up a connection with the requested number.

**CLR NP** the address of the called DTE is unknown (not included in the numbering plan or not assigned to a DTE).

**CLR RPE** remote procedure error.

**CLR ERR** a procedure error caused by the calling DTE has been detected by the TPAD (e.g.: wrong format).

**CLR RNA** the called DTE has not subscribed to the reverse charging facility.

**ERR**

- the abbreviated remote address has not been found in the **/etc/isohosts** file containing the abbreviated "address / full Public PAD address" pairs,
- the service has been incorrectly requested or does not exist,
- the remote full Public PAD address corresponding to the remote abbreviated address contains alphanumerical characters or is longer than allowed.

**Note:** In most cases, TPAD specifies explicitly the reason why the connection cannot be set-up. For more information, refer to the X25.3 Access Error Codes, *OSI Services Reference Manual*.

---

## TPAD Reports on Called DTE–P Requests

When the remote host (called DTE) requests an interruption, reset, clear or close of the connection, it sends to TPAD a special information packet.

TPAD transmits this information to the user terminal by displaying an indication code on the user terminal screen. The indication codes are the following:

- INT**                    indication of DTE–P interrupt connection request.
- CLR DTE**            indication of DTE–P clear connection request.
- RESET**              indication of DTE–P reset connection request.
- TRANSFER**        – indication of DTE–P transfer connection request,
  - the DTE–P requests a disconnection and a new connection with another DTE–P (the new DTE–P address and complementary services used, if any, are displayed with the code),
  - the new connection is automatically set–up by TPAD.

**Note:** The format of the TPAD and DTE–P exchanged messages complies with CCITT X.29 recommendation.



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## Chapter 6. Using TPAD–HPAD over PVC

This chapter is reserved for administrators and end users who have to configure and use TPAD–HPAD over Permanent Virtual Circuits (PVCs).

---

### Using TPAD–HPAD over PVC: Section Overview

This section contains information for administrators or end users to help them to configure and use TPAD–HPAD over Permanent Virtual Circuits (PVCs).

A full example of the whole setting up of a PAD with the various steps is given in the Configuration part. Only the SMIT submenus relating to the TPAD–HPAD configuration itself are detailed in further sections.

This section is divided into:

- Introducing TPAD–HPAD over PVC, on page 6-2,
- Configuring TPAD–HPAD on PVC, on page 6-3,
  - Actions to be performed, on page 6-3,
  - Addressing a WAN PAD Server Site on PVC, on page 6-5,
  - WAN HPAD Server Configuration over PVC, on page 6-7,
- Setting up TPAD–HPAD over PVC: Example, on page 6-11.

---

# Introducing TPAD–HPAD over PVC

## Support of PVCs

The CCITT X29 1993 recommendation specifies that the use of PAD over PVC is for further study. Nevertheless, a solution is proposed to work on PVC via the application TPAD–HPAD using the X25–3 Access Method (MAX3 API).

Unlike a connection on a SVC, a connection on a PVC is permanent: the link is established once and for all when the X25 board is loaded. The notion of connection / disconnection is inexistant. The implementation of TPAD–HPAD (based on the reset packet sent by the X25 boards when the PVC is reinitialized) takes into account this particular feature.

But the implementation is transparent to the user: a TPAD connection session has the same behavior over PVC as over SVC.

From the administrator point of view, the **main differences** with SVCs are found in:

- the **configuration of the PVCs in the X25 board** configuration,
- the **configuration of the PVCs in the OSI stack**,
- the **configuration of TPAD–HPAD** itself, taking into account the fact that the connection is permanent.

## Restrictions

### Usage Restrictions

The following features, since they have to be done at connection time, are not available on PVC:

- Remote terminal check
- X3 profile initialization

The features based on X25 CUD and facilities are not supported, particularly PAD password.

By definition of a PVC, only one **'tpad'** session is possible on a PVC at a given time.

### TPAD invocation

The TPAD invocation is the same as over SVC links except:

- Facility options `-c<group_number>`, `-C` and `-R`, which are meaningless.
- Call User Data options `-P<user_data>` or `-D<user_data>`, which are meaningless.
- The option `-s<NSEL>`, which is meaningless too.

---

## Configuring TPAD–HPAD on PVC

Configuring a TPAD–HPAD on PVC implies not only the configuration of the PAD itself, but also the setting up of the PVC link, from the configuration of the board up to the invocation of **tpad**.

### Actions to be performed

Provided that the prerequisite software is available and the TPAD–HPAD product is installed on both machines, all the actions to be performed, on local and on remote sites, are listed below:

– **Board and OSI configuration, on both sides:**

1. Configure a PVC on the chosen line of the board by running '**smit x25d**',
2. Generate and load the board,
3. Test the line by using **lookx25** tool after loading osistack.
4. Unload the stack and Configure a PVC on the 'Hispeed WAN Comm Adapter' by running '**smit ConfOSIPVC**',
5. Reload the stack.

The Board and OSI configuration phase is detailed in Setting up TPAD–HPAD over PVC: example, on page 6-11.

– **TPAD–HPAD Configuration:**

• On the **remote site:**

1. Add a WAN PAD server configuration on PVC by running '**smit padsrv\_pvc**', detailed on page 6-7,
2. Run the SMIT menu 'Reload the HPAD server configuration' detailed on page 3-27.

• On the **local site:**

1. Add a WAN PAD server site on PVC by running '**smit padclt\_pvc**' to configure the PAD client configuration, detailed on page 6-5,
2. Establish a TPAD–HPAD session (*/bin/login* application).

The Figure10 shows the TPAD–HPAD configuration phase.

More detailed information about SMIT screens used for TPAD–HPAD configuration is provided in further sections.

All the actions to be performed are detailed in Setting up TPAD–HPAD over PVC: example, on page 6-11.

# Configuration of TPAD-HPAD over PVC

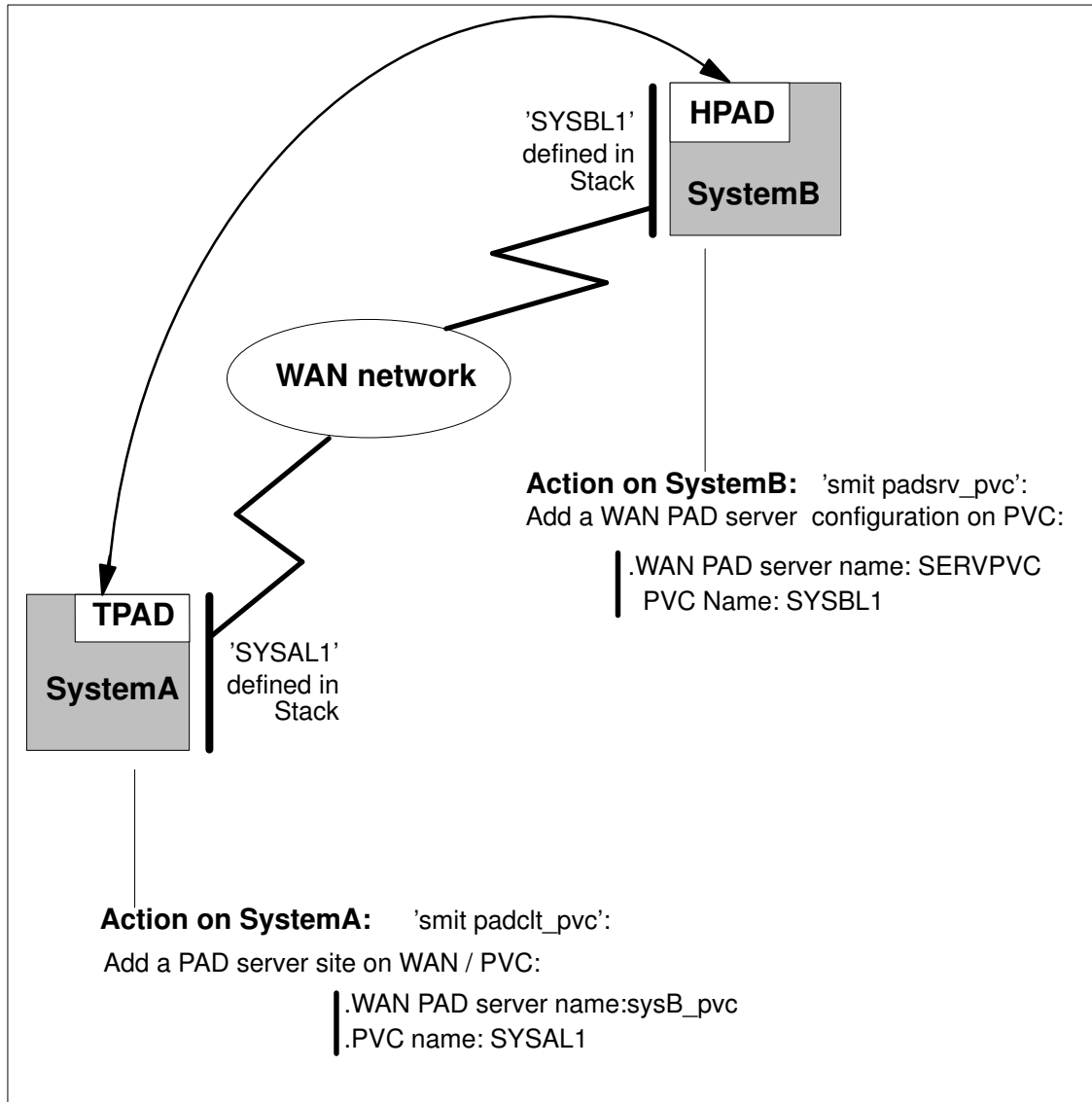


Figure 10. Configuration of TPAD-HPAD over PVC

---

# Addressing a WAN PAD Server Site on WAN / PVC with TPAD using SMIT

## Access

From the TPAD Client Configuration menu, select:

### Addressing a PAD server site on WAN / PVC with TPAD

**FastPath:** padclt\_pvc

## Overview

Enables the administrator to manage the addressing of a PAD server site on WAN for permanent virtual circuit (PVC).

Example:

Addressing a PAD server site on WAN / PVC with TPAD
List WAN PAD server site on PVC Add WAN PAD server site on PVC Change/Show a WAN PAD server site on PVC Remove WAN PAD server site on PVC

## Description

### List PAD server sites on PVC

Lists all the configuration names of WAN PAD server on PVC. The configuration name identifies a set of information that enables a end user of a PAD client to access a PAD server on PVC. In other words, a configuration name identifies a PAD server.

**Command:** padcltwcvp -l

### Add a WAN PAD server site on PVC

Enables the administrator to create a named set of information that identifies a PAD server on a remote WAN network accessible over PVC. Once created, the name is associated with a set of information that contains: the PVC name defined in OSI configuration and the X3 profile.

The dialogs fields are explained in the 'Change/Show a WAN PAD server on PVC' submenu paragraph.

**Command:** padcltwcvp -c<configuration name> -a<PVC name>  
-p<profile number>

### Change/Show a WAN PAD server site on PVC

Enables the administrator to edit a named set of information that identifies a PAD server on a WAN network accessible over PVC. If the name of the configuration is changed, a new named PAD server is created.

**Command:** padcltwcvp -e<configuration name> -a<PVC name>  
-p<profile number>

The dialog fields are detailed on page 6-6.

### Remove a WAN PAD server site on PVC

One or several named PAD servers over PVC selected from the list, can be removed.

**Command:** padcltwcvp -d<configuration name>

Example:

Change/Show a WAN PAD server site on WAN	
	[Entry Field]
* WAN PAD server name:	[sysB_pvc]
* PVC Name:	[SYSAL1
* Profile number:	[127]

**Dialog Fields:**

**\*WAN PAD server name**

Name of the PAD server on the WAN network. It is a string limited to 32 characters. The name DFLTX25 is reserved for internal use. The syntax of this field is [a-zA-Z][a-zA-Z0-9\_]\*. Default: none. Mandatory.

**\*PVC name**

Name of a Permanent Virtual Circuit (PVC) defined in OSI configuration. You can get the list of PVC name defined in Osi stack by using the F4 function key. The syntax of this field is a string of 1 to 8 alphanumeric characters including '\_' '.' '/' and '"' characters.

**\*Profile number**

Number of an X3 profile defined in the file */etc/PROFPAD*. X3 defines a set of parameters, defining the behavior of PAD service. A given X3 profile associates a value to each X3 parameter. The X3 profile range value is [0-127]. Default: 127. Mandatory.

---

# WAN HPAD Server Configuration over PVC

## Access

From the HPAD Server Configuration menu, select:

### HPAD server on WAN / PVC

**FastPath:** padsrv\_pvc

## Overview

Enables the administrator to manage a PAD configuration on WAN for permanent virtual circuit (PVC).

Example:

HPAD server on WAN / PVC
List WAN HPAD server on PVC
Add WAN HPAD server on PVC
Change / Show WAN HPAD server on PVC
Remove WAN HPAD server on PVC

## Description

### List WAN HPAD server on PVC

Lists all configurations on WAN of the PAD server application over PVC. A configuration is a named set of parameters that defines the PAD server behavior.

**Command:** padsrvwcvp -l

### Add a WAN HPAD server on PVC

Enables the administrator to create a configuration on WAN for PAD server over PVC. A configuration is a named set of parameters, that defines the PAD server behavior. A configuration is known with its name, that is unique. Once a configuration is created, it is taken into account by requiring the PAD server daemons to load the complete configuration (Reload the PAD server configuration). The configuration on PCV contains two types of parameters. A minimum set of parameters describes the services offered by the PAD server (program to exec, PCV name, X3 profile, X29 mode and remote terminal check). A second set describes security features that the administrator can set up.

The dialogs files are explained in the 'Change/Show a WAN PAD server on PVC' submenu paragraph.

**Command:** padsrvwcvp -c <configuration name>  
-a <PVCname> [-p <profile number>] [-f  
{check|not\_check}] [-x {normal|rlogin|no\_message}]  
[-v{filter|not\_filter}] [-E <programm pathname>] [-o  
"program arguments"] [-h <history file>][-H<number of  
record in history file>] [-m<control address mode>  
[-f<control address file>]]

### Change/Show a WAN HPAD server on PVC

Enables the administrator to edit a named configuration over PVC. If the name of the configuration is changed, a new named PAD server is created. A configuration is a named set of parameters, that defines the PAD server behavior. A configuration is known with its name, that is unique. Once a configuration is modified/created, it is taken into account by requiring the

PAD server daemons to load the complete configuration (Reload the PAD server configuration). The configuration on WAN contains two types of parameters. A minimum set of parameters describes the services offered by the PAD server (program to exec, PVC name, selector, X3 profile, X29 mode and remote terminal check). A second set describes security features that the administrator can set up.

**Command:** padsrvwcvp -e <configuration name>  
 -a <PVCname> [-p <profile number>] [-f  
 {check|not\_check}] [-x {normal|rlogin|no\_message}]  
 [-v{filtered|not\_filtered|filtered\_no\_init|transparent}  
 ] [-E <programm pathname>] [-o "program arguments"] [-h  
 <history file>] [-H<number of record in history file>]  
 ] [-m<control address mode>] [-f<control address file>]

Example:

Change/Show a WAN PAD server configuration on PVC		
	[Entry Field]	
* Name :	[sysB_pvc]	+
* PVC Name :	[SYSBL1]	+
Profile number :	[127]	#
Remote terminal check :	not_checked	
X29 mode :	normal	+
Filter video keys :	filtered	+
Program :	[ ]	
Program arguments :	[ ]	
History file :	[ ]	
Max record of history :	[200]	#
Control address :	none	+
Control address file :	[ ]	

#### Dialog Fields:

**\*Name** Name of the new configuration. It is a string limited to 32 characters. The name DFLTX25 is reserved for internal use. The syntax of this field is [a-zA-Z][a-zA-Z0-9]\*. Default: none. Mandatory.

**\*PVC name** Name of a Permanent Virtual Circuit (PVC) defined in OSI configuration. You can get the list of PVC name defined in osistack by using the F4 function key. The syntax of this field is a string of 1 to 8 alphanumeric characters including '\_' '.' '/' and '"' characters.

**Profile number** Number of a X3 profile defined in the file /etc/PROFPAD. X3 defines a set of parameters, that defines the behavior of PAD service. A given X3 profile associates a value to each X3 parameter. The X3 profile range value is [0-127]. Default: none. Not mandatory.

**Remote terminal check** Remote terminal check: If set, the PAD server will require the PAD client to send the value of its environment variable TERM. Its range is [checked|not\_checked]. Default: not\_checked.

**X29 mode** X29 mode: Defines the use of X29 message that will be done by PAD server. If set to 'Normal', the PAD server is going to send X29 messages according to a change of value of PTY/termio. If set to 'No message', the



PAD server won't send any X29 message. If set to 'rlogin mode', the PAD server is going to send a unique X29 message, that requires the PAD client to run like rlogin (each character keyed, is sent). The 'rlogin' is not recommended on WAN due to the load over the network and response time. Its range is: normal, no\_message, rlogin mode. Default: normal.

### Filter video keys

This parameter allows to choose filter and presentation mode:

**Filter mode:** the PAD server filters the function keys (Envoi, retour, répétition, guide, annulation, sommaire, correction, suite) coming from a videotex terminal (minitel).

**Initialisation mode:** the PAD changes presentation parameters (80 columns, scrolling,...)

The possible values of the 'Filter video keys' parameter are:

**transparent:** neither filter nor initialisation operation is performed.

**not\_filtered:** initialisation is performed but functions keys are not filtered.

**filtered\_no\_init:** no initialisation but function keys are filtered.

**filtered:** both filter and initialisation operation are performed.

Default: filtered.

**Program** Program: pathname of the program to be run. Default: none.

### Program arguments

Program options: list of arguments to the program whose name is specified in 'Program' field. The PAD server can provide the values of some internal variables. These variables can be accessed through keywords:

PTY: specifies the pty file opened by the HPAD process.

ADDRESS: to specify the calling address

CUD: to specify the Calling user data

NSEL: to specify the Network selector

On PVC, CUD has no value and NSEL has always the value 01000000.

**Example:** '-g 1003 PTY -a ADDRESS'. The program specified in the 'Program' parameter is going to be called with the option '-g 1003 /dev/pts/123 -a PVCL1'. /dev/pts/123 is the file name of the opened pty. 13802002 is the address of the caller. Applicable only, if the Program parameter is set. Default: none.

**History file** History file: Contains the pathname of the file that stores the history logs of the incoming calls. If this parameter is not set, no history file is created for this configuration. This history is managed as a circular file. Its range of value is a pathname of a file that can be access (read/ write by the PAD server (super user rights). Default: none. Be careful, on diskless environment the History file must not be defined /usr partition!

### Max record of history

Max record of history: It contains the maximum number of records of the history file: its range of value is [1–2000]. Applicable only if history file parameter is set. Default: 200.

### Control address

Control address: Enables the administrator to filter incoming calls, according to the caller address. Its range values is [none/denied/ allowed]. If set to 'none', this function is inactive. If set to 'denied' a denied address list contains all caller addresses that have to be rejected. If set to 'allowed' a allowed address list contains the only caller address that are accepted. The allowed/denied address list is a file the pathname of which is defined in

the parameter 'Control address list'. If set to 'none', the 'control access file' parameter must not be set. If set to 'denied' or 'allowed', the 'control access file' parameter must be set. If 'none' is selected hpad takes the following control address default files, if they exist: the '/etc/secure/log/HPADdenied' for denied addresses, the '/etc/secure/log/HPADallow' for allowed addresses.

### **Control address file**

Control address file: This is the pathname of a file that contains addresses. This parameter must be set only if 'control address' is set to 'denied' or 'allowed'. Suppose 'control address' sets to 'denied' and 'control access file' sets to '/tmp/foo'. When a call occurs, if the caller address matches one of the address specified in '/tmp/toto', then the call is rejected; else it is accepted. Suppose 'control address' sets to 'allowed' and 'control access file' sets to '/tmp/foo'. When a call occurs, if the caller address does not match any address specified in '/tmp/foo', then the call is rejected; else it is accepted. Warning: this file isn't manage with the PAD configurator. So, this file must be updated with and editor like 'vi', 'ed' or 'emacs'. The format of a record is an address pattern oneach line. Meta-characters like '?' and '\*' are allowed. Default: none.

### **Remove a WAN PAD server on PVC**

One or several named PAD servers over PVC selected from the list, can be removed.

**Command:** padcltwcyp -d<configuration name>

---

## Setting up TPAD–HPAD over PVC: Example

This section gives a concrete example of what an administrator must do to establish a **tpad** session over a PVC link between two DPX/20 ESCALA machines, from the software prerequisite checking, up to the **tpad** session launching.

### Environment Description

In this example, we want to establish a **tpad** session on a PVC over a V35 physical line interface between two DPX/20 ESCALA machines PEGA1 and PEGA2 through Hispeed WAN Comm Adapters, as shown in the Figure 11.

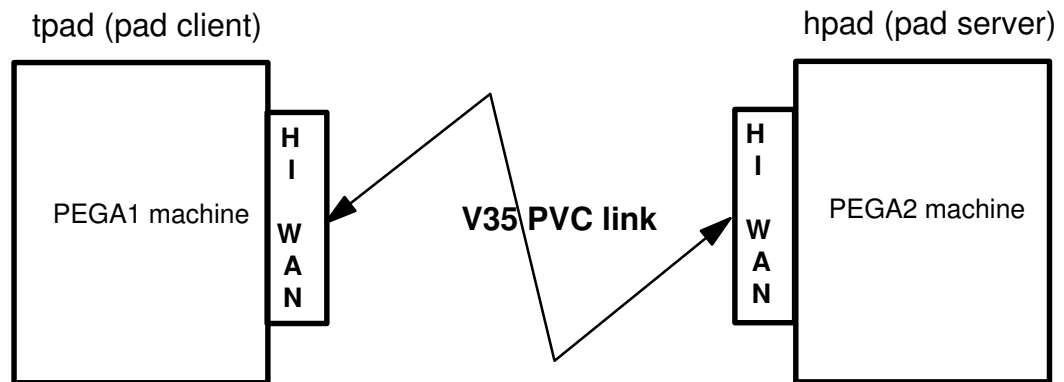


Figure 11. Example of TPAD–HPAD over PVC: environment description

From that point, all the following actions are to be performed in a sequence.

### 1. Software Prerequisite Checking

The following software must be installed on the AIX 4.1.4 or higher on the two machines:

- `osi_frame`: OSI framework Mad+Configurator
- `osi_low`: OSI Low OSI Stack in particular MAX3 api
- `bullx25.board` for Hispeed WAN Communication Board
- `tpad_hpad`: **tpad–hpad** application software

### 2. PVC Configuration on ‘Hispeed WAN Comm Adapter’

To configure a PVC on your ‘Hispeed WAN Comm Adapter ‘ enter the command: **‘smit x25d’**.

On **PEGA1** we configure the line x25I0 of the board as DTE.

On **PEGA2** we configure the line x25I0 of the board as DCE.

- On **PEGA1** (DTE)=> **smit x25d**

- Change / Show Network Parameters

Lowest logical channel number for a two–way SVC	[2]
Number of logical channels for two–way SVCs	[64]
Lowest logical channel number for a PVC	[1]
Number of PVCs	[1]

- On **PEGA2** (DCE)=> **smit x25d**
  - Change / Show Network Parameters
  - Lowest logical channel number for a two-way SVC [2]
  - Number of logical channels for two-way SVCs [64]
  - Lowest logical channel number for a PVC [1]
  - Number of PVCs [1]

**Warning: \*Don't forget to Generate and Load the board.**

- **Test of the line:**

Run '**osiload**' command and use '**lookx25**' tool: On each machine the PVC 1 is in STATE: TRANSFER.

### 3. PVC Configuration in OSI stack

To configure a PVC on your 'Hispeed WAN Comm Adapter ' enter the command: '**smit ConfOSIPVC**'.

- On **PEGA1** => **smit ConfOSIPVC**

- Add a PVC

Adapter code	00-01-01-00
* PVC Name	PEG1L0P1
* Logical Channel Number	[1]
* Module Owner	3610

- On **PEGA2** => **smit ConfOSIPVC**

- Add a PVC

* Adapter code	00-01-01-00
* PVC Name	PEG2L0P1
* Logical Channel Number	[1]
* Module Owner	3610

**Warning: \*Don't forget to reload the stack.**

## 4. PVC Configuration in TPAD–HPAD

### HPAD Server Configuration

On **PEGA2** enter 'smit padsrv\_pvc', fill in and validate the following menu.

- Add a HPAD server on WAN / PVC

The corresponding SMIT window is given here:

Add WAN PAD server configuration on PVC	
	[Entry Fields]
*WAN PAD server Name	[SERVPVC] +
*PVC Name	[PEG2L0P1] +
Profile Number	[ ] #
Remote terminal check	+
X29 mode:	+
Filter video keys :	
Program :	
Program arguments :	[ ]
History file :	[ ]
Max record of history :	[200] #
Control address :	none +
Control address file	[ ]

**Warning: Don't forget to 'Reload the HPAD server configuration'**

## 5. TPAD Client Configuration

On **PEGA1** enter 'smit padclt\_pvc', fill up and validate the following menu.

- Add a WAN PAD server site on PVC

The corresponding SMIT window is given here:

Add WAN PAD server site on PVC	
	[Entry Fields]
*WAN PAD server Name	[pega2_pvc] +
*PVC Name	[PEG1L0P1] +
*Profile Number	[ ] #

## 6. Establishing TPAD–HPAD session

To establish a TPAD–HPAD session (*/bin/login* application) enter on **PEGA1** the command: **'tpad pega2\_pvc'**. The */bin/login* banner appears and log on.

Errors may occur when you run a tpad session. The more usual errors are:

- After running 'tpad', no data are coming after the 'COM' message:  
Usual cause: the pad daemon is not listening on the server side, run the daemon.
- X253 Access Method (MAX3): PVC already used  
Usual cause: a tpad session or the hpadd daemon is already running.
- X253 Access Method (MAX3): unknown or inactive subscrip.  
Usual cause: this PVC name is not defined in the OSI stack.

---

## Chapter 7. Using a LAN / WAN Gateway

This chapter is reserved for administrators who have to configure and use the LAN/WAN Gateway PAD function, allowing connections between a user on a LAN network and a remote host on a WAN network.

---

### Using a LAN / WAN Gateway: Section Overview

This section contains general information about LAN/WAN gateway available in TPAD–HPAD (based on SPAG Y/13 profile), as well as information on the way to configure and use LAN/WAN connections:

- Terminology and Overview, on page 7-2
- Configuring a Server Site Via a LAN/WAN Gateway, on page 7-4
- Using PAD Connections on LAN/WAN, on page 7-10

# Terminology and Overview

## Terminology

Some definitions are useful to understand this chapter:

- **Gateway:**  
A gateway is a site which has access to both WAN and LAN. It receives LAN packets and opens another connection with the end site on a WAN network, and vice versa.
- **Calling Packet and Call User Data:**  
The calling packet is the first packet sent by the TPAD in order to open the connection with another PAD entity on a remote site, the server HPAD for example.  
The Call User Data is sent inside the calling packet.
- **SPAG Y/13:**  
It is a profile defining the character mode access to any type of LAN and using a special pattern (Call User Data) to enable a gateway to manage LAN/WAN connections. For further information on protocols used by TPAD-HPAD, see TPAD-HPAD Protocols, on page 1-5.

## Overview

### Purpose of LAN/WAN Gateway

The main purpose of the LAN / WAN gateway is to make easy a connection between a TPAD user on a LAN network and a HPAD remote host on a WAN network.

The software structure of PAD using SPAG connections is shown in Figure 12

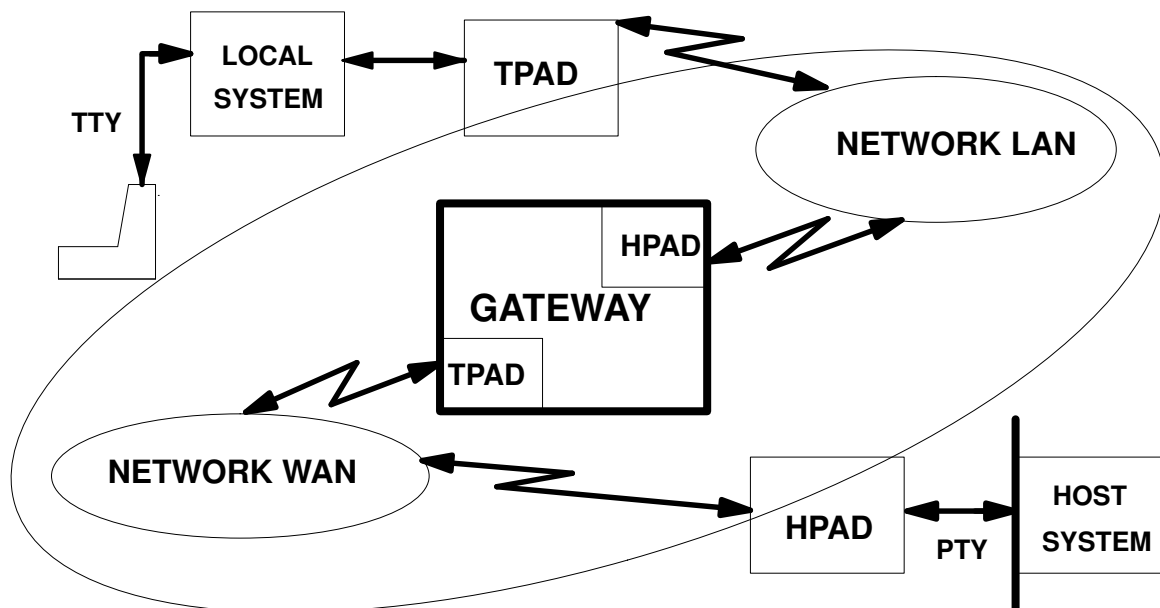


Figure 12. LAN / WAN connections with PAD



## **LAN / WAN Connections**

This routage can be done because the request to connect, on both WAN and LAN PAD connections can convey facultative and private information (Call User Data). The SPAG Y/13 takes advantage of this feature: the information for X25 gateway is given in the first packet of the LAN connection. So when the request to connect arrives on a LAN system in a SPAG format, another request to connect is sent by the gateway according to the WAN information given to it in the user data of the LAN connecting packet.

The following sections do not fully describe all the TPAD–HPAD functions. They simply explain what is specific to SPAG Y/13: how the SPAG Y/13 profile is taken into account in TPAD–HPAD configuration and how to use PAD in a local site with intent to make SPAG connections.

## **From a User Point of View**

From a user point of view, once configured, a LAN / WAN gateway for PAD connections is perfectly transparent: a remote X25 host is accessed as if through a WAN.

---

## Configuring a Server Site Via a LAN / WAN Gateway

Configuring a gateway using SPAG Y/13 profile implies no particular interface for the administrator. A specific SMIT sub-menu must be accessed on the local site.

### Actions to be performed

All the actions of configuration to be performed, on the local site as well as on the gateway and remote site, are listed below and shown on page 7-5.

1. **Remote Site:**

Run the SMIT menus:

**Add a HPAD server configuration on WAN (SVC)**, detailed on page 3-13

**Start HPAD server daemon**, detailed on page 3-45

2. **Gateway:**

Run the SMIT menus:

**Add a HPAD server configuration on LAN**, detailed on page 3-23

**Start HPAD server daemon**, detailed on page 3-45

3. **Local Site:**

Run the SMIT menus:

**Add a PAD server site on LAN**, detailed on page 3-36

**Addressing a PAD server site on WAN via a LAN/WAN gateway**, detailed on page 7-7

More detailed information about SMIT screens used for configuration is provided in further sections.

## Configuration Via a LAN / WAN Gateway

An example of the TPAD–HPAD gateway configuration, local and remote sites, is shown in Figure 13.

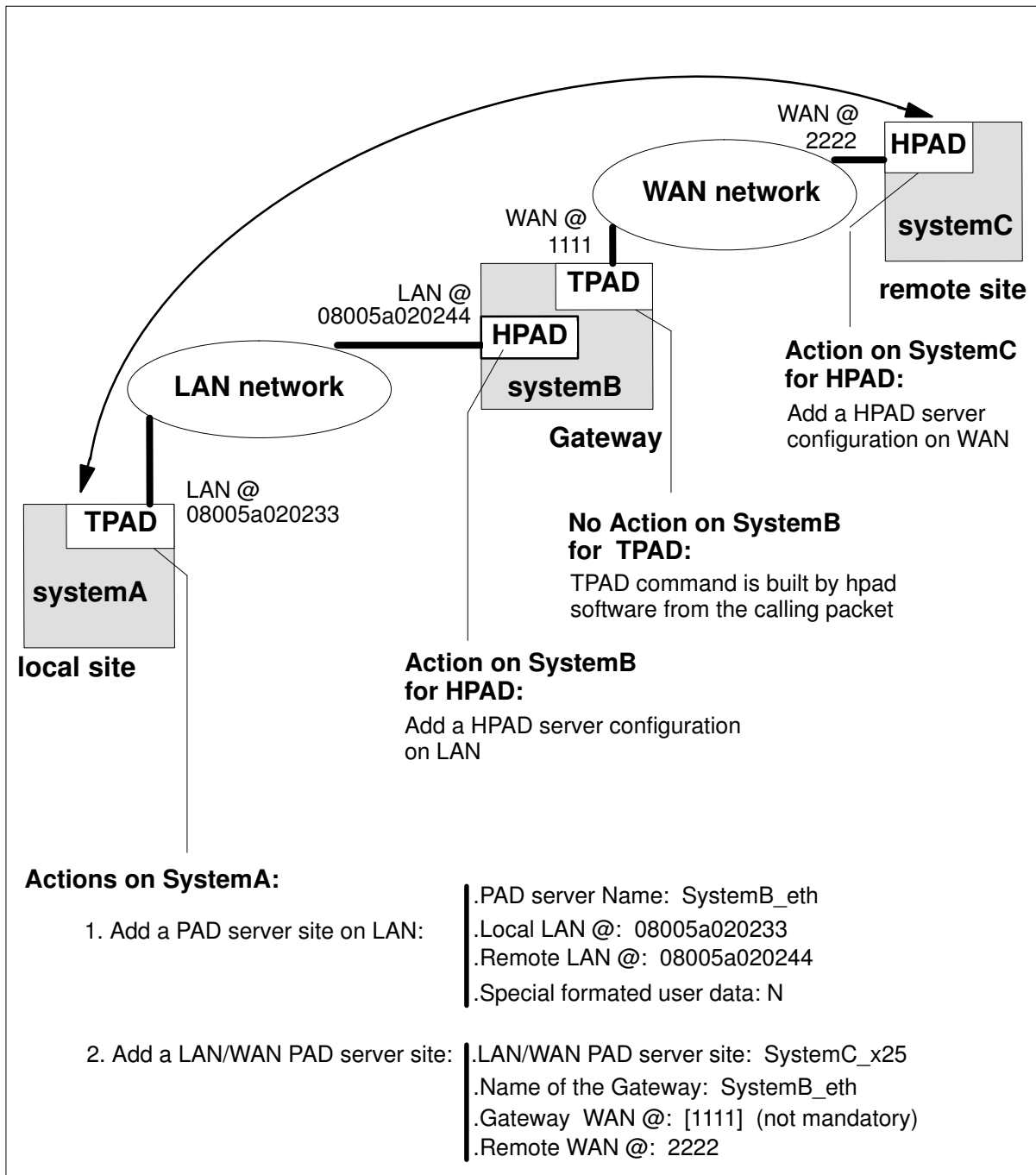


Figure 13. Configuration Via a LAN / WAN Gateway

## Miscellaneous

### A New Network Type

In addition to the two types of network already existing in TPAD–HPAD: **LAN** and **WAN**, a new type has been introduced: **LAN/WAN**. This is only seen when navigating in the SMIT menus, and in the report of the TPAD interactive command **hosts** described on page 5-26.

### Error Handling

Each LAN server configuration may be used as a gateway. So when a LAN configuration is requested to be removed, a warning message is displayed if it is used as a gateway by a LAN/WAN client.

### Remote Sites

Any LAN server can be the gateway of a LAN/WAN configuration, on condition that the machine has also a WAN access. Moreover, if the gateway X25 address is not known from the local site, you have to define a default outgoing address on the gateway site in order to reach the end site.

A LAN/WAN connection cannot be opened if either the gateway or the remote site is not operational. Both of them have to be configured so that their server can receive the incoming connection. The gateway server has to be configured to receive LAN connections and the remote site has to be configured to receive WAN connections.

The gateway can be a system different from Bull DPX/20 provided that the SPAG Y/13 recommendations are implemented on it.

### Local Configuration

On the local site, the gateway configuration is supposed not to have its own Call User Data. Since any LAN server can be used as a gateway, if there is a CUD in its configuration, it will be ignored when it works as a gateway.

### Particular Purpose

A particular way of using the SPAG Y/13 implementation is to use the **SPAG** profile over a LAN, without a route link or gateway. As no address is conveyed in the calling packet, the user takes advantage of longer user data, and with a more extended set of allowed characters. In this particular case, the server configuration is done in the same way as for any simple LAN client. There is only a flag to set to **Y** (yes) in the dialog field 'Special formatted user data' of Add a PAD server site on LAN SMIT menu. For more information, see How to Add a PAD Server Site on LAN on page 3-38.

# Addressing a PAD Server Site on WAN Via a LAN / WAN Gateway with SMIT

On the local site, part of the configuration phase will be done with a specific sub–menu, in which the administrator is asked some information about the machine used as a gateway.

## Access

From the TPAD Client Configuration menu, select:

### Addressing a PAD server site on WAN via a LAN/WAN gateway

The sub–menu shown below can also be accessed by running SMIT with the FastPath **padclt**:

TPAD Client Configuration
Addressing a PAD server site on WAN with TPAD (SVC) Addressing a PAD server site on WAN / PVC with TPAD Addressing a PAD server site on LAN with TPAD <b>Addressing a PAD server site on WAN via a LAN / WAN gateway</b> ← Definition of a default address

## Overview

Enables the administrator to manage the addressing of a PAD server site using the SPAG Y/13 profile: i. e. a PAD server site on WAN using a PAD LAN / WAN Gateway site on LAN.

The addressing is a named set of information that enables an end user of the PAD client to access a PAD server known by its name. The name is unique. The set of information is: a generic name, board addresses, X3 profile, facilities (reverse charging, charging information, closed user group and others), and call user data. The following actions are allowed: list all PAD servers names on WAN, create a new named set of information for addressing a PAD server, edit the set of information associated with a PAD server (selected with its name), remove information concerning a PAD server, list all PAD gateway's names available.

The sub–menu shown below can be accessed with running SMIT with the FastPath **padclt\_LW**:

<b>Addressing a PAD server site on WAN via a LAN / WAN gateway</b>
List LAN / WAN server sites Add LAN / WAN PAD server site Change / Show a LAN / WAN PAD server site Remove a LAN / WAN PAD server site List LAN / WAN gateways

### List LAN / WAN PAD server site:

Lists all the name of PAD server on remote WAN networks accessible, via a LAN / WAN gateway. The name identifies a set of information that enables

an end user of a PAD client to access a PAD server. In other words, a name identifies a PAD server.

**Add a LAN / WAN PAD server site**

Enables the administrator to create a named set of information that identifies a PAD server on a remote WAN network accessible, via a LAN / WAN gateway. Once created, the name is associated with a set of information that contains: board addresses, X.3 profile, facilities (reverse charging, charging information, closed user group and others) and calling user data.

**Remove LAN / WAN PAD server site**

One or more named PAD servers selected from the list, can be removed.

**List LAN / WAN gateways**

Lists all the names of PAD server on LAN usable as LAN / WAN gateway in a configuration.

**Change / Show a LAN / WAN PAD server site**

Enables edition of a named set of information that identifies a PAD server on a remote WAN network accessible, via a LAN / WAN gateway. If the name of the configuration is changed a new named PAD server is created.

The sub-menu shown below can be accessed by running SMIT with the FastPath `padclt_LW_edsel`:

Change/Show a LAN / WAN PAD server site	
	[Entry Field]
* LAN / WAN server site name :	[systemC_x25]
* Name of the LAN-WAN Gateway :	[systemB_eth]
Gateway WAN address :	[1111]
* Remote WAN address :	[2222]
Reverse charging :	not_asked
Charging informations :	not_asked
Closed User group :	[ ]
Other facilities :	[ ]
Calling user data :	[ ]

**Dialog Fields**

**\*LAN / WAN PAD server name**

Name of the PAD server on the remote WAN network. It is a string limited to 32 characters. The name DFLTX25 is reserved for internal use. The syntax of this field is [a-zA-Z][a-zA-Z0-9\_]\*. Default: none. Mandatory.

**\*Name of the LAN / WAN gateway**

Name of the PAD serve on LAN which is the LAN / WAN gateway of this configuration. Default: none. Mandatory.

**Gateway WAN address**

The address of the board, from where the WAN connection request is sent: the local WAN address of the gateway. Its range of values is up to 15 digits. A digit is a value 0-9. Default: according to the gateway local configuration. Not Mandatory.

**\*Remote WAN address**

The address of the board, from where the connection request is received:

the WAN address of the ending site. Its range of values is 15 digits. A digit is a value 0-9. Default: none. Mandatory.

**Reverse Charging**

A facility that requires the charging of the called party, on public WAN. It is set in the facility field of call packet. Its range of values is [asked|not\_asked]. Default: not\_asked.

**Charging informations**

A facility that requires charging informations from a public WAN. It is set in the facility field of the call packet. Its range value is [asked|not\_asked]. Default: not\_asked.

**Closed user group**

A facility that requires a closed user group from a public network. It is set in the facility field of the call packet. Its range of values is a number in the range [1–99]. Default: none.

**Other facilities**

Enables the administrator to add some other free facilities. This field is filled with a hexa string like 0x01,0x02,0x03...The length is limited to 109 characters. Default: none.

**Calling user data**

A character string that is sent in the calling user data of the call packet. The length is limited to 12 characters. It is an alphanumeric character string or hexa string like 0x68,0x65,0x6c,0x6c,0x6f ('hello'). Default: none.

---

## Using PAD Connections on LAN / WAN

Once configured, a LAN / WAN gateway for PAD connections is perfectly transparent to the user: A remote X25 host is accessed as if it were through a WAN.

### TPAD Interactive Commands

When his local site is correctly configured, the user can access a remote X25 host from a local LAN site with the usual TPAD commands.

The gateway must also be correctly configured and the pad daemon running.

The options given by user on the **tpad** command line will be applied at the appropriate level, i.e. either on LAN, or on WAN according to the type of option (–C option for instance will be used for the WAN part of the connection).

### Error Handling

- Error and response messages are the same. They may concern either the LAN connection or the X25 connection.
- When opening a PAD connection the following message is displayed: “ COM “
- Since two embedded connections are opened, there should be 2 successive messages. This could create further problems with applications. So the first message “COM”, punctuating the link between the local host and the gateway, is dropped.

Independently from the SPAG Y/13 profile using, you can refer to Error Codes and Messages, on page C-1.



---

## Chapter 8. PAD Printing

This chapter describes the remote printing facility using PAD over WAN.

---

### PAD Printing: Overview

TPAD–HPAD provides an extension to the Operating System print spooler which enables the user to access a printer connected via a PAD concentrator.

A PAD concentrator is a standard product (hardware and software) from BULL or any vendor that must be X3–X28–X29 and X25 1984 compliant.

The printer connected, via an asynchronous line of a PAD concentrator, is called a PAD printer. In the same way, this type of interface is called “PAD printing” (as opposed to “local printing” which concerns a printer connected directly to the machine).

From the user point of view, a PAD printer is very similar to a local printer: the same commands are used to submit print requests. The main difference is at configuration level (although handled via SMIT, the configuration menus are slightly different and require to provide some additional parameters for the purpose of communications). Moreover, as error recovery is a little more complex (user wants to know whether it is a printer problem or a network problem), a specific SMIT submenu enables administrator to get information on what has happened.

You can find more information in:

- Introducing PAD Printing, on page 8-2
- Using PAD Printers, on page 8-4
- Introduction to Configuration, on page 8-6
  - Configuring a printer spool, on page 8-7
  - Configuring a network, on page 8-15.
- Submitting PAD Print Requests, on page 8-19
- PAD Printing Problem Determination, on page 8-20

# Introducing PAD Printing

## User Point of View

PAD printers support is integrated under the AIX spooling system. This means that it takes advantage of the standard mechanisms available (such as header and trailer pages, filters, and so on). From the user point of view, there is no difference between a local printing and a PAD printing. He can use the standard commands such as:

- lp**
- lpstat**
- enable**
- cancel....**

## Administrator Point of View

Figure 14 shows the data transmission mechanism to local and network printers:

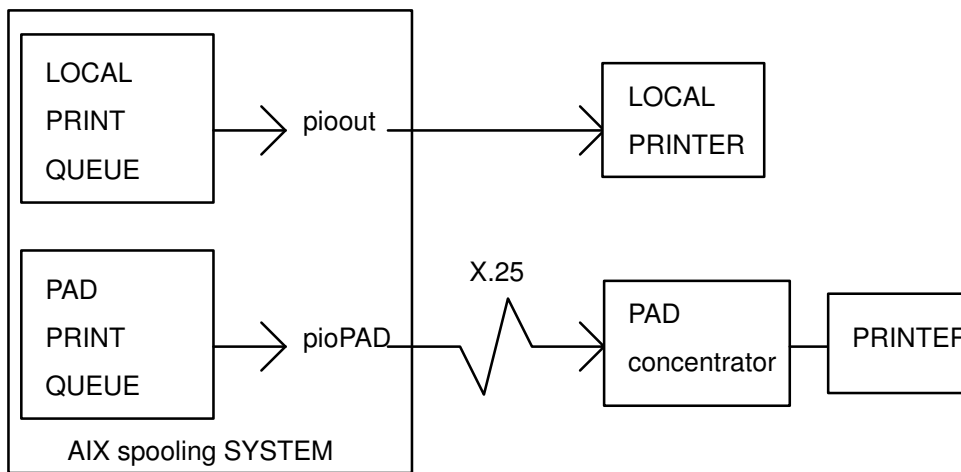


Figure 14. Data Transmission Mechanism – Local & Network Printers.

The only significant difference between a local printing and a PAD printing resides in the module which effectively transmits the data to the printer: whereas the Device Driver Interface Program **pioout** transmits the data to a local printer, a specific module called **pioPAD** is in charge of sending the data to the printer via the X25 network. It implies that the administrator has to make AIX system know that he wants to use a PAD printer. This is done through configuration menus. Those are detailed in further sections.

To transmit the data, **pioPAD** launches 3 tpad sessions (with specific command files and a specific X.3 profile) and watches the transfer process to make sure that the data are effectively transmitted – at least to the distant concentrator.

The successive steps of the transfer process are as follows:

1. first tpad session (preliminary connection)
  - open the connection with the remote printer,
  - close the connection.
2. second tpad session (main connection)
  - open the connection with the remote printer,
  - transmit the print file in transparent mode,
  - close the connection.

3. third tpad session (last connection)
  - open the connection with the remote printer,
  - close the connection.

Several problems may appear during a connection. The connection may:

- fail (either because of network problem, or because the printer is off),
- be delayed without error message (if the network is over crowded, for instance),
- succeed and then the transfer may hang in the middle (with or without error indication).

The preliminary and the last connections are used to detect network or printer problems that might not otherwise be detected.

For each tpad session, pioPAD will watch PAD indications to detect errors; it will also use time-outs to get out of cases where no error indication is obtained. There is a connection time-out, after which it will consider that the connection attempt has failed, and a transfer time-out after which it will consider that the transfer has failed. These two time-outs have default values but may be adjusted by the customer to meet his specific requirements (i.e. network load).

If connection or transfer phase has failed, pioPAD will not exit directly: if specified at configuration time, it will perform further connection attempts. This is useful for example if the network is overloaded from time to time: after some delay, another tpad will be launched to perform the same session. The total number of connection attempts, as well as the delay between connections, are user-configurable; moreover you may specify a percentage of increase for this delay, before each new connection attempt.

All these parameters may be adjusted under SMIT, either during PAD printer configuration phase, or later on. This is detailed in "Configuring a printer spool", on page 8-7.

## **PAD Printing Connection**

PAD Printing is designed to work with a printer directly connected to the PAD concentrator with the appropriate cable.

The printer power-down is detected by the concentrator when the carrier drops (signal 109). The PAD then transmits this information to the spool.

Similarly, printer off-line is detected through signal 106.

If modems are placed between the printer and the PAD concentrator they must not force signals 106 and 109, otherwise print requests can be lost because the spool is not warned about printer problems. To ensure that signals 106 and 109 are not forced, select "no continuous transmission" (transmission driven by signal 105) on the modem.

# Using PAD Printers

Typically, PAD printers are for users who have a remote access to a machine: they want their requests to be printed on a printer not physically near the machine.

Figure 15 shows the association between printer and user terminal:

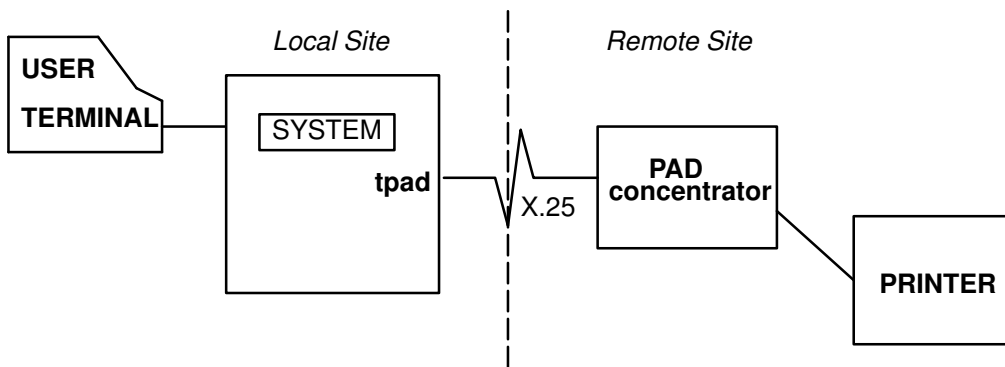


Figure 15. Printer/User Terminal Association

PAD printers are not designed to be shared among several machines: **all requests for a PAD printer must be queued by only one print queue at once.**

Other machines may access this printer via a remote queue but not via a PAD print queue: in this way, the print requests will be simply transmitted to the spool which administers the PAD printer.

Figure 16 shows the PAD printer queuing, for example between two DPX/20 ESCALA machines:

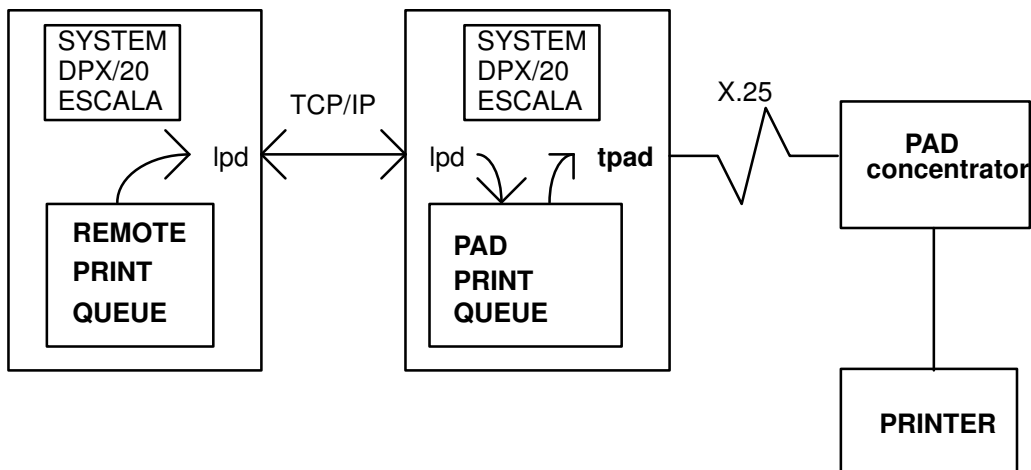


Figure 16. PAD Printer Queuing

## Examples of PAD printers

PAD printers can be used in the following cases:

- A user directly connected to a machine, for instance a DPX/20, wants to print a file available on his machine on a remote printer, for example for another person. This situation is shown in Figure 17.

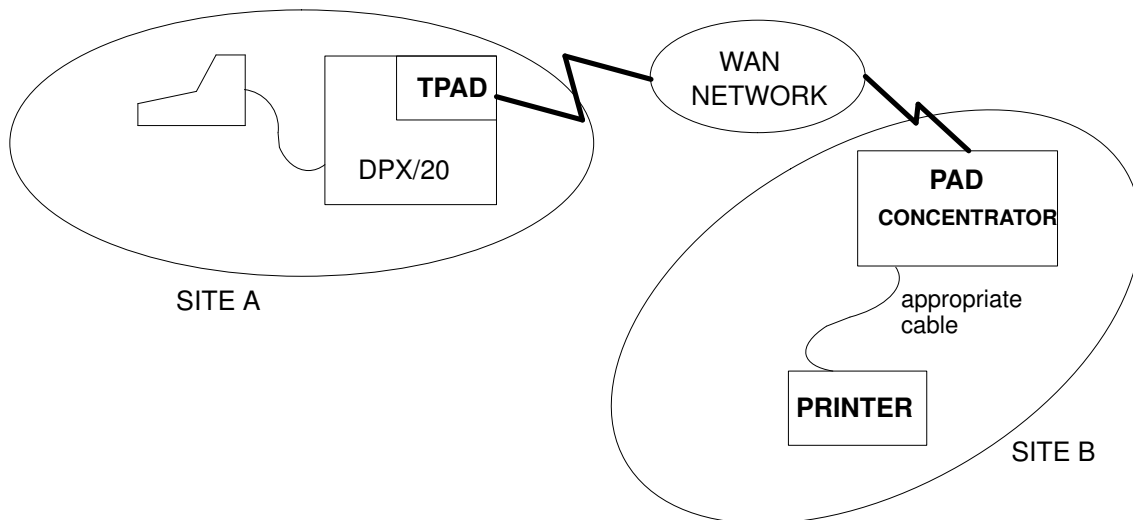


Figure 17. Example of PAD printing: printing on a remote site

- From a terminal connected via a PAD concentrator to a DPX/20, a user wants to print a file on a printer which is physically near his machine but not connected to it. This situation is shown in Figure 18.

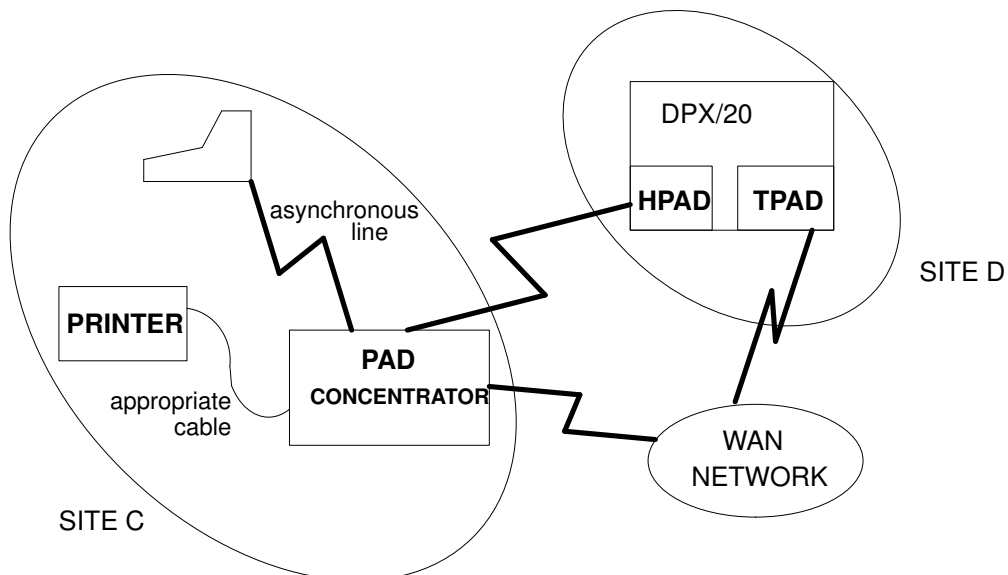


Figure 18. Example of PAD printing: printing on the same site

# Introduction to PAD Printing Configuration

Before beginning to manage the Print Spooler using the SMIT configurator, it is important to understand the configuration menu structure.

There are two basic levels of management:

- Configuring the printer spool:  
defining the printer and the link with PAD by giving the host name defined in the pad configuration. This is detailed on page 8-7.
- Configuring the network:  
i.e. defining the configuration of the PAD server site corresponding to the hostname, and check the configuration of the PAD concentrator. See page 8-15.

An example of PAD Printing Configuration (used for remote printing) is given in Figure 19.

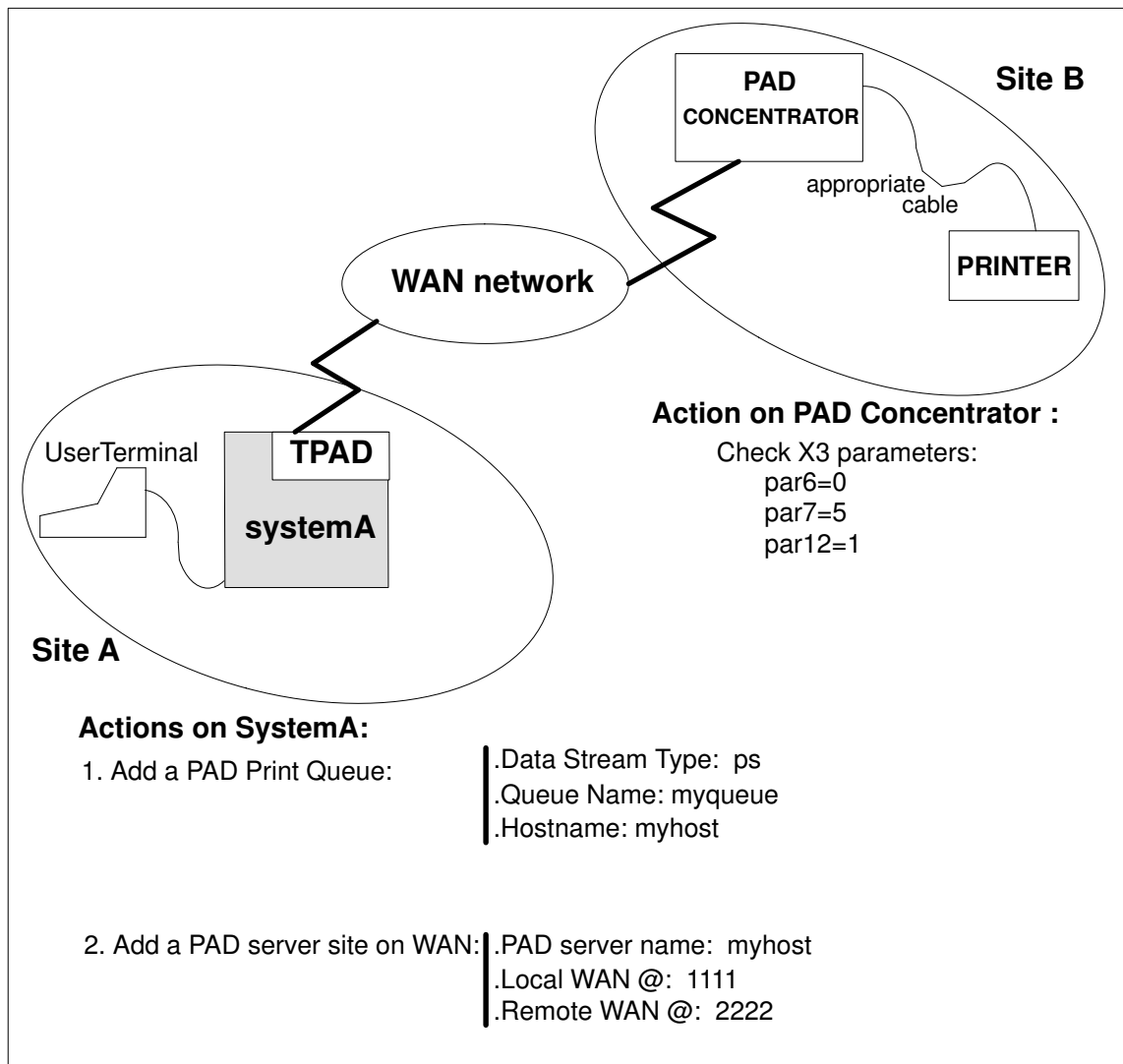


Figure 19. Example of PAD Printing Configuration

---

## Configuring a Printer Spool

To get a printer on a PAD concentrator queue on your system, you have to configure a PAD print queue.

This task is achieved using the System Management Interface Tool (SMIT) with appropriate privilege, such as root or a member of the printq admin group (just as for an ordinary printer).

You can find more information in:

- Print Spooling menu structure, on page 8-8.
- How to add a PAD print queue, on page 8-9.
- How to change / show printer connection characteristics, on page 8-13.

---

## Print Spooling Menu Structure

This section describes the Print Spooling menus in graphic form, showing inter-dependencies, **FastPath** access and section references.

```
Start SMIT <-- smit ASCII:smit -C
           <-- smit Windows:smit

|
|
| Print Spooling (FastPath = spooler)
|
| -- Start a Print Job
| -- Manage Print Jobs
| -- List All Print Queues
| -- Manage Print Queues
| -- Add a Print Queue (FastPath = mkpq)
| -- Add an additional Printer to an Existing Print Queue
| -- Change/Show Print Queue Characteristics
| -- Change/Show Printer Connection Characteristics
|                                     (FastPath= chprtcom)
| -- Remove a Print Queue
| -- Manage Print Server
| -- Programming Tools
| -- PAD Printing Problem Determination (FastPath = padprpb)
```

The submenus most involved in PAD printing are detailed in further sections:

- Add a Print Queue, on page 8-9
- Change/Show Printer Connection Characteristics, on page 8-13
- PAD Printing Problem Determination, on page 8-20

Among the print queue characteristics, the PAD printer specific characteristics are those concerning establishment of connection and data transfer. They are set at the time of print queue creation, with the '**Add a Print Queue**' menu and later modified with the '**Change/Show Printer Connections Characteristics**' menu.

Standard print queue characteristics are modified with the '**Change/Show Print Queue Characteristics**' menu, not detailed here because not specific to PAD printing.



---

# How to Add a PAD Print Queue

## Access

From the Print Spooling menu, select:

## Add a Print Queue

**FastPath:** mkpq

## Overview

This menu allows the system administrator to add a print queue and define for it the attachment type, the manufacturer, and the type of printer.

## Menus

- The attachment type selector is first displayed. **Select the type pad.**

The first selector allows you to indicate how the printer is connected. You have to select the PAD attachment type among the following list to show that your printer is connected to a PAD concentrator:

# ATTACHMENT TYPE	DESCRIPTION
local	Printer Attached to Local Host
remote	Printer Attached to Remote Host
xstation	Printer Attached to Remote Host
ascii	Printer Attached to Ascii Terminal
file	File (in /dev directory)
<b>pad</b>	<b>Printer attached to PAD Concentrator ←</b>
other	User Defined Backend

- The Printer Manufacturer selector is then displayed. **Select your Printer Manufacturer.**

This selector allows you to indicate which printer manufacturer you intend to use. You have to select it among a list that could be as follows:

**Bull ← for instance**

Canon

Dataproducts

Hewlett-Packard

IBM

OKI

Printonix

QMS

Texas Instruments

Other (Select this if your printer type is not listed above)

- The Printer Type selector is then displayed. **Select your Printer Type.**

This selector allows you to select the type which matches your printer.

Below is an example of what the selector would look like if the Manufacturer previously selected is Bull:

```

bull1015      Bull Compuprint PageMaster 1015
bull1021      Bull Compuprint PageMaster 1021
bull1025      Bull Compuprint PageMaster 1025
bull1070      Bull Compuprint 1070
bull1625      Bull Compuprint PageMaster 1625
bull200       Bull Compuprint PageMaster 200
bull201       Bull Compuprint PageMaster 201
.../...

```

**Note:** This list is not exhaustive.

- The 'Add a PAD Print Queue' dialog is then displayed. **Type in the various print queue characteristics** you want.

This selector allows you to define the print queue characteristics you want for your printer.

The parameters preceded by "...." have predefined values. In most cases, they must not be changed.

The Figure 20 shows what the 'Add a PAD Print Queue' dialog would look like if the printer type previously selected was Bull and bull1015 (SMIT in ASCII mode):

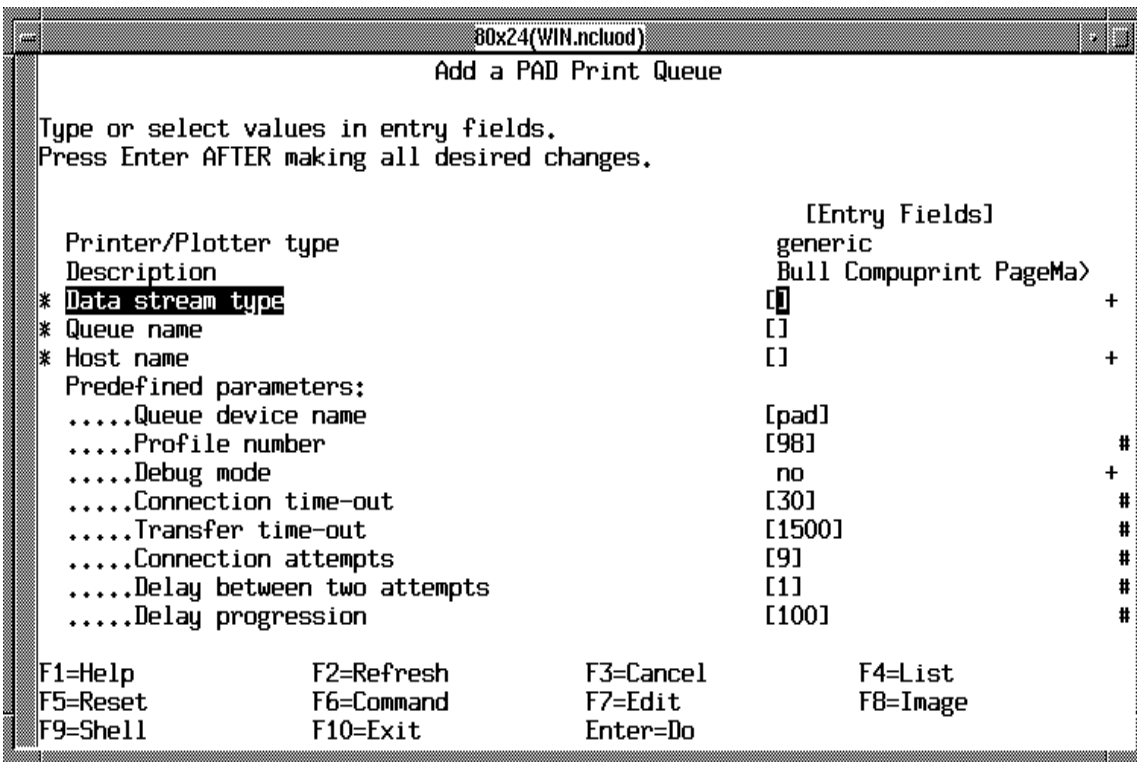


Figure 20. SMIT window: Add a Print Queue

## Dialog Fields

\* **Data stream type** Press the F4 key to list the available data stream types in regard to the printer type selected. Mandatory.  
Example: `ps`

\* **Queue name** Enter name to identify the print queue. Mandatory.  
Example: `myqueue`

\* **Host name** Enter the host name (as defined in `/etc/isohosts`) of the PAD concentrator to be accessed. Mandatory.  
Example: `myhost`

**Queue device name** Used by the print spooling subsystem to identify a queue device associated with a printer device driver. PAD print queues do not deal with printer device drivers, so the queue device name is meaningless in this case and appears only in **lpstat** command report:

Queue	Dev	Status
myqueue	pad	READY
qps413	pad	DOWN

The default value is "pad".

**Profile number** Specifies the number of the profile to be used.  
The default profile number is 98.

**Debug mode** Press the space-key to select the possible values or press the F4 key to list the possible values of this field: and select one of them:

"no" Means that the debug mode is not set. This is the default value.

"yes" Means that the debug mode is set.

For further information about the debug mode, please refer to PAD Printing: Managing Report and Trace Files, on page 8-21

**Connection time-out** Specifies the connection time-out (in seconds). After this delay, if the connection is not yet established the connection attempt is interrupted.  
The value "0" inhibits the `time_out`. The max value is `MAXINT (2, 147, 483, 647)`.  
The default value is 30 seconds.

**Transfer time-out** Specifies the transfer time-out (in seconds). After this delay, if the `tpad` process is not already terminated, it is interrupted. The value "0" inhibits the `time_out`. The max value is `MAXINT (2, 147, 483, 647)`.  
The default value is 1500 seconds.

**Connection attempts** Specifies the number of successive connection attempts which will be made, if the line is busy (CLR OCC or CLR DER **tpad** indication) or if we have connection timeout.  
If a null value is specified, 9 connection attempts will be made.  
The default number of connection attempts is 9.

**Delay between two attempts** Specifies the delay (in seconds) between two successive connection attempts.  
The max value is MAXINT (2, 147, 483, 647). The default delay flag value is 1.  
The value "0" means that there is no delay between two successive connection attempts.

**Delay progression** Specifies the percentage by which the previous delay is increased, before each new connection attempt.  
The default value is 100. That means that the delay between two attempts is multiplied by two for each new attempt.  
The value "0" means that the delay will be the same before each new connection.  
**Example:** Enter the number 25 for an increase in delay of 25%.

### **Successful Result**

A message like this is displayed:

```
Added print queue 'myqueue'.
```

### **Failure**

An error message is displayed.

---

# How to Change / Show Printer Connection Characteristics

## Access

From the Print Spooling menu, select:

## Change / Show Printer Connection Characteristics

**FastPath:** `chprt.com`

## Overview

This menu allows the connection characteristics of a PAD Print Queue to be shown and changed.

## Menus

- The attachment type selector is first displayed. **Select the type pad.**

Below is an example of what the selector would look like:

#	ATTACHMENT TYPE	DESCRIPTION
	local	Printer Attached to Local Host
	<b>pad</b>	<b>Printer attached to PAD Concentrator &lt;—</b>
	other	User Defined Backend

- Then, the PAD Print Queue Name selector is displayed. Select **the print queue.**  
Press the F4 key to list the PAD print queues configured on the system and select one of them.
- The 'Change/Show Characteristics of a PAD print queue' is displayed. **Type in the values of the print queue characteristics** you want to change.

## Dialog Fields

The dialog fields are the same as those used in 'Add a PAD print queue' menu. For further information see How to add a PAD Print Queue, on page 8-9.

## Successful Result

A message like this is displayed:

```
Print queue 'test' updated.
```

## Failure

An error message is displayed.

## Example

Next page, Figure 21 is an example of what the dialog would look like if the print queue name previously selected was 'test'.

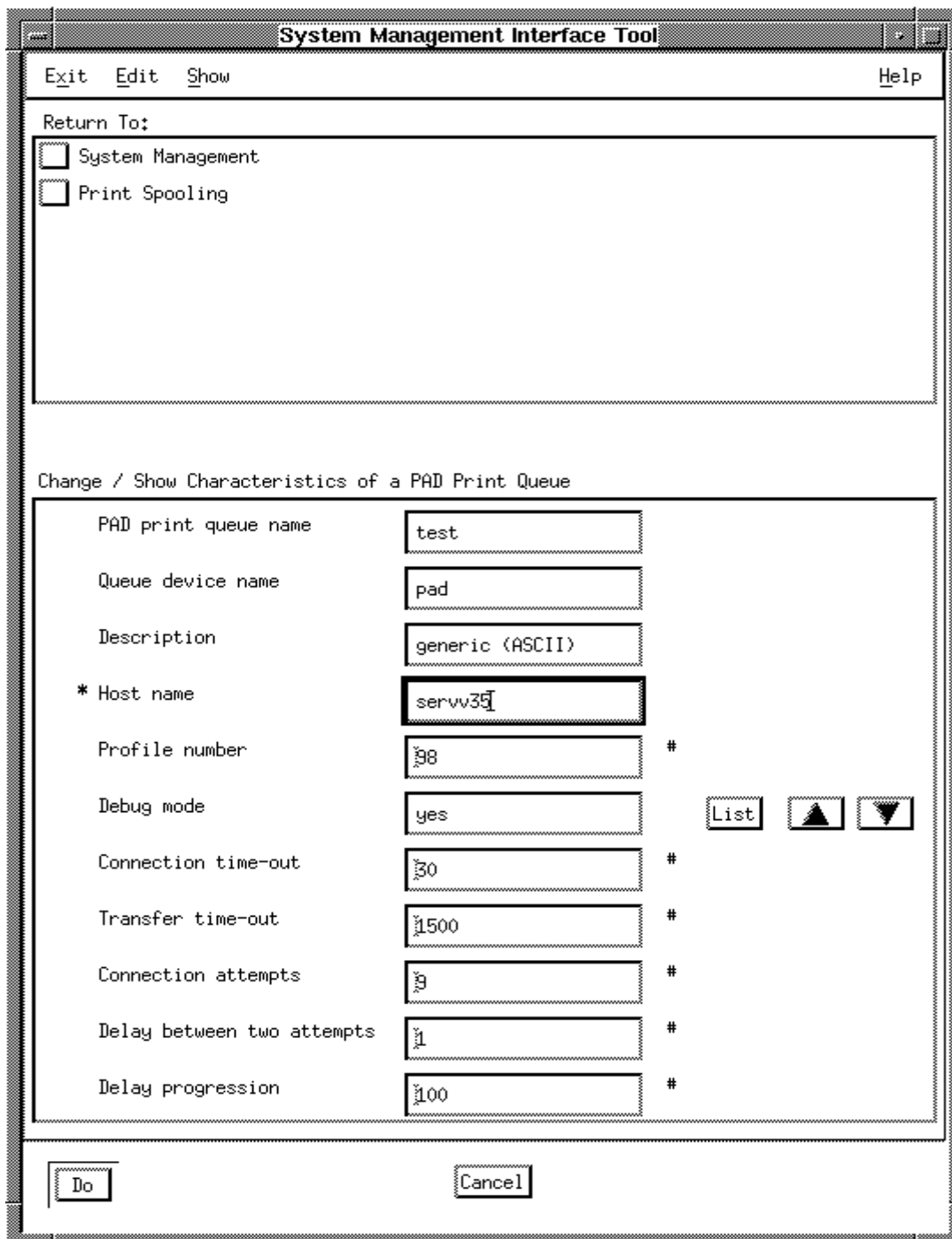


Figure 21. SMIT window: Change/Show Printer Connection Characteristics

---

## Configuring a Network

Apart from configuring the print queue inside the spool, the network communication itself must also be configured. This process includes several steps. You can find further details in:

- How to Create the PAD Server Site Configuration to Access the PAD Concentrator, on page 8-16
- How to choose adequate X.3 Profiles, on page 8-17
- How to check the connection, on page 8-18.

---

## How to Create the PAD Server Site Configuration to Access the PAD Concentrator

If not already done, the administrator must add the PAD client configuration corresponding to the entry associated with the PAD printer, see “PAD Configuration”. The name of this configuration must be the same as the host name declared when configuring the print queue under SMIT.

Use the menus of the TPAD–HPAD configurator:

TPAD Client configuration, on page 3-28

Addressing a PAD Server Site on WAN with TPAD, on page 3-29

Add PAD Server Site on WAN, on page 3-31



---

## How to Choose Adequate X.3 Profiles

You must use **two different** profiles: one on the TPAD side (system), and another one on the HPAD side (PAD concentrator).

### TPAD Side

The default profile is 98; it can be modified to add a disconnection time-out (par98) if a transfer time-out in **pioPAD** is not specified.

### PAD Concentrator Side

Another profile must be set on the PAD concentrator, to handle the connection with the printer. Simply make sure that the following parameters have the appropriate values:

par6=0 (no PAD indications sent to the terminal)

par7=5 (INT indication sent to the correspondent in case of a break)

par12=1 (XON/XOFF flow control by terminal).

**Example:** for a printer connected on an Ecom PAD (asynchronous line, 9600 bps) the following profile will work:

0, 0, 126, 0, 1, 0, 5, 0, 0, 0, 14, 1, 0, 0, 0, 8, 24, 18, 2, 64, 0, 0

---

## How to Check the Connection

Once the network is properly configured, it is advisable to check the tpad connection in interactive mode. Prepare a test file adequate for your printer: either a PostScript file, or a simple ASCII file ended by a form feed (issue an **echo "\fc" >>test\_file** command to add such a character at the end of the file, for instance).

Then type the following commands:

```
tpad -p98
>open <PAD printer name> (see "Host name" in Example on page 8-11)
<CTRL>p
> send -p <test_file>
<CTRL>p
> clr
> bye
```

**Note:** After typing the **open** and **send** commands, the TPAD escape sequence must be entered to return to the TPAD context. <CTRL>p is the default escape sequence, see page 5-2.

Check simply that something comes out of your printer (if not correctly formatted, don't worry: the spool filters will very likely solve the problem and process your data in the appropriate manner).

If nothing gets out of the printer, you will probably get some error messages from TPAD, indicating network problems; if no error is indicated, check your printer configuration and status.

It is only when this direct PAD connection works correctly that you can try to submit PAD print requests to the spool.

---

## Submitting PAD Print Requests

Once the PAD printer has been configured in the spool, the user interface to this printer is totally similar to that of any local printer. This means that the request is queued with **qprt**, **enq** or **lp** without any specific additional option: the name of the PAD print queue is enough.

The status of the queues and of print requests appear as for local printers.

---

# PAD Printing Problem Determination

## Access

From the Print Spooling menu, select:

## PAD Printing Problem Determination

**FastPath:** padprpb

## Overview

When the **pioPAD** transfer utility fails because of network problems, the print job remains queued, and the printer is turned to **DOWN** status.

After the problem is solved, the print queue must be enabled. Then, the print job comes back into the running state.

## CAUTION:

Print page duplication may occur because the print job restarts at the beginning.

The '**PAD Printing Problem Determination**' menu allows the system administrator to have an easy access to the PAD printing traces, to solve problems or to perform administrative tasks.

## Menu

The menu displayed enables administrator to choose between **two types of tasks** concerning PAD printing problems corresponding to two submenus:

PAD Printing Problem Determination
Move cursor to desired item and press Enter
Current Problem
History

- **'Current problem'** item:  
This menu allows administrator to show traces if the last request of a selected PAD print queue in DOWN state and also to remove trace files. This menu and its submenus are detailed in PAD Printing: Managing reports and Trace files, **on page 8-21**.
- **'History'** item:  
This menu allows administrator to manage the history file of the PAD printing. This menu and its submenus are detailed in Managing PAD Printing history file, **on page 8-25**.

# PAD Printing: Managing Reports and Trace Files

## Access

From the Print Spooling menu, select:

## PAD Printing Problem Determination

### Current Problem

**FastPath:** pprcurpb

## Overview

The 'Current Problem' menu of 'PAD Printing Problem Determination' menu allows the administrator to manage PAD printing traces concerning the last request of a selected DOWN PAD print queue and to remove trace files. To get the status of a Print Queue, type 'smit qstatus' and type 'yes' when the selector 'Include status of a print queues remote servers' is displayed.

## Menus

The Figure 22 is the menu displayed to give you access to the PAD trace managing.

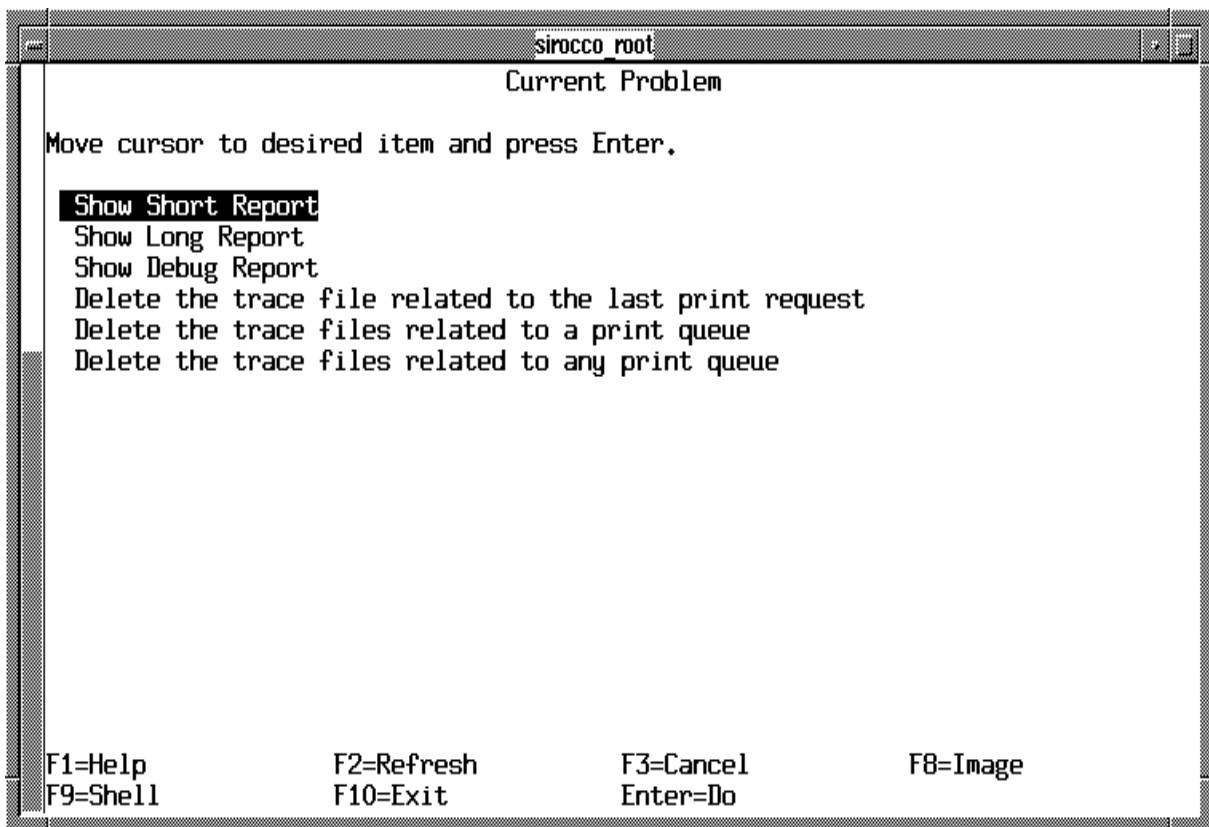


Figure 22. SMIT Window: PAD Printing Problem Determination

- For the first three submenus concerning reports, you must select a **PAD Queue Name in DOWN status**. More or less detailed information on the last request of this selected PAD print queue is displayed according to the kind of report you have chosen, as explained in **Trace Reports** hereafter.
- For the last three submenus concerning traces, once you have selected the print queue name whose trace files you want to remove, you must **confirm your request**. More information on these submenus is given in **Traces files**, on page 8-24.

## Trace Reports

- For a **Short Report** on the PAD print queue in DOWN status called 'myqueue', the error messages of the last request of the selected 'myqueue' are displayed. So the trace report displayed on screen would look like:

```
[TOP]
Short trace report; Print queue: myqueue;job number: 101
-----
ERR: x253 Access Method (MAX3):
ERR: unknown or inactive subscrip
ERR: TPAD session failed, TPAD report = CLR PAD

[BOTTOM]
```

**Possible Error Message:** 'no report file for the print queue <queue\_name>'.

- For a **Long Report** on the PAD print queue in DOWN status called 'myqueue', the error messages (lines beginning with ERR) and administration messages (lines beginning with ADM) of the last request of the selected 'myqueue' are displayed. So the trace report displayed on screen would look like:

```
[TOP]
Long trace report; Print queue: myqueue;job number: 101
-----
ADM:=====
ADM:Print request started, job number = 101
ADM:Queue name = myqueue
ADM:Queue device name = pad
ADM:- destination = padprintheads
ADM:- time = Mar 21 at 13:15
ADM:
ADM:+++++ TPAD SESSION = INIT
ADM:Connection Establishment attempts
ADM:-----> attempt number = 1
ADM:- time = 13:15:05
ERR: x253 Access Method (MAX3):
ERR: unknown or inactive subscrip
ERR: TPAD session failed, TPAD report = CLR PAD
ADM:End of print request at = Mar 21 at 13:15
ADM:
ADM:=====

[BOTTOM]
```

**Possible Error Message:** 'no report file for the print queue <queue\_name>'.

- For a **Debug Report** on the PAD print queue in DOWN status called 'myqueue', the error, administration and debug messages (lines beginning with `DBG`) of the last request of the selected 'myqueue' are displayed. So the trace report displayed on screen would look like:

```
[TOP]
Debug trace report; Print queue: myqueue; job number: 101
-----
ADM:=====
ADM:Print request started, job number = 101
ADM:Queue name = myqueue
ADM:Queue device name = pad
ADM:- destination = padprintheosts
ADM:- time = Mar 21 at 13:15
DBG:pioPAD pid = 12764
DBG:files used:
DBG:formatted print file = /tmp/padprint.3.12764.data2prt
DBG:pioPAD output file = /tmp/padprint.3.12764.pioPAD_o
DBG:TPAD stdout and stderr file = /tmp/padprint.3.12764.TPAD_out
DBG:parameters used:
DBG:Host name = [111111]222222
DBG:Connection time-out = 30
DBG:Data transfer time-out = 1500
DBG:Profile option = -p98
DBG:Connection attempts = 9
DBG:Delay between two attempts = 1
DBG:Delay Progression = 100
DBG:Debug mode set, TPAD options = -d0x00000008
ADM:
ADM:+++++ TPAD SESSION = INIT
ADM:Connection Establishment attempts
ADM:-----> attempt number = 1
ADM:- time = 13:15:05
ERR x253 Access Method (MAX3)
ERR: unknown or inactive subscrip
ERR:- TPAD session failed, TPAD report = CLR PAD
DBG:- check_TPAD exit code = 2
DBG:- run_TPAD exit code = 2
DBG:- Retry_connection exit code = 2
ADM:End of print request at = Mar 21 at 13:15
ADM:
ADM:=====
DBG:Updated file = /tmp/PADprintlog
DBG:Deleted file = /tmp/padprint.3.12764.run_TPAD
DBG:Deleted file = /tmp/padprint.3.12764.init_cmd
DBG:Deleted file = /tmp/padprint.3.12764.open_ok
DBG:Deleted file = /tmp/padprint.3.12764.send_ok
DBG:Deleted file = /tmp/padprint.3.12764.TPAD_end
DBG:pioPAD return value = 102

[BOTTOM]
```

**Possible Error Message:** 'no report file for the print queue <queue\_name>'.

## Trace files

For the three submenus concerning trace files removing, you have to select the print queue name whose trace files you want to remove, and then **confirm your request**:

- The 'Delete the trace file related to the last print request' deletes the trace file corresponding to the last print request of the selected PAD print queue.
- The 'Delete the trace files related to a print queue' deletes all trace files related to the selected PAD print queue.
- The 'Delete the trace files related to any print queue' deletes all trace files related to any PAD print queue.

**Possible Error Message** for the three submenus:

'no report file for the print queue <queue\_name>'.



# Managing PAD Printing History File

## Access

From the Print Spooling menu, select:

## PAD Printing Problem Determination

### History

**FastPath:** pprhisto

### Overview

There is an optional logging function associated with PAD printing: if (and only if) the file */usr/adm/PADprintlog* exists and has global write permission, a new record will be appended to it for each new print request. This record contains, among other data, connection and transfer durations. This may be useful for statistical purposes (in order to customize connection attempts, as well as connection and transfer time-outs, to the site requirements).

The 'History' menu of 'PAD Printing Problem Determination' allows to manage the history file of the PAD printing: */usr/adm/PADprintlog*. If created, this file contains the administration information of all the PAD print requests. Administrator must create this file and remove its content when necessary, with the help of the submenus.

### Menus

Figure 23 is the menu displayed to access to the management functions (Show/Clean/Create/Remove) which can be applied on the PAD Printing History file.

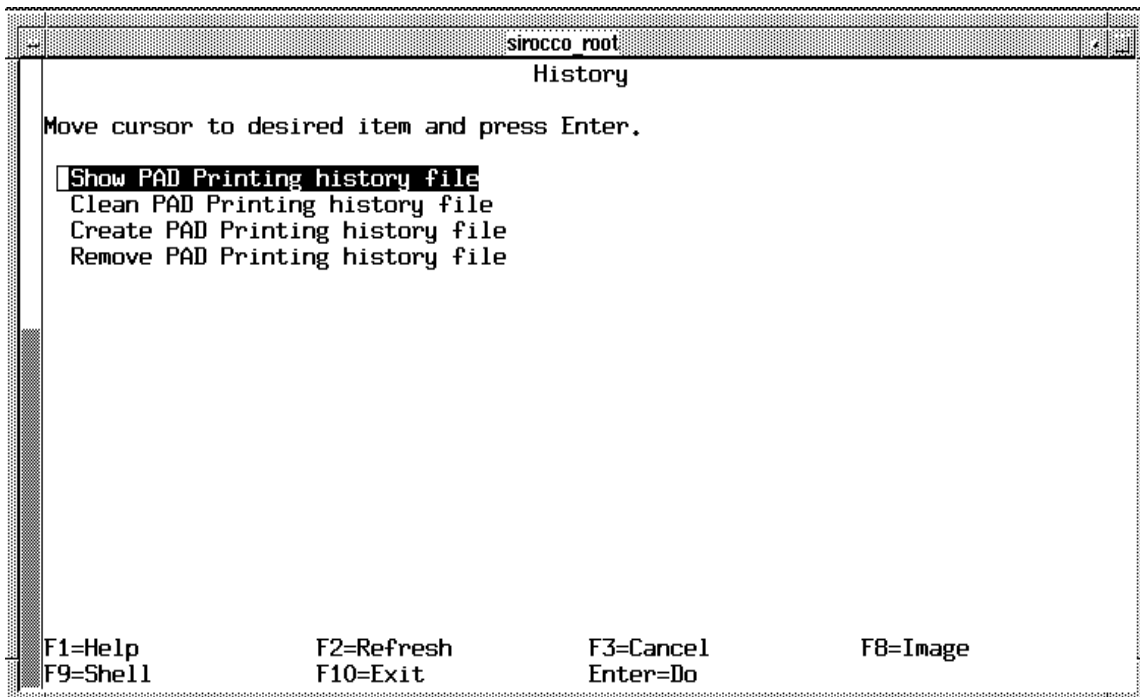


Figure 23. SMIT Window: PAD Printing History File

- The 'Show PAD Printing history file' menu displays the content of the history file */usr/adm/PADprintlog*, i.e. administration information and error messages.

**Possible Error Message:** 'Cannot access /usr/adm/PADprintlog file'.

The 'Show PAD Printing history file' result is shown the Figure 24.

```

COMMAND STATUS
Command: OK          stdout: yes          stderr: nk
Before command completion, additional instructions may appear below.
[TOP]
ADM: =====
ADM: Print request started, job number = 100
ADM: - destination = padprintheads
ADM: - time = Mar 15 at 16:28
ADM
ADM: ++++++ TPAD SESSION = INIT
ADM: Connection establishment attempts
ADM: -----> attempt number = 1
ADM: - time = 16:28:28
ERR: WAN Network Layer (x25-3):
ERR: DTE not operational (level 2) or no application listening (networl)
ERR: TPAD session failed, TPAD report = CLR PAD
ADM: End of print request at = Mar 15 at 16:28
ADM
ADM: =====
ADM: =====
ADM: Print request started, job number = 101
ADM: Queue name = myqueue
ADM: Queue device name = pad
ADM: - destination = padprintheads
ADM: - time = Mar 21 ar 14:43
ADM
ADM: ++++++ TPAD SESSION = INIT
ADM: Connection establishment attempts
ADM: -----> attempt number = 1
ADM: - t ime = 14:43:23
ADM: - connection establishment after = 00:01
ADM: - TPAD session successful after = 00:04
ADM: ++++++ TPAD SESSION = MAIN
ADM: Connection establishment attempts
ADM: -----> attempt number = 1
ADM: - t ime = 14:43:28
ADM: - connection establishment after = 00:00
ADM: - data transfer terminated after = 00:04
ADM: - Remote CLR maximum waiting time = 10000
ADM: TPAD session successful after = 00:04
ADM: ++++++ TPAD SESSION = LAST
ADM: Connection establishment attempts
ADM: -----> attempt number = 1
ADM: - t ime = 14:43:33
ADM: - connection establishment after = 00:01
ADM: - TPAD session successful after = 00:04
ADM: End of print request at = Mar 21 at 14:43
ADM
ADM: =====
[BOTTOM]
F1=Help ....

```

Figure 24. SMIT Window: Show PAD Printing History File

- The '**Clean PAD Printing history file**' menu enables administrator, with acknowledgment, to clean the content of the PAD printing history file.  
**Possible Error Message:** '/usr/adm/PADprintlog file does not exist'.
  
- The '**Create PAD Printing history file**' menu enables administrator to create, if not already done, the PAD printing history file.  
**Possible Error Message:** '/usr/adm/PADprintlog file already exists'.
  
- The '**Delete PAD Printing history file**' menu enables administrator to remove, with acknowledgment the PAD printing history file. To get again history information, you must perform 'Create PAD Printing history file'.  
**Possible Error Message:**  
'You are not allowed  
'/usr/adm/PADprintlog file does not exist'.



---

# Chapter 9. Kermit Through TPAD–HPAD

This chapter describes the KERMIT file transfer protocol.

---

## Overview

This overview contains information about the KERMIT file transfer program. This product is supplied in the Bull Enhancement Package. You can find more information in:

- Kermit file transfer, on page 9-1,
- Restrictions of use, on page 9-2,
- Configuration, on page 9-3,
- Interactive mode, on page 9-4,
- Program mode, on page 9-6,
- Cookbook of examples, on page 9-8.

## Kermit File Transfer

KERMIT is a protocol for reliable file transfer between computers over the ordinary serial telecommunication lines that are used to connect terminals to computers.

A KERMIT program must be running on each end of the communication line. Both KERMIT programs exchange messages according to the KERMIT protocol.

The KERMIT file transfer is accessible in transparent mode over a TPAD–HPAD connection through a LAN or X.25 network. It may be requested once the HPAD connection is set up. It is activated by the *ker* command of the local TPAD. It is operated under the remote host environment.

Kermit runs in server mode on the remote system.

On the local system, KERMIT may be run:

- in interactive mode which is the default mode with a *.kermrc* file restricted to the set entries,
- in program mode with a *.kermrc* file including logging and file transfer commands.

**Note:** The Kermit environment on DPX/20 is not the same as that on the DPX/2. This particularly concerns the *.kermrc* script for transfers from DPX/20 to DPX/2. For additional information, refer to the *DPX/2 TPAD–HPAD Reference Manual*, see Bibliography, on page G-1.

---

## Kermit Use Restrictions

The KERMIT process can be activated in server mode only on the remote site.

The following parameters are not allowed for the KERMIT command set because they are automatically generated by the TPAD process:

- line
- modem-dialer
- speed.

The KERMIT commands **dial** and **bye** are not allowed under TPAD-HPAD.

As a result of conflicts with the TPAD and HPAD policy the commands executed on the remote system between the login phase and the KERMIT server start are not echoed. It is blind started.

During the login phase the format of the display on the user screen is spoiled.

---

## KERMIT Configuration

To run Kermit over a TPAD–HPAD connection between local and remote sites, the administrator has to configure:

- TPAD and KERMIT on the local site,
- HPAD and KERMIT on the remote site.

This paragraph gives a reference to the SMIT menu to be used (as for any general TPAD–HPAD installation and configuration) and mentions the specific items necessary to run the KERMIT file transfer (profile and process to be run on connection).

### TPAD–HPAD configuration for Kermit

#### TPAD on the local site

The administrator has to configure the client to be accessed by kermit by using the SMIT menu '**TPAD Client Configuration**'. See TPAD Client Configuration, on page 3-28.

No particular item is necessary for addressing.

The **profile** to be used is a special profile "**124**", defined with inhibition of the TPAD escape sequence: parameter 1 = 0.

Every other parameter is standard: i.e. equivalent to default profile 127.

#### HPAD on the remote site

The administrator must define a PAD server configuration by using the SMIT menu '**HPAD Server Configuration**'. See HPAD Server Configuration, on page 3-9.

The configuration enables to define the communication line on which incoming call requests are received from a remote KERMIT with activation of the login process on the HPAD connection:

The dialog field '**Program**' should be filled in with: */bin/login*.

Every other parameter is standard: i.e. equivalent to DEFAULT.

### Kermit configuration file

The *.kermrc* file used during the KERMIT login phase must be generated on the local host.

Refer to the KERMIT User's Guide (86 A2 89PE) for a full description of the *.kermrc* file.

It may contain the entry:

*set escape <code\_carac>*

where *<code\_carac>* is the decimal value of the code of the new escape character.

to avoid overlaps with the keyboard special keys the KERMIT escape character (CTL \) may have to be modified.

*set file type binary*

to transfer binary files or to boost ordinary file transfer.

*script*

to automatically log on the remote site and connect to a remote KERMIT server.

*get/send/...*

to manage file transfers.

---

# KERMIT in Interactive Mode

## Starting a KERMIT Session

### Starting TPAD

Start up the TPAD facility using the command:

```
tpad [-p<profile>] [options]
```

where

`p<profile>`

is used to request the load of the profile particular to KERMIT specified by the number 124 as declared in the */etc/PROFPAD* file.

`options`

other TPAD options may be necessary for the network.

### Running a KERMIT file transfer session

This function is used to run a KERMIT file transfer session over TPAD–HPAD.

When KERMIT is activated, its prompt is displayed on the user's screen and Kermit functions can be operated as usual, taking into account that KERMIT is running on the remote system in server mode.

Run a KERMIT file transfer session using the specific TPAD command:

```
ker <address>
```

where

`<address>`

is the X25, LAN address or remote host name of the remote system as declared in the */etc/isohosts* file.

When KERMIT is activated, its prompt is displayed on the user's screen and KERMIT functions can be operated as usual (See KERMIT Use Restrictions for limitations).

Example:

```
Command: KER 138020011
          KER <remote host name>
```

### Starting KERMIT using the KERMIT command

Start up the KERMIT session using the KERMIT command:

```
connect
```

which gives the local Kermit program access to the underlying TPAD–HPAD connection and enables the login procedure on the remote host.

The remote login banner is displayed on the user's screen.

### Logging on to remote host

Log on the remote host as usual.

### Starting remote KERMIT process

Start the remote KERMIT process using the command:

```
kermit
```

The remote KERMIT prompt is displayed on the user's screen.



## Entering remote KERMIT in server mode

Enter the remote KERMIT in server mode using the KERMIT command:

```
server [-i]
```

The use of the `-i` option is mandatory to transfer binary files.

Wait for the string `#N3` to be displayed on the user's screen, meaning that the KERMIT connection has been established. This may take several seconds.

Type the escape character of KERMIT (as defined by the `.kermrc` file) followed by `c` to get back control to the local host.

The system is ready for the KERMIT session.

**Note:** The two activities, **Starting remote KERMIT process** and **Entering remote KERMIT in server mode** can also be performed in a single command from the login prompt of the remote host, by issuing the command `kermit -x -i` (the `-i` option must always be used to transfer binary files).

## Terminating a KERMIT Session

To terminate a KERMIT session, use one of the KERMIT command: **finish** or **quit**.

1. The **finish** command stops the KERMIT server on the remote host but the user remains logged on the remote hosts.
2. The **quit** command stops the KERMIT server on the remote hosts and closes the TPAD–HPAD connection. Control is back to the local TPAD.

**Note:** The **bye** command is not allowed for KERMIT under TPAD–HPAD.

---

## KERMIT in Program Mode

KERMIT is started by the TPAD process and is always running in interactive mode. A program mode may be simulated by starting the TPAD process with its command entry redirected to a script file and including in the local *.kermrc* file the logging and transfer commands to be executed by KERMIT.

Run the TPAD facility.

1. Start up the TPAD facility using one of the commands:

```
tpad -f "pad_script" -p"profile" >"tpad.out" 2&1 &
```

where

"pad\_script"

is the name of the script file to be executed by TPAD

"tpad.out"

is the name of the standard output file

"profile"

is used to request the loading of the profile particular to KERMIT specified by its number as declared in the */etc/PROFPAD* file.

2. Entry in the script file "pad\_script" is the TPAD KERMIT activation command:

```
ker "address"
```

where

"address"

is the X25, LAN address or remote host name of the remote system as declared in the */etc/isohosts* file.

Execute the KERMIT session.

The *.kermrc* file must contain all the commands to be executed by KERMIT to ensure the:

- login and connect phase
- transfer phase
- termination phase

Entries in the *.kermrc* file:

```
set escape "code_caract"
```

modify the KERMIT escape character if necessary.

```
set file type binary
```

set transfer mode to binary to transfer binary files.

(this command is only used for binary file transfer).

```
script ~s connect ~r in: --in: --in: --in: "login" ord:--ord:  
"password" \  
"remote_prompt" ~s -- "remote_prompt" \  
~s kermit it>--it> \  
set~sfile~stype~sbinary~r it --it> \  
server N3--N3 \\ "code_caract" C
```

The string:

```
set~sfile~stype~sbinary~r it --it> \
```

is mandatory to transfer binary files.

Controls the connection to the remote KERMIT: sends the local KERMIT connect command, expects the remote site logging prompt, provides the user, expects the password prompt, provides the password, expects the remote system prompt, sets command on server to transfer binary files, runs KERMIT on the remote site in server mode, expect "connection established" prompt (#N3), sends the KERMIT escape sequence to get control back to the local KERMIT.

**CAUTION:**

The **script** command is sensitive to the software environment. It may be necessary to add a delay in the command as "**— in**" or a space blank after a sequence, as in "**— in**". To add a space blank in a name use the **~s**.

To set binary files, do not forget to set binary mode on both the **server and local** KERMIT.

```
send "local_file" "remote_file"
```

```
get "remote_file"
```

```
...
```

KERMIT transfer session

```
quit
```

terminate the KERMIT session: control is back to TPAD.

Details concerning the **script** command are given in the Kermit User's Guide, see Bibliography, on page G-1.

---

## Kermit Cookbook

This example treats both interactive and simulated background mode.

Two sites have to communicate through a LAN Ethernet.

The local site is named **diva** and the remote site is named **mousson**.

The TPAD profile to use with KERMIT is 124.

The user has to perform the following operations:

1. Connect both sites through TPAD–HPAD
2. Start the KERMIT process on the local site **diva**
3. Log on the remote site **mousson** under root user's name
4. Start the KERMIT server on the remote site and connect both local and remote KERMIT processes
5. Send the */etc/passwd* file into the */tmp/foo* file
6. Get the */tmp/foo* file
7. Terminate the KERMIT session.

### Interactive mode

User commands are shown in Courier.

Display information is shown in Fixed pitch.

The main phases of the session are in **Bold**.

```
tpad -p124                start TPAD process loading profile 124
tpad> ker mousson        open the TPAD–HPAD connection with the site mousson
                           and start the local KERMIT process

    COM
    Warning, read access to lock directory denied
    C-Kermit, 4E(072) 15 Jul 91, AIX Kermit for Bull DPX/20
    C-Kermit>
C-Kermit> connect      start KERMIT connect phase
    Connecting thru /dev/pts/1, speed 9600.
    The escape character is CTRL- (28).
    Type the escape character followed by C to get back,
    or followed by ? to see other options.
    Bull DPX/20 - AIX 4.1
    PAD services (xmousson)
    AIX Version 4.1 for Bull DPX/20
    (C) Copyrights by IBM and by others 1982, 1994.
    La station mousson est heureuse de vous accueillir
    Welcome to the mousson workstation
    login:
login: root              start the login procedure on the remote site
root's Password: secret
```

```

*****
*
* Welcome to BOS/X Version 4.1!
*
*
* Please see the README file in /usr/lpp/bos for information
* pertinent to this release of the AIX Operating System.
*
*
*
*****

```

```

Last unsuccessful login: Thu Nov 18 09:20:53 CST 1993 on pts/7
from dalton
Last login: Fri Nov 19 01:29:15 CST 1993 on pts/1 from PAD
xmousson:root#

```

**xmousson:root# kermit -x** **start the KERMIT server on the remote site**

```

C-Kermit server starting. Return to your local machine by typing
its escape sequence for closing the connection, and issue further
commands from there. To shut down the C-Kermit server, issue the
FINISH or BYE command and then reconnect.

```

```
# N3
```

**CTL\c** **get control back on the local KERMIT**

```

[Back at Local System]
C-Kermit>

```

**C-Kermit> send /etc/passwd /tmp/foo** **start the KERMIT transfer session**

```

SF
/etc/passwd => /tmp/foo, Size: 514
Type escape (CTRL-> followed by:
CTRL-F to cancel file, CTRL-R to resend current packet
CTRL-B to cancel batch, CTRL-A for status report: .. [OK]

```

```
ZB
```

```
C-Kermit>
```

**C-Kermit> get /tmp/foo**

```

IRSF
FOO => foo
Type escape (CTRL-> followed by:./tpad>
CTRL-F to cancel file, CTRL-R to resend current packet
CTRL-B to cancel batch, CTRL-A for status report: ..Z [OK]

```

```
B
```

```
C-Kermit
```

**C-Kermit> quit** **terminate the KERMIT session**

```
CLR CONF
```

Commands may be abbreviated and case is ignored.  
Type '?' for help or '? command' for help on specific command.  
./tpad>

```
tpad> quit terminate the PAD session  
CLR PAD  
xdiva:root#
```

## Simulated background mode

Commands to be executed by the TPAD and KERMIT processes are stored in script files.  
Insert the KERMIT commands related to the connect and transfer phases in the *.kermrc* file:

Example: *.kermrc* file

```
script ~s connect ~r in: --in: --in: --in: root ord:--ord:  
secret root# ~s -- root# \  
~s kermit it>--it> server N3--N3--N3--N3--N3 \\028c  
send /etc/passwd /tmp/foo  
get /tmp/foo  
quit  
/  
/
```

Create a file script for TPAD commands: *pad\_script*

### CAUTION:

The “script” command is sensitive to the software environment. It may be necessary to add a delay in the command as “— in” or a space blank after a sequence, as in “— in ”.

Example: *pad\_script* file

```
ker mousson  
quit
```

Activate the TPAD process in background.

Type the *tpad* command redirecting:

- the standard input to the *pad\_script* file
- the standard output and error to the *pad.output* file

Example: *tpad* command

```
tpad -p124 < pad_script >tpad.output
```

Example: *pad.output* file

```
Commands may be abbreviated and case is ignored.  
Type '?' for help or '? command' for help on specific command.  
./tpad.inter> ker mousson  
COM  
Executing script thru /dev/pts/1, speed 9600.  
Script string: ~s connect ~r in: --in: --in: --in: root  
ord:--ord: secret root# ~s -- root# ~s kermit it>--it> server  
N3--N3--N3--N3--N3--N3--N3--N3--N3 \\028c  
Script successful.  
SF
```

```
/etc/passwd => /tmp/foo, Size: 514
Type escape (CTRL-> followed by:
CTRL-F to cancel file, CTRL-R to resend current packet
CTRL-B to cancel batch, CTRL-A for status report: .. [OK]
ZB
IRSF
FOO => foo
Type escape (CTRL-> followed by:
CTRL-F to cancel file, CTRL-R to resend current packet
CTRL-B to cancel batch, CTRL-A for status report: ..Z
B
CLR CONF
Commands may be abbreviated and case is ignored.
Type '?' for help or '? command' for help on specific command.
./tpad.inter> quit
CLR PAD
xdiva:root#
```

## Related Information

- Kermit User's Guide,
- Bull Enhancement Software Release Bulletin, see Bibliography, on page G-1.





---

# Appendix A. Files & Data Formats

---

## Files and Data Formats: Overview

You can find information under the following headings:

- Server PAD application, on page A-2,
- TPAD–HPAD Configuration Files, on page A-5,
- Host site table file (/etc/isohosts), on page A-6,
- HPAD connection configuration file (/etc/hpadd.conf), on page A-9,
- TPAD profile file (etc/PROFPAD), on page A-14,
- Customized start–up file (\$HOME/.padrc), on page A-16,
- History logs, on page A-17,
- TPAD–HPAD Banner File, on page A-19.

---

# Server PAD Application

**/etc/rc.pad**

**/etc/hpadd.conf**

**/etc/pad.banner**

**/etc/utmp – /etc/wtmp**

These are system files which hold user and accounting information for such UNIX commands as `/bin/who`, `/bin/write` and `/bin/login`. This file is updated by `hpad` at the beginning and at the end of the connection. During the connection, it may be modified by other system processes, such as `/bin/login`.

At the beginning of the connection, a record is registered in these files (`/etc/utmp` and `/etc/wtmp`), to associate the login process with its characteristics:

- login time
- pty resource name (`/dev/pts/xxx`)
- process identifier of the login
- remote host name (set to PAD).

At the end of the connection, the record is modified to set up the characteristics:

- termination status (mainly design to know if the program received a signal)
- exit code (code return by the exit system call of the program).

## **trace file**

### **history file**

This file is used to registered history logs of WAN connections. This file is managed as a circular file which contains the logs of the last connections established.

The name and the size of the history file depend on those given by the system administrator during the configuration of the PAD server. This configuration is going to update the `/etc/hpadd.conf` file. The updated fields are:

History Mode: set to 1 if the history logs is activate (default is 0)

History File: set to a pathname given by the system administrator (default is `/etc/secure/log/HPADxxxxx` where `xxxxx` is the network address of the X25 subscription)

Max History Record: set to the maximum number of records to be present in the circular file (default is 200)

Figure 41 shows a history file.

	(A)	(B)
No. of records in file: 027		
NUA	138111111	138111111
DATA	_____	hello
LOGGED at:	09:20:13:36:34	09:20:13:36:34
LOGOFF at:	09:20:13:13:40:15	09:20:13:40:15
STA	C	C
N_Snt	0.859	15
N_rcv	4	0.034
Q_S	99	5
Q_R	12	99

Figure 25. Example of a history file.

**NUA:** Network User Address. This is the network address of the PAD client (Caller). This field contains 16 characters. It is always filled.

**DATA:** This field contains the call user data, if they exist. This field is limited to 16 characters. If the password control is activated on the subscription, it is filled with ‘-’ characters (see example A in the previous figure)

**LOGGED at:** contains the date when the call request was received. The format is Month:Day:Hour:Minute:Second. It is always filled

**LOGOFF at:** contains the date when the connection was closed. The format is Month:Day:Hour:Minute:Second. It can be empty, if the connection was rejected by the PAD server (HPAD). This field is empty since the connection is closed.

**STA:** This field is set to a character, that gives the status of the terminated connection. This field is set to ‘I’ since the connection is closed. The set of characters allowed for this field is:

**I** (i uppercase): default value while the connection is on. When the connection is over (when the field LOGOFF is filled), this value means the previous connection was made with a wrong password (call user data), wrong closed user group or wrong network user address (if the caller address is denied or not allowed)

**i:** unknown cause of the writer process abort

**C:** unidentified known cause of a fork secondary “writer” process abort

**?:** internal error

**1:** The pad server wasn’t able to acknowledge the incoming call

**2:** The pad server wasn’t able to obtain or set up a pty.

**I** (L lowercase): The pad server wasn’t able to fork the login process.

**F:** The pad server wasn’t able to split itself in reader/writer process.

**E:** The connection was terminated due to the login’s death. This is the normal case, when the user send, to the remote host, a termination command (example: “exit” when the user runs shell)

**K:** The login process has been killed

**N:** The connection was terminated due to network close, coming from pad client

**t:** abort of the “writer” process by SIGTERM signal reception

**T:** abort of the “reader” process by SIGTERM signal reception

**w:** abort of the “writer” process by a failed writing on the PTY

**W:** abort of the “reader” process by a failed writing on the network

**r:** abort of the “writer” process by a failed reading on the network

**R:** abort of the “reader” process by a failed reading on the PTY

**N\_Snt:** Number of characters sent during the session. If this number exceeded 1000, it is expressed in Kilo characters.

**N\_Rcv:** Number of characters received during the session. If this number exceeded 1000, it is expressed in Kilo characters.

**Q\_S:** Number of X29 messages sent during the session. If this number exceeded 99, it is limited to 99 in the history file

**Q\_R:** Number of X29 messages received during the session. If this number exceeded 99, it is limited to 99 in the history file.

---

## TPAD–HPAD Configuration Files

These files can only be modified by the administrator (“super–user”) using either the TPAD–HPAD configuration procedure, previously described, or the specific configuration tools called by means of the following commands:

- `/etc/pad_install/hpad` command is used to update the HPAD `/etc/hpadd.conf` file,
- `/etc/pad_install/tpad` command is used to update the TPAD `/etc/isohosts` file.

On the local HPAD machine, the `/etc/isohosts` file is automatically set with the entries of the `/etc/hpadd.conf` file.

The file modifications are taken into account only after restarting the hpadd daemon. The HPAD daemon restart can be performed by running:

- `> /etc/rc.pad restart`
- or:
  - > `padproc -l` as described on page 4-2
- or the smit menu provided for hpad server daemon management:
  - > `smit padproc` as described on page 3-27

---

# Host Site Table File (/etc/isohosts)

## Description

This **/etc/isohosts** file contains the addressing tables of the remote host sites accessible via TPAD–HPAD from the local machine, i.e. addresses, facilities, user calling data, associated TPAD profile, etc...

The **/etc/isohosts** file is used:

- by the **TPAD module** to identify the outgoing connection to the remote HPAD host sites, in particular, to know the addressing parameters of the host connections.
- by the **HPAD module** to identify the local connections on which incoming call requests from remote TPAD host sites may be received.

When using the configuration tool, the network configuration parameters of the used physical interface, declared by means of the System Management Interface Tool (described in *OSI Services Reference Manual*, “OSI Stack User Interface”), are implicitly taken into account in the corresponding site tables.

**Note:** A default X 25 local outgoing connection can be configured on the TPAD module side. The addressing parameters of this default local outgoing connection is pre–defined in the “DFLTX25” site table.

## Record format and content

```
<HOST> padp:<NUMPROF> pads: ....
class of transport (0,2,4) :0x4
alternate class (4) :0x4
expedited data (0,1) :0x1
flow control (0,1) :0x1
credit (1 to 15) :0x3
checksum control for class 4 (0,1) :0x0
tpdu size:1024
nsdu size:1024
npdu size:1024
input network window (1 to 127) :3
output network window (1 to 127) :3
type of network(1-TRANSPAC,2-ETHERNET) :<TYPERES>----- (1)
gateway name : <gatename>----- (2)
type of connection (0 CVC,1 CVP) :0
local address :<LOCADDR>
remote address :<REMADDR>
length of network facilities (1 to 10) :<LFAC>
network facilities (list of digits) :<FAC>
length of local TSAP (0 to 16) :<LOCTSAPLEN>
local TSAP (list of digits) :<LOCTSAP>
length of remote TSAP (0 to 16) :<REMTSAPLEN>
remote TSAP (list of digits) :<REMTSAP>
calling user data (list of digits) :<UDATA>
```

### Notes:

- 1.. TYPERES may be X.25, LAN, or LAN/WAN
- 2.. this line is displayed when TYPERES is 9 (LAN/WAN).

## Meaning of the entry data fields

**Note:** The entries in the file are represented in uppercase letters and enclosed with the “<>” characters, e.g. <NUMPROF>.

<HOST> depending on module:

- **For the TPAD module:** host site name or host abbreviated address (e.g. "Dalton"). The site name "DFLTX25" is the TPAD default site (to be used for X25 connection only) which is associated with the default X25 local outgoing address used as the implicit local address of the TPAD connection requests, see the <LOCADDR> entry.
  - **For the HPAD module:** local active line name (e.g. "X25\_1\_1") on which incoming call requests can be received from a particular remote TPAD host site. The site name "DFLTLAN" is the HPAD default site name (to be used for LAN connection only) which is associated to the default HPAD local TSAP ("PAD1"), see <LOCTSAP> entry.
- <NUMPROF> TPAD profile number to be loaded. This profile must be declared in the /etc/PROFPAD file, see "TPAD profile file (/etc/PROFPAD file)" section, on page A-14).
- When this entry is validated, TPAD sets the connection with the 25 parameters making up the corresponding TPAD profile.
- <TYPERES> Type of the network, i.e.:
- value is "1" for a **X.25** network (e.g. TRANSPAC)
  - value is "2" for a **LAN** network.
  - value is "9" for a **LAN/WAN** network (i.e. thru a gateway)
- <LOCADDR> local address (i.e. originator address).
- <REMADDR> remote address (i.e. recipient address).
- <LFAC> length of network facilities.
- <FAC> list of facilities.
- <LOCTSAPLEN> length of the local TSAP (*Transport Service Access Point*); for the LAN connections only.
- <LOCTSAP> local TSAP (*Transport Service Access Point*); for the LAN connection only.
- **on the HPAD side:** specify the local TSAP on which the HPAD module waits for the incoming calls sent from the TPAD module.
  - **on the TPAD side:** specify the local TSAP from which are sent the outgoing calls to the remote HPAD module.
- The TPAD and HPAD modules are implicitly attached to a default TSAP predefined 0x40,0x01,0x50,0x41,0x44,0x31. It is recommended to use this default TSAP to configure, at each end of the connection, the TPAD and the HPAD modules installed on the DPX/20 machines.
- If the local TSAP is different from "0x40,0x01,0x50,0x41,0x44,0x31", take care that the value of this particular local TSAP is known by the local system. To update the local TSAP table of the Operating System, use the "cftran" tool (see the description of this tool in *OSI Services Reference Manual* "OSI Stack Maintenance Tools").
- <REMTSAPLEN> length of remote TSAP (*Transport Service Access Point*); for the LAN connection only.
- <REMTSAP> remote TSAP (*Transport Service Access Point*); for the LAN connection only.
- **on the TPAD side:** specify the local TSAP of the remote HPAD connected to it.
  - **on the HPAD side:** without significance. The TPAD and HPAD modules are implicitly attached to a default TSAP predefined

"0x40,0x01,0x50,0x41,0x44,0x31". It is recommended to use this default TSAP to configure, at each end of the connection, the TPAD and the HPAD modules.

**<UDATA>**

calling user data associated with the related TPAD start-up command, see Connection Configuration File, on page A-9.

The calling user data can be used, in particular, to transmit the connection password if declared in the **/etc/hpadd.conf** file.



---

# HPAD Connection Configuration File (/etc/hpadd.conf)

## Description

The `/etc/hpadd.conf` file contains the configuration parameters of all the communication lines used by HPAD. This file is used by the HPAD daemon:

- first, at the system initialization phase, to identify the connections on which HPAD calls may be transmitted,
- second, as soon as it has detected a connection request, to "fork" a HPAD process with the corresponding configuration parameters.

This file is loaded and validated at system initialization. If an error is detected, HPAD service activation fails.

## Record format and content

Host Name:	<HOST>
Profile Number:	<NUMPROF>
Reverse Charging:	<REVCHARG>
Closed User Group:	<CUG>
Password:	<PASSCHCK>
Remote Terminal Check:	<TERMCHCK>
Remote Term Time-out:	<TERMTO>
Videotex Mode:	<VDTX>
NSEL Configuration:	<NSEL>
No More X.29 Message:	<X29MSG>
No X.29 Message:	<PTYUSE>
Program:	<EXECF>
Program Options:	<EXECOP>
Trace Mode:	<TRACE>
Debug Mode:	<DEBUG>
Trace File:	<TRACEF>
History Mode:	<HISTO>
History File:	<HISTOF>
Max History Record:	<MAXREC>
Allow File:	<ALLOWED>
Denied File:	<DENIED>

## Meaning of the entry data fields

**Note:** The entries in the file are represented in uppercase letters and enclosed with the "<>" characters, e.g. <NUMPROF>.

<HOST> local active line name (e.g. "X25\_1\_1") on which incoming call requests can be received from a particular remote TPAD host site.

<NUMPROF> TPAD profile number to be down-loaded. This profile must be declared in the `/etc/PROFPAD` file. It is set as the only available profile of the connection, i.e. any requests to modify this connection profile or other profile declarations are invalidated, see "profile file (`/etc/PROFPAD`)", on page A-14). This profile is loaded during the set-up of the HPAD connection.

When this entry is validated, HPAD sends to the PAD an X.29 message setting the X.3 parameters which make up the TPAD profile. (Default: no profile number specified).

**Note:** The profile declared in the connection entry of the `/etc/hpadd.conf` file is set as the only available profile of the connection, i.e. any requests to modify this connection profile are invalidated.

- <REVCHARG>** request of reverse charging facility. (Default: invalidated).
- <CUG>** definition of the Closed User Group.
- A subscriber to a public network may belong to one or more groups. This possibility provides additional access protection in that the subscribers of the same group can communicate within the group but not with anyone outside the group. If when starting a HPAD, a CUG number is specified, any X25.3 call containing a different CUG number in the “facilities” field will be refused.
- For example, if the subscriber belongs to several groups, this mechanism allows calls coming from one group only to be handled. The possible values for <CUG> are:
- 00: any CUG number is accepted,
  - 01 to 99: only this CUG number is accepted.
- (Default value is “00”).
- <PASSCHECK>** connection password check.
- When this function is validated, this field contains the connection password (12 character maximum string) in encrypted mode. In this case, the connection password must be entered as call user data in the call packet of the connection request, see Called Address Specifications on page 5-4.
- (Default: function invalidated).
- <TERMCHECK>** remote terminal type check.
- When this function is validated, HPAD sends to the TPAD a specific message to obtain the remote terminal type.
- For more information, see Declaration of Terminal Type, on page 5-6.
- (Default: function invalidated)
- <TERMTO>** time–out of the remote terminal type check (TERMCHECK) function.
- Time, in seconds, within which the remote terminal type is expected to be returned.
- <VDTX>** Transparent mode for videotex terminals, Minitel or Teletel.
- (Default: function invalidated).
- <NSEL>** Network Selector – hexadecimal entry – on X25 networks only (see following note).
- The same host site name can be configured with several NSELS in order to allow, once the HPAD connection is set–up, access to a specific program or user application declared in the next **<EXECF>** entry. The **<NSEL>** value must always begin by “01” followed by three bytes maximum; This value is transmitted in the first four bytes of the X25 calling data user of the block request, see TPAD Start–Up, on page 5-2.
- (Default value: 0x01,0x00,0x00,0x00).

**Examples:**

(configuration of the <NSEL> and <EXECF> entries)

```
Host name: Hpadd#1
NSEL Configuration:
Program:
```

*The Hpadd#1 host site is configured with the <NSEL> and <EXECF> default values (i.e. "0x01,0x00,0x00,0x00" for the <NSEL> entry and "/bin/login" for the <EXECF> entry).*

Host name: Hpadd#2  
NSEL Configuration: 0x01,0x01,0x00,0x00  
Program:

*The Hpadd#2 site is configured with a particular <NSEL> value attached to the <EXECF> default program (i.e. "/bin/login").*

Host name: Hpadd#3  
NSEL Configuration: 0x01,0x02,0x00,0x00  
Program: /bin/date

*The Hpadd#3 host site is configured with the particular <NSEL> value attached to the "/bin/date" program.*

**Note:** The `/etc/pad_install/hpad` command associates only NSEL per X25 connection line. To define other NSELS, use the "vi" editor (it is assumed that the a HPAD line must be configured by setting as many connections as there are NSELS available).

**<X29MSG>** "no more X.29 messages" (rlogin mode) validation.

Once the connection request has been accepted, including facilities processing (CUG, Reverse charging) and Access Control processing (Passwd, NUA Control, History file update), no more X.29 messages will be sent to the client.

(Default: function invalidated).

**<PTYUSE>** "no X.29 message" validation.

This function forbids HPAD to transmit any X.29 messages on the connection.

(Default: function invalidated).

**<EXECF>** name of the program or user application to be run at the activation of the HPAD connection, i.e. user application to be executed instead of the standard **login** procedure. See also the previous <NSEL> entry.

When the program to be executed is a script shell, this field must contain the script environment path `"/bin/sh"`, the name of the script is then declared in the next <EXECOP> entry, see the example below.

If a user application has been executed at the activation of the HPAD connection and has not crashed its called environment, the following environment variables, set with specific network connection information, can be recovered:

PADNUA= <Calling X25 address>

PADPROT= <Network Selector>

PADUDATA= <User data in call packet>.

(Default: `/bin/login` file).

#### **Examples:**

Host name: Hpadd#4  
NSEL Configuration: 0x01,0x04,0x00,0x00  
Program: /bin/sh  
Program Options: /users/user\_applic

*The Hpadd#4 host site is configured with a particular <NSEL> value attached to the "/users/user\_applic" script shell.*

**<EXECOP>** arguments of the program whose name is specified in the previous <EXECF> entry.

The argument length must not exceed 63 characters maximum. Any blank or tabbing character entered in this field is interpreted as an argument separator. If the application executed at the activation of the HPAD connection has crashed its called environment, the following four key words can be used as an argument:

- PTY: to specify the **pty** file opened by the TPAD process,
- ADDRESS: to specify the calling address,
- CUD: to specify the Calling User Data,
- NSEL: to specify the Network Selector.

(Default: no argument is specified).

**Example:**

To recover PADNUA variable with /bin/login program:

*/etc/hpadd.conf* file on server:

```
Host Name entry in isohosts : mousson_dat
Program path/null for std login : /bin/sh
Program Options : /etc/padextension ADDRESS
```

*/etc/padextension* file on server:

```
#set -x
echo $1 > /tmp/NUMPAD_$$
exec /bin/login
```

*/.profile* file on server

```
...
PADNUA=`cat /tmp/NUMPAD_$$`
export PADNUA
rm /tmp/NUMPAD_$$
...
```

The PADNUA variable contains the value of calling address.

**<TRACE>** trace mode activation(\*).  
Reserved for debugging. The trace function should be used only when Technical Support requests it.  
(Default: function invalidated).

**<DEBUG>** debug mode activation.  
Reserved for debugging. The debug function should be used only when the Technical Support requests it.  
(Default: function invalidated).

**<TRACEF>** trace file name.  
When the trace mode is activated, this file contains the output trace.

**<HISTO>** history log activation.  
The history function stores the history logs of the connection established on X25 network only.  
(Default: function invalidated).

- <HISTOF>** history file name containing the logs of the connection set up on the X25 network only. Applicable only if the history function is validated.
- <MAXREC>** maximum number of history logs recorded in the circular history file.  
Applicable only if the history function is validated.  
(Default value is 200 records maximum).
- <ALLOWED>** name of the file containing all the allowed call addresses, i.e. the allowed subscription numbers.  
  
Only the call addresses which are declared in this file are authorized ; any call address not included in this file is denied.
- <DENIED>** name of the file containing the denied call addresses, i.e. denied subscription numbers.  
  
The denied file is scanned by the TPAD–HPAD process only when no allowed file has been declared.

## Allowed and Denied File Description

The two “Allowed” and “Denied” files are complementary. Therefore, it is useless to declare and use both files. Choose the type of file which is the simplest to fill in and specify its name using SMIT. The relevant field of the */etc/hpadd.conf* file is then updated.

Those two file contain Network User Addresses (NUA) of the denied and allowed connections.

Files are filled with one address per line ; addresses can contain the wildcards: “?” and “\*”.

For example:

```
allowed:
13802*
19?56*
17320456001
```

The Only calls accepted will be those with the NUA of initiator prefixed with 13802 or prefixed with 19056, 19156, 19256,... , 19956, or with the NUA matching exactly 17320456001.

---

# TPAD Profile File (/etc/PROFPAD)

## Description

This file contains the declaration of the TPAD profiles. It is delivered with a few predefined profiles. Customized profiles can be added using an UNIX editor such as “vi”.

The TPAD profiles are loaded during the TPAD activation phase. As TPAD can only load up to 128 different profiles, only the first 128 valid profile records of the file are used. If a profile is defined several times, only the last version read is used, within the limit of 128 profiles.

The TPAD profiles must be defined according to the TRANSPAC TSNU (Technical Specifications for **N**etwork **U**se) recommendations.

## Record format and content

The TPAD profile parameters are defined in compliance with CCITT X.3 recommendations. A TPAD profile handles twenty two X.3 standard parameters (in the range 1 to 22) and three local parameters (in the range 97 to 99). The functions associated with these parameters are described in TPAD Profile Parameters on page B-1.

The format of the TPAD profile record is the following:

```
<profile_number>:<parameter_1_value>,<parameter_2_value>,...,  
<parameter_22_value>;<parameter 97 value>,...
```

Example:

```
2:1,0,0,10,1,0,21,0,0,0,0,0,0,0,0,13,13,13,0,0,0,0;0,0,0
```

where:

- <profile\_number>** must be in the range 0 to 127 (profiles do not have to be numbered sequentially).
- “:” (colon)** separates the profile number from the first X.3 parameter.
- <parameter\_n\_value>** specifies whether the corresponding X.3 function (*n* in the range 1 to 22) or specific Bull function (*n* in the range 97 to 99) is operational or not; it can also specify a characteristic value concerning this function (e.g. the value of a time-out).
- “,” (comma)** separates each specific parameter.
- “;” (semicolon)** separates the last three specific parameters from the X.3 parameters.

## List of the predefined TPAD profiles

The `/etc/PROFPAD` file is delivered with a few predefined profiles which cannot be modified or deleted. They include the following profiles:

- the "TSNU" profiles (profiles 1 to 91),
- a printer profile (profile 99),
- a profile for kermit support (profile 124),
- the Standard profile on DPX/20 (profile 127).

The records of these predefined profiles are listed below:

```
0:1,1,126,0,1,1,8,0,0,0,0,0,1,4,0,1,8,24,18,2,0,0,0;0,0,0
1:1,0,126,0,1,1,8,0,0,0,0,0,1,4,0,1,8,24,18,2,0,0,0;0,0,0
2:1,0,0,10,1,0,21,0,0,0,0,0,0,0,0,0,13,13,13,0,0,0,0;0,0,0
3:1,0,2,80,0,1,21,0,0,0,0,0,0,0,0,0,13,13,13,0,0,0,0;0,0,0
4:1,0,2,40,0,1,21,0,4,0,0,0,0,0,0,0,13,13,13,0,0,0,0;0,0,0
5:1,0,2,0,1,1,21,0,0,0,0,0,0,0,0,0,13,13,13,0,0,0,0;0,0,0
6:1,1,126,0,1,1,21,0,0,0,0,0,0,0,0,0,13,13,13,0,0,0,0;0,0,0
7:1,1,2,0,1,1,21,0,0,0,0,0,0,0,0,0,13,13,13,0,0,0,0;0,0,0
8:1,1,2,0,1,1,21,0,0,0,0,0,0,0,0,0,13,13,13,0,0,0,0;0,0,0
9:1,0,2,0,0,1,0,0,0,69,0,0,0,0,0,0,13,13,13,0,0,0,0;0,0,0
10:1,0,2,0,0,1,21,0,0,0,0,0,0,0,0,0,13,13,13,0,0,0,0;0,0,0
11:0,0,0,3,0,0,21,0,0,0,0,0,0,0,0,0,13,13,13,0,0,0,0;0,0,0
12:1,0,126,0,1,1,2,0,0,0,0,0,0,0,0,0,13,13,13,0,0,0,0;0,0,0
13:1,0,0,5,1,1,21,0,0,0,0,0,0,0,0,0,13,13,13,0,0,0,0;0,0,0
14:0,0,0,5,1,1,8,0,0,0,0,0,0,0,0,0,13,13,13,0,0,0,0;0,0,0
15:1,0,0,5,0,1,21,0,0,0,0,0,0,0,0,0,13,13,13,0,0,0,0;0,0,0
20:1,1,126,0,1,1,21,0,0,0,0,1,0,0,1,8,24,18,1,64,3,0;0,0,0,
21:1,1,126,0,1,1,21,0,0,0,0,1,0,0,1,8,24,18,2,64,3,0;0,0,0
22:1,0,0,5,1,1,21,0,0,0,0,1,0,0,0,13,13,13,0,0,0,0;0,0,0,
23:1,1,126,0,1,1,21,0,0,0,0,1,0,0,1,8,24,18,2,64,3,20;0,0,0
30:0,1,128,0,0,1,0,0,0,0,0,1,0,0,1,127,24,18,2,2,0,0;0,0,0
90:1,1,126,0,1,1,2,0,0,0,0,0,0,0,0,0,127,24,18,1,0,0,0;0,0,0
91:0,0,0,20,0,0,2,0,0,0,0,0,0,0,0,0,127,24,18,1,0,0,0;0,0,0
98:1,0,0,0,1,1,0,0,0,0,14,0,0,0,0,0,0,0,0,1,0,0,0;1,0,0
99:0,0,0,80,1,1,0,0,0,0,0,1,0,0,0,127,24,18,0,0,0,0;0,0,0
124:0,1,126,0,1,1,21,0,0,0,0,1,0,0,1,8,24,18,2,0,0,0;0,0,0
127:1,1,126,0,1,1,21,0,0,0,0,1,0,0,1,8,24,18,2,0,0,0;0,0,0
```

---

## Customized Start-up File (\$HOME/.padrc)

The **\$HOME/.padrc** file is created by the user to personalize his TPAD operating mode. It is located in the **\$HOME** directory of the concerned user and automatically taken into account during each TPAD start-up request.

**CAUTION:**

**Take care the user access rights to the \$HOME/.padrc file are declared in reading mode only.**

It can contains a script of commands making automatic the connection to a remote host and the user **login** entries and also the most frequently addresses, full or abbreviated, called by the user. See an example of use in the STRSYNC or WAIT command, on pages 5-50 and 5-54.

**Note:** The “-n” option of the **tpad** command line inhibits the automatic execution of the **.padrc** file.



---

## History Logs (only for HPAD connections on an X25 network)

The History logs of the connection are stored in the history file declared in the <HISTOF> entry of the `/etc/hpadd.conf` file. The history file is a circular file which contains the logs of the last connections established (200 maximum records by default). There can be as many history files as X25 HPAD connections set-up on the local machine.

To make this function operational on a given X25 HPAD connection, the administrator must declare a specific history log file name in `/etc/hpadd.conf` file.

### History file record format and content

Example:

```
HPAD178111111
002 NUA DATA LOGGED at : LOGOFF at : STA N_Snt N_Rcv Q_S Q_R
138111111 09:20:13:36:24 09:20:13:37:08 C 859 0.320 48 6
138111111 09:20:14:01:54 09:20:14:02:02 C 45 0.062 48 3
```

### Meaning of the Coded Information

The Network User Address zone "NUA" contains the calling address.

The first number in the title line ("002" here), located just before the "NUA" field, is the number of records included in the file.

The "DATA" zone contains the first 8 characters exchanged on the connection. If the connection password is included here, its display is substituted by "-" characters.

The "LOGGED at" and "LOGOFF at" zones are respectively time of connection and de-connection given in the following format:

*month : day : hour : minute : second*

The Status zone "STA" contains the HPAD connection status code.

The meaning of the main status codes is the following:

E : normal close of the login process  
K : login process killed  
N : close received from the network  
t : abort of the "writer" process by SIGTERM signal reception  
T : abort of the "reader" process by SIGTERM signal reception

The status codes listed below are reserved for the incident detections. Therefore, they are particularly intended for the support technical staff:

w : abort of the "writer" process by a failed writing on the PTY  
W : abort of the "reader" process by a failed writing on the network  
r : abort of the "writer" process by a failed reading from the network  
R : abort of the "reader" process by a failed reading from the PTY  
I (i uppercase) : default value while the connection is on.  
i : unknown cause of the "writer" process abort  
C : unidentified known cause of a forked secondary "writer" process abort  
? : internal error

- 1 (one) : HPAD was not able to acknowledge the incoming call
- 2 : TPAD was not able to obtain or set up PTY
- 1(L lowercase) : HPAD was not able to fork the login process
- F : HPAD was not able to split itself in reader/writer processes.

**Note:** The *"writer"* process is the HPAD process which handles the data transferred from the network to the PTY.  
The *"reader"* process is the HPAD process which handles the data transferred from the PTY to the network.

The **"N\_Snt"** and **"N\_Rcv"** zones indicate the quantity of information sent and received on the connection, specified in kilo bytes, rounded and limited to  $2^{31} - 1$ .

The **"Q\_S"** and **"Q\_R"** zones indicate the number of X29 messages transmitted on the network (the counter is limited to the 99 value).

---

## TPAD–HPAD Banner File

The TPAD–HPAD login banner can be personalized by echoing the content of the */etc/pad.banner* file.

The */etc/pad.banner* file is echoed on the server side (hpad).



# Appendix B. TPAD Profiles and SPAG Y/13 packet

## TPAD Profile Parameters

The TPAD profile parameters are defined in compliance with the X.3 CCITT recommendations.

A TPAD profile handles the 22 following X.3 standard parameters (in the range 1 to 22) and three specific Bull parameters (in the range 97 to 99).

The value associated with each of these parameters indicates whether the corresponding X.3 function is operational or not.

See TPAD Profile File (/etc/PROFPAD), on page A-14.

PARAMETERS	X.3 LABELS	
	Range / Name	Value
<b>1</b> / escape character	0	no escape character.
	1	it is the DLE character.
	32 – 126	it is the character of international alphabet.
		No 5 corresponding to the parameter's value.
<b>2</b> / echo	0	no echo.
	1	characters received from terminal are echoed.
<b>3</b> / send character	0	no send character.
	2	send on CR.
	6	send on CR,ESC,BEL,ENQ or ACK.
	18	send on CR,EOT or ETX.
	126	send on any control character of the international alphabet No. 5.
<b>4</b> / send time-out	0	no send time-out.
	1 – 255	time-out value in twentieths of second.
<b>5</b> / flow control	0	the PAD does not generate XON or XOFF characters to control the flow from the terminal.
	1	the PAD controls the flow coming from the terminals using XON and XOFF characters during data transfer phase.
<b>6</b> / TPAD indications	0	the PAD sends no indication to the terminal.
	1	the PAD sends its indications.
	5	the PAD sends its indications as well as its prompt signal.
<b>7</b> / procedure on BREAK signal	0	no specific action.
	1	an interrupt is sent to correspondent.
	2	virtual circuit re-initialization.
	5	an interrupt and BREAK indication are sent to the correspondent.
	8 21	escape to PAD command state. send interrupt to DTE-P, set parameter 8 to 1, send format 2 BREAK indication to DTE-P.

<b>PARAMETERS</b>	<b>X.3 LABELS</b>	
<b>Range / Name</b>	<b>Value</b>	<b>Meaning</b>
<b>8</b> / data scrapped	0 1	data delivered to terminal normally. data received from correspondent destroyed.
<b>9</b> / padding after (CR)	0 1 – 255	(CR) sent to terminal. number of null char to be inserted after CR.
<b>10</b> / line folding	0 1 – 255	the PAD does not handle line folding. number of characters per line before the PAD folds the line.
<b>11</b> / binary throughput rate (accessible in read only)	0 1 2 3 4 5 6 7 8 10 12 13 14 15	110 bits/s 134.5 bits/s 300 bits/s 1200 bits/s 600 bits/s 75 bits/s 150 bits/s 1800 bits/s 200 bits/s 50 bits/s (telex only) 2400 bits/s 4800 bits/s 9600 bits/s 19200 bits/s
<b>12</b> / flow control by the terminal	0 1	terminal does not use XON/XOFF to control flow coming from the PAD. terminal can control flow coming from the PAD by XON/XOFF.
<b>13</b> / insert (LF) after (CR)	0 1 4 5 6 7	no (LF) inserted. (LF) inserted after each (CR) of a character string sent to the terminal. (LF) inserted after each (CR) of a character string echoed at the terminal. parameter values 1 and 4 combined. (LF) inserted after each (CR) of a character string coming from the terminals and sent to the correspondent. (LF) inserted after each (CR) of a character string echoes at the terminal. parameter values 1 and 6 combined.
<b>14</b> / padding after (LF)	0 1 – 255	(LF) normally transmitted to terminal. number of (NULL) characters to be inserted after each (LF).
<b>15</b> / editing	0 1	no editing during data transfer phase. editing during data transfer phase.
<b>16</b> / character erase	0 – 127	the character of international alphabet No. 5 corresponding to this value is used to erase a character not yet sent to the correspondent.
<b>17</b> / line erase	0 – 127	the character of international alphabet No. 5 corresponding to this value is used to erase a line not yet sent to the correspondent.

<b>PARAMETERS</b>	<b>X.3 LABELS</b>	
<b>Range / Name</b>	<b>Value</b>	<b>Meaning</b>
<b>18</b> / line re-display	0 – 127	the character of international alphabet No. 5 corresponding to this value is used to erase a line not yet transmitted to the correspondent.
<b>19</b> / editing indications	0 1 2 8 32 – 126	the PAD does not transmit editing indications to the terminal. the PAD transmits editing indications in the format for the printer terminal. the PAD transmits editing indications in the format for the display terminal. the PAD transmits the (BS) character to erase a character and the line erase indication for the printer format. the PAD transmits the character of international alphabet No. 5 corresponding to this value to erase a character and the line erase indication for the printer format.
<b>20</b> / echo mask  Parameter values can be combined (0 to 255)  Example: if the parameter equals 3, CR and LF are not echoed.	0 1 2 4 8 16 32 64 128	all characters are echoed. (CR) no echoed. (LF) not echoed. (VT), (HT), (FF) not echoed. (BEL) and (CS) not echoed. (ESC) and 'ENQ) not echoed. (ACK), (NAK), (STX), (SOH), (EOT), (ETB) and (ETX) not echoed. editing characters defined by parameters 16, 17 and 18 are not echoed. all the control characters of international alphabet No. 5 not mentioned above are not echoed and character (DEL) not echoed.
<b>21</b> / parity	0 1 2 3	parity not checked. characters sent by DTE-C checked for parity. a parity bit generated in all the characters sent to the DTE-C. parity checked and a check bit is generated (options 1+2).
<b>22</b> / wait for end of page	0 1 – 255	no wait for end of page. number of lines displayed by the PAD before sending a wait for end of page indication. The PAD resumes sending characters to the terminal as soon as the terminal sends an (XON) character or when a data send condition to the correspondent exists.
<b>97</b> / automatic TPAD exit	0 1 – 255	no automatic disconnection of the idle TPAD session. value in minute of the expected time out before automatically closing the TPAD session.

<b>PARAMETERS</b>	<b>X.3 LABELS</b>	
<b>Range / Name</b>	<b>Value</b>	<b>Meaning</b>
<b>98</b> / automatic disconnection time out	0 1 – 255	no automatic disconnection of the established connections staying idle. value in minute of the expected time out before automatically disconnecting the idle established connections.
<b>99</b> / remote host parity treatment	0 1 2 3 4	no host parity treatment. treatment of host space parity. treatment of host mark parity. treatment of host even parity. treatment of host odd parity.



# SPAG Y/13 packet

The LAN/WAN connection using SPAG Y/13 packet has to be transparent to the user: the connection is established as soon as the first packet is sent as for any simple connection. When the request to connect leaves the local host, it conveys all the information needed to reach the final site. This information is in the calling packet. This is shown in Figure 26.

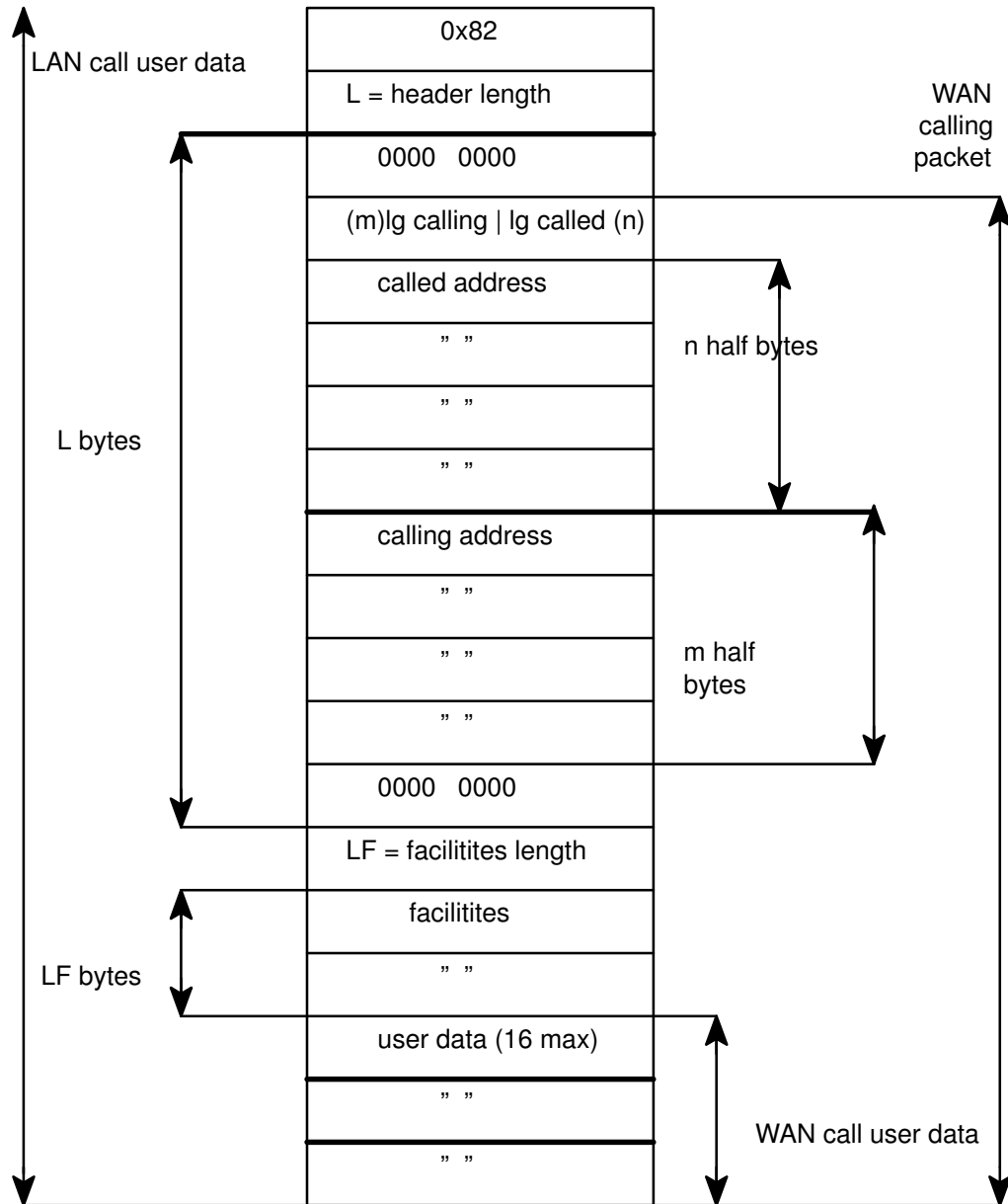


Figure 26. SPAG Y/13 packet



---

# Appendix C. Error Codes and Messages

This appendix describes error codes and messages.

---

## Error Codes and Messages: Overview

You can find more information in:

- Command return codes and errors, on page C-2
- X28 Clear PAD service signals, on page C-3
- PAD X29 error messages, on page C-4
- PAD parameter value error messages, on page C-5
- PAD Configuration Check Tool returned errors, on page C-6

---

# Command Return Codes and Errors

## Return Codes

To be closer to the common UNIX command interface, the code returned by each command gives a status of the command execution. The range of values is:

- 0: No problem during syntax analysis and execution of the command
- 1: Error during syntax analysis of the command and its options
- 2: Error during semantic analysis of the command and its options
- 3: Error during execution of the command.

So when an error occurs with the return code equal to "n" (different from 0), this means that all controls that return a code "n-1" are passed. For example, a return code of "2" means all syntax controls are passed.

## Error messages

If an error occurs, each command returns a code and an NLS error message. The error messages give the maximum information to help the user. In order to limit the number of messages, commands share a common set of error messages.

Only error messages returned during execution of the command (returned code **3**) are listed here:

"Add start at reboot fail: OSI stack isn't started at reboot"
"Configuration <%s> doesn't exist"
"Configuration name <%s> already used as server or client"
"Create/Modify PAD configuration failed: configuration on the same transport selector (%s) and network selector (%s) already exists"
"Create/Modify PAD configuration failed: configuration on the same transport selector (%s) already exists"
"Load of PAD daemon configuration failed: PAD daemon not active"
"No default address defined"
"No PAD configuration defined"
"No PAD server site defined"
"PAD daemon not running" (it is a warning. The command does not fail)
"Sorry: you must be super user to perform (padproc) action"
"Sorry: you must be super user to perform action (%s)"
"Suppress start at reboot fail: PAD service isn't started at reboot" (it is a warning. The command does't fail)
"Warning: <%s> inexistent or not executable program"
"Warning: PAD daemon wasn't started at reboot"
"<=> Error: configuration %s doesn't exist"
"<=> Error on file %s"
"<=> Too many fails..."

---

## X28 Clear PAD Service Signals

The table below gives the list of all the Clear PAD Service Signals that can be sent from the TPAD module to the DTE–C, in response of a Command Signal:

The full text of the corresponding cause of the error is displayed only if user has chosen to have the extended dialogue mode set in the language specified by him. See LANG command, on page 5-30.

<b>Cause</b>	<b>Extended dialogue mode text</b>
OCC	Call cleared, number busy
NC	Call cleared, temporary network problem
INV	Call cleared, invalid facility request
NA	Call cleared, access to this number is barred
ERR	Call cleared, network detected local procedure error
RPE	Call cleared, network detected remote procedure error
NP	Call cleared, number not assigned
DER	Call cleared, number out of order
PAD	Call cleared, remote request
DTE	Call cleared, by remote device, data may be lost
RNA	Call cleared, reverse charging refused
ID	Call cleared, incompatible destination
SA	Call cleared, ship cannot be contacted
FNA	Call cleared, fast select refused
ROO	Call cleared, cannot be routed as request
CONF	Call cleared, confirmed

---

## PAD X29 Error Messages

The table below gives the list of the error messages that can be exchanged across the network between the TPAD and HPAD modules:

<b>Error code</b>	<b>Error message</b>
0	Received PAD message contained less than eight bits
1	Unrecognized message code in received PAD message
2	Parameter field format of received PAD message was incorrect
3	Received PAD message did not contain an integral number of octets
4	Received parameter indication PAD message was unsolicited
5	Received PAD message was too long
6	Unauthorized reselection PAD message

---

## PAD Parameter Value Error Messages

The table below gives the list of the error messages concerning parameter handling, and that can be sent to the DTE-C:

<b>Error Code</b>	<b>Error Message</b>
0	No additional information
1	Parameter reference not exist or not implemented
2	Parameter value invalid or no implemented
3	Parameter value cannot be altered from the current setting value
4	The parameter is read only
5	The parameter follows an invalid parameter separator

# Errors from PAD Configuration Check Tool: padcheck

The description of error messages, presented in American English, respects the printf(3) syntax.

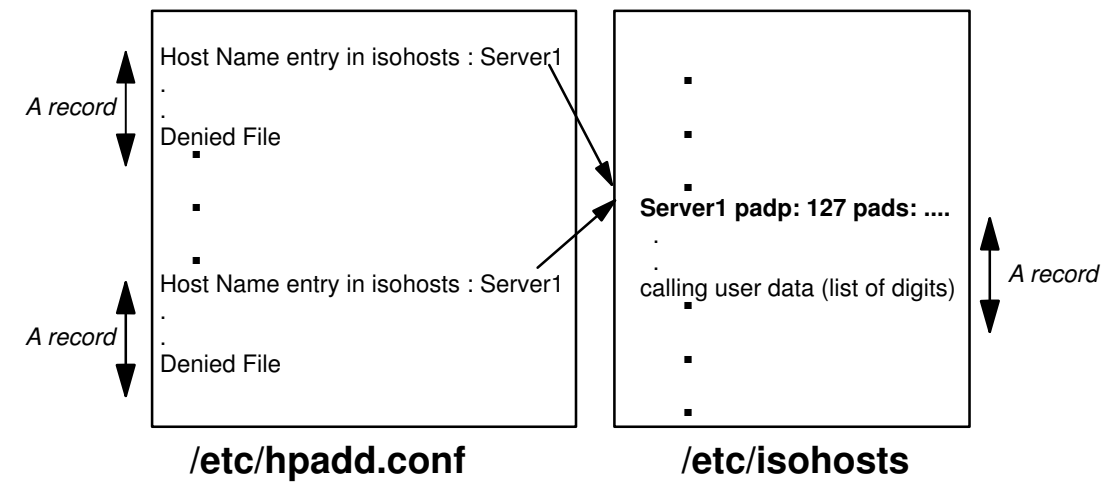
All the error messages from the PAD consist of three parts: a **message** describing the **error detected**, the string **"Error Recovery Procedure:"**, a **message** describing the **action(s)** to perform for **error recovery**. In the following, %s means a string and %d a decimal number.

**Message: "** <site\_name>: Entry defined more than once in file %s  
**Error Recovery Procedure:**  
**Keep only one entry with this name and delete the others"**

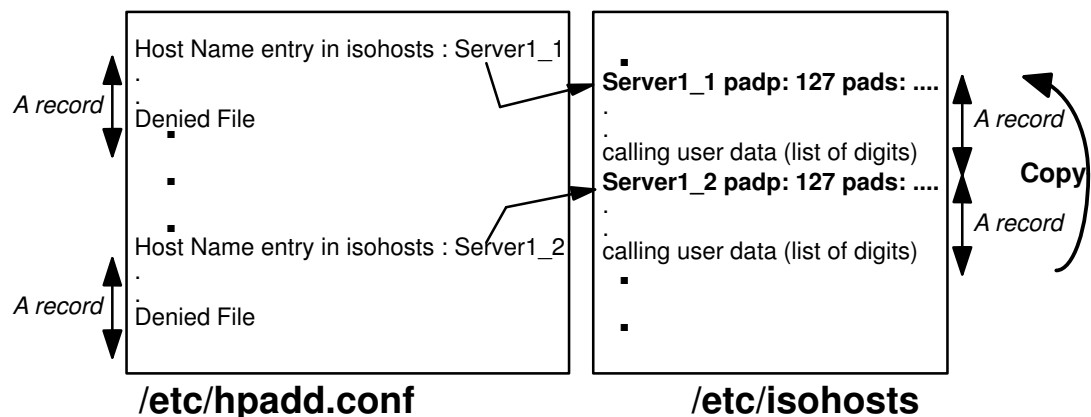
**Description** It exists several records, in the file */etc/hpadd.conf*, that have the same name. The SMIT configurator of TPAD-HPAD cannot manage such records. This configuration is able to run with TPAD-HPAD applications, however it is recommended to solve this incoherence with the following method.

**Action** The name of a record in */etc/hpadd.conf*, refers to an other record in */etc/isohosts*. These two records, enable the activation of a PAD server. The administrator has to manage */etc/hpadd.conf* to obtain a unique name for each record. It has to duplicate the record in */etc/isohosts* and rename each new record with the new name introduced in */etc/hpadd.conf*.

**Example: before**



**after**





# Message: "<site\_name>: Entry doesn't exist in isohosts

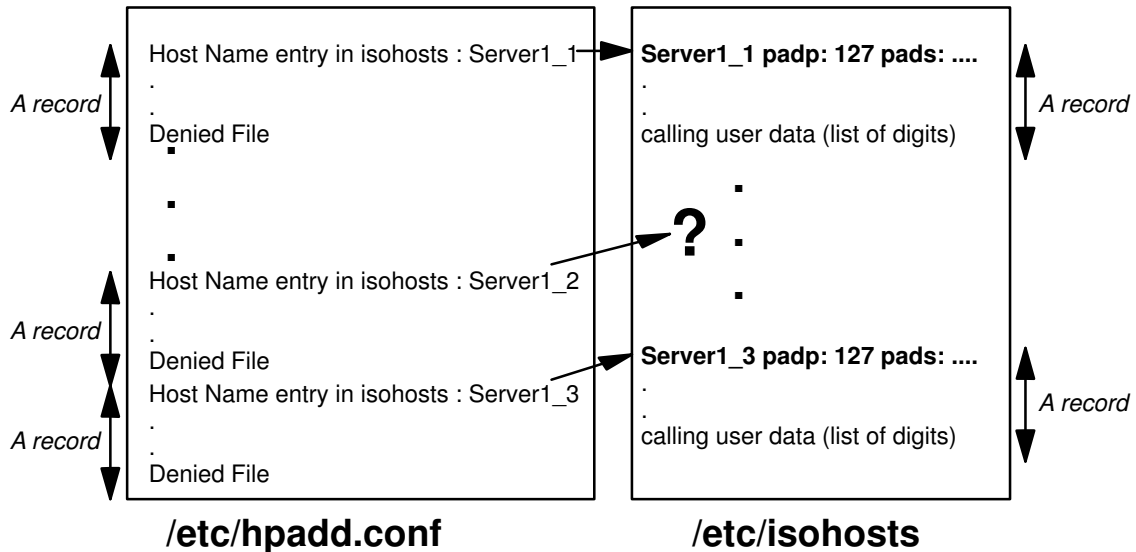
## Error Recovery Procedure:

### Remove this entry from hpadd.conf file"

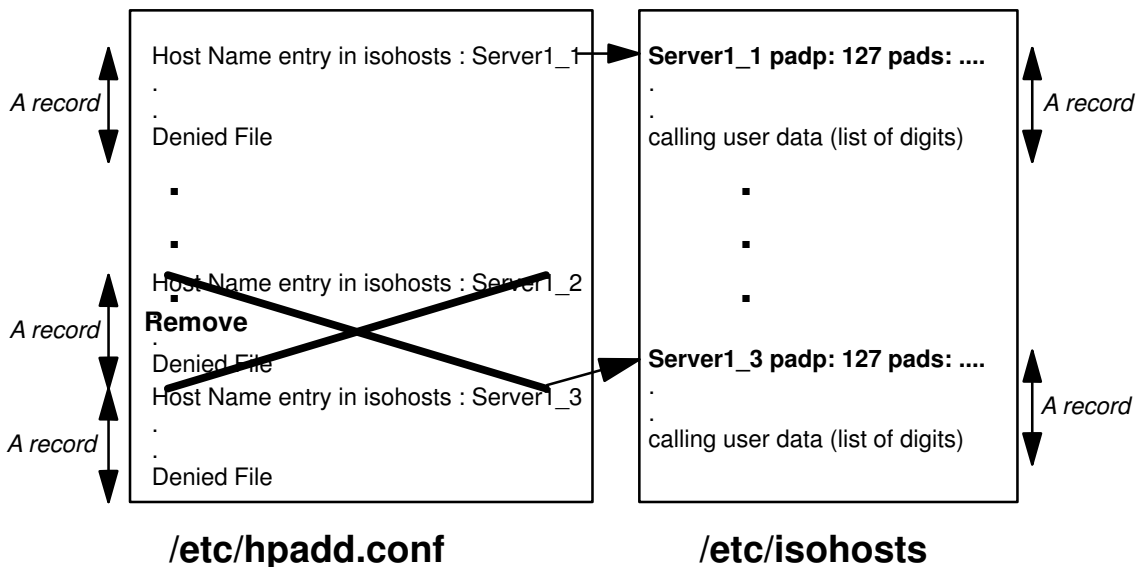
**Description** It exists an entry in the `/etc/hpadd.conf` file that haven't any associated record in `/etc/isohosts`. So this PAD server won't able to wait any incoming call from a PAD client

**Action** The simplest thing to do is to remove this entry from `/etc/hpadd.conf` file

**Example:** before



after



**Message: "<site\_name>: Profile <%s> in file %s doesn't exist in file %s**

**Error Recovery Procedure:  
Create profile in file %s"**

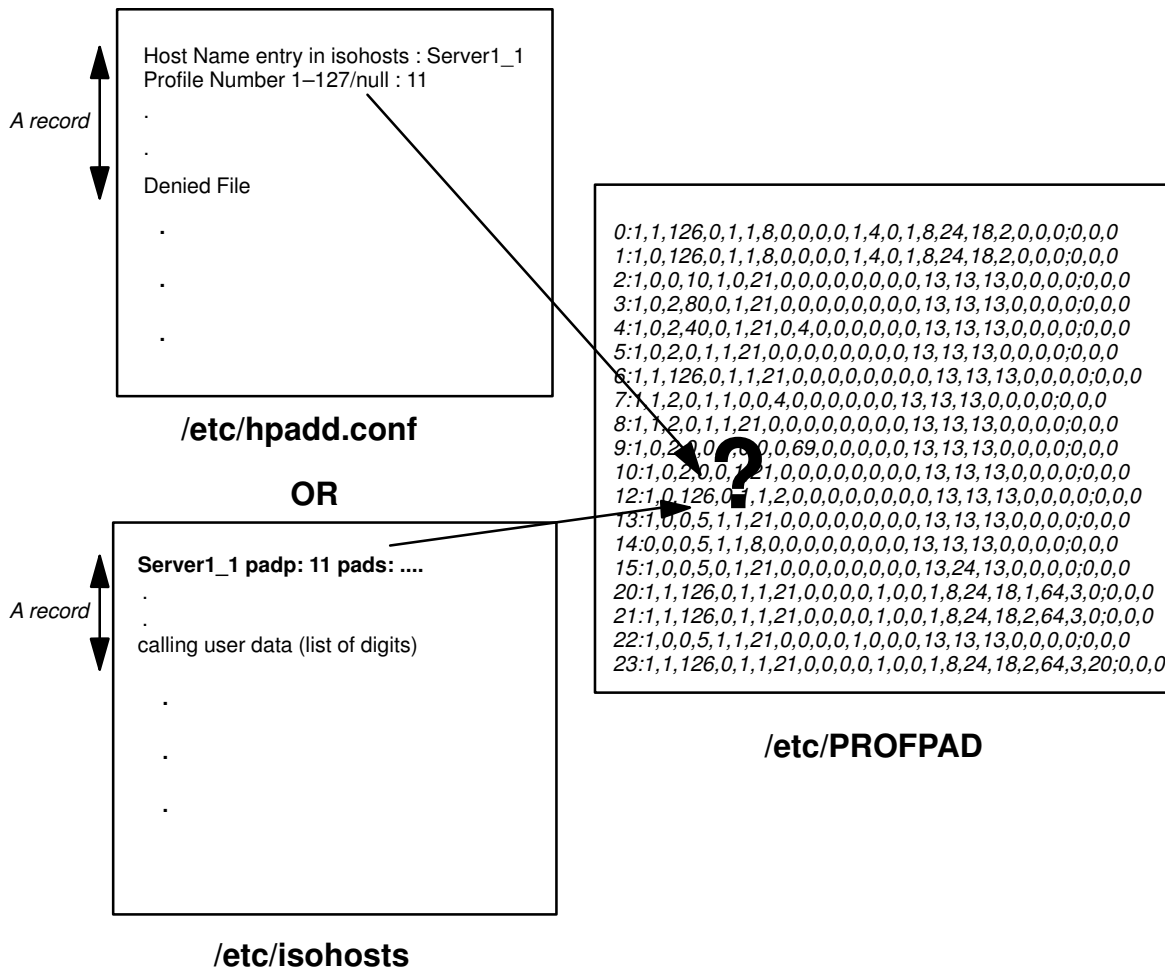
**Description** The PAD uses X3 profiles that are recorded in the file /etc/PROFPAD. A PAD server may send a X3 profile to a PAD client; so a record in /etc/hpadd.conf may refer (with the field "Profile Number") to a profile (with its number) in /etc/PROFPAD.

A PAD client may specify a X3 profile with which it wants to work; so a record in /etc/isohosts may refer (with the field "padp:") to a profile (with its number) in /etc/PROFPAD.

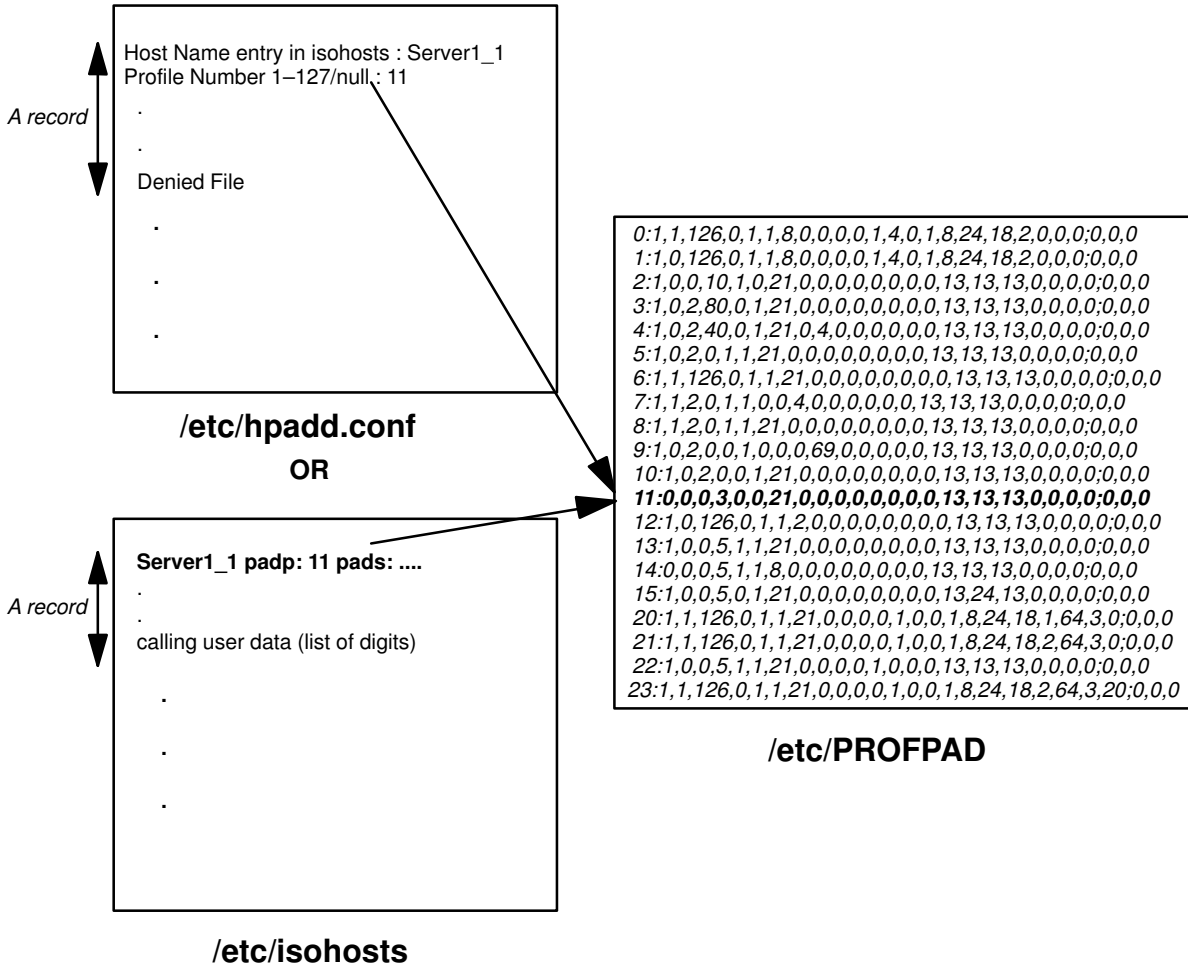
The tool detects a record in /etc/hpadd.conf that refers to a profile (with the field "Profile Number") which isn't defined in /etc/PROFPAD. Or the tool detects a record in /etc/isohosts that refers to a profile (with the field "padp:") which isn't defined in /etc/PROFPAD.

**Action** create a profile in file in /etc/PROFPAD with the expected number

**Example:** before



after



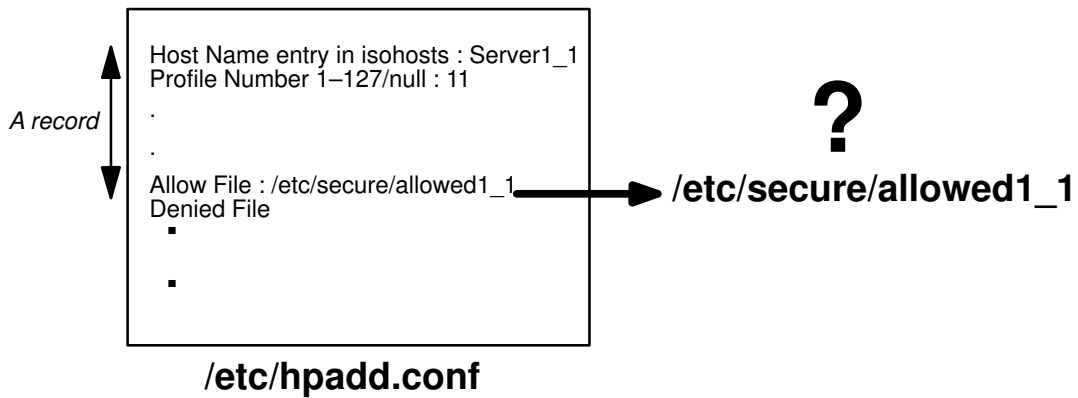
**Message: "<site\_name>: %s file for allowed addresses doesn't exist  
 Error Recovery Procedure:  
 Create %s file"**

**Description** It exists a PAD server (a record in */etc/hpadd.conf*) that restricted access to the only PAD clients that are registered in a "allowed" file. This file should contain WAN addresses of PAD clients that are allowed to do incoming call. The problem detected by the tool is the file doesn't exist but is referred by a PAD server record in */etc/hpadd.conf*. The file name is in the field "Allow File".

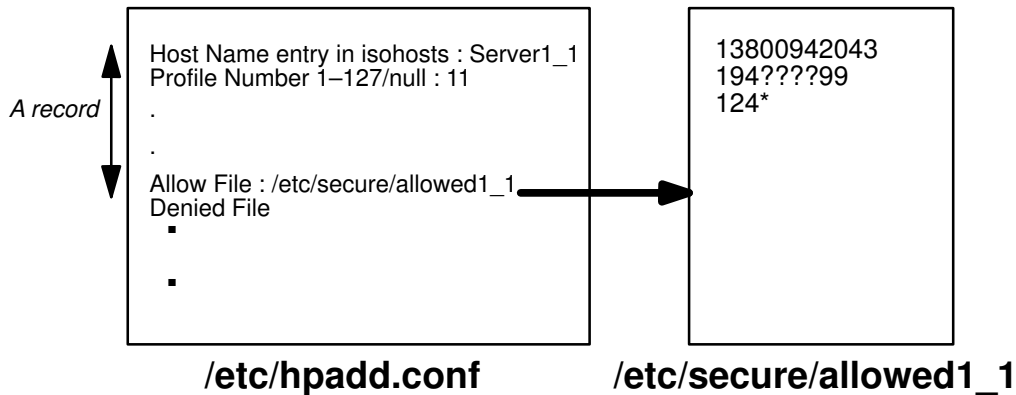
**Action**

create and fill the allowed file

**Example: before**



**after**



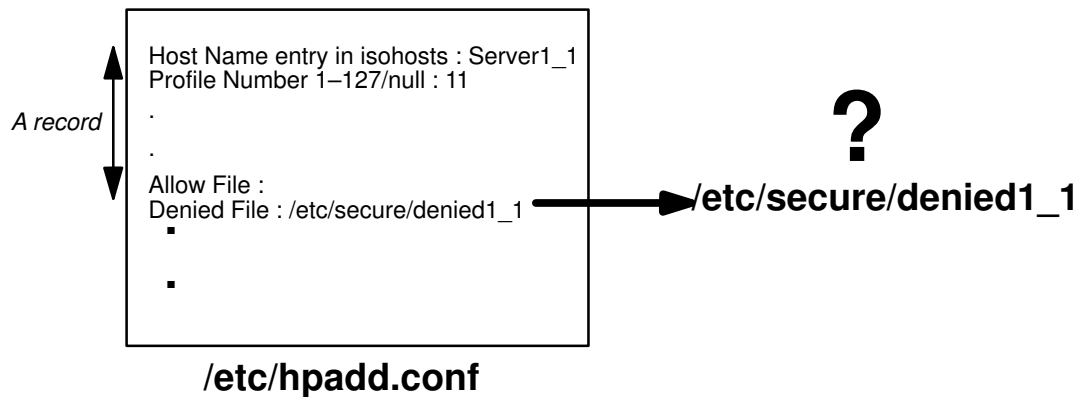
**Message: ”<site\_name>: <file\_name> file for denied addresses doesn't exist**

**Error Recovery Procedure:  
Create <file\_name> file”**

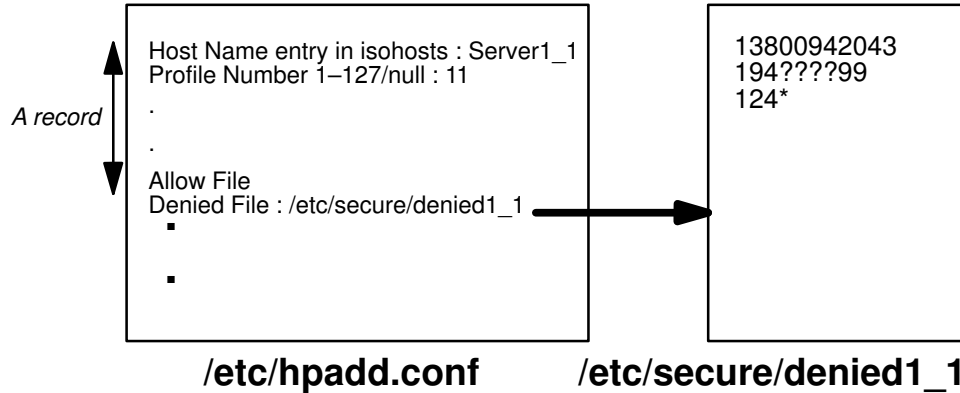
**Description** It exists a PAD server (a record in */etc/hpadd.conf*) that forbid access to the PAD clients that are registered in a “denied” file. This file should contain WAN addresses of PAD clients that are forbidden to make incoming calls. The problem detected by the tool is the file doesn't exist but is referred by a PAD server record in */etc/hpadd.conf*. The file name is in the field “Denied File”.

**Action** create and fill the denied file

**Example: before**



**after**



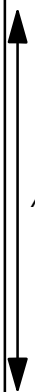
**Message: ”<site\_name>: Warning, NSEL value doesn’t begin with 0x01  
Error Recovery Procedure:  
Modify NSEL value in <hpadd.conf> file”**

**Description** A selector identifies a service from the OSI stack. A PAD client trying to access a PAD server should specify its selector. The selector on WAN is four bytes long and the first byte is called SPI (subsequent protocol identifier). The PAD service on WAN is normalized with the SPI = 0x01. The selector (also called NSEL) is a tunable parameter of a PAD server configuration, but it **must** begin with 0x01.

**Action** modify NSEL value in *hpadd.conf* file

**Example:** before

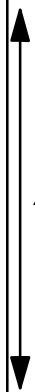
```
Host Name entry in isohosts : Server1_1
Profile Number 1-127/null : 11
Reverse Charging 0/1 :
Closed User Group 00-99/null for all : 00
Password crypted password/null :
Remote Terminal Check 0/1 :
Remote Term Timeout 1-10/null : 3
Videotex Mode 0/1 :
NSEL Configuration list of digits : 0x04,0x03,0x02,0x01
No More X29 Message 0/1 :
.
.
Allow File :
Denied File :
▪
▪
▪
```



**/etc/hpadd.conf**

**after**

```
Host Name entry in isohosts : Server1_1
Profile Number 1-127/null : 11
Reverse Charging 0/1 :
Closed User Group 00-99/null for all : 00
Password crypted password/null :
Remote Terminal Check 0/1 :
Remote Term Timeout 1-10/null : 3
Videotex Mode 0/1 :
NSEL Configuration list of digits : 0x01,0x03,0x02,0x01
No More X29 Message 0/1 :
.
.
Allow File :
Denied File :
▪
▪
▪
```



**/etc/hpadd.conf**

# Message: "<site\_name>: TSAP <%s> unknown by the local system

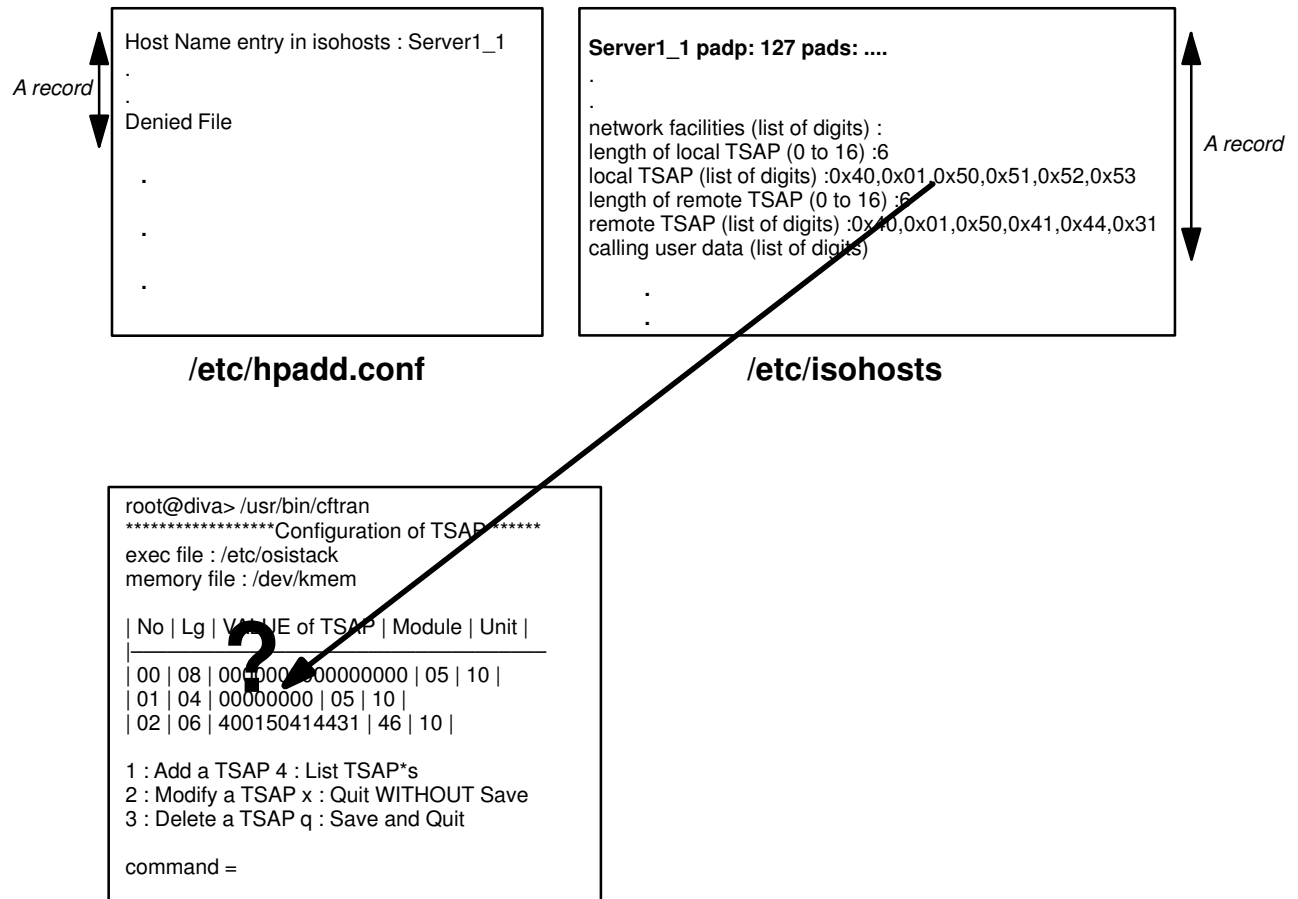
## Error Recovery Procedure:

### Define your TSAP in the local TSAP table using **cftran** tool

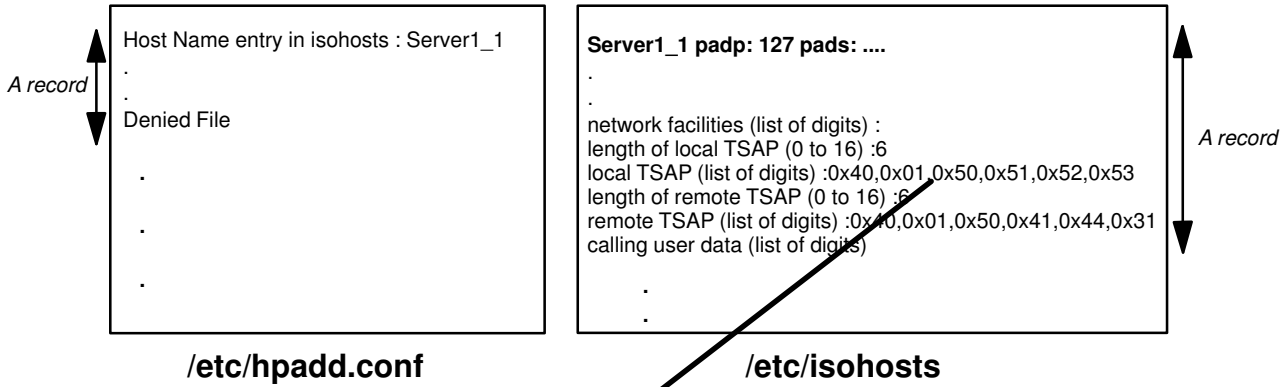
**Description** A selector identifies a service from the OSI stack. A PAD client trying to access a PAD server should specify its selector. The PAD on LAN uses Transport Protocol and the selector used by PAD service (also called TSEL) is a tunable parameter of a PAD server configuration. However, the TSEL **must** be known by the Transport protocol, to a PAD server, on LAN, using the Transport protocol. In order to:

**Action** Add your TSAP (also called TSEL) in the local TSAP table using **cftran** tool

**Example:** before



after



```
Host Name entry in isohosts : Server1_1
.
Denied File
.
.
.
```

**/etc/hpadd.conf**

```
Server1_1 padp: 127 pads: ....
.
.
network facilities (list of digits) :
length of local TSAP (0 to 16) :6
local TSAP (list of digits) :0x40,0x01,0x50,0x51,0x52,0x53
length of remote TSAP (0 to 16) :6
remote TSAP (list of digits) :0x40,0x01,0x50,0x41,0x44,0x31
calling user data (list of digits)
.
.
```

**/etc/isohosts**

```
root@diva> /usr/bin/cftran
*****Configuration of TSAP *****
exec file : /etc/osistack
memory file : /dev/kmem

| No | Lg | VALUE of TSAP | Module | Unit |
-----|-----|-----|-----|-----|
| 00 | 08 | 0000000000000000 | 05 | 10 |
| 01 | 04 | 00000000 | 05 | 10 |
| 02 | 06 | 40015044431 | 46 | 10 |
| 03 | 06 | 400150515253 | 46 | 10 |

1 : Add a TSAP 4 : List TSAP*s
2 : Modify a TSAP x : Quit WITHOUT Save
3 : Delete a TSAP q : Save and Quit

command =
```



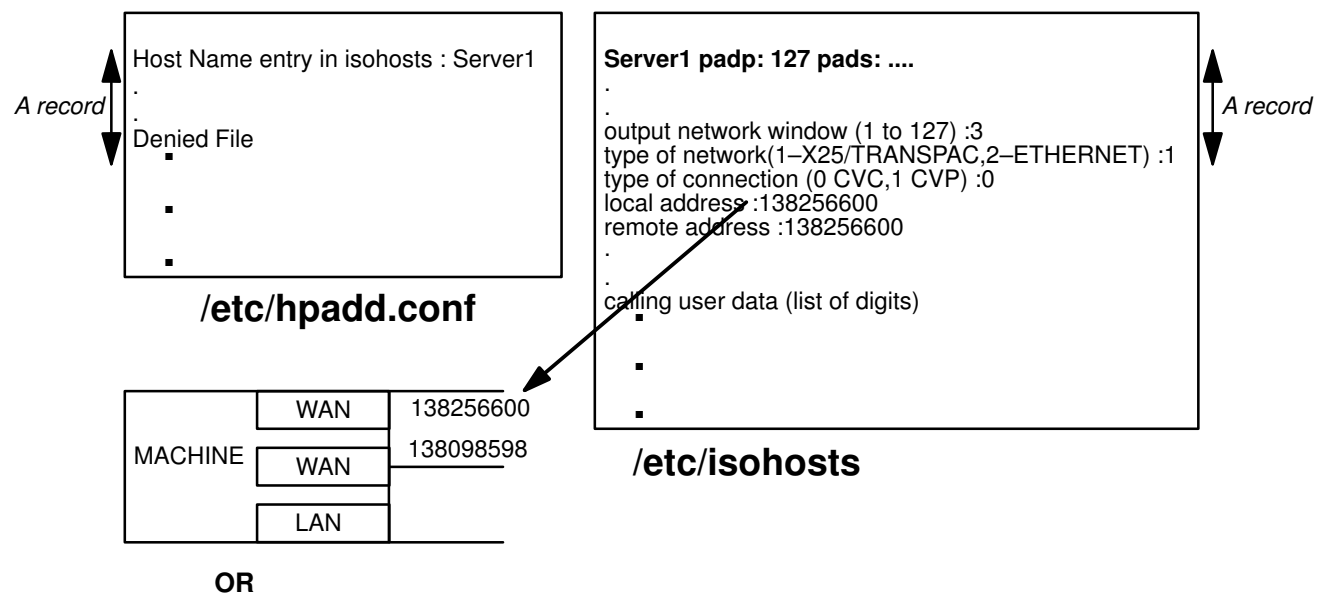
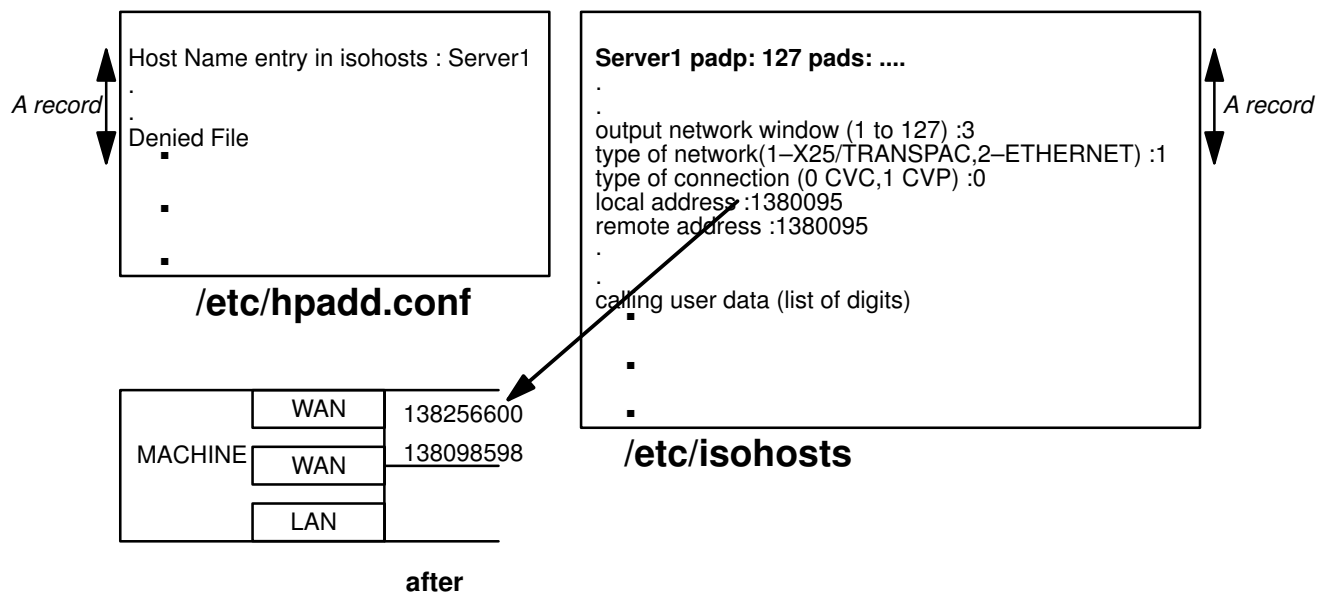
**Message: ”<site\_name>: Local address <%d> not defined on your machine”**

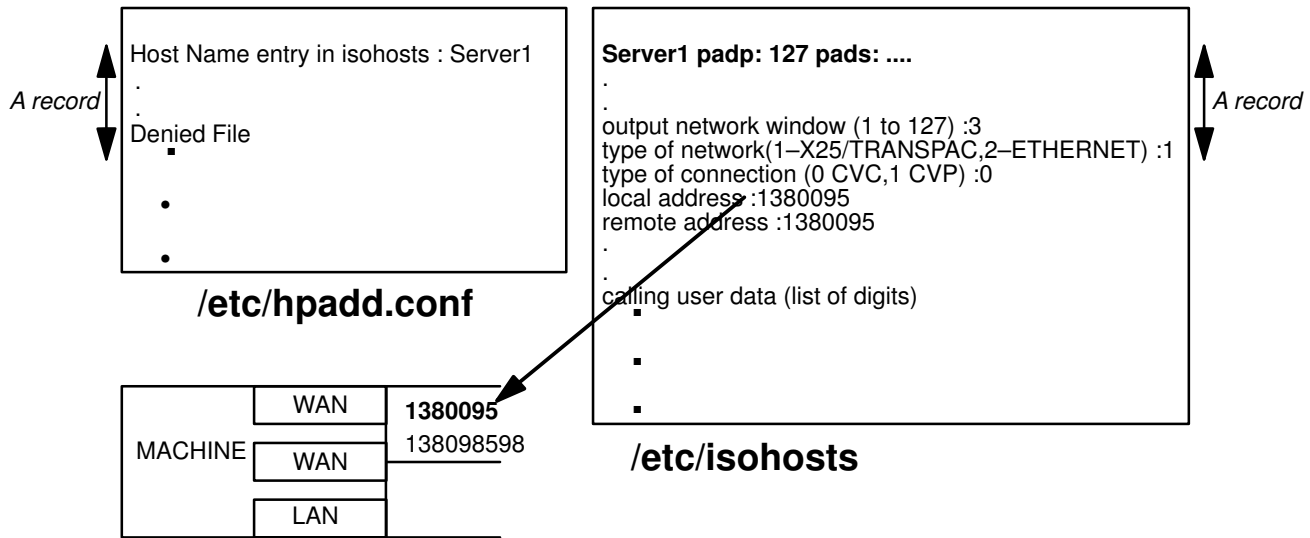
**Error Recovery Procedure:  
Modify local address <%d> to conform with your  
configuration**

**Description** A PAD server configuration on WAN refers to a local WAN board address from where incoming calls are expected. The tools detected that a specified local WAN board address doesn't exist on the machine.

**Action** It exists two solutions. Either the administrator sets the address of a local WAN board to the value expected in the PAD server configuration, or the administrator change the address defined in the PAD server configuration with one of the existing WAN boards.

**Example: before**





**Message: ”<site\_name>: Invalid syntax in file %s**

**Error Recovery Procedure:  
Modify syntax in file %s”**

Description A record exists in `/etc/isohosts` or `/etc/hpadd.conf` whose name doesn't respect the syntax `[a-zA-Z][a-zA-Z0-9_]*`

Action modify syntax in file `/etc/isohosts` or `/etc/hpadd.conf`

**Message: ”<site\_name>: Gateway site %s not defined on your machine**

**Error Recovery Procedure:  
Modify the gateway name %s of the site %s to conform with  
your configuration”**

Description The name mentioned in `/etc/isohosts` as the gateway name does not exist in the file `/etc/hpad.conf`

Action modify the name of your gateway.

**Message: ”<site\_name>: The Gateway site name is missing**

**Error Recovery Procedure:  
Select the gateway name of the site <site\_name> to  
conform with your configuration”**

Description The name mentioned in `/etc/isohosts` as the gateway name does not exist in the file `/etc/hpad.conf`.

Action modify the name of your gateway.

---

# Appendix D. Using TPAD with Minitel

---

## Using TPAD with MINITEL

The Minitel, through the TRANSPAC Public PAD, can access The HPAD service implemented on a DPX/20.

TPAD–HPAD supports the following types of Minitel:

- Minitel 1,
- Minitel 1B(\*\*),
- Minitel 2,
- Minitel 5,
- Minitel 10,
- Minitel 10B(\*\*),
- Minitel 12.

**Note:** (\*\*) The “B” type for “Bi–standard”,  
i.e. Minitel type supporting Teletel and Telematic mode.

## Starting the PAD

The PAD is started using a Minitel as follows:

```
<address> SUITE "character string"
```

or

```
<address> * "character string"
```

where:

- **SUITE** corresponds to the start–up option “p”,
- **\*\*\*** corresponds to the start–up option “d”.

## Terminal type of the Minitel (TERMINFO)

THE HPAD service, on the DPX/20 handles a standard “Minitel” type for Minitel 1 and Minitel 10 declared in the following files:

- **/usr/src/terminfo/minitel.ti**
- **/usr/lib/terminfo/m/minitel**

The other types of Minitel must be declared as **VT100 type** only.

## Hints for Use

There are a number of teletel services (3613, 3614, 3621, etc..). Access to a DPX server, via a Minitel, is recommended in the standard “teleinformatique (minitel)” mode.

In France it is recommended to use the **3621** Minitel service. The tariff is the same as the 3613 Minitel service but characters are sent one by one. This is useful when using an **1B** Minitel like a **VT100**.

The 3613, 3614 services work in standard teletel, however during the dialing of the DPX server subscription it is possible to work in standard “teleinformatique (minitel)” mode by preceding the number by a “#”.

The "vi" editor should be used only from an 1B Minitel or an upper range Minitel; it is recommended to set the **noredraw** and the **slow open** optional mode of the "vi" editor.

## Restrictions & Limitations

### Numbering

After accessing the teletel service, the user must compose the DPX server subscription number on the PAD numeric keyboard.

### Call User Data

To enter call user data (or password), first type the key **SUITE** and then the call user data. every character will be echoed by a "-".

### Teletel Access Code

The DPX administrator can obtain a teletel access code from **France Telecom**. This access code (string less than 10 characters) is a logic name. With this access code, a user is able to access a registered DPX server via a Minitel without the knowledge of the subscription number, nor any call user data.

---

## Appendix E. Using a TRANSPAC Public PAD

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### Using a TRANSPAC Public Pad to Reach a Machine

The only available public pad is obtainable through "RTC" with the number : 36 06 24 24. This allows the use of a modem at 1200 and 2400 bauds (V22 and V22-bis).

The call through the public pad is made with the 'Reverse Charging' facility. The machine subscription characteristic must be taken into account and the subscription must accept reverse charging.

The host pad (e.g., */usr/bin/hpadd*) must accept reverse charge calls.

A suitable X3 profile must be selected before opening the connection:

```
prof 90
set 5:0 # avoid XOFF after escape character
set 7:21 # good management of BREAK
set 16:8 # good management of backspace
set 19:2 # good editing of backspace
set 20:64 # no echo of editing characters
```



---

## Appendix F. Migration

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### Migrating from an Earlier Version of TPAD–HPAD

PAD configurations created with earlier versions of TPAD–HPAD are supported.

However, the administrator may use the PAD Configuration Check Tool menu, on page 3-43 to inspect earlier configurations for compatibility.

The PAD Configuration Check Tool validates four key configuration parameters:

- name
- profile
- control
- address

An error message is produced when there is incompatibility.

Error messages, together with solutions to configuration parameter problems, are given in Errors from PAD Configuration Check Tool, on page C-6.





---

# Appendix G. Bibliography

This appendix gives information about the document references used in this guide.

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## Bibliography Overview

This overview provides a list of related documentation and a list of standards. You can find more information in:

- List of Related Documents (Referenced in Text), on page G-1
- Standards, on page G-3

## List of Related Documents

Related documents are listed under the following headings:

### TPAD–HPAD

*TPAD–HPAD Cookbook* (86 A2 82GX).

*TPAD–HPAD Pocket Guide* (86 A2 56GX)

### OSI Services

*OSI Services Reference Manual* (86 A2 05AQ)

### Error Trace Management

*OSI Diagnostic Interactive Toolkit (ODIT) User's Guide* (86 A2 39WG)

### OSI Migration

*OSI Communications Porting Guide* (86 A2 44AP)

### KERMIT

*Kermit User's Guide* (86 A2 89PE)

*Bull Enhancement Software Release Bulletin*

### MAX25.3

*MAX25.3 Programmer's Guide* (86 A2 45AP)

### DPX/2 TPAD–HPAD

*DPX/2 TPAD–HPAD Reference Manual* (86 A2 60SS)

### Adapters

*HiSpeed WAN Comm. Installation & Services Guide* (86 A1 81WG)

*BULL DPX/20 Adapters, Devices, and Cable Information* (86 A1 76AT)

*ESTRELLA Asynchronous Serial Comms Adapters Install. & Config. Guide* (86 A1 45AT)

*ESTRELLA Token–Ring PCI Adapter Install. & Config. Guide* (86 A1 31 GX)

*ESTRELLA 1Port X.25 Comms Adapter ISA Install. & Config. Guide* (86 A1 42AT)

*ESTRELLA Ethernet 10 & 10/100 Mbps Adapters Install. & Config. Guide* (86 A1 18GX)

### Terminals & Printers

*Terminals & Printers, Installation & Configuration Guide* (86 A1 22WE)

**Site Preparation**

*Site Preparation Guide (86 A1 06WD)*

**System Management**

*AIX System Management Guide: Operating System and Devices, (86 A2 49WG)*

**Xwindows Environment**

*AIX Getting Started (86 A2 99WD)*

**Product User Documentation**

*Documentation Overview (86 A2 71WE)*

## Standards

This section provides a list of standards. You can find more information in:

- ISO Standards on page G-3
- CCITT Recommendations on page G-5
- X/Open Guides on page G-5
- International Standardized Profiles (ISP) on page G-5
- SPAG Profiles on page G-5
- CEN/CENELEC Profiles on page G-6
- Streams Interfaces on page G-6
- RFC on page G-6
- Government Profiles on page G-6

## ISO Standards

The ISO standards are listed in the following table:

[ISO 7498–1, 91]	OSI Basic Reference Model
[ISO 7498–2]	OSI Reference Model – Security Architecture
[ISO 7498–3, 88]	OSI Reference Model – Naming and Addressing
[ISO 8072, 86]	Transport service definition
[ISO 8073, 88]	Connection-oriented transport protocol definition
[ISO 8208, 90]	X25 packet level protocol for Data Terminal Equipment
[ISO 8326 DAD2, 88]	Basic Connection-oriented session service definition– Addendum 2: Incorporation of unlimited User Data.
[ISO 8326 DAM4, 91]	Basic Connection-Oriented Session Service Definition– Amendment 4: Additional Synchronization Functionality.
[ISO 8326, 87]	Basic Connection-oriented session service definition
[ISO 8327 DAD2, 88]	Basic Connection-Oriented Session Protocol Specification – Addendum 2: Incorporation of unlimited User Data.
[ISO 8327 DAM3, 91]	Basic Connection-Oriented Session Protocol Specification – Amendment 3: Additional Synchronization Functionality.
[ISO 8327, 87]	Basic Connection-Oriented Session Protocol Specification
[ISO 8348/AD1]	Addendum to ISO 8348 covering Connectionless Transmission Mode
[ISO 8348/AD2]	Addendum to ISO 8348 covering Network layer Addressing
[ISO 8348/AD3]	Addendum to ISO 8348 covering Additional features for the network service
[ISO 8348]	Network service definition
[ISO 8473, 88]	Protocol for providing the connectionless-mode network service
[ISO 8648]	Internal organization of the network layer
[ISO 8649, 88]	Service definition for the Association Control Service Element (ACSE)
[ISO 8650 TC1]	Protocol specification for the Association Control Service Element (ACSE) – Amendment 1: authentication.
[ISO 8650, 88]	Protocol specification for the Association Control Service Element (ACSE)
[ISO 8802–1, 89]	Local Area Networks Protocols

[ISO 8802–2, 89]	Local Area Networks – Logical Link Control (LLC)
[ISO 8802–3]	Local Area Networks – CSMA/CD access method and physical layer specification
[ISO 8802–5]	Local Area Networks – Token Ring access method and physical layer specification
[ISO 8822, 88]	Connection-oriented presentation service definition
[ISO 8823, 88]	Connection-oriented presentation protocol definition
[ISO 8824]	Specification of Abstract Syntax One (ASN. 1)
[ISO 8825]	Specification of Basic Encoding Rules for Abstract Syntax One (ASN. 1)
[ISO 8878, 87]	use of X.25 to provide the OSI connection oriented network service
[ISO 8878–2, 91]	Use of X25 to provide the OSI connection-mode network service – Part 2: PICS
[ISO 8878/AD1, 90]	use of X.25 to provide the OSI connection oriented network service / Addendum 1: priority
[ISO 8878/AD2, 90]	Use of X25 to provide the OSI connection-mode network service / Addendum 2: use of PVC to provide the OSI CONS
[ISO 8880–1]	Specification of protocols to provide and support the OSI network service – Part one : general principles
[ISO 8880–2]	Specification of protocols to provide and support the OSI network service – Part two : provision and support of the connection-mode network service (CONS)
[ISO 8880–3]	Specification of protocols to provide and support the OSI network service – Part three : provision and support of the connectionless-mode network service (CLNS)
[ISO 9072–1, 89]	Remote Operations Part 1: ROSE model, notation and service definition
[ISO 9072–2, 89]	Remote Operations Part 2: ROSE protocol definition
[ISO 9314–1]	FDDI – Physical layer
[ISO 9314–1]	FDDI – Physical layer
[ISO 9314–2]	FDDI – Medium Access Control
[ISO 9314–2]	FDDI – Medium Access Control
[ISO 9314–3]	Medium dependent Physical Layer
[ISO 9314–3]	Medium dependent Physical Layer
[ISO 9542, 88]	End System to Intermediate System routing exchange protocol for use in conjunction with ISO 8473
[ISO 10030, 90]	End System Routing Information Exchange Protocol for use in conjunction with ISO 8878.
[ISO 10589, 92]	Intermediate System to Intermediate System Intra Domain routing information exchange protocol for use in conjunction with the protocol for providing the Connectionless-mode Network Service
[ISO TR 10172, 91]	Network / Transport Protocol Interworking Specification
[ISO TR 10172]	CO/CR Interworking Functional Units
[ISO TR 10178]	The structure and coding of link service access point addresses in LANs
[ISO TR 8509]	OSI Layer Service Definition Conventions
[ISO TR 9575, 89]	OSI Routing framework

## CCITT Recommendations

The CCITT Recommendations are listed in the following table:

[CCITT X21]	Interface between DTE and DCE for synchronous operation on public data networks
[CCITT X25, 88]	Interface between Data Terminal Equipment (DTE) and Data Circuit-terminating Equipment (DCE) for terminals operating in the packet mode and connected to public data networks by dedicated circuit (CCITT <i>Blue Book</i> )
[CCITT I440]	LAP-D
[CCITT I441]	LAP-D

## X/Open Guides

The X/Open guides are listed in the following table:

[XTI, 92]	X/Open Transport Interface – CAE Specification – XPG4 – January 1992
[XAP, 93]	X/Open ACSE/Presentation Services Application Programming Interface – CAE Specification – may september 1993
[XTIX25, 93]	Appendix: use of XTI to support X.25 – V 0.8, october 1993

## International Standardized Profiles (ISP)

The International Standardized profiles are listed in the following table:

[ISO TR 10000–1]	Taxonomy Framework
[ISO TR 10000–2]	Taxonomy of Profiles
[ISP 10608–1]	Provision of the COTS over the CLNS – Subnetwork Independent Requirements
[ISP 10608–2]	Provision of the COTS over the CLNS – Definition of profile TA51
[ISP 10608–4]	Provision of the COTS over the CLNS – Definition of profile TA53
[ISP 10608–5]	Provision of the COTS over the CLNS – Definition of profiles TA 1111/1121
[ISP 10608–6]	Provision of the COTS over the CLNS – Definition of profile TA 54 for operation over an FDDI LAN subnetwork (1992)
[ISP 10608–14]	Provision of the COTS over the CLNS – MAC, PHY and PMD Sublayer dependent and Station Management requirements over an FDDI LAN subnetwork (1992)
[ISP 10609–1]	Provision of the COTS over the CONS – Group TB requirements
[ISP 10609–5]	Provision of the COTS over the CONS – Definition of profiles TB 1111/1121

## SPAG Profiles

The SPAG profiles are listed in the following table:

[T31]	Permanent Access to a Packet Switched Data Network
[T32]	Switched Access to a Packet Switched Data Network
[R21]	Connectionless Internet Relay (LAN-LAN)
[R22]	Connectionless Internet Relay (LAN-PSDN-LAN)
[T6211]	CSMA/CD LAN (Null Internet)
[T6212]	CSMA/CD LAN (Connectionless-mode Internet)

## CEN/CENELEC Profiles

The CEN/CENELEC profiles are listed in the following table:

[ENV 41101]	Provision of the COTS over the CLNS using a CSMA/CD LAN isolated
[ENV 41102]	Provision of the COTS over the CLNS using a CSMA/CD LAN
[ENV 41104/2]	Provision of the COTS through the CONS through a PSDN, permanent access case
[ENV 41105/2]	Provision of the COTS over the CONS through a PSDN, switched access case
[ENV 41107]	Provision of the COTS over the CONS through a CSDN
[ENV 41109]	Provision of the COTS over the CLNS using a Token Ring LAN isolated
[ENV 41110]	Provision of the COTS over the CLNS using a Token Ring LAN
[ENV 41801]	Provision of the network relay function in a relay system attached to two or more LANs to allow interworking among End systems providing the OSI CLNS. (1992)

## Streams Interfaces

The STREAMS Interfaces are listed in the following table:

[TPI, 92]	UNIX System V Porting Rules – A Streams based Transport Provider Interface– AT&T Bell Laboratories – version 1.5
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## Request For Comments

The Request For Comments (RFCs) are listed in the following table:

[RFC1006, 87]	OSI Transport Service on top of the TCP, version 3
[RFC1277, 91]	Encoding Network Address to support operation over non OSI lower layers

## Government Open System Profiles

The Government Open System Profiles are listed in the following table:

[UKGOSIP]	GOSIP 4 UK Government OSI Profile. Fourth Edition
[USGOSIP2]	Government Open Systems Interconnection Profile. FIPS PUB 146–1. 1991 April 3
[SIA]	Stable Implementation Agreements for Open System Interconnection protocol. Version 4 Edition 1 . December 1990.
[NIST]	NIST agreements – SP5000–183
[NIST]	NIST On–going agreements.

---

# Glossary

## Addressing table

A table which contains the local or remote parameters necessary for using an X25.3 virtual circuit and possibly a X21 switched circuit.

## AIX

Advanced Interactive eXecutive.

## APPLICATION

X25 service user.

## CCITT

Consultative Committee International Telegraph and Telephone.

## CUG

Closed User Group.

## DCE

Data Circuit-terminating Equipment.

## DPX

Distributed Processor for UNIX.

## DTE-C

Data Terminal Equipment – Character mode. In CCITT terminology, a character mode terminal operator that connects to a TPAD is called a character mode subscriber or DTE-C.

## DTE-P

Data Terminal Equipment – Packet mode. In CCITT terminology, an item of equipment connected by a packet mode subscription to an X25 network is called a packet mode subscriber or DTE-P.

## ETHERNET

Local area network which uses the CSMA-DC (also called 802.3) network interface. In the Bull offer, this type of network is called RLE3. The transmission speed is 10 Mbps with maximum segment lengths of 500 meters.

## FDDI

Fiber Distributed Data Interface. Communication adapter interface using optical fiber medium network.

## HPAD

Host Packed Assembly Disassembly.

## Initializing table

A table which contains the initializing parameters either of a network subscription or of a link and a physical line.

## Kermit

A protocol for reliable file transfer between

computers over ordinary serial telecommunication lines.

## LAN

Local Area Network.

## LPP

Licensed Program Product.

## LSAP

Link Service Access Point.

Example : the X25.3 network level or the MAD driver.

## MAD

Distributed Access Method.

It provides the relationship between a client process and the server processes which handle communication services, through a set of primitives.

## NSEL

Network Selector.

Address of a specific program or user application to which the Network layer can access.

## NUA

Network User Address.

## OPP

Optional Program Product.

## PAD

Packet Assembly Disassembly.

Program providing direct access to an X25 network from asynchronous terminals in character mode. See X.3 and X.28.

## PAVI

Videotex Access Point.

Handles protocol with user videotex terminal, network access and PAD protocols.

## PID

Process Identifier.

Logical number allocated by the system to a running process (indicated with the "ps" command).

## PVC

Permanent Virtual Circuit.

## RTC

Réseau Téléphonique Commuté (Switched Phone Network)

## SITE TABLE

See "Addressing table".

**Statistics area**

A set of parameters which give statistical type information on: a virtual circuit, a link and a line.

**SVC**

Switched Virtual Circuit.

**TOKEN RING**

Local area network (also called 802.5). Token access procedure used with a sequential (ring) topology.

**TPAD**

Terminal Packet Assembly Disassembly

**TPAD–HPAD**

Reference of the Bull application level that implements X.3, X.28, X.29, and Y/13 recommendations.

**TSAP**

Transport Service Access Point.  
Enables the identification of a transport service access point.

**TSEL**

Transport SElector. The part of an address relative to the Transport layer.

**TSNU**

Technical Specifications for Network Use.

**UCB**

User Control Block.  
Data block used by the M.A.D.

**VC**

Virtual Circuit.

**VIDEOPAD**

Management of VideoTex terminals by TRANSPAC (X.29M).

**VIDEOTEX**

Communication services using the public switched telephone network enabling users to receive pages from a database connected to the network. Communications are via a terminal (Minitel or Teletel).

**X.2**

CCITT recommendation describing the services offered to users of public data networks.

**X.3**

CCITT recommendation describing the PAD service used for communication over the X25 public network between a DTE and an asynchronous terminal.

**X.21**

CCITT circuit establishment procedure for certain public networks with switched circuits.

**X.25**

CCITT recommendation describing an interface for connecting to a packet switching network with virtual circuit services.

**X.25.3**

CCITT level 3 Protocol which specifies the format and the exchange protocol of packets on an X25 network.

**X25.3 AM**

X25.3 Access Method.  
Reference of the X.25 layer 3 programmatic interface provided with TPAD–HPAD.

**X.28**

CCITT recommendation which determines the commands available from a character mode terminal to access a PAD service.

**X.29**

CCITT recommendation describing the exchange procedures for control information and user data between a PAD service and a DTE–P.

**X.121**

CCITT recommendation describing the international numbering plan for public data networks.

**Y/13**

SPAG profile.  
Defines the character mode access to any type of LAN with use of X.29 facilities



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