X.25 for OpenVMS

Configuration Guide

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Preface

This guide explains how to configure X.25 for OpenVMS.

Audience

This guide is intended for use by anyone who is configuring an X.25 system for the first time, or is reconfiguring an existing system.

This manual assumes that you understand and have some experience of:

- Local Area Networks (LANs)
- Wide Area Networks (WANs)
- X.25 communications

The configuration program can be run in two modes: basic mode, and advanced mode. To run the utility in advanced mode, you should have a good understanding of Enterprise Management Architecture (EMA) entities, and the relationship between those entities. Such information is given in the *X.25 for OpenVMS—Management Guide*.

Structure

The guide consists of ten chapters and four appendices:

- Chapter 1 outlines the modes in which the configuration program can be used to configure a system and explains the areas you need to consider before you run the utility.
- Chapter 2 details how to run the utility and how to access help information, and provides details of the keys that can be used while running the configuration program.

Chapters 3 to 10 are divided logically into three Parts:

- Part I details how to run the configuration program in basic mode. It consists of three chapters:
  - Chapter 3 provides an overview of running the configuration program in basic mode and describes each of the available configuration sections.
  - Chapter 4 details the data that you need to obtain before running the utility.
  - Chapter 5 provides flowcharts to illustrate the flow of data entry and data required within each section. Each flowchart is accompanied by a set of associated notes.

- Part II details how to run the configuration program in advanced mode. It consists of three chapters:
  - Chapter 6 provides an overview of running the configuration program in advanced mode and describes each of the available configuration sections.
  - Chapter 7 details the data that you need to obtain before running the utility.
  - Chapter 8 provides flowcharts to illustrate the flow of data entry and data required within each section. Each flowchart is accompanied by a set of associated notes.
- Part III details how to verify the configuration created and how to modify an existing configuration. This Part consists of two chapters:
  - Chapter 9 explains how to test your configuration using the Configuration Test Procedure (CTP).
  - Chapter 10 explains how to modify an existing configuration, that is, to reconfigure a system.
- The four appendices are:
  - Appendix A contains a series of blank forms in which you can write the values of configuration parameters specific to your system.
  - Appendix B contains an example configuration file produced by the configuration program.
  - Appendix C lists the characteristic values of the parameters in the 'Default' and 'OSI Transport' templates.
  - Appendix D lists the location and use of each of the configuration files either created as a result of running the configuration program in basic and advanced modes or supplied with the product.

At the end of this manual are two Reader's Comment forms. If you have any suggestions or criticisms that you think would improve this manual, please fill in one of the forms and return it to Digital.

Associated Documentation

Product Documentation

The following manuals in the X.25 for OpenVMS documentation set may be useful to network managers.

– *X.25 for OpenVMS—Management Guide*

This manual describes how to manage and monitor an X.25 system, and details the tools provided to administer an X.25 system.

– *X.25 for OpenVMS—Security Guide*

This manual describes the X.25 Security model and the tasks required to manage X.25 Security.

– *X.25 for OpenVMS—Problem Solving Guide*

This manual provides guidance on how to solve problems that may occur when using the product.

– *X.25 for OpenVMS—Accounting*

This manual describes how to use X.25 Accounting to obtain performance records and information on how X.25 is being used on your system.

NCL Command Information

Detailed information on Network Control Language (NCL), which is used to manage an X.25 network, is given in the following manual:

- *DECnet/OSI—Network Control Language Reference*

Conventions

The following conventions are used in this guide:

UPPERCASE and lowercase	The OpenVMS® Alpha® operating system does not differentiate between lowercase and UPPERCASE characters. Literal strings that appear in text, examples, syntax descriptions, and function descriptions can be entered using UPPERCASE characters, lowercase characters, or a combination of both.
user input	In interactive examples, user input is shown in **bold** print.
`system output`	This typeface is used in interactive and code examples to indicate system output. In text, this typeface is used to indicate the exact name of a command, option, partition, pathname, directory, or file.
$	In this manual, a dollar sign ($) is used to represent the default user prompt.
Ctrl/X	In procedures, a sequence such as Ctrl/X indicates that you must hold down the key labelled Ctrl while you press another key or a pointing device button.
Return	In procedures, a key name is shown enclosed to indicate that you press the corresponding key on the keyboard.

1 Introduction

X.25 for OpenVMS needs to be configured before your system can communicate with remote systems via a Packet Switching Data Network (PSDN).

This chapter provides an overview of the configuration process, and outlines the steps you should take before running the configuration program.

Throughout the rest of this guide, X.25 for OpenVMS is referred to as X.25 Alpha.

1.1 Configuration Overview

After installing X.25 Alpha it must be configured specifically for your system. X.25 Alpha provides a configuration program that enables you to define configuration parameter values specific to your system. The program generates an NCL script containing the NCL commands necessary to set up your X.25 configuration. The X.25 startup script starts processes and initializes databases required by X.25.

When invoked, the X.25 startup script executes the NCL script. An NCL script is a series of NCL commands, each of which relates to a specific aspect of configuration. To make each script more readable, the NCL commands are interspersed with comments that indicate what actions the subsequent NCL commands perform. An example NCL script is shown in Appendix B.

1.2 Configuration Program Modes

The configuration program, which is supplied as the utility `x25$configure`, can be run in one of two modes to configure a system:

- **basic mode**, which is used to create a basic working configuration. This mode provides a mechanism for configuring a system, without the need to have knowledge of, or understand, Enterprise Management Architecture (EMA) entities. Full details of using this mode are given in Part I of this guide.
- **advanced mode**, which is used to create more complex working configurations. This mode of operation requires you to have a good understanding and working knowledge of EMA entities. Full details of using this mode are given in Part II of this guide.

1.2.1 Selecting the Configuration Mode

The configuration mode you need to choose depends on the type of X.25 configuration you want to generate.

A basic configuration consists of:

- One DTE connected to a PSDN, with X.25 Mail and/or X.29 operating over that connection. The use of PVCs and DECnet OSI Transport services are also supported.

  or

- One or more DTEs configured to run over a single LAN device, with X.25 Mail and/or X.29 operating over those connections. The use of PVCs and DECnet OSI Transport services are also supported.

  or

- One X.25 client system connected to one or more PSDNs via one or more gateways, with X.25 Mail and/or X.29 operating over that connection.

If one of these configurations satisfies your X.25 requirements, then the **basic mode** will be sufficient to configure your system. If, however, you require any of the following:

- More than one connection to a PSDN
- Connections to a Local Area Network over more than one LAN device
- Both a WAN connection and a LAN connection
- More than one X.25 client system
- Your own X.25 or X.29 applications to service incoming X.25 calls
- Closed User Group support

then you will need to use the **advanced mode** to create your X.25 configuration.

Note that any configuration data entered using the basic mode is available when the configuration program is subsequently run using the advanced mode. Therefore, you can create a simple configuration using basic mode, and then add to it by running the advanced mode (using the "Modify an existing configuration script" option).

1.3 Changing Your Configuration

To allow flexibility, configurations need to be modified on either a temporary or permanent basis.

X.25 Alpha provides a number of methods in which an existing configuration can be modified. These methods are detailed in Chapter 10.

1.4 Obtaining Help

A comprehensive Help facility is available in both basic and advanced mode and can be used if further information is required while running the configuration program. Full details of the help facility available in each mode are given in Chapter 2.

1.5 Steps in Configuring Your System

To configure your X.25 Alpha system:

1. Plan your configuration. As part of this task you should take note of the information given in Section 1.6.

   Time spent planning your configuration will obviate the need to perform major or constant reconfigurations at later stages.

2. Record the information you will need during the configuration program. Tables are provided in Appendix A for this purpose.

   For the basic mode, use Chapter 3 and Chapter 4 to determine the information required.

   For the advanced mode, use Chapter 6 and Chapter 7 to determine the information required.

3. Run the configuration program in either basic mode or advanced mode (refer initially to Chapter 2 and then to Chapter 3 (basic mode) or to Chapter 6 (advanced mode)).

1.6 Configuration Considerations

This section introduces aspects of your proposed configuration that you need to consider before you run the configuration program.

1.6.1 Required Licenses

Systems running X.25 Alpha have direct access to one or more PSDNs conforming to CCITT recommendation X.25 and to ISO standards 7776 and 8208, or to communicate with another node on the LAN via LLC2.

In addition, X.25 Alpha allows OpenVMS® Alpha® systems on a DECnet/OSI for OpenVMS Alpha network to connect to PSDNs through one or more connector nodes. This enables communication between the X.25 Alpha system and a remote DTE.

To run X.25 Alpha you must have one or more of the following licenses:

- DECnet/OSI for OpenVMS Alpha
- X.25 Alpha

The type(s) of X.25 system you can configure depend on the license(s) that you have installed. Table 1–1 summarizes the possible configurations and the licenses required to run them.

Table 1–1 Configurations and License Requirements

License(s)	Possible X.25 Configurations
DECnet/OSI for OpenVMS Alpha only	CONS over LLC2 CLNS over DEC-HDLC
X.25 Alpha only	X.25 over Local Area Networks X.25 over Wide Area Networks X.25 Client (via a connector node)

1.6.2 Network Profiles

A network profile contains all the pertinent network parameters for a specific X.25 network. For example, a profile contains the default value and permissible range for the X.25 window size.

For External Field Test, a number of profiles are supported and pre-configured in the X.25 Alpha software.

2
Using the Configuration Program

2.1 Introduction

This chapter explains how to invoke the configuration program and provides details on the facilities and keys that are available to help you to complete the configuration.

If you have not already done so, you should record the required configuration parameter values. Details of the Configuration Program Sections required for X.25 Alpha systems are given in Chapter 3 (basic mode) and Chapter 6 (advanced mode). Details of the required configuration parameters for each Section in the program are given in Chapter 4 (basic mode) and Chapter 7 (advanced mode). It is recommended that you **do not** invoke the configuration program unless you have values for each of the required configuration parameters.

Note

Throughout this and subsequent chapters, reference is made to the keys available on a DEC terminal (VT200 or higher).

Refer to Section 2.3.4 for keys that are supported on this and other terminals.

2.2 Invoking the Configuration Program

To run the configuration program:

1. Log in to a suitably privileged account.
2. Invoke the configuration program in either basic or advanced mode.

   To invoke the configuration program in **basic** mode, enter the command:

   ```
   $ @sys$startup:x25$configure basic
   ```

   To invoke the configuration program in **advanced** mode, enter the command:

   ```
   $ @sys$startup:x25$configure advanced
   ```

   or

   ```
   $ @sys$startup:x25$configure
   ```

When the configuration program is invoked (in either mode), the wide area network device driver configuration utility (`WANDD$CONFIGURE`) is run. This utility allows you to configure the synchronous device drivers to permit direct connection to a wide area network via a serial port.

- If WANDD has not been configured, you are prompted whether to configure the device drivers.

- If WANDD has been configured, you are prompted whether to reconfigure the device drivers.

In both cases, you are then prompted whether to load the WANDD management software and the auto-configurable synchronous devices.

If you select to load the auto-configurable synchronous devices, you are further prompted whether to configure the built-in serial port as a synchronous device.

An example showing these prompts and example responses is given below.

```
$ @sys$startup:x25$configure

  Configuring WANDD... ['?' for HELP]

%WANDD$CONFIGURE-I-WANDDNOTCONFIG, WANDD has not been configured.
Configure WANDD? [YES] Return
Load WANDD? [YES] Return

  All installed synchronous devices will be automatically
  configured.  However, the built-in serial port will only
  be configured at your request.

Configure built-in serial port as synchronous? [YES] Return

! SYS$STARTUP:WANDD$CONFIG.DAT
! Created by SYSTEM on 10-FEB-1994 14:28:09.02
!
load_wandd      YES
load_zrdriver   YES
!
! End of SYS$STARTUP:WANDD$CONFIG.DAT

Are you satisfied with your answers? [YES] Return
%NET-I-LOADED, executive image X25$KERNEL_RTL.EXE loaded
%NET-I-LOADED, executive image X25$MEL.EXE loaded
%NET-I-LOADED, executive image X25$L2.EXE loaded
%NET-I-LOADED, executive image X25$L1.EXE loaded

%SYSMAN-I-OUTPUT, command execution on node SPTENZ
%IOGEN-I-PREFIX, searching for ICBM with prefix SYS$
%IOGEN-I-PREFIX, searching for ICBM with prefix X25$
%IOGEN-I-SCSIPOLL, scanning for devices through SCSI port PKA0
%IOGEN-I-SCSIPOLL, scanning for devices through SCSI port PKB0
%RUN-S-PROC_ID, identification of created process is 00000092

  Available Synchronous Communication Ports:

        1.  ZRA0   -  SSCC-0-0

Press RETURN to continue...
```

Once WANDD$CONFIGURE has been run, the initial screen of the X.25 configuration program is displayed.

2.3 Common Operations

The configuration program consists of a number of Sections, each corresponding to a logical group of information.

Most Sections are optional, that is you do not have to enter information unless you want to. Such Sections begin with a question in the form:

"Do you want to set up *X*?"

If you respond "Yes" to the prompt, the rest of that Section is presented to allow you to complete it. If you respond "No" to the prompt, the next new Section is presented. You can decide at a later stage to complete any Section that you bypass (refer to Section 2.3.5).

Each Section commences with a screen of introductory information and is followed by one or more screens on which you can enter data. Each data entry screen contains one or more fields in which you can enter data. Some fields are mandatory, others are optional.

2.3.1 Entering Information

You can enter data in two ways:

- By selecting an option from a displayed menu. To select an option, move the cursor over that option using the arrow keys (refer to Section 2.3.4) and then press Return.
- By entering data in a field. To enter data, move to the field (refer to Section 2.3.4), key in the data, and then press Return.

When you have entered all the required information on a screen, a new screen is automatically displayed. You cannot move to a new screen until you have completed all the mandatory fields on the current screen.

2.3.1.1 Horizontal Scrolling

Usually, when you enter data into a field, all the data you enter is displayed. However, in some cases, the maximum number of data characters you are allowed to enter is greater than the length of the field displayed on the screen. In such cases, the entered data will scroll horizontally when you have entered the maximum number of characters that can be displayed.

Note that horizontal scrolling only works if the data entry screen is in Insert mode. Refer to Section 2.3.1.2.

2.3.1.2 Data Entry Mode

By default, each data entry screen is invoked in Overstrike mode. In this mode, any characters entered overwrite any characters currently displayed in the data entry field. If required, a data entry screen can be placed in Insert mode. In this mode, any characters entered are inserted into the characters currently displayed; any previously entered characters are moved to the right. To change from one mode to the other, press Ctrl/A. The current mode is displayed in the upper right-hand corner of the data entry screen.

2.3.2 Moving Within a Section

To move backwards within a Section to a previous screen, press Prev Screen. You are allowed to move backwards within a Section whether you have completed all the screens in that Section or not. However, you can move backwards only as far as the first screen of the Section.

If you have moved back to look at completed screens, you can move forward again by pressing Next Screen. You can only move forward until you reach an incomplete screen. The mandatory fields on the incomplete screen must then be completed before moving on.

2.3.3 Moving Between Sections

The methods available for moving between Sections depend on whether you are running the configuration program in basic or advanced mode and whether you are creating or modifying a configuration.

Basic Mode

When **creating** a configuration, the next uncompleted Section is displayed automatically when the current Section has been completed.

When the last Section (the NCL Script Section) is displayed, you are prompted whether to create the NCL script or review/modify the information you have entered. Entering "No" to this prompt displays the Sections Menu from which you can select a Section to be reviewed or modified.

When **modifying** a configuration, a specific Section can be selected from the Sections Menu. The Sections Menu is displayed automatically after you select the type of X.25 connection required, or can be accessed from the Options Menu of the current Section by selecting the option "Go to Sections Menu" (refer to Section 2.3.5).

Advanced Mode

When **creating** a configuration, an Options Menu is displayed when you complete the last data entry screen in a Section. This menu includes options that allow you to move to the next uncompleted Section or to move to a previously completed Section (via the Sections Menu):

- To move to the next uncompleted Section, select the option "Continue to a new section".
- To move to a previously completed Section, select the option "Go to Sections Menu".

Full details of the Options Menu are provided in Section 2.3.5.

When **modifying** a configuration, a specific Section can be selected from the Sections Menu. The Sections Menu is displayed automatically after you select the option **Modify an existing configuration script**, or can be accessed from the Options Menu of the current Section by selecting the option "Go to Sections Menu" (refer to Section 2.3.5).

2.3.4 Keys Used in the Configuration Program

Table 2–1 lists the keys you can use when running the configuration program in either basic or advanced mode.

Note that if your terminal does not support cursor keys, you cannot move between fields and therefore you will not be able to run the configuration procedure.

To use the cursor keys, you must ensure that the "TERM" environment variable is set correctly so that it reflects the terminal being emulated.

To set the TERM environment variable, enter the command:

```
SET TERM/DEVICE=terminal_type
```

where `terminal_type` is specified as vt300, vt200 etc.

Note

If you intend to run the configuration program in a DECterm window, the terminal type **must** be set to vt320. To set the correct terminal type:

1. Display the General Options pull-down menu.
2. Select `VT300 Mode`, `7-Bit Control` and Terminal ID `VT320 ID`.
3. Select OK

Table 2–1 Available Keys

DEC Terminal (VT200 or higher) Keys	Function
Movement Keys	
UP and DOWN arrow keys	Moves cursor between fields
LEFT and RIGHT arrow keys	Moves cursor within a field
Prev Screen or Ctrl/P	Takes you to the previous screen in the current section
Next Screen or Ctrl/N	Takes you to the next screen in the current section
F12 or Ctrl/E	Moves cursor to end of input field
Ctrl/H	Moves cursor to start of input field
Edit Keys	
Return, Select or Enter	Enters/Selects a value
Remove or Ctrl-U	Deletes all characters from a field
Delete	Deletes previous character
Action Keys	
Help or Ctrl/K	Provides help on the current field
F9 or Ctrl/R	Return to Procedure Help menu

(continued on next page)

Table 2–1 (Cont.) Available Keys

DEC Terminal (VT200 or higher) Keys	Function
F10 or Ctrl/Z	Exit Help
F8 or Ctrl/Z	Quit
F14 or Ctrl/A	Toggle Insert/Overstrike Mode
Ctrl/W	Redraw screen

2.3.5 Accessing the Options Menu

An Options Menu is displayed when:

- you review/modify a Section in **basic mode**
- you complete the last data entry screen of a Section while creating or modifying a Section in **advanced mode**

Generally, the Options Menu for a Section provides the following choices:

- Continue to a new section
- Add / Enable an *X*
- Modify an *X*
- Delete / Disable an *X*
- Go to Sections Menu

where *X* is the item you created in that Section. For example, the Remote DTE Class Options Menu provides the following choices:

- Continue to a new section
- Add a Remote DTE Class
- Modify a Remote DTE Class
- Delete a Remote DTE Class
- Go to Sections Menu

To perform an action, select one of the options on the Options Menu. The options have the following meanings:

Continue to a new section

Choose this option when you have finished entering or amending information in the current Section. The configuration program then displays the first screen in the next uncompleted Section.

Add an *X*

Choose this option to add another item to the current Section.

Modifying an *X*

Choose this option to modify some or all of the information previously entered about an item.

Delete an *X*

Choose this option to delete an item in the current Section.

Go to Sections Menu

Choose this option to display the Sections Menu. Selecting a Section from the Sections Menu will display the Options Menu of that Section.

2.4 Obtaining Help

You can get help at any time during the program by pressing the Help key. The level of help you receive depends on where the cursor is positioned when you press the Help key. Subsections Section 2.4.1, Section 2.4.2, and Section 2.4.3 detail each level of help.

2.4.1 Obtaining Help on a Specific Field or Menu Choice

If you press Help while the cursor is on a particular field or menu choice, lines of text will appear near the bottom of the screen. This will tell you what sort of value is expected in that field, or what the implications are of making that choice if further help is available.

If you press Help again and further help is available, the screen will be replaced by further information on that field or menu choice. Press F10 to leave Help and return to the screen from which you pressed Help originally.

2.4.2 Obtaining General Help

If you press Help while on any of the introductory screens, the screen will be replaced by general information on that section. For example, pressing Help while on the NCL introduction screen will bring up general information on NCL script and NCL commands.

2.4.3 Obtaining Help on the Program

You can get help on the configuration program (for example, what keys you can use, how to navigate between screens) by pressing Help while you are on any other Help screen. A list of topics is presented from which you can select the item of interest. Press F10 to leave Help and return to the screen from which you pressed Help originally.

2.5 Creating the Configuration File

The final Section in the configuration program, NCL Script, allows you to initiate the generation of the relevant NCL script for the configuration file from the information held in the configuration database.

This Section can be accessed in either of the following ways:

- By selecting the **NCL Script** option from the Sections Menu.
- By completing the penultimate Section and selecting the **Continue to a new section** option from the Options Menu.

When the NCL Script Section is accessed, you are prompted whether to create the NCL script immediately or modify your answers:

"Do you want to modify your answers?"

To create the NCL script, enter **No** in response to the prompt.

If you want to return to any of the completed Sections and modify the existing data before creating the NCL script, enter **Yes** in response to the prompt. The Sections Menu is redisplayed.

To quit from the configuration program without generating an NCL script, refer to Section 2.6.

During the creation of the NCL script a number of messages are displayed on the screen and a number of system files are created:

SYS$SYSTEM:X25$SECURITY_IDENTIFIERS.COM

This command procedure creates the rights identifiers required based on the security information you enter.

SYS$SYSTEM:MODPARAMS.DAT

This file is modified only if you have configured X.25 Client and the number of session control connections is changed. It contains values for a number of system parameters, based on the number of session control connections specified. Refer to Section 2.8.

SYS$STARTUP:X25$SESSION_STARTUP.COM

This command procedure defines the process parameters for the X.25 Alpha Session Control Process. It is run when X.25 Alpha is invoked.

SYS$STARTUP:X25$APPL_STARTUP.COM

This command procedure defines the process parameters for the X.25 Alpha Application Process. It is run when X.25 Alpha is invoked.

SYS$STARTUP:X25$MAIL_SETUP.COM

This command procedure creates the user account in which X.25 Mail will run. It is created only if the X.25 Utilities Section is completed and is run before you exit the configuration program.

The command procedure, X25$SECURITY_IDENTIFIERS.COM, can be run prior to leaving the configurator. When the command procedure is created, you are prompted whether to run that procedure.

Finally, the Main Menu is redisplayed to allow you to exit the configuration program.

If, for some reason, the program cannot create the NCL script, an error message is displayed at the foot of the screen. This may occur if, for example, a file cannot be created due to incorrect permissions. You must correct the problem before making a further attempt to create the NCL script.

To correct the problem:

1. Press Return to display the Main Menu.
2. Select the option **Exit this program**.
3. Rectify the error.
4. Re-run the configuration program.
5. Select the option **Modify an existing configuration script**.
6. Access the NCL Section from the Sections Menu.

7. Select to create the NCL script.
8. If the course of action detailed in steps 1 to 7 does not rectify the problem, please report the problem to Digital by submitting a Software Performance Report (SPR).

2.6 Quitting from the Configuration Program

Caution

Quitting from the configuration program will delete all information entered since the NCL script was last created or since the configuration data was last saved. This action should therefore be performed only if you do not want to retain the entered data.

To quit from the configuration program without creating an NCL script:

1. Press F8.

   A warning message is displayed and you are prompted to confirm that you want to quit the configuration program.
2. To quit the program, enter **Yes**. The system prompt is redisplayed.

   To return to the program, enter **No**. The screen from which you chose to quit the configuration program is redisplayed.

2.7 Leaving the Configuration Program

Once the configuration program has created the configuration file containing the NCL scripts, the Main Menu is redisplayed.

To leave the configuration program, select the option **Exit this program**.

2.8 Post-configuration Tasks

After configuring your system you should perform the following tasks:

1. If you changed the number of session connections, run the Autogen utility and reboot your system. For example, these actions can be performed by issuing the command:

   ```
   @SYS$UPDATE:AUTOGEN SAVPARAMS REBOOT FEEDBACK
   ```

   Further details about configuring the number of session control connections are given in Section 8.5.
2. Ensure that the NSP attributes `maximum transport connections` and `maximum remote nsaps` are large enough to support the number of session connections required. The default values of these attributes are 200 and 201 respectively.
3. If you have run the configurator in Basic mode, grant the rights identifier X25_OUTGOING_ALL to all users and processes that are to be permitted to make outgoing calls.

4. For compatibility with VAX P.S.I., a number of logicals have been provided (but commented out) in SYS$STARTUP:X25$STARTUP.COM. Details of the available logicals are provided in the *X.25 for OpenVMS—Management Guide*. To use these logicals, edit X25$STARTUP.COM and remove the comment characters that precede the logicals.
5. Run the command procedure SYS$STARTUP:X25$STARTUP.COM to execute the NCL script.

Part I

Basic Configuration Mode

3
Overview of Basic Mode

3.1 Introduction to the Basic Mode

The basic mode of the configuration program allows you to configure a working X.25 system without needing to have any knowledge of Enterprise Management Architecture (EMA) entities and the relationship between such entities.

To use the basic mode, you only need to have a knowledge of the network components of your system and a basic knowledge of X.25. If you are new to X.25 and you have not already done so, you are encouraged to read the *DECnet/OSI for OpenVMS—Introduction, Planning, and Glossary* before using the configuration program.

3.2 Configuration Program Structure

The configuration program consists of a number of Configuration Sections, each Section corresponding to a specific function. The following Sections are available:

1. X.25 over Wide Area Networks
2. X.25 over Local Area Networks
3. X.25 Client
4. PVCs
5. Incoming Call Security
6. X.29 Support
7. X.25 Mail

You do not need to complete each of the available Sections; you only need to complete the Sections relevant to the configuration that you want to set up. For example, you might only want to configure X.25 Client and security. Note that **only one** of the first three Sections can be completed.

The data required to complete a configuration depends on the Sections to be completed. Details explaining the purpose of each Section are given in Section 3.3 and full details about the data required to complete each Section are given in Chapter 4.

3.3 Configuration Sections

X.25 over Wide Area Networks

This Section allows you to enter details about an X.25 network to which your system is attached. You must provide the profile name, DTE address, outgoing and incoming channel number ranges, and synchronous line associated with the DTE connected to the named network.

X.25 over Local Area Networks

This Section allows you to enter details about each of the LAN-based remote hosts you want to access from this system. You must select a LAN device to be used by all the LAN remote hosts. For each remote host you name, you must provide the DTE address and remote Media Access Control (MAC) address associated with each DTE connected to the LAN. A profile does not need to be specified as it is set to ISO8881.

X.25 Client

This Section allows you to enter details about an X.25 network to which your system is attached and the gateways used by the specified network to access PSDNs.

PVCs

This Section allows you to define one or more Permanent Virtual Circuits (PVCs). Your PSDN subscription will determine whether you are permitted to set up any PVCs. For each PVC you name you must specify a channel number.

This Section is not presented if you configure your system for X.25 Client.

Incoming Call Security

Note

Digital **strongly recommends** that you set up incoming security to protect your system from unauthorised use.

This Section allows you to select the type of security to be applied to your X.25 system. One of three options can be selected:

- Allow all incoming access
- Allow no incoming access
- Restricted incoming access

If restricted incoming access is selected, remote DTE addresses must be entered for each remote DTE that needs to make an incoming call. The remote DTE addresses must be categorized and entered in one of two Access Level categories: Remote Charge or All.

X.29 Support

X.29 support will be configured on your system so that remote users can access the local system via an X.25 network and local users can access a remote system via an X.25 network. If required, you can specify a Network User Identity (NUI) to identify the party that is to pay for each outgoing call.

X.25 Mail

X.25 Mail will be configured on your local system so that users can send mail to, and receive mail from, other systems that implement the Mail-11 protocol over X.25. You must enter a VMS user identification code for the X.25 Mail account.

4
Required Configuration Data

4.1 Overview

This chapter details the information you will need to provide while running the configuration program in **basic** mode.

Tables 4–1 to 4–7 list all the information you will require during the configuration. You should write down the configuration parameter values specific to your system in Appendix A (which provides a series of blank forms) and refer to that appendix when you run the configuration program.

Table 4–1 details the information required for the X.25 over Wide Area Networks Section.

Table 4–2 details the information required for the X.25 over Local Area Networks Section.

Table 4–3 details the information required for the X.25 Client Section.

Table 4–4 details the information required for the PVCs Section.

Table 4–1 lists the information you need to complete the X.25 over Wide Area Networks Section of the configuration program.

Table 4–1 Configuration Information: X.25 over Wide Area Networks

Information required	Form in which it is required	Where to find information	Default value or setting
Profile name	–	Refer to Section 1.6.2	–
X.25 address	Max 15 digits	PSDN subscription information	–
Synchronous line name	Characters	Choose from lines determined by program	–
Incoming Logical Channel Range(s)	Range of numbers	PSDN subscription information	[1..4095]
Outgoing Logical Channel Range(s)	Range of numbers	PSDN subscription information	[1..4095]

Required Configuration Data
4.1 Overview

Table 4–2 lists the information you need to complete the X.25 over Local Area Networks Section of the configuration program.

Table 4–2 Configuration Information: X.25 over Local Area Networks

Information required	Form in which it is required	Where to find information	Default value or setting
LAN Device	Characters	Choose from devices determined by program	–
LAN remote host name	Max 32 characters	You supply	–
X.25 DTE address	Max 15 digits	You supply	–
MAC address	LAN hardware address	Remote system	–
Incoming Logical Channel Range(s)	Range of numbers	PSDN subscription information	[1..4095]
Outgoing Logical Channel Range(s)	Range of numbers	PSDN subscription information	[1..4095]

Table 4–3 lists the information you need to complete the X.25 Client Section of the configuration program.

Table 4–3 Configuration Information: X.25 Client

Information required	Form in which it is required	Where to find information	Default value or setting
Network name	Max 32 characters	You supply	–
Gateway Node Name(s)	Max 32 characters	You supply	–

Table 4–4 lists the information you need to complete the PVCs Section of the configuration program.

Table 4–4 Configuration Information: PVCs

Information required	Form in which it is required	Where to find information	Default value or setting
DTE name (if more than one)†	Max 32 characters	Choose from available DTEs	-
PVC name(s)	Max 32 characters	You supply	PVC-*n*
Channel number(s)	Integer[1]	PSDN subscription information	-

[1]The value entered must lie outside the incoming and outgoing channel ranges for the specified DTE.

†Multiple DTEs are permitted only for LAN configurations.

Table 4–5 lists the information you need to complete the Incoming Call Security Section of the configuration program.

Table 4–5 Configuration Information: Incoming Call Security

Information required	Form in which it is required	Where to find information	Default value or setting
Security option	Allow all incoming access Allow no incoming access Restricted incoming access	Choose one of the available options	-
DTE addresses of systems that can call this system only if they pay for the call	Max 15 digits. Can be a full DTE address or a Remote Address Prefix (RAP)	You supply	–
DTE addresses of systems that can call this system irrespective of who pays for the call	Max 15 digits. Can be a full DTE address or a Remote Address Prefix (RAP)	You supply	–

Table 4–6 lists the information you need to complete the X.29 Support Section of the configuration program.

Table 4–6 Configuration Information: X.29 Support

Information required	Form in which it is required	Where to find information	Default value or setting
X29 Network User Identity	Octet string	You supply	-

Table 4–7 lists the information you need to complete the X.25 Mail Section of the configuration program.

Table 4–7 Configuration Information: X.25 Mail

Information required	Form in which it is required	Where to find information	Default value or setting
Account UIC	OpenVMS User Identification Code	You supply	[200,200]

5
Flowcharts and Associated Notes

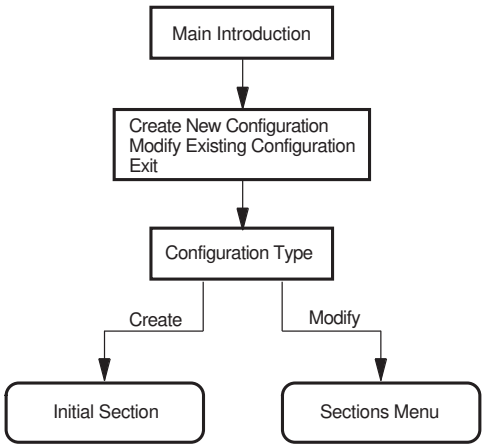
This chapter contains flowcharts illustrating each Section presented when the basic mode of the configuration program is run, together with notes about each Section.

5.1 Introduction

Figure 5–1 illustrates the Introduction Section.

The Introductory Section provides you with options to create a new X.25 Alpha configuration, modify an existing configuration, or exit from the program. These options are detailed more fully in subsections 5.1.1, 5.1.2, and 5.1.3 respectively.

Figure 5–1 Introduction



Flowcharts and Associated Notes
5.1 Introduction

5.1.1 Creating a New Configuration

To create a new configuration:

1. Select the option **Create a new configuration script**.

   The configuration program displays the types of X.25 system you can configure. The choices are:

   X.25 over Wide Area Networks
   X.25 over Local Area Networks
   X.25 Client

2. Select the type of system you want to configure. You can select only one of the available choices.

   The configuration program then displays the configuration Section associated with the option selected.

   The Section displayed is the first in a series of Sections that can be completed. You do not have to complete every Section, only those that present functions that you want to configure. When the current Section has been completed, you are given the opportunity to amend that Section or to move on to another Section. In some Sections you are given the opportunity to move on to the next Section without completing the current Section.

3. Complete the current Section or select to move on to the next Section.

4. Repeat step 3 for each of the Sections. To create a configuration script you **must** complete the NCL Script Section.

5.1.2 Modifying an Existing Configuration

To modify an existing configuration:

1. Select the option **Modify an existing configuration script**.

   The Configuration Type screen is displayed with the current X.25 connection type highlighted.

2. Select the type of X.25 connection you want to configure. You can select only one of the available choices. The next action depends on whether you select to retain the existing type of X.25 connection or to create a different type:

   - If you select to retain the existing type, the Sections Menu is displayed. Continue at step 3.
   - If you select to create a different type, you will be prompted to confirm that you want to delete the existing X.25 connection information. If you choose to delete the existing information, the Section associated with the selected (new) configuration type is displayed and must be completed. Once completed, the Sections Menu is displayed. Continue at step 3.

3. The Sections Menu presents the Sections that can be modified. These are:

   1. X.25 over Wide Area Networks
   2. X.25 over Local Area Networks
   3. X.25 Client
   4. PVCs
   5. Incoming Call Security
   6. X.29 Support

7. X.25 Mail
8. NCL Script

Note that a Section is presented in the list only if that Section has been completed.

Initially, the first Section is highlighted to indicate that it is the current Section.

To modify an existing Section, use the up-arrow and down-arrow keys to highlight the required Section (and hence make it current) and then press Return.

The Options Menu for the specified Section is displayed and allows you to modify the existing data.

To configure a new Section, use the up-arrow and down-arrow keys to highlight any Section other than the NCL Script and then press Return.

The Options Menu for the specified Section is displayed and allows you to select to move on to the next Section. This action will display the next Section not yet configured.

For further details on modifying an existing configuration and facts that you should be aware of before making any modifications, refer to Chapter 10.

If you want to modify a Section after creating it you can return to that Section from the Sections Menu. To display the Sections Menu while creating a configuration, move to the NCL Script Section and, when prompted whether to modify your answers, enter **Yes**. Note that the Sections Menu only displays those Sections that have been completed.

5.1.3 Exiting the Configuration Program

To leave the configuration program, select the option **Exit this program** from the Main Menu.

Full details of quitting and leaving the configuration program are provided in Chapter 2.

5.2 X.25 over Wide Area Networks

This Section allows you to enter details about an X.25 network to which your system is attached. You must provide information associated with the DTE connected to the named network. It is assumed that the system is to be attached to a public or private network and will have a DTE connected to the specified network.

Figure 5–2 illustrates the X.25 over Wide Area Networks Section.

Profile Name

An X.25 profile is a set of parameters that indicate to X.25 Alpha the correct operating procedures for a particular network. The profile name defines a specific profile. The valid profiles are given in the help text for this prompt. Typically, the profile name corresponds to the name of the PSDN.

X.25 Address

The X.25 address is the X.25 DTE address assigned by the PTT when the network connection to a Packet Switched Data Network (PSDN) is purchased. An X.25 address is a series of numeric digits similar to a telephone number.

Synchronous Line

The synchronous line indicates which of the available synchronous communications devices supported by this host can be used by the specified DTE for its connection to a PSDN. Select one of the available lines.

Incoming Logical Channel Range

The incoming channel number range specifies what channel numbers can be expected by X.25 Alpha when an incoming call request is received. This information is supplied by the PTT authority when the DTE subscription is made. You must enter the channel range in the following format:

{[<start of range> .. <end of range>]}

where <start of range> must be less than or equal to <end of range>. For example, to enter the range 1 to 4095, enter {[1..4095]}.

Note

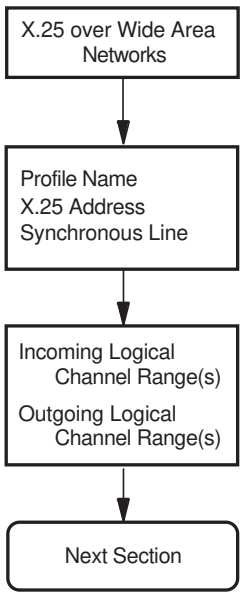
If you intend to define PVCs, ensure that you leave enough channel numbers free to cater for the PVCs. For example, by entering the range {[10..4095]}, 9 channels are left free for assigning to PVCs.

Outgoing Logical Channel Range

The outgoing channel number range specifies what channel numbers can be used by X.25 Alpha when an outgoing call request is made. This information is supplied by the PTT authority when the DTE subscription is made.

Enter the channel range in the same format as the incoming channel range. For example, to enter the range 1 to 4095, enter {[1..4095]}. See also **Note** under Incoming Logical Channel Range.

Figure 5–2 X.25 over Wide Area Networks Section



5.3 X.25 over Local Area Networks

This Section allows you to enter details about each of the LAN-based X.25 networks (LAN Remote Hosts) you want to access from this system. For each LAN Remote Host you name, you must provide information on the DTE that is connected to the LAN.

Figure 5–3 illustrates the X.25 over Local Area Networks Section.

LAN Device Name

The LAN device name indicates which of the available connections to the LAN the DTEs are to use as a connection to the LAN-based X.25 Network. You are only permitted to specify **one** LAN device.

LAN Remote Host Name

The LAN Remote Host name is simply a name that is used to distinguish between the different remote hosts. This name must be unique. For example, REMOTE-LAN-1.

To specify more than one LAN Remote Host, complete this Section for the first remote host and then select to define another.

X.25 DTE Address

The X.25 DTE address is the X.25 address that is used by other nodes in this X.25 network to identify this DTE. A DTE address is a series of numeric digits similar to a telephone number. It must be unique within each X.25 network.

MAC Address

The remote Media Access Control (MAC) address identifies the remote node accessed by this DTE. This address is fixed. A MAC address consists of a series of up to twelve hexadecimal digits, optionally separated by hyphens. For example: 1b-34-5f-78-e4-ab.

Note that each DTE may access only one other X.25 node on the LAN.

Incoming Logical Channel Range

The incoming channel number range specifies what channel numbers can be expected by X.25 Alpha when an incoming call request is received. This information is supplied by the PTT authority when the DTE subscription is made. You must enter the channel range in the following format:

{[<start of range> .. <end of range>]}

where <start of range> must be less than or equal to <end of range>. For example, to enter the range 1 to 4095, enter {[1..4095]}.

Note

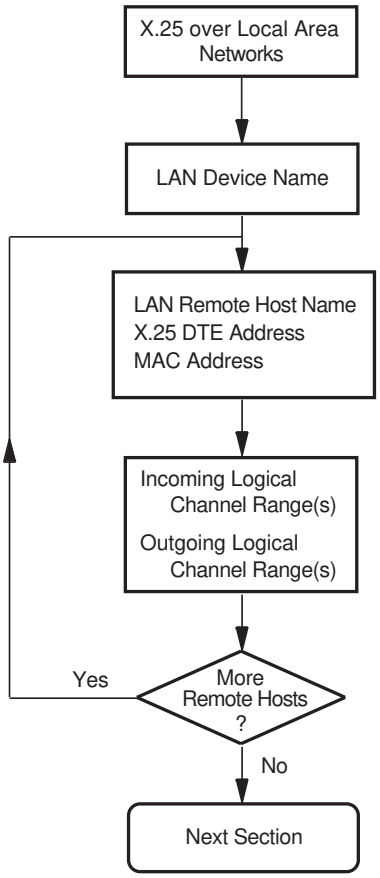
If you intend to define PVCs, ensure that you leave enough channel numbers free to cater for the PVCs. For example, by entering the range {[10..4095]}, 9 channels are left free for assigning to PVCs.

Outgoing Logical Channel Range

The outgoing channel number range specifies what channel numbers can be used by X.25 Alpha when an outgoing call request is made. This information is supplied by the PTT authority when the DTE subscription is made.

Enter the channel range in the same format as the incoming channel range. For example, to enter the range 1 to 4095, enter {[1..4095]}. See also **Note** under Incoming Logical Channel Range.

Figure 5–3 X.25 over Local Area Networks Section



5.4 X.25 Client

This Section allows you to enter details about an X.25 network to which your system is attached and the X.25 gateways through which your system is to access an available PSDN. You must provide the node name(s) of the gateways that provide the connection to the required PSDN.

Figure 5–4 illustrates the X.25 Client Section.

Notes

It is assumed that the system is to be attached indirectly to a network via an X.25 gateway.

The X.25 network name is simply a name that is used to distinguish between the different Packet Switch Data Networks (PSDNs) to which the local machine has a connection via an X.25 gateway.

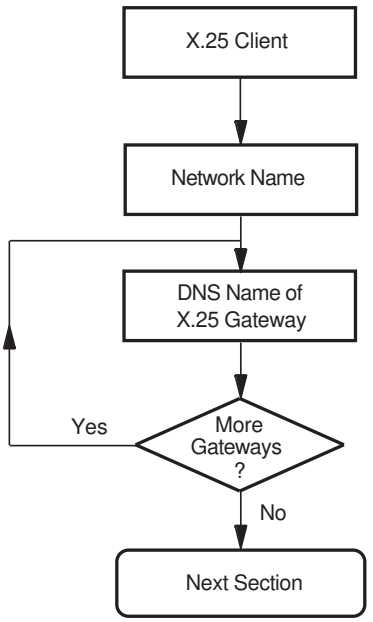
Note

The names that you choose for the network must correspond to the name of the DTE Class or Network in the gateway.

The node name of the X.25 gateway must be specified as either the Phase V node name of the X.25 gateway or the 6 character Phase IV DECnet node name. Examples of Phase V node names include:

dnu:.zko.star
vbo:.afsg.comms.werner
miller:.sales.west_coast.salem.WillyLoman
OZ:.QLD.Gold_Coast.Research_Park.Wasa

Figure 5–4 X.25 Client



5.5 PVCs

This Section is not presented if the X.25 Client Section is completed.

This Section allows you to enter details about each of the Permanent Virtual Circuits (PVCs) to be used by your system. Your PSDN subscription will determine whether you are permitted to set up any PVCs.

Figure 5–5 illustrates the PVCs Section.

Note

The information you enter in this Section is used in the Incoming Call Security Section. If you re-do this Section after configuring security, it is recommended that the Incoming Call Security Section is also re-done.

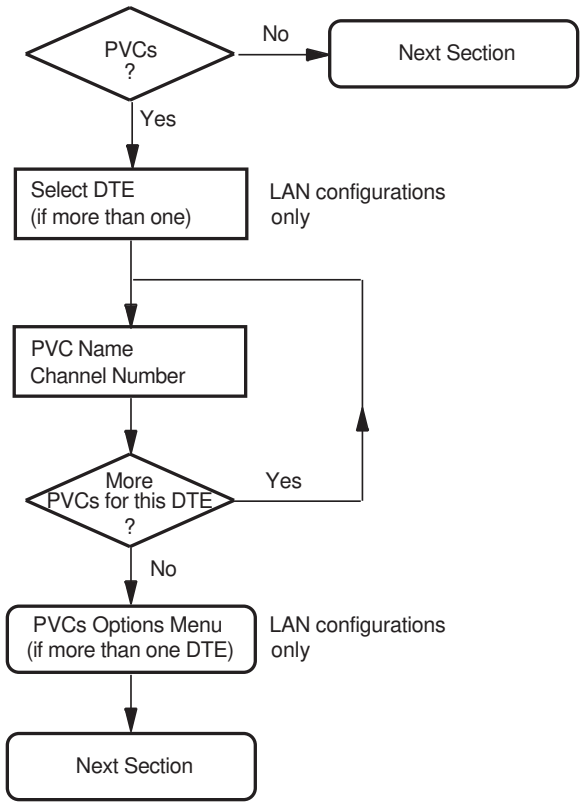
PVC Name

The PVC name is simply a name that is used to distinguish between the different PVCs. This name must be unique. For example, PVC-1.

Channel Number

The channel number must be specified as an integer and must lie outside the outgoing and incoming logical channel ranges specified in the X.25 over Wide Area Networks or X.25 over Local Area Networks section.

Figure 5–5 PVCs Section



5.6 Incoming Call Security

This section allows you to enter details about the type of incoming call security to be applied to your X.25 system.

Figure 5–6 illustrates the Incoming Call Security Section.

Notes

One of three security options can be selected:

- Allow all incoming access
- Allow no incoming access
- Restricted incoming access

If the **Restricted incoming access** option is selected, you must define the access level to be granted to each remote DTE that needs to make an X.25 call to the local system.

The access level granted to each remote DTE can be one of the following:

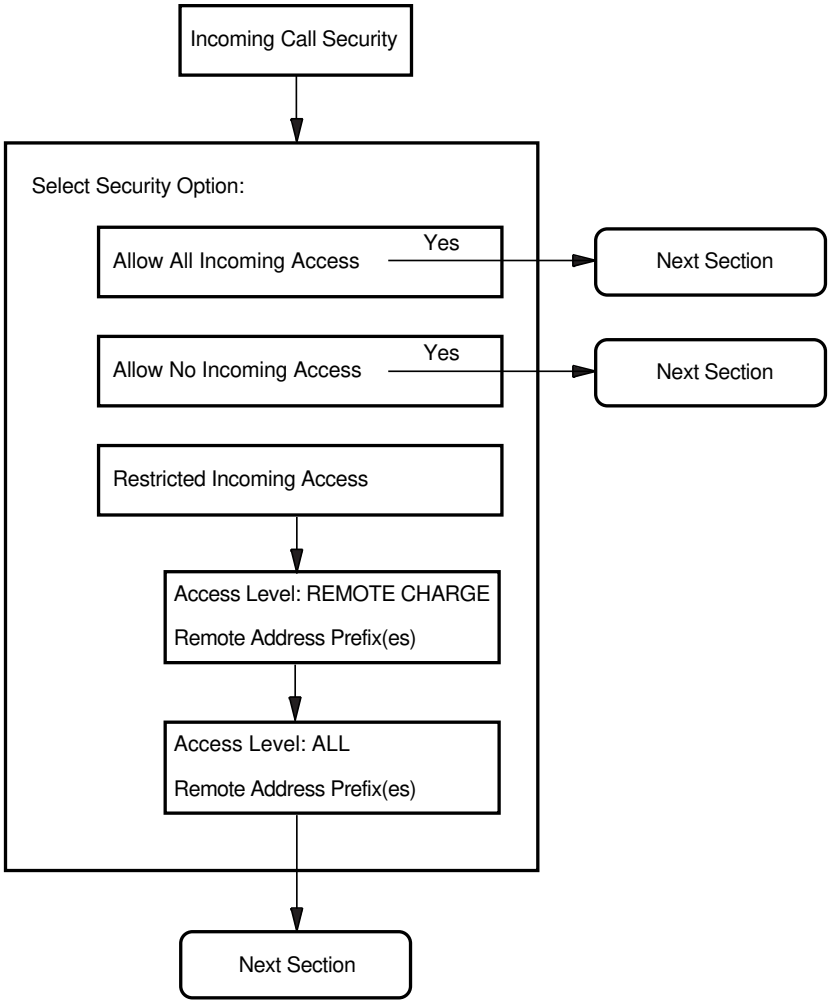
Remote_Charge	Remote DTEs are only permitted to make calls that do not contain a reverse charging request, that is, the local system will never be charged for the call
All	Remote DTEs are permitted to make any type of incoming calls to the local system

Separate screens are presented for each access level. On the relevant screen, enter the Remote Address Prefix (RAP) of each remote DTE to be granted the specified access level.

Wildcards can also be used to specify an address. Entering only the wildcard, *, implies that the local system can receive calls from **any** DTE address.

Note that any calls from DTE addresses with RAPs that are **not** specified will be cleared.

Figure 5–6 Incoming Call Security



5.7 X.29 Support

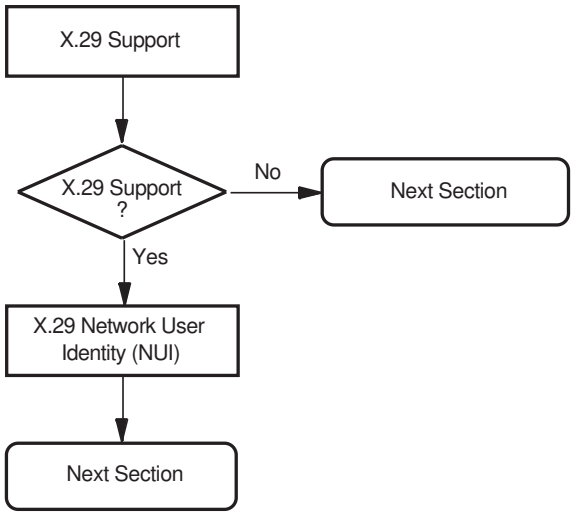
Support for X.29 allows users to access the local system remotely via an X.25 network and to access remote systems via the X.25 network from the local system.

Figure 5–7 illustrates the X.29 Support Section.

X.29 Network User Identity

The X.29 Network User Identity (NUI) identifies the party that is to pay for each outgoing call, and the DTE class to be used for the outgoing X.29 calls.

Figure 5–7 X.29 Support Section



5.8 X.25 Mail

X.25 Mail allows users to send mail to, and receive mail from, other systems that implement the Mail-11 protocol over X.25.

Figure 5–8 illustrates the X.25 Mail Section.

If you answer "Yes" when prompted whether to configure X.25 Mail, the configurator will create an account called X25MAIL in which X.25 Mail will run when X.25 Mail calls are received by the system being configured.

The account created is a network account having the following attributes:

- TMPMBX privilege
- PSI$X25_USER rights identifier

This account must be given a unique User Identification Code (UIC).

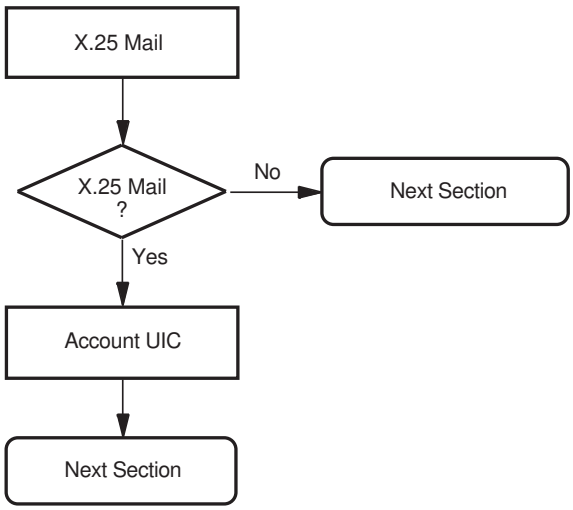
Account UIC

The User Identification Code (UIC) to be given to the account in which X.25 Mail will run. This code must be unique. If it is not unique then creation of the X.25 mail account will fail, and you will not be able to run X.25 Mail on your system.

Note

The UIC consists of two octal numbers, a group number and a member number, for example [77,1]. Group numbers 1 and 300-377 (octal) are reserved by Digital.

Figure 5–8 X.25 Mail



5.9 NCL Script

Figure 5–9 illustrates the NCL Script Section.

When you reach this Section, you have entered sufficient information to create a working X.25 configuration. If you want to verify some of the information you have entered, or add or delete some information, enter **Yes** in response to the question "Do you want to modify your answers?". The Sections Menu will be displayed, from which you can choose the Section you want to review.

When you are sure that the information you have entered is correct and complete, display the Sections Menu and select the option **Create the NCL Script**.

If the program creates the configuration file, a message is displayed which indicates the filename assigned to the file.

If, for some reason, the program cannot create the NCL script, error messages are displayed at the foot of the screen. If this occurs, you must correct the problem before making a further attempt to create the NCL script.

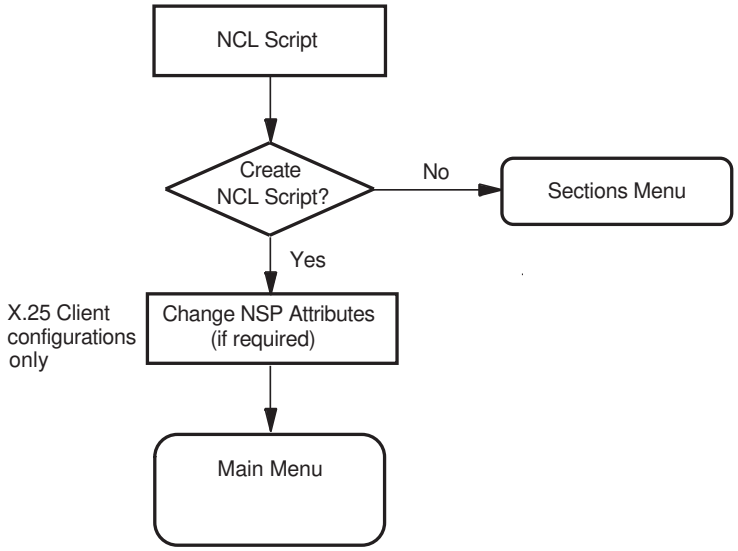
Next, if you have configured the X.25 Client Section, you are presented with a screen that details the minimum number of executor links required for your X.25 Alpha configuration. The number of links is calculated on the basis of 128 links per gateway node specified.

The configuration program now displays the number of Session Connections that can be established based on the configuration you have defined. You must ensure that the NSP attributes `maximum transport connections` and `maximum remote nsaps` are large enough to support this number of session connections. The default values of these attributes are 200 and 201 respectively.

If you need to change the values of the specified NSP attributes:

1. Exit the configuration program.
2. Use NCL to disable the NSP entity.
3. Make the required NSP attribute changes.
4. Enable the NSP entity.

Figure 5–9 NCL Script



Part II

Advanced Configuration Mode

6

Overview of Advanced Mode

6.1 Introduction to the Advanced Mode

The advanced mode of the configuration program allows you to fully configure an X.25 system or to reconfigure an existing X.25 system.

To use the advanced mode, you should have a good understanding of Enterprise Management Architecture (EMA) entities, the relationship between those entities, and a good understanding of X.25.

When you invoke the utility in advanced mode, you can decide whether to create a new configuration or modify an existing configuration.

This mode of the configuration program can also be used to modify a configuration that was defined using the basic mode of the utility. When the utility is run, any existing configuration data is retrieved from the configuration database so that it can be viewed and, if required, modified.

6.2 Configuration Program Structure

The configuration program consists of a number of Sections, each Section corresponding to a logical group of information.

Details explaining the purpose of each Section are given in Section 6.3 and full details about the data required to complete each Section are given in Chapter 7.

6.3 Configuration Sections

The configuration program has 17 sections, but not all sections are relevant to both Direct Connect and Client systems. Table 6–1 shows the sections that apply to each type of system. Details on each of the sections are provided after Table 6–1.

Note

You must complete **at least one** of the following sections:

- Remote DTE Classes Section
- Lines and DTEs Section
- LLC2 Section

Table 6–1 Configuration Sections Applicable to Client and Host-based Systems

Configuration Section	Applies to Host-based Systems?	Applies to Client Systems?
Remote DTE Classes	No	Yes
Lines and DTEs‡	Yes	No
LLC2‡ [1]	Yes	No
Session Connections	No	Yes
PVCs	Yes	No
Groups	Yes	No
X.29 Support	Yes	Yes
X.25 Mail	Yes	Yes
Applications	Yes	Yes
Filters	Yes	Yes
Templates	Yes	Yes
Reachable Addresses	Yes	Yes
Security	Yes	Yes
Incoming Security: Applications	Yes	Yes
Incoming Security: Filters	Yes	Yes
Outgoing Security: Local Processes	Yes	Yes
NCL Script	Yes	Yes

[1]DECnet/OSI must be installed and configured in order to complete this section.
‡You must set up at least one synchronous line and associated DTE or at least one LLC2 DTE.

Remote DTE Classes

This Section allows you to specify the DTE Classes on the gateway(s) that your X.25 Client system is to use to access one or more PSDNs.

You must configure **at least one** gateway node to complete this Section.

Lines and DTEs

This Section allows you to enter details relevant to Lines and DTEs.

You must configure **at least one** synchronous line to complete this Section. Choose a line on your system to configure for X.25 communications.

LLC2

This Section allows you to enter details relevant to LLC2 DTEs. This allows your system to communicate using X.25 over a local area network (LAN).

You must configure **at least one** LAN device to complete this Section.

Session Connections

This Section allows you to specify the maximum number of session control connections (virtual circuits) supported by the X.25 Alpha interface. This Section is presented only if the Remote DTE Classes Section has been completed.

PVCs

This Section allows you to define one or more Permanent Virtual Circuits (PVCs). Your PSDN subscription will determine whether you are permitted to set up any PVCs. This Section is presented only if the Lines and DTEs Section or the LLC2 Section has been completed.

Groups

This Section allows you to enter details of Closed User Groups (CUG) and Bilateral Closed User Groups (BCUG) on your system. This Section is presented only if the Lines and DTEs Section or the LLC2 Section has been completed.

If your DTE belongs to a CUG, it can communicate freely with remote DTEs that are members of the same CUG. Its communications with other DTEs (outside the CUG) may be restricted, depending on your PSDN subscription options.

You must complete this Section if you have requested this facility from your PSDN.

X.29 Support

This Section allows you to add support for X.29 communications. X.29 support is required if your X.25 Alpha system is to communicate with character-mode terminals.

X.25 Mail

This Section allows you to add support for X.25 Mail. X.25 Mail is required if your X.25 Alpha system is to send mail to, or receive mail from, other X.25 nodes.

Applications

This Section allows you to specify X.25 and X.29 applications on your system that are used to accept incoming calls.

You must specify any X.25 or X.29 applications on your system, to allow incoming calls for those applications to succeed. For each application you must define at least one filter, the name of the command file that starts the application, and a user name.

Filters

This Section allows you to specify the filters to be used to determine the action taken when an incoming call is received.

You must supply a Filter Name and a Priority for each Filter. You may leave all the other parameters unspecified.

The more parameters you specify in a Filter, the more specific is that filter. For example, you could create a Filter with most of its parameters unspecified, and with a low priority, to act as a ‘catchall’ for unexpected calls.

Templates

This Section allows you to define the templates to be used when an outgoing call is made.

Your system uses a template to make outgoing calls. The template sets various parameters for each call made using that template.

Two templates, called ‘Default’ and ’OSI Transport’, are automatically created on your system. Appendix C lists the characteristic values of these templates. If you want additional templates, then you must complete this Section.

Reachable Addresses

This Section allows you to define the addresses of remote DTEs that are permitted to communicate with the X.25 system.

If you have local applications that use NSAP addresses to communicate with remote DTEs, then you must complete this Section to provide a mapping between NSAP addresses and DTE addresses. Reachable Address entities are used to convert NSAP addresses into DTE addresses.

X.25 Security

This Section allows you to specify the type of security to be applied to your system. The options allow you to:

- Create/define or modify the X.25 security to be applied
- Permit only outgoing X.25 calls
- Permit all X.25 calls

If the option to create or modify the X.25 security is selected, a further three security sections that allow you to set up security for your system are presented, namely:

- Incoming Security: Applications
- Incoming Security: Filters
- Outgoing Security: Local Processes

Incoming Security: Applications

This Section is available only if you have specified one or more applications to handle incoming calls.

Complete this Section if you want your applications to be able to receive calls from remote systems.

Incoming Security: Filters

This Section is available only if you have specified one or more filters to receive incoming calls.

Complete this Section for each filter you want to receive incoming calls.

Outgoing Security: Local Processes

Complete this Section if you want users on your system to be able to make calls to remote systems.

NCL Scripts

This Section allows you to initiate the generation of NCL scripts based on the configuration data that you have entered.

This initiation should be performed only when you are satisfied that all the data you have entered is complete and correct.

7

Required Configuration Data

7.1 Overview

This chapter details the information you will need to provide while running the configuration program in advanced mode.

Tables 7–1 to 7–15 list all the information you will require during the configuration. You should write down the configuration parameter values specific to your system in Appendix A (which provides a series of blank forms) and refer to that appendix when you run the configuration program. Note that the tables are presented in the order that the Sections are displayed if an X.25 system is configured for Client, WAN, and LAN usage.

Table 7–1 lists the information you need to complete the Remote DTE Classes section of the configuration program.

Table 7–1 Configuration Information: Remote DTE Classes

Information required	Form in which it is required	Where to find information	Default value or setting
Name	Max 32 characters	You supply	REMOTE-CLASS-*n*
Outgoing Session Template	Max 32 characters	You supply	See *Default* template
Segment size	Decimal number	You supply	64
Node name(s)	Max 64 characters	You supply	–

Table 7–2 Configuration Information: Lines and DTEs

Information required	Form in which it is required	Where to find information	Default value or setting
Line name	Select from list	Available lines determined by program	–
Line speed	Select from list	Supplier of line	4.8
Link name	Max 32 characters	You supply	link-*n*
DTE name	Max 32 characters	You supply	dte-*n*
X.25 address	Max 15 digits	PSDN subscription information	–
Profile name		PSDN/Digital	–
Incoming Logical Channel Range(s)	Number(s) or range(s) of numbers	You supply§	[1...4095]
Outgoing Logical Channel Range(s)	Number(s) or range(s) of numbers	You supply§	[1...4095]
Packet level negotiation[1]	Yes or No	–	Yes
Extended packet sequence numbering[1]	Yes or No	–	Yes
Minimum packet size[2]	Decimal number	You supply §	Profile dependent
Maximum packet size[2]	Decimal number	You supply §	Profile dependent
Default packet size	Decimal number	You supply §	Profile dependent
Level 3 Minimum window size[2]	Decimal number	You supply §	Profile dependent
Level 3 Maximum window size[2]	Decimal number	You supply §	Profile dependent
Level 3 Default window size	Decimal number	You supply §	Profile dependent
Extended frame sequence numbering[1]	Yes or No	–	Yes
Level 2 Window size	Decimal number	You supply §	Profile dependent
Frame size	Decimal number	You supply §	Profile dependent
DTE Interface type	DTE or DCE	You supply §	-
Segment Size	Decimal number	PSDN Subscription information	Profile dependent
Inbound DTE Class	Max 32 characters	You supply	Profile name

[1] You only need to make this choice if the Profile you have entered supports the facility.

[2] You only need to enter values here if you have chosen to use Packet Level Negotiation.

§Subject to PSDN restrictions

Table 7–3 lists the information you need to complete the LLC2 section of the configuration program.

Table 7–3 Configuration Information: LLC2

Information required	Form in which it is required	Where to find information	Default value or setting
LAN device name	–	Available devices determined by program	–
LLC2 DTE name	Max 32 characters	You supply	DTE-*n*
LLC2 DTE address	Max 15 digits	You supply	–
Local LSAP address	2 Hex digits	You supply	7E
Level 3 profile	Max 32 characters	You supply	ISO8881
Incoming logical channel range(s)	Number(s) or range(s) of numbers	You supply, in consultation with remote system	{[1..4095]}
Outgoing logical channel range(s)	Number(s) or range(s) of numbers	You supply, in consultation with remote system	{[1..4095]}
Remote MAC address	LAN hardware address	Remote system	–
Remote LSAP address	2 Hex digits	You supply	7E
DTE Interface type	DTE, DCE, or Negotiated	You supply	Negotiated
Packet level negotiation	Yes or No	–	No
Extended packet sequence numbering	Yes or No	–	No
Minimum packet size[1]	Decimal number	You supply	16
Maximum packet size[1]	Decimal number	You supply	1024
Default packet size	Decimal number	You supply	128
Level 3 Minimum window size [1]	Decimal number	You supply	1
Level 3 Maximum window size [1]	Decimal number	You supply	7
Level 3 Default window size	Decimal number	You supply	2
Inbound DTE class	Max 32 characters	You supply	llc2-class-*n*

[1]You need to supply these values only if you have chosen to use Packet Level Negotiation.

Table 7–4 lists the information you need to complete the Session Connections Section of the configuration program.

Table 7–4 Configuration Information: Session Connections

Information required	Form in which it is required	Where to find information	Default value or setting
Maximum number of session control connections	Integer in range 1 to 512	You supply	10

Table 7–5 lists the information you need to complete the PVCs section of the configuration program.

Table 7–5 Configuration Information: PVCs

Information required	Form in which it is required	Where to find information	Default value or setting
DTE name	Max 32 characters	Select from list	DTE-*n*
PVC name	Max 32 characters	You supply	PVC-*n*
Channel number	Integer[1]	PSDN subscription information	-
Packet size	Decimal number	You supply§	Profile dependent
Window size	Decimal number	You supply§	Profile dependent

[1]The value entered must lie outside the incoming and outgoing channel ranges specified for the DTE
§Subject to PSDN restrictions

Table 7–6 lists the information you need to complete the Groups section of the configuration program.

Table 7–6 Configuration Information: Groups

Information required	Form in which it is required	Where to find information	Default value or setting
Group name	Max 32 characters	You supply	GROUP-*n*
Group type	BCUG, CUG, or CUGOA	You supply§	CUG
DTE name	–	Select from list	–
CUG number	Decimal number	PSDN subscription information	–
Remote DTE address[1]	Max 15 digits	PSDN subscription information	–

[1]You need to supply this information only if the Group type is a BCUG.
§Subject to PSDN restrictions

Table 7–7 lists the information you need to complete the X.29 Support section of the configuration program.

Table 7–7 Configuration Information: X.29 Support

Information required	Form in which it is required	Where to find information	Default value or setting
X.29 Network User Identity	Octet string	You supply	–
DTE Class for outgoing X.29 calls	An existing DTE Class name	You supply	–

Table 7–8 lists the information you need to complete the X.25 Mail section of the configuration program.

Table 7–8 Configuration Information: X.25 Mail

Information required	Form in which it is required	Where to find information	Default value or setting
X.25 Mail Account Username	OpenVMS username Max 12 characters	You supply	–
X.25 Mail Account UIC	OpenVMS User Identification Code	You supply	–

Table 7–9 lists the information you need to complete the Applications section of the configuration program.

Table 7–9 Configuration Information: Applications

Information required	Form in which it is required	Where to find information	Default value or setting
Name	Max 20 characters	You supply	APPLICATION-*n*
Type	X.25 or X.29	You supply	X.25
Command file to start application	OpenVMS AXP full filename Max 128 characters	You supply	–
Username for application	OpenVMS AXP username Max 12 characters	You supply	–
Template†	Max 32 characters	You supply	Default
Filter name(s)‡	Max 20 chars	You supply	FILTER-*n*

†If a template that has not yet been defined is entered, information about the template is requested. Details of the information required to define a template are given in Table 7–11.

‡Details of the information required to define a filter are given in Table 7–10.

Table 7–10 lists the information you need to supply when you create filters in the Applications section of the configuration program.

Table 7–10 Configuration Information: Filters

Information required	Form in which it is required	Where to find information	Default value or setting
Name	Max 20 characters	You supply	Filter- *n*
Priority	Decimal number	You supply	1
Incoming DTE Address	Max 15 digits	You supply	–
Call Data Mask	Hex digits	You supply	–
Call Data Value	Hex digits	You supply	–
DTE Class	Max 32 characters	You supply	–
Sending DTE Address	Max 15 digits	You supply	–
Receiving DTE Address	Max 15 digits	You supply	–
Group name	Max 32 characters	You supply	–
Originally Called Address	Max 15 digits	You supply	–
Redirect Reason	One of: 0 Unspecified 1 Busy 2 Out of order 3 Systematic	You supply	–
Called Address Extension Mask	Hex digits	You supply	–
Called Address Extension Value	Hex digits	You supply	–
Called NSAP	Decimal number	You supply	–

Table 7–11 lists the information you need to complete the Templates section of the configuration program.

Table 7–11 Configuration Information: Templates

Information required	Form in which it is required	Where to find information	Default value or setting
Name	Max 32 characters	You supply	TEMPLATE-*n*
DTE Class	Max 32 characters	You supply	–
Call Data	Hex digits	You supply	–
Packet Size	Decimal Number	You supply	–
Window Size	Decimal number	You supply	–
Destination DTE Address	Max 15 digits	You supply	–
Fast Select Option	One of: 0 Unspecified 1 Fast select 2 With response 3 No fast select	You supply	0
Reverse Charging	Yes or No	You supply	No
Selected Group	Max 32 characters	You supply	–
Throughput Class Request	A range of values, the max and min to be chosen from: 0, 75, 150, 300, 600, 1200, 2400, 4800, 9600, 19200, 48000	You supply	0..0
Network User Id	Octet string	You supply	–
Local Facilities	Hex digits	You supply	–
Charging Information	Yes or No	You supply	No
RPOA Sequence	Sequence of octet strings of 4 decimal digits	You supply	–
Local Subaddress	Decimal number	You supply	–
Target Address Extension	NSAP Address	You supply	–
NSAP Mapping	Yes or No	You supply	No
Calling Address Extension	NSAP Address	You supply	–
Transit Delay Selection	Decimal number	You supply	–
End-to-End Delay	Range of decimal numbers	You supply	–
Expedited Data Option	One of: Use Do not use Not specified	You supply	Not specified

Table 7–12 lists the information you need to complete the Reachable Addresses section of the configuration program.

Table 7–12 Configuration Information: Reachable Addresses

Information required	Form in which it is required	Where to find information	Default value or setting
Name	Max 32 characters	You supply	–
Address Prefix	Complete or partial NSAP address, including at least the AFI	You supply	–
DTE Class	Max 32 characters	You supply	–
Address Extensions	Yes or No	You supply	Yes
Conversion Mechanism	X.121 or Manual	You supply	X.121
Destination DTE address[1]	Max 15 digits	You supply	–

[1]You need to supply this value only if you have selected Manual as the conversion mechanism.

Table 7–13 lists the information you need to complete the Incoming Security: Applications section of the configuration program.

Table 7–13 Configuration Information: Incoming Security - Applications

Information required	Form in which it is required	Where to find information	Default value or setting
Select an application	–	List supplied by program	–
DTE addresses of systems that can call this application only if they pay for the call	Max 15 digits. Can be a full DTE address or a Remote Address Prefix (RAP)[2]	You supply	–
DTE addresses of systems that can call this application irrespective of who pays for the call	Max 15 digits. Can be a full DTE address or a Remote Address Prefix (RAP)	You supply	–
DTE addresses of systems that cannot call this application	Max 15 digits. Can be a full DTE address or a Remote Address Prefix (RAP)	You supply	*[1]

[1]The wildcard character (*) means all unspecified DTEs. Even if you enter specific DTEs that are to have No Access, by default all other unspecified DTEs will also have No Access. However, if you enter the wildcard character to stand for DTEs that have Remote Charge or All Access, there will be no default for this value, and the only DTEs that will not be allowed access are those that you specify explicitly.

[2]The Remote Address Prefix (RAP) is used to match against the remote DTE address in incoming and outgoing calls.

Table 7–14 lists the information you need to complete the Incoming Security: Filters section of the configuration program.

Table 7–14 Configuration Information: Incoming Security - Filters

Information required	Form in which it is required	Where to find information	Default value or setting
Select a Filter	–	You supply	–
DTE addresses of systems that can call processes using this filter only if they pay for the call	Max 15 digits. Can be a full DTE address or a Remote Address Prefix (RAP)[2]	You supply	–
DTE addresses of systems that can call processes using this Filter irrespective of who pays for the call	Max 15 digits. Can be a full DTE address or a Remote Address Prefix (RAP)	You supply	–
DTE addresses of systems that cannot call processes using this Filter	Max 15 digits. Can be a full DTE address or a Remote Address Prefix (RAP)	You supply	*[1]

[1]The wildcard character (*) means all unspecified DTEs. Even if you enter specific DTEs that are to have no access, by default all other unspecified DTEs will also have no access. However, if you enter the wildcard character to stand for DTEs that have Remote Charge or all access, there will be no default for this value, and the only DTEs that will not be allowed access are those that you specify explicitly.

[2]The Remote Address Prefix (RAP) is used to match against the remote DTE address in incoming and outgoing calls.

Table 7–15 lists the information you need to complete the Outgoing Security: Local Processes section of the configuration program.

Table 7–15 Configuration Information: Outgoing Security - Local Processes

Information required	Form in which it is required	Where to find information	Default value or setting
Rights Identifier[1]	–	You supply	–
DTE addresses of systems that can be called by processes with this rights identifier only if they pay for the call	Max 15 digits. Can be a full DTE address or a Remote Address Prefix (RAP)[2]	You supply	–
DTE addresses of systems that can be called by processes with this rights identifier irrespective of who pays for the call	Max 15 digits. Can be a full DTE address or a Remote Address Prefix (RAP)	You supply	–
Names of PVCs that can be used by processes with this rights identifier[4]	Name of existing PVC	You supply	-
DTE addresses of systems that cannot be called by processes with this rights identifier	Max 15 digits. Can be a full DTE address or a Remote Address Prefix (RAP)	You supply	*[3]
Names of PVCs that cannot be used by processes with this rights identifier[4]	Name of existing PVC	You supply	-

[1]Specify the group to which the local process belongs.

[2]The Remote Address Prefix (RAP) is used to match against the remote DTE address in incoming and outgoing calls.

[3]The wildcard character (*) means all unspecified DTEs. Even if you enter specific DTEs that are to have No Access, by default all other unspecified DTEs will also have No Access. However, if you enter the wildcard character to stand for DTEs that have Remote Charge or All access, there will be no default for this value, and the only DTEs that will not be allowed access are those that you specify explicitly.

[4]You will be asked for this information only if you have configured PVCs.

8
Flowcharts and Associated Notes

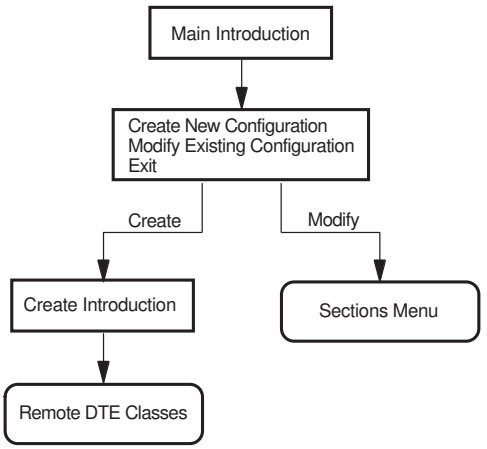
This chapter contains flowcharts illustrating each Section in the advanced mode of the configuration program, together with notes about each Section.

8.1 Introduction

Figure 8–1 illustrates the Introduction Section.

The Introductory Section provides you with options to create a new X.25 Alpha configuration, modify an existing configuration, or exit from the program. These options are detailed more fully in subsections 8.1.1, 8.1.2, and 8.1.3 respectively.

Figure 8–1 Introduction



8.1.1 Creating a New Configuration

To create a new configuration:

1. Select the **Create** option.

   After displaying some introductory screens, the configuration program displays the types of X.25 system you can configure and the configuration Sections relevant to those choices. The choices are:

   X.25 Client through a connector node (Remote DTE Classes Section)
   X.25 over a wide area network (Lines and DTEs Section)
   X.25 over a local area network (LLC2 Section)

   To create a useable configuration, you must complete **at least one** of the specified Sections.

The configuration program then displays the Remote DTE Classes Section. This Section is the first in a series of Sections that can be completed.

You do not have to complete every Section, only those that present functions that you want to configure. For example, if you do not want to configure any client systems, you do not have to complete the Remote DTE Classes Section. When the current Section has been completed, an Options Menu relevant to that Section is displayed. The Options Menu gives you the opportunity to amend the current Section or to move on to another Section.

2. Complete the current Section or select to move on to the next Section.
3. Repeat step 2 for each of the Sections. To create a configuration script you **must** complete the NCL Script Section.

8.1.2 Modifying an Existing Configuration

To modify an existing configuration:

1. Select the **Modify** option.

   The Sections Menu is displayed, which presents the Sections that can be modified. These are:

   1. Remote DTE Classes
   2. Lines and DTEs
   3. LLC2
   4. Session Connections
   5. PVCs
   6. Groups
   7. X.29 Support
   8. X.25 Mail
   9. Applications
   10. Filters
   11. Templates
   12. Reachable Addresses
   13. Security
   14. Incoming Security: Applications
   15. Incoming Security: Filters
   16. Outgoing Security: Local Processes
   17. NCL Script

   Note that the full list of Sections is determined by which configuration Sections have been created. The above list indicates the Sections displayed if all Sections have been created. Initially, one of the Sections is highlighted to indicate that it is the current Section.

2. To configure a Section, use the up-arrow and down-arrow keys to highlight the required Section (and hence make it current) and then press Return.

   The Options Menu for the specified Section is displayed and allows you to modify the existing data.

For further details on modifying an existing configuration and facts that you should be aware of before making any modifications, refer to Chapter 10.

8.1.3 Exiting the Configuration Program

To leave the configuration program, select the option **Exit this program** from the Main Menu.

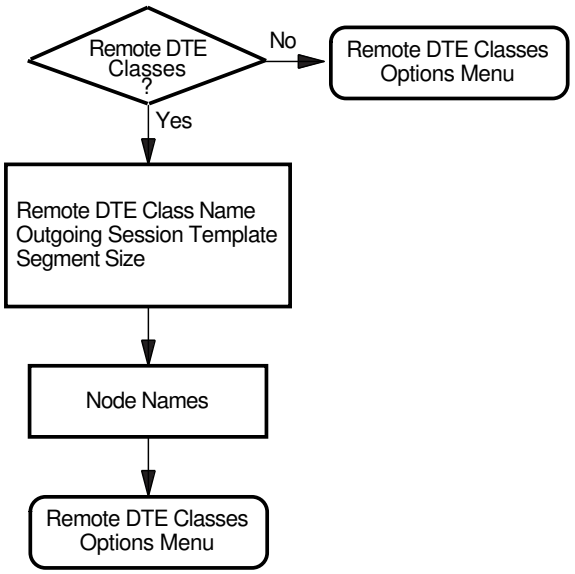
Full details of quitting and leaving the configuration program are provided in Chapter 2.

8.2 Remote DTE Classes

Figure 8–2 illustrates the Remote DTE Classes Section.

This Section allows you to define remote DTE classes, in which you specify the connector system (s) that your Client system will use in making a call.

Figure 8–2 Remote DTE Classes



8.3 Lines and DTEs

Figure 8–3 illustrates the Lines and DTEs Section.

This Section allows you to configure synchronous lines and associated DTEs. You must set up **at least one** synchronous line and associated DTE, unless you intend to set up LLC2 on your system.

Synchronous Line

This screen displays the available synchronous lines. Only lines configured when the synchronous devices were installed are presented. Select a line for the specified DTE. You will have the opportunity to set up further lines later.

Line Speed

The available line speeds are displayed. Select a speed for the line(s) to be used.

Link Name, DTE Name, Address, and Class

You will be required to provide a unique link name, DTE name, and DTE address to identify the DTE to be associated with the line you select.

Additionally, before completing this Section the configuration program will prompt you to enter a DTE Class to include the DTE you specified. This DTE Class is used to select a DTE when making outgoing calls.

Profile

You must provide the name of the Profile to be used by the DTE you specified. Information on frame and packet control parameters will be derived from the Profile you specify.

If you want to set up a point-to-point link then the ISO8208 profile should be specified.

Logical Channel Range

Logical channel numbers are required to identify logical links between your system and the PSDN for both incoming and outgoing calls.

If you intend to configure any PVCs, select Logical Channel Ranges for the SVCs that leave enough channels free for the required PVCs.

Extended Packet Sequence Numbering

If the profile you have selected supports extended packet sequence numbering, you will be prompted whether you want to use this facility.

Packet Level Negotiation

If the profile you have selected supports packet level negotiation, you will be prompted whether to use this facility. If you select to use the facility, you will be prompted to specify the minimum, maximum, and default packet size to be used, and to specify the level 3 minimum, maximum, and default window size. If you select not to use the facility, you will be prompted to enter the packet size and level 3 window size to be used.

Segment Size

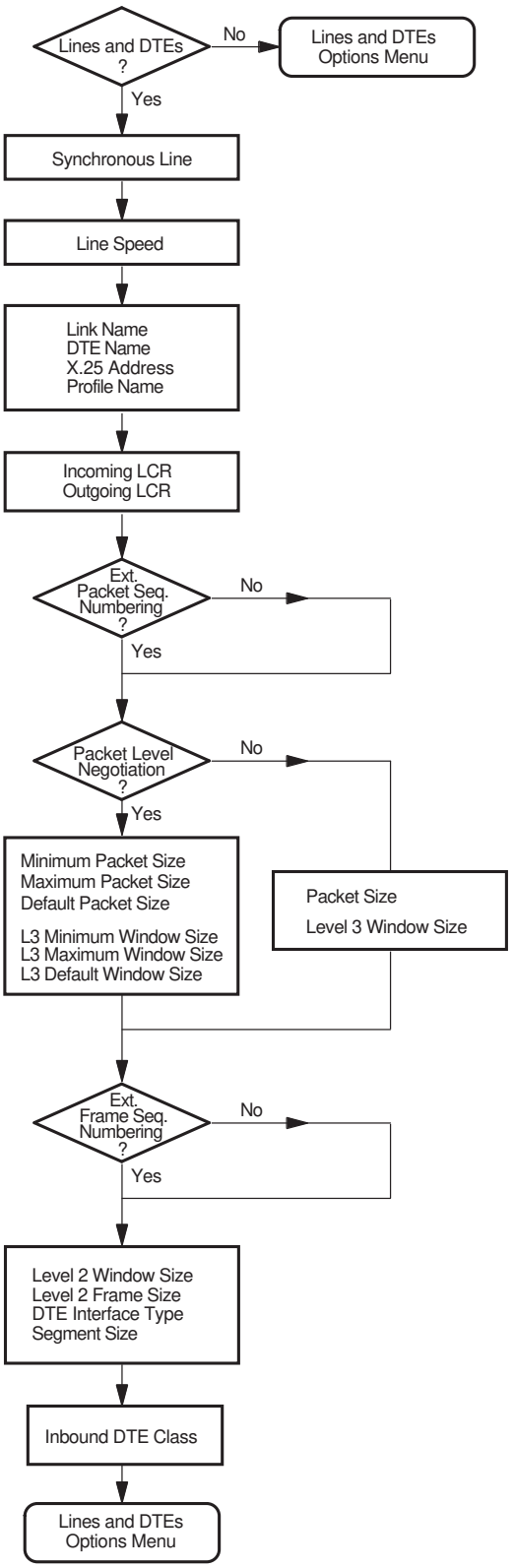
The call will be charged based on the number of segments sent. Thus, this value must be provided if you want to generate accounting records. Note that the value must match the value set in the network.

Extended Frame Sequence Numbering

If the profile you have selected supports extended frame sequence numbering, you will be prompted whether you want to use this facility.

Flowcharts and Associated Notes
8.3 Lines and DTEs

Figure 8–3 Lines and DTEs



8.4 LLC2

Figure 8–4 illustrates the LLC2 Section.

This Section allows you to configure LLC2 DTEs.

LAN Device Name

The LAN Device(s) available on your system are displayed. Choose one to associate with your LLC2 SAP DTE. You will have the opportunity to set up further LLC2 DTEs later, using either a different LAN device (if you have more than one) or the same one.

LLC2 DTE Name and Address, and Local LSAP Address

You must provide a unique name and address to identify the LLC2 DTE to be associated with the link you select.

In addition, you must specify the Link Service Access Point (LSAP) for the specified LLC2 DTE.

Profile

You must provide the name of the Profile to be used by the LLC2 DTE you specified. For most LANs, the profile used is ISO8881. Information on frame and packet control parameters will be derived from the Profile you specify.

Logical Channel Range

Logical channel numbers are required to identify logical links between the LLC2 DTEs for both incoming and outgoing calls.

If you intend to configure any PVCs, select Logical Channel Ranges for the SVCs that leave enough channels free for the required PVCs.

Remote System Parameters

You must provide the unique Media Access Control (MAC) address of the remote system and the Link Service Access Point for the remote LLC2 DTE.

For two systems to communicate using the LLC2 protocol, one must be configured as a DCE and one as a DTE. You must determine the interface type being used by the remote system and the select the appropriate type for the local system. If the interface type being used by the remote system is unknown, set the interface type to Negotiated.

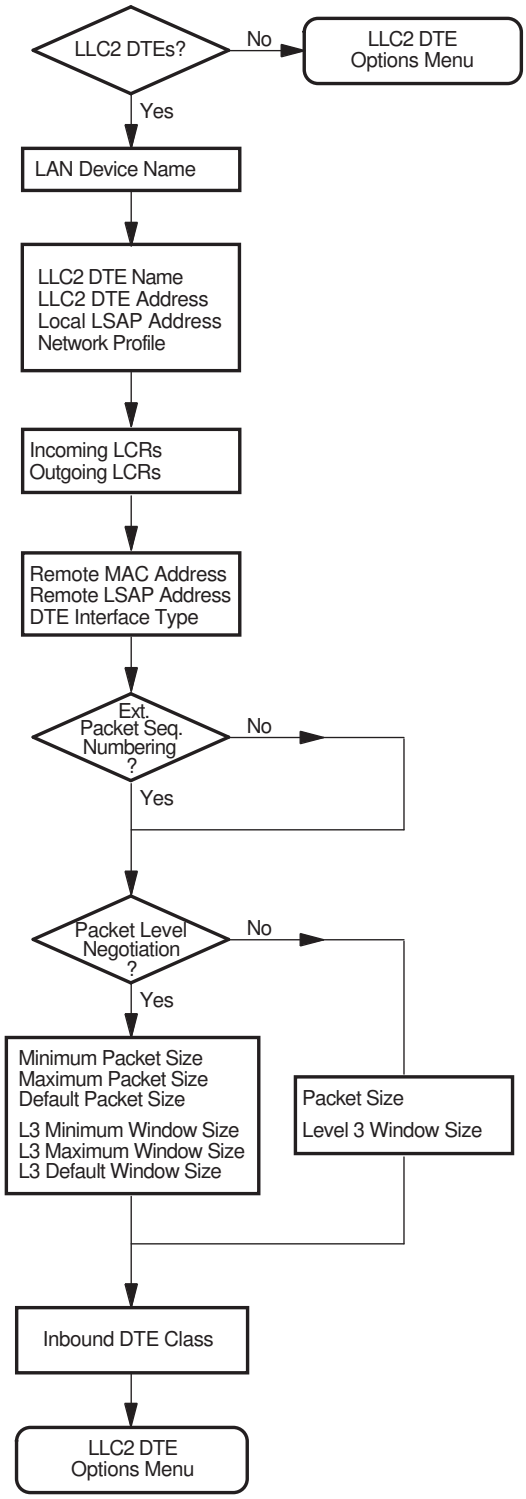
Extended Packet Sequence Numbering

If the profile you have selected supports extended packet sequence numbering, you will be prompted whether you want to use this facility.

Packet Level Negotiation

If the profile you have selected supports packet level negotiation, you will be prompted whether to use this facility. If you select to use the facility, you will be prompted to specify the minimum, maximum, and default packet size to be used, and to specify the level 3 minimum, maximum, and default window size. If you select not to use the facility, you will be prompted to enter the packet size and level 3 window size to be used.

Figure 8–4 LLC2 DTEs



8.5 Session Connections

This Section is available only if the Remote DTE Classes Section has been completed.

Figure 8–5 illustrates the Session Connections Section.

This Section allows you to specify the maximum number of session control connections (virtual circuits) supported by the X.25 Alpha interface. A value **must** be entered for this parameter. The default value is 10.

The number specified is used to calculate process parameters for the X.25 Session Control and X.25 Application processes. In addition, values for the following system parameters will be calculated and defined in SYS$SYSTEM:MODPARAMS.DAT:

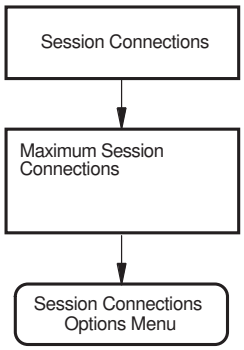
```
ADD_CHANNELCNT
ADD_NPAGEDYN
ADD_NPAGEVIR
```

Note

Whenever you change the number of session control connections, you must run the Autogen utility and reboot your system after configuring the system. For example, these actions can be performed by issuing the command:

```
@SYS$UPDATE:AUTOGEN SAVPARAMS REBOOT FEEDBACK
```

Figure 8–5 Session Connections



8.6 PVCs

This Section is available only if the Lines and DTEs Section or the LLC2 Section has been completed.

Figure 8–6 illustrates the PVCs Section.

This Section allows you to set up permanent virtual circuits between the host system and specified DTEs.

DTE Name

Each of the DTEs created in the Lines and DTEs Section or the LLC2 Section are listed. Select one from the list.

PVC Name

Enter the name of the PVC.

For each PVC you name, you **must** define values for the channel number, packet size, and window size.

Channel Number

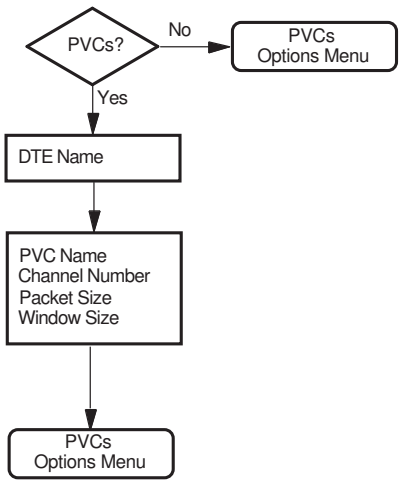
The channel number entered **must not** be within the range of incoming and outgoing logical channel numbers specified in the Lines and DTEs Section or the LLC2 Section. The logical channel number range currently defined for PVCs is displayed beneath the DTE name at the top of the screen.

The channel number should be unique amongst PVCs associated with the specified DTE.

Packet Size and Window Size

The default values for the Packet size and Window size are taken from the profile specified in the Line and DTEs Section. The default values can be overridden if required.

Figure 8–6 PVCs



8.7 Groups

This Section is available only if the Lines and DTEs Section or the LLC2 Section has been completed.

Figure 8–7 illustrates the Groups Section.

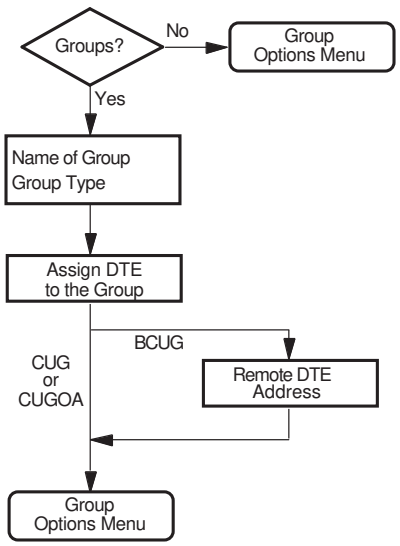
This Section allows you to assign any of the DTEs you have created to Closed User Groups (CUGs), Bilateral Closed User Groups (BCUGs), or Closed User Groups with Outgoing Access (CUGOAs).

All the DTEs you have created are listed.

To place a DTE in a group, enter the PSDN-assigned CUG, BCUG, or CUGOA Number beside that DTE. The same number can be assigned to more than one DTE.

To remove a DTE from a CUG or BCUG, delete the CUG or BCUG Number associated with that DTE.

Figure 8–7 Groups



8.8 X.29 Support

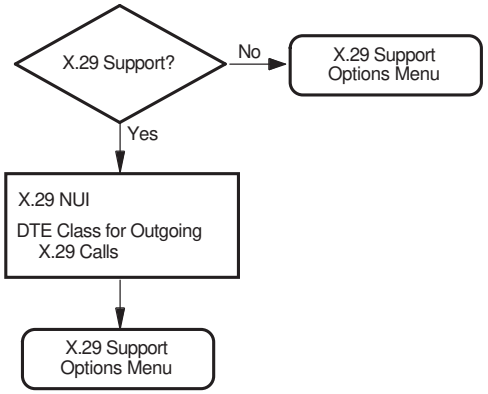
Figure 8–8 illustrates the X.29 Support Section.

This Section allows you to provide support for X.29 communications.

You are prompted to provide the network user identity (NUI) to identify the party that is to pay for each outgoing call, and the DTE class to be used for the outgoing X.29 calls.

Note that if you answer "No" to configuring X.29 Support, no further questions will be displayed. Instead, the X.29 Support Options Menu is displayed from which you can move on to the next Section.

Figure 8–8 X.29 Support



8.9 X.25 Mail

Figure 8–9 illustrates the X.25 Mail Section.

This Section allows you to provide support for X.25 Mail.

You must provide the account username under which the mail handler will run.

Note that if you answer "No" to configuring X.25 Mail, no further questions will be displayed. Instead, the X.25 Mail Options Menu is displayed from which you can move on to the next Section.

Account Name

The name of the OpenVMS AXP account in which X.25 Mail will run when an incoming X.25 Mail call is received by your system. If the required account does not exist, it will be created before you exit the configuration program.

The account created is a network account having the following attributes:

- TMPMBX privilege
- PSI$X25_USER rights identifier

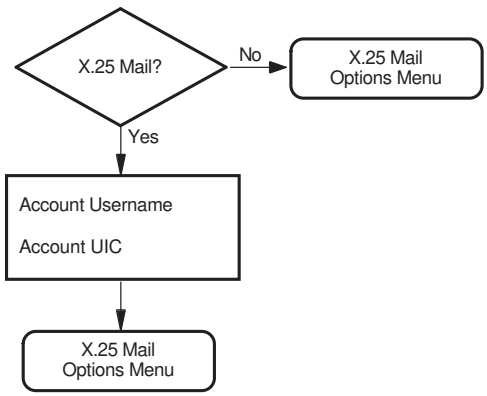
Account UIC

The User Identification Code (UIC) to be given to the account in which X.25 Mail will run. This code must be unique. If it is not unique then creation of the X.25 mail account will fail, and you will not be able to run X.25 Mail on your system.

Note

The UIC consists of two octal numbers, a group number and a member number, for example [77,1]. Group numbers 1 and 300-377 (octal) are reserved by Digital.

Figure 8–9 X.25 Mail



8.10 Applications

Figure 8–10 illustrates the Applications Section.

In this Section, you specify any applications running on your system. You must specify the name of the application and its type. The two possible types are:

- X.25
- X.29

If you specify either X.25 or X.29, you must provide the name of the command file that starts the application, and a username. All other fields are optional.

Application Names

The name you give an application is used to generate a rights identifier in the file `sys$startup:x25$security_identifiers.com`. For example, if you enter the application name TEST$1, and subsequently specify (in the Incoming Security: Applications Section) that one or more remote DTEs should be given an access level of REMOTE CHARGE, the rights identifier created will be APPL_TEST$1_REMOTE. Similarly, if you specify that one or more remote DTEs should be given an access level of ALL, the rights identifier created will be APPL_TEST$1_ALL.

The use of the application name to create rights identifiers places the following restrictions on application names:

- They must only consist of alphanumeric characters, '$', and '_'
- There must be at least one non-numeric character
- They cannot be more than 20 characters long

Application Templates

For an X.29 application, you can specify the name of a template in the Application Template field. If you specify a name of a template that has not yet been defined, you will be presented with two further screens on which you can enter details specific to the template specified. If you do not specify a template, the 'Default' template will be used.

Note

You cannot specify a template for an X.25 application. The Application Template field is not displayed if you specify the application type as `X.25`.

Application Filters

You must create at least one unique filter for each Application. The **Filter Name** and **Priority** fields are mandatory; the other fields are optional.

Note that you can set attributes to 'unspecified' by leaving the appropriate field blank.

If you want to add a further filter to this Application or modify an existing filter associated with the application, choose **Modify** from the Applications Options Menu.

Applications Options Menu

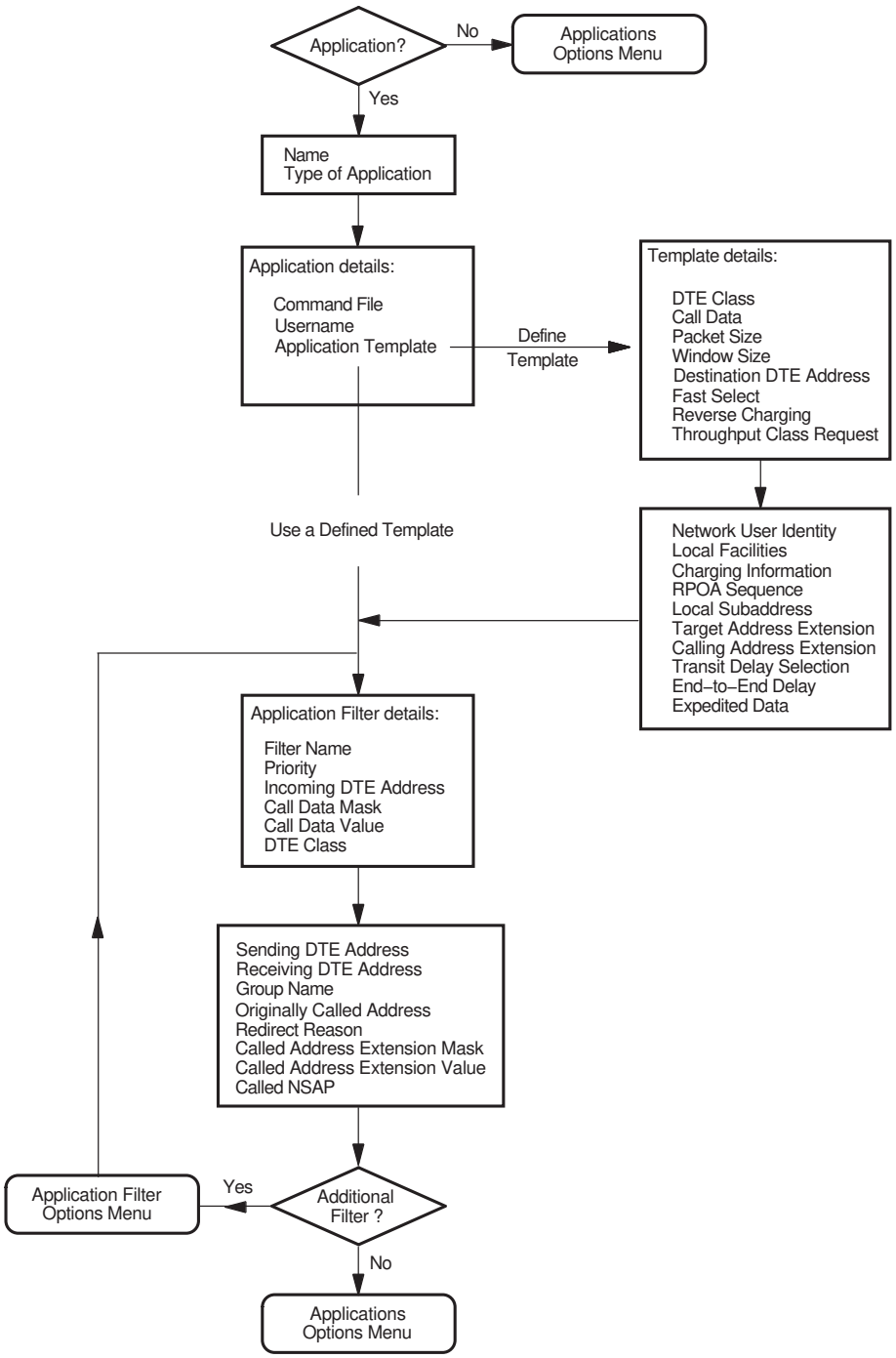
You can add, delete or modify applications from the Applications Options Menu. If you choose the **Modify** option, you will be asked to select an application to modify. You will then be given the opportunity to change the name of the application, the command file, and username associated with it.

The next screen gives you the opportunity to:

- Add a filter to the application
- Delete a filter from the application
- Modify a filter belonging to the application

Flowcharts and Associated Notes
8.10 Applications

Figure 8–10 Applications



8.11 Filters

Figure 8–11 illustrates the Filters Section.

This Section allows you to create additional filters to screen incoming calls. The **Filter name** and **Priority** fields are mandatory.

Note that you can set attributes to 'unspecified' by leaving the appropriate field blank.

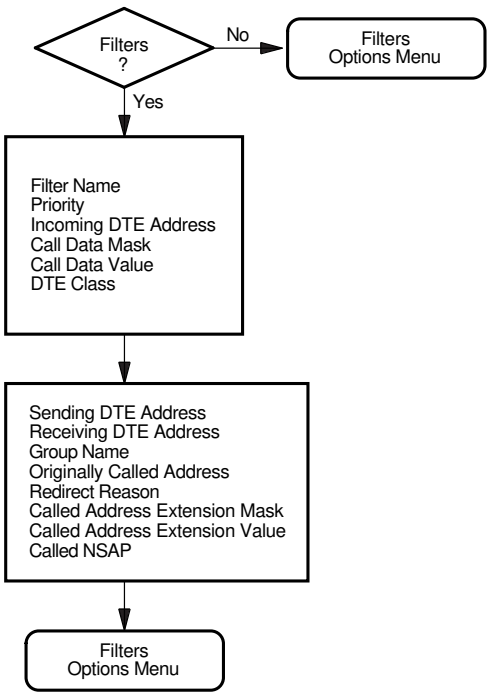
Filter Names

The name you give a filter is used to generate a rights identifier in the file `sys$startup:x25$security_identifiers.com`. For example, if you enter the application name TEST$1, and subsequently specify (in the Incoming Security: Filters Section) that one or more remote DTEs should be given an access level of REMOTE CHARGE, the rights identifier created will be FILTER_TEST$1_REMOTE. Similarly, if you specify that one or more remote DTEs should be given an access level of ALL, the rights identifier created will be FILTER_TEST$1_ALL.

The use of the filter name to create rights identifiers places the following restrictions on filter names:

- They must only consist of alphanumeric characters, '$', and '_'
- There must be at least one non-numeric character
- They cannot be more than 20 characters long

Figure 8–11 Filters



8.12 Templates

Figure 8–12 illustrates the Templates Section.

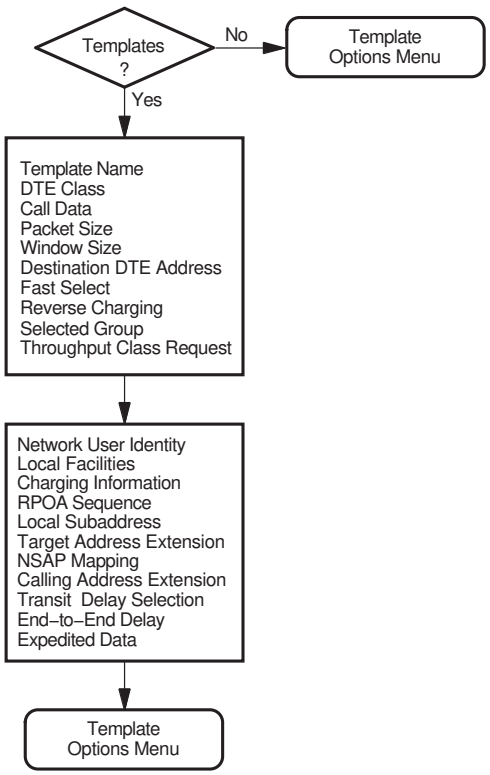
The ‘Default’ and ’OSI Transport’ templates are set up automatically. The characteristic values of these templates are given in Appendix C.

This Section allows you to create additional templates with which to make outgoing calls.

Note that you can set attributes to ‘unspecified’ by leaving the appropriate field blank.

The **Template Name** field is the only mandatory field.

Figure 8–12 Templates



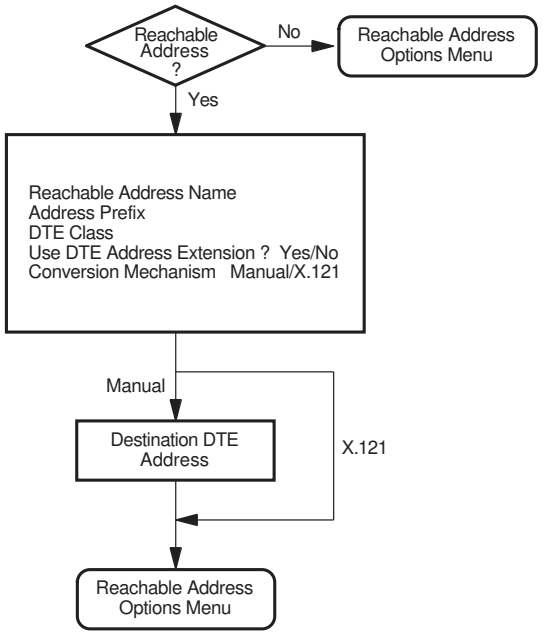
8.13 Reachable Addresses

Figure 8–13 illustrates the Reachable Addresses Section.

This Section allows you to convert NSAP addresses to DTE addresses.

Choose either **X.121** or **Manual** for the mechanism by which the destination DTE address is supplied.

Figure 8–13 Reachable Addresses



8.14 Security

This Section allows you to specify the type of security to be used on your system.

Caution

Digital **strongly recommends** that you set up both incoming and outgoing security to protect your system from unauthorized use.

You can choose one of the following options:

- **Create or Modify X.25 Security**

  This option allows you to define incoming security for applications and filters, and to define outgoing security for local processes. Selecting this option displays the first of the security sections.

- **Allow outgoing X.25 calls only**

  This option allows all outgoing calls to be made from your system, but does not allow incoming calls. Selecting this option bypasses the incoming and outgoing security sections and displays the **NCL Script** section.

- **Allow all X.25 calls**

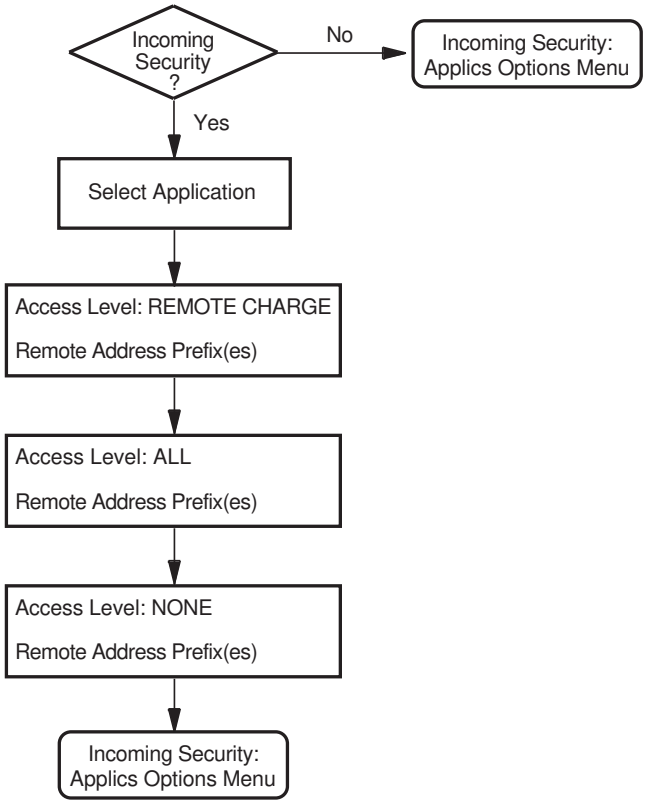
  This option leaves security **open**, that is, no security is applied to incoming or outgoing calls. Selecting this option bypasses the incoming and outgoing security sections and displays the **NCL Script** section.

8.15 Incoming Security: Applications

Figure 8–14 illustrates the Incoming Security: Applications Section.

This Section allows you to specify the type of incoming access for each application you specified. You must complete this Section if you want Applications to receive incoming calls.

Figure 8–14 Incoming Security: Applications

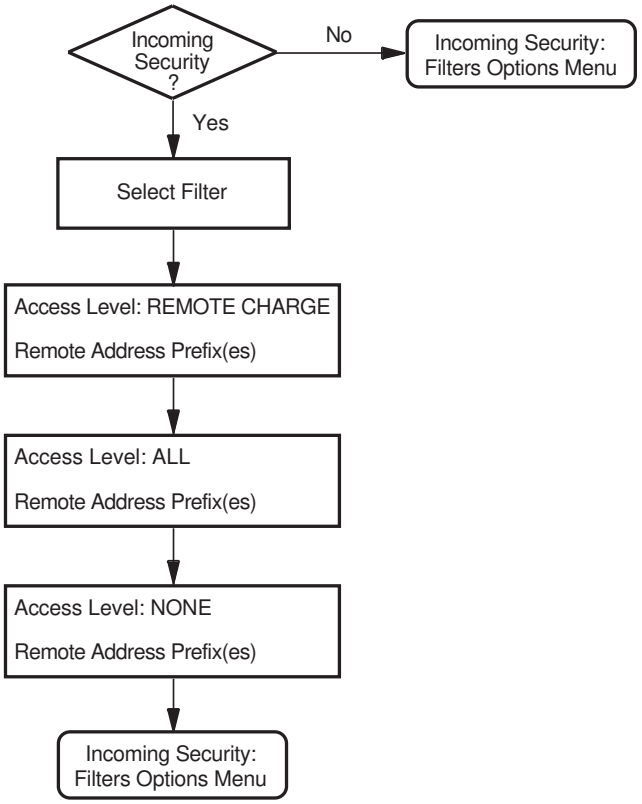


8.16 Incoming Security: Filters

Figure 8–15 illustrates the Incoming Security: Filters Section.

This Section allows you to specify the type of incoming access for the Filters specified. You must complete this Section if you want Filters to be able to receive incoming calls.

Figure 8–15 Incoming Security: Filters



8.17 Outgoing Security: Local Processes

Figure 8–16 illustrates the Outgoing Security: Local Processes Section.

You must complete this Section if you want processes on this system to be able to make outgoing calls. Processes include X.25 applications.

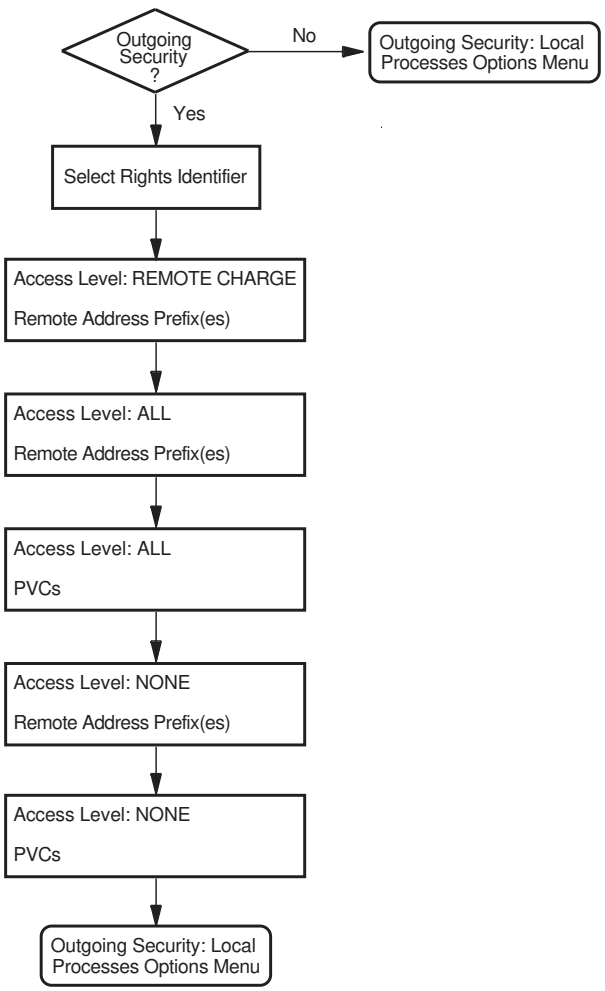
For X.25 applications, enter the name of the group to which the process belongs when prompted for the Rights Identifier.

To obtain a list of all valid rights identifiers (and hence groups) on your system, issue the following commands:

```
$ set def sys$system
$ run authorize
UAF> show /identifier *
```

If the rights identifier you enter does not exist, it will be defined before you exit the configuration program **provided that** you select to run the command procedure sys$system:x25$security_identifiers.com.

Figure 8–16 Outgoing Security: Local Processes



8.18 NCL Script

Figure 8–17 illustrates the NCL Script Section.

When you reach this Section, you have entered sufficient information to create a working X.25 configuration. If you want to verify some of the information you have entered, or add or delete some information, then answer **No** to the question "Do you want to create an NCL script now?" You will then go back to the Sections Menu, from which you can choose the Section you want to review.

When you are sure that the information you have entered is correct and complete, display the Sections Menu and select the option **Create the NCL Script**.

If the program creates the configuration file, a message is displayed which indicates the filename assigned to the file.

If, for some reason, the program cannot create the NCL script, error messages are displayed at the foot of the screen. If this occurs, you must correct the problem before making a further attempt to create the NCL script.

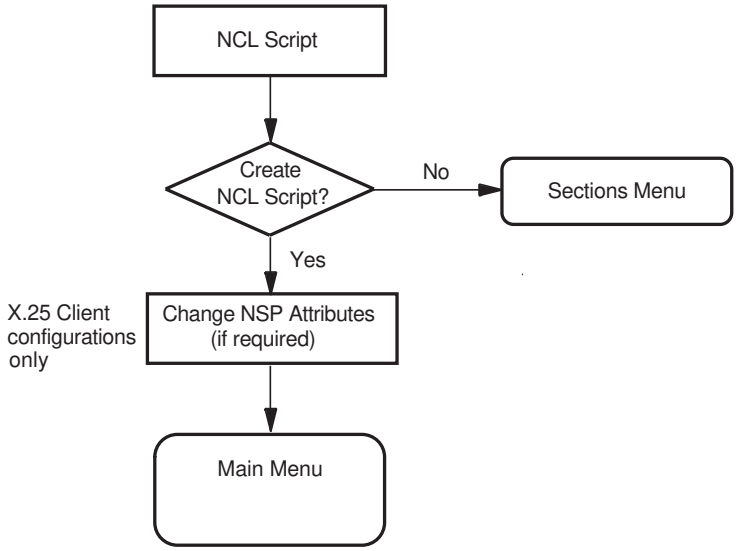
If you have configured the Remote DTE Classes Section, you are presented with a screen that details the minimum number of executor links required for your X.25 Alpha configuration. The number of links is calculated from the number of session control connections you specified in the Session Connections Section.

The configuration program now displays the number of Session Connections that can be established based on the configuration you have defined. You must ensure that the NSP attributes `maximum transport connections` and `maximum remote nsaps` are large enough to support this number of session connections. The default values of these attributes are 200 and 201 respectively.

If you need to change the values of the specified NSP attributes:

1. Exit the configuration program.
2. Use NCL to disable the NSP entity.
3. Make the required NSP attribute changes.
4. Enable the NSP entity.

Figure 8–17 NCL Script



Part III

Configuration Verification and Modification

9
Verifying the Configuration

This chapter explains how to run the Configuration Test Procedure (CTP) to verify the configuration created.

The CTP verifies that the product has been installed and configured correctly. It also verifies that the basic operations of X.25 connections, such as data transfer to and from the node, have been tested.

The CTP consists of a screen-based verification procedure. The procedure prompts for information about any DTEs or PVCs you want to test.

After installing, rebuilding and configuring X.25, run the CTP to verify that the software installed is correctly configured on your system. You might also want to run the CTP after a system failure to be sure that users can access X.25.

9.1 Testing Your Configuration

You can run the CTP either in loopback (from your system through the PSDN and back to your system), or to a remote system through the PSDN.

9.1.1 Running the CTP for Loopback Testing

Use loopback testing if you want to test access to a PSDN, or if a remote system running X.25 Alpha V1.0 or later is not available.

Restrictions

- Your PSDN must allow loopback from the network to your system.

9.1.2 Running the CTP for Remote System Testing

Use remote system testing if you want to test communication with a remote DTE that has X.25 Alpha, V1.0 or later configured and running.

Restrictions

- The remote system must be running X.25 Alpha, V1.0 or later.

9.2 Preparing to Run the CTP

This section describes the privileges and system quotas required, and the actions that must be taken, before you can run the CTP.

Privileges Required

The following privileges are required:

NETMBX
TMPMBX
WORLD
CMKRNL

DETACH
SYSPRV
SECURITY

System Quotas Required

The following system quotas must be available:

ASTLM = 100
BIOLM = 100
BYTLM = 40000
DIOLM = 100
TQELM = 30

Rights Identifiers Required

When CTP is initialized, users are given the rights identifier PSI$X25_USER. This privilege should be sufficient. If this provides insufficient privileges to run CTP, assign BYPASS privilege.

X.25 Alpha Software

- X.25 Alpha must be configured and running on your system.
- The DTE you want to use to make and receive calls must be up and running. Use the following command(s) **at the connector node** to verify this:

  ```
  ncl> show node connector-node-id x25 protocol dte-name state
  ```

  If the status of your DTE is not shown as RUNNING, wait for two minutes and try again. If your DTE is still not RUNNING, refer to the *X.25 for OpenVMS—Problem Solving Guide*.

Partner System

Partner systems may be either the local system running the CTP or an accessible X.25 Alpha system correctly configured to allow access from the local system and running CTP in Receive-Only mode.

You must know the X.25 address of the partner system.

9.3 Running the CTP

The CTP can be run either interactively or as a network object.

Note

When the CTP is set up as a network object, it can only handle **incoming** calls (either from a remote system or calls that have been looped back from the PSDN).

9.3.1 Running the CTP Interactively

To run the CTP interactively, enter the command:

```
$ run sys$test:x25$ctp
```

After some introductory screens, you are asked which mode you want to run the CTP in (Send/Receive Mode, Receive-Only Mode, or Send-Only Mode). Full details of these modes are given in Section 9.4.

9.3.2 Running the CTP as a Network Object

To run the CTP as a network object, enter the command:

```
$ @sys$test:x25$ctp_add_netobj
```

To run the CTP as a network object automatically when you start X.25 Alpha, you should add the above line to X25$STARTUP.COM.

To remove the CTP as a network object, enter the command:

```
$ @sys$test:x25$ctp_rem_netobj
```

9.4 CTP Test Modes

The CTP can be run in one of the following test modes:

- If you run the CTP in Receive-Only Mode, you can test your system's ability to receive incoming calls from remote systems.
- If you run the CTP in Send-Only Mode, you can test your system's ability to send calls to a remote system that is running the CTP in Receive-Only Mode.
- If you run the CTP in Send/Receive Mode, you can test your system's ability to communicate with a PSDN (loopback testing) or with remote systems.

Full details about each of these modes are given in Sections 9.4.1, 9.4.2, and 9.4.3 respectively.

9.4.1 Receive-Only Mode

Nodes running in Receive-Only Mode are referred to as listeners and the main tasks performed by these nodes consist of:

- receiving the X.25 connection requests from the other node
- setting up PVCs as test receivers, and displaying testing information in the event of failure

Restrictions

- These nodes do not initiate any tests. This is performed by nodes running the Send-Only or Send/Receive Mode.
- You are not allowed to run more than one Receive-Only Mode at a time on any machine
- The Receive-Only Mode should be run first.

When Receive-Only Mode is successfully run on a node it means that the node is ready to receive and respond to connection requests and to send data on the resulting X.25 connection.

Note

Do not exit the Receive-Only Mode until testing has been completed by the CTP in Send/Receive Mode on the remote system, otherwise receiving will be disabled.

9.4.2 Send-Only Mode

Nodes running in Send-Only Mode perform the following tasks:

- Initiate connection requests and transfer data.
- Provide diagnostic and error messages.

When running X.25 Alpha, the Send-Only Mode initiates the testing of DTEs and accesses connections to server nodes of the node on which it is run.

9.4.3 Send/Receive Mode

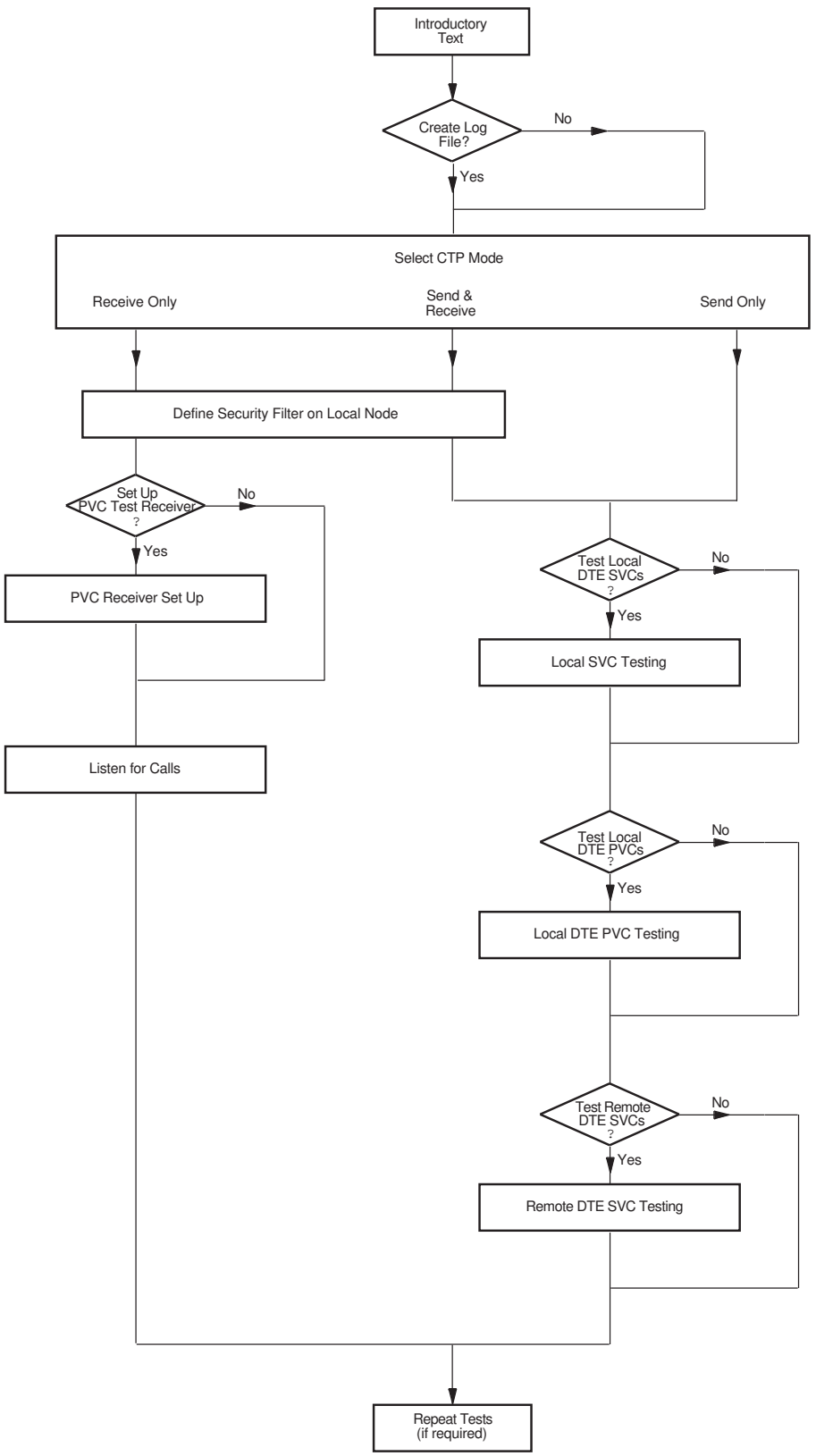
Nodes running in Send/Receive Mode perform the tasks of both the Send-Only and Receive-Only modes. A node running in this mode is able to listen for its own connection requests, so that loopback tests can be performed on a node.

9.5 Testing SVCs and PVCs

Figure 9–1 provides a flowchart of the testing procedure for testing of SVCs and PVCs. For details of the steps required to test SVCs and PVCs, refer to Sections 9.5.1 and 9.5.2 respectively. A summary of the tests performed on each SVC or PVC are provided in Section 9.5.3.

Note that at the end of testing you will be prompted whether to repeat any of the tests. If you choose to repeat tests, only the tests you chose to perform the first time will be repeated (that is, SVC testing, PVC testing, or both). You cannot change the testing, but you may choose different DTE classes or PVCs to be tested. If during the initial testing you chose to set up PVC receivers, those receivers will be used for any repeat testing.

Figure 9–1 Configuration Test Procedure Flowchart



9.5.1 Testing SVCs

If you choose to carry out SVC testing you will be asked whether remote DTE SVCs are to be tested. If you enter `Y`, you may choose to provide a default destination DTE address.

When prompted, enter:

- The security filter name (if Send/Receive or Receive-Only mode is being used)
- A default destination X25 address to which the test connection is to be made.
- The name(s) of the remote DTE class(es) that you want to test.

A table will then be displayed containing remote DTE information. For example:

```
REMOTE DTE SVC TESTING

       DTE Class         Test   Dest Addr        Result
       ---------         ----   ---------        ------

       REMCLASS-0        Yes    12345
       CLASSA            Yes    12345
       REMCLASS-1        Yes    9876
```

You must then enter a destination DTE (X.25) address on which the listener (Receive-Only) resides. If you elect not to specify an address, the default will be used.

Default Destination Address

When running the CTP to verify a number of remote DTE classes, you can use the same remote DTE, running the CTP in Receive-Only Mode, as a common partner for each of the remote DTE classes. In this case, the DTE address of the partner system may be specified as a Default Destination Address to avoid having to specify it repeatedly.

You cannot use a single local DTE as a common partner system to verify a number of local DTEs, because the CTP enables only the DTE being tested and the remaining local DTES are disabled.

Therefore you should not specify a default DTE address and each local DTE should act as its own partner DTE (in loopback Mode).

You are then prompted whether to change any of the test information prior to performing the tests.

You may test as many DTE classes as you want to. After the DTE classes have been tested the system will display either `Success` or `Fail` as the result of the test for each DTE class.

The results for all the DTE classes are initially displayed in a table. For example:

```
REMOTE DTE SVC TESTING

       DTE Class         Test   Dest Addr        Result
       ---------         ----   ---------        ------

       REMCLASS-0        Yes    12345            Fail
       CLASSA            Yes    12345            Fail
       REMCLASS-1        Yes    9876             Success
```

You are then given the option to display more detailed test information for each DTE where the test failed. For example:

```
REMOTE DTE SVC TEST FAILURE

  DTE Class        Failure Analysis
  ---------        ----------------

  REMCLASS-0       Test:   SVC outgoing call test

                   Reason: Unsolic MSG$_DISCON mbx msg received
                           cause code = 00, diag code = 00

                   Cause:  Call cleared unexpectedly

                   Action:
```

After reading the diagnostics and rectifying the problem, run the CTP test on the DTEs again.

9.5.2 Testing PVCs

After you have completed SVC testing you will be prompted whether to test PVCs. The X.25 Client Configuration Test Procedure allows you to test Remote PVCs.

If you are running **Send/Receive** or **Receive-Only Modes** you will be prompted for the names of PVCs you want to use as test receivers.

A table will then be displayed containing PVC receiver information. For example:

```
PVC RECEIVER SET UP

       PVC             Test   DTE Class        Result
       ---             ----   ---------        ------

       CLASSA-RCV      Yes    CLASSA
       AUSNAC-RCV      Yes    AUSNAC
```

You must then enter the DTE Class to which the PVC belongs. If the logical name PSI$NETWORK is defined on your system, the definition will be used as the default DTE class name.

The results for all PVCs are initially displayed in the table. For example:

```
PVC RECEIVER SET UP

       PVC             Test   DTE Class        Result
       ---             ----   ---------        ------

       CLASSA-RCV      Yes    CLASSA           Fail
       AUSNAC-RCV      Yes    AUSNAC           Success
```

Pressing Return will display more detailed test information for each PVC where the test failed. For example:

```
    PVC RECEIVER FAILURE

PVC                 Failure Analysis
---                 ----------------

CLASSA-RCV          Reason: Failed to set up receiver
                            status = SS$_IVDEVNAM
                            2nd status = PSI$C_ERR_NOSUCHPVC

                    Cause:  Specified PVC is not known

Action:    The entity you specified does not exist.
           Ensure that the name was entered correctly in
           the test data. To determine which entities are
           configured, use the ncl command:
             ncl> show x25 proto dte <dte-name> pvc * name
           at the remote node
```

After reading the diagnostics and rectifying the problem, run the CTP test on PVC receivers again.

If you are running **Send/Receive** or **Send-Only Mode** you will be prompted for the names of PVCs you want to test. Enter only the names of PVCs for which receivers have been successfully set up using the CTP.

The same tables will be displayed as for PVC receiver setup. When prompted, enter the DTE class to which the specified PVCs belong.

The results will be displayed as for PVC receivers.

9.5.3 Test Summary

Each time an SVC or PVC is tested the following tests are performed in the order shown:

1. SVC outgoing call test or PVC access test
2. Reset test
3. Interrupt test
4. Write/read test
5. Reset test
6. Interrupt test
7. Write/read test
8. SVC outgoing clear test or PVC deaccess test

If all the tests succeed the system will display `Success` as the result of the test. Otherwise, the system will display `Fail`, and the results of the first test which failed will be displayed in detail.

9.6 CTP Failure Reasons

During CTP testing one of the following events may occur:

- A specific test fails
- The CTP exits

These events and how to proceed if one occurs are described in Sections 9.6.1 and 9.6.2 respectively.

9.6.1 Test Failure

If a CTP test fails, an error message is displayed. Each error message displayed presents the following information:

- The OPERATION being performed when the error occurred.
- The system MESSAGE associated with the error.
- An X.25-specific REASON for the error and, where relevant, details of the action that should be taken to rectify the error.

9.6.2 CTP Exits

If the CTP is unable to run on your system it will exit with an error message. Table 9–1 details each of the error messages that may be displayed and the action that should be taken to rectify the problem.

If an error message other than those given in Table 9–1 is generated, please submit a Software Performance Report (SPR).

Table 9–1 CTP Errors

x25$pr file not found -

Reason: The executable for the receiver process could not be found.

Action: Ensure that the file `x25$pr.exe` is present in the `sys$test` directory.

no connection to X25$PR -
timed out trying to connect to x25$pr -

Reason: The CTP could not connect to the receiver process.

Action: Ensure that when the CTP is running, the process X25$PR_PID is also running on the local system, and either X25$PR_PID or PSI$PR is running on the receiving system.

version mismatch between X25$PR interface and X25$PR -
x25$ctp and x25$pr images not compatible -

Reason: The sending and receiving processes have different protocol versions. You cannot use this version of the DEC X.25 Client for OpenVMS AXP Systems CTP to communicate with a system that produces these messages.

Action: Use loopback testing if a remote system running X.25 Alpha V1.0 or later is not available.

(continued on next page)

Table 9–1 (Cont.) CTP Errors

x25$pr has no room for new connections -

Reason: The limit for connections to the receiver process has been exceeded.

Action: Reduce the number of CTP processes trying to connect to this receiver process, and/or the number of circuits being tested at one time. The maximum number of connections permitted is 16.

invalid X.25 Client installation -

Reason: Your X.25 Client licence has either expired or has been de-registered.

Action: The licence must be loaded and registered before X.25 Client or the CTP can be used.

X.25 Client not running -

Reason: X.25 Client is installed but not running.

Action: Ensure that X.25 client has been started.

invalid receiving mode -

Reason: The logical PSI$PR_NETOBJ_MODE has been defined incorrectly.

Action: Issue the DCL command:

```
show logical PSI$PR_NETOBJ_MODE
```

If the logical name is defined, it must be either SINK or MIRROR. Any other value is invalid.

Exceeded <quota type> quota -

Reason: The system quota for the type specified has been exceeded.

Action: Use SYS$SYSTEM:AUTHORIZE to increase the relevant quotas for your process. Refer to Section 9.2 for a list of the quota values required.

10
Modifying the Configuration

This chapter describes how to modify an existing X.25 Alpha configuration.

10.1 Overview of Methods

To modify an existing configuration, you can:

- Re-run the configuration program to generate a new configuration file, based on the existing configuration. Refer to Section 10.2.
- Add NCL commands to, or edit existing NCL commands in, the available user NCL script files. The NCL commands in these files are executed in addition to the NCL commands executed by the startup script. Refer to Section 10.3.
- Enter NCL commands to dynamically change the configuration. Refer to Section 10.4.
- Discard the current configuration data entirely and create a new configuration. This method is detailed in Section 10.5.

The choice of method determines what effect a modification has when the system is next rebooted:

- If you run the configuration program to make the changes required, the NCL script generated contains the required configuration data. Whenever the system is started up, the NCL script is run to configure the system.
- If you add NCL commands to, or edit NCL commands in, the user NCL script files, the commands are executed when the startup script is next run.
- If you change the configuration dynamically by issuing NCL commands, those changes remain in effect until one of the following actions take place:
  - The commands are revoked by subsequent NCL commands.
  - The configuration file is next used when the system is rebooted.
  - The configuration program is next run (to generate a new configuration file) and the system is then rebooted.

10.2 Using the Configuration Program

To modify a configuration originally created using basic mode, you can use either basic or advanced mode. To modify a configuration originally created using the advanced mode, you must use the advanced mode.

Note

The configuration program does not permit you to use basic mode to modify a configuration that was originally created using advanced mode. This ensures that configuration data entered using the advanced mode is retained for future use.

To modify a configuration:

1. Invoke the configuration program in **basic** or **advanced** mode. Refer to Chapter 2.
2. Select the option **Modify an existing configuration script** from the Main Menu.

   The configuration program retrieves the information stored in the configuration database.

   - If the program is invoked in basic mode, it will load the information stored in the file `sys$startup:x25$basic_config.dat`.
   - If the program is invoked in advanced mode, it determines whether configuration data exists that was entered using the advanced mode, that is, whether the file `sys$startup:x25$config.dat` has been created. If this file does not exist, the configuration program loads the data from the file `sys$startup:x25$basic_config.dat`.

   Once the configuration data has been loaded, the Section Menu is displayed.
3. Use the options on the Section Menu to modify, add to, or delete the previously entered data.

Caution

If you have dynamically changed the configuration by issuing NCL commands interactively, the changes made will be lost when the startup script is next run.

If you select to modify the configuration by mistake or while modifying the configuration decide that you want to revert to the previous configuration, press F8 before selecting the option to create the NCL script. Modifications to a configuration are saved only if you select to create the NCL script and that script is used when the startup script is next run.

10.3 Editing the User NCL Script Files

Four user NCL script files are created the first time the configuration program is run. These script files can be used to contain user-supplied NCL commands. The script files are called when the startup script is invoked and any commands defined in them are used to augment the NCL commands in the master NCL script file generated as a result of running the configuration program.

The available user NCL script files are:

`sys$startup:x25$extra_create.ncl`	File containing additional, user-supplied NCL commands specific to **creating** entities.
`sys$startup:x25$extra_enable.ncl`	File containing additional, user-supplied NCL commands specific to **enabling** entities.
`sys$startup:x25$extra_security.ncl`	File containing additional, user-supplied NCL commands specific to **security**.
`sys$startup:x25$extra_set.ncl`	File containing additional, user-supplied NCL commands specific to **setting** the values of entities.

A standard text editor can be used to add NCL commands to these script files. Each command should be placed on a separate line. Only valid NCL commands should be added to the script files.

By default, the commands in the user NCL script files are executed only when the startup script is next run. To execute the commands immediately, issue the command:

```
ncl> do script-filename
```

where *script-filename* is one of the following:

```
sys$startup:x25$extra_create.ncl
sys$startup:x25$extra_enable.ncl
sys$startup:x25$extra_security.ncl
sys$startup:x25$extra_set.ncl
```

Note

The current configuration may have enabled one or more of the entities affected by commands specified in the user NCL script files. Such entities will have to be disabled before the user NCL script files can be executed successfully.

10.4 Modifying a Configuration Dynamically

To modify an existing configuration dynamically, use NCL commands to alter the configuration parameters initially set up when the configuration file is run. Full details on how to use NCL are given in the *DECnet/OSI—Network Control Language Reference*.

10.5 Discarding a Configuration

If you want to discard your existing configuration or make extensive modifications to your configuration, it may be more efficient to create an entirely new configuration. This can be achieved by invoking the configuration program and selecting the **Create** option from the Main Menu.

The existing configuration is superseded when the new configuration file is generated.

10.6 Re-using a Saved Configuration File

Whenever a configuration file is generated by the configuration program, the previous script (if any) is saved. Provided that you have not manually deleted a saved version, a specific version can, if required, be recalled and used in place of the current version.

To re-use a specific saved configuration file:

1. Rename the required version of the `x25$config.ncl_sav` file to `x25$config.ncl`.
2. Boot the system.

For example, to re-use version 3 of the configuration file, enter the command:

```
$ ren x25$config.ncl_sav;3 x25$config.ncl
```

A

Values Specific to Your Configuration

This appendix provides of a set of blank tables in which you can record the configuration parameter values specific to your system. You can then refer to these tables when you run the configuration procedure.

For convenience, this appendix has been divided into two subsections:

- Subsection A.1 provides tables specific to the basic mode of the configuration program.
- Subsection A.2 provides tables specific to the advanced mode of the configuration.

Note that there is some overlap between the data required for each mode of operation.

The full list of tables is given below:

Forms for the Basic Mode:

Table A–1	X.25 over Wide Area Networks
Table A–2	X.25 over Local Area Networks
Table A–3	X.25 Client
Table A–4	PVCs
Table A–5	Incoming Call Security
Table A–6	X.29 Support
Table A–7	X.25 Mail

Forms for the Advanced Mode:

Table A–8	Remote DTE Classes
Table A–9	Lines and DTEs
Table A–10	LLC2
Table A–11	Session Connections
Table A–12	PVCs
Table A–13	Groups
Table A–14	X.29 Support
Table A–15	X.25 Mail
Table A–16	Applications
Table A–17	Filters

Values Specific to Your Configuration

Table A–18	Templates
Table A–19	Reachable Address
Table A–20	Incoming Security: Applications
Table A–21	Incoming Security: Filters
Table A–22	Outgoing Security: Local Processes

A.1 Basic Mode Configuration Parameter Values

Table A–1 X.25 over Wide Area Networks

Information required	Your values
Profile name	
X.25 address	
Synchronous line name	
Incoming Logical Channel Range(s)	
Outgoing Logical Channel Range(s)	

Table A–2 X.25 over Local Area Networks

Information required	Your values
LAN device name	
LAN remote host name(s)†	
X.25 DTE address	
MAC address	
Incoming Logical Channel Range(s)	
Outgoing Logical Channel Range(s)	

†Multiple LAN remote hosts are permitted.

Values Specific to Your Configuration
A.1 Basic Mode Configuration Parameter Values

Table A–3 X.25 Client

Information required	Your values
Network Name	
Gateway Node Name(s)	

Table A–4 PVCs

Information required	Your values
DTE name (LAN configurations only)†	
PVC name(s)	
Channel number(s)	

†Multiple DTEs are permitted only for LAN configurations.

Table A–5 Incoming Call Security

Information required	Your values
Security type	Allow all incoming access Allow no incoming access Restricted incoming access
If **Restricted Incoming Access**:	
Remote DTE addresses, Access level = Remote Charge	
Remote DTE addresses, Access level = All	

Table A–6 X.29 Support

Information required	Your values
X29 Network User Identity	

Table A–7 X.25 Mail

Information required	Your values
Account UIC	

A.2 Advanced Mode Configuration Parameter Values

Table A–8 Remote DTE Classes

Information required	Your values
Name	
Outgoing Session Template	
Segment Size	
Node Names (connector nodes)	

Table A–9 Lines and DTEs

Information required	Your values
Line name	
Line speed	
Link name	
DTE name	
X.25 address	
Profile name	
Incoming Logical Channel Range(s)	
Outgoing Logical Channel Range(s)	
Packet level negotiation	Yes or No
Extended packet sequence numbering	Yes or No

(continued on next page)

Table A–9 (Cont.) Lines and DTEs

Information required	Your values
Minimum packet size	
Maximum packet size	
Default packet size	
Level 3 Minimum window size	
Level 3 Maximum window size	
Level 3 Default window size	
Extended frame sequence numbering	Yes or No
Level 2 Window size	
Level 2 Frame size	
DTE Interface type	DTE or DCE
Segment size	
Inbound DTE Class	

Table A–10 LLC2

Information required	Your values
LAN device name	
LLC2 DTE name	
LLC2 DTE address	
Local LSAP address	
Level 3 Profile	

(continued on next page)

Table A–10 (Cont.) LLC2

Information required	Your values
Incoming Logical Channel Range(s)	
Outgoing Logical Channel Range(s)	
Remote MAC address	
Remote LSAP address	
DTE Interface type	DTE, DCE, or Negotiated
Packet level negotiation	Yes or No
Extended packet sequence numbering	Yes or No
Minimum packet size	
Maximum packet size	
Default packet size	
Level 3 Minimum window size	
Level 3 Maximum window size	
Level 3 Default window size	
Inbound DTE Class	

Table A–11 Session Connections

Information required	Your values
Maximum Number of Session Control Connections	

Table A–12 PVCs

Information required	Your values
DTE name	
PVC name	
Channel number	
Packet size	
Window size	

Table A–13 Groups

Information required	Your values
Group name	
Group type	CUG, BCUG, or CUGOA
DTE name	
CUG number	
Remote DTE address (BCUG Only)	

Table A–14 X.29 Support

Information required	Your values
X.29 Network User Identity	
DTE Class for outgoing X.29 calls	

Table A–15 X.25 Mail

Information required	Your values
X.25 Mail Account Username	
X.25 Mail Account UIC	

Table A–16 Applications

Information required	Your values
Name	
Type	X.25 or X.29
Command file to start application	
Username for application	
Template name	
Template details (refer to Table A–18)	
Filter name(s)	
Filter details (refer to Table A–17)	

Table A–17 Filters

Information required	Your values
Name	
Priority	
Incoming DTE address	
Call data mask	
Call data value	
DTE class	
Sending DTE address	
Receiving DTE address	
Group name	
Originally called address	
Redirect reason	
Called address extension mask	
Called address extension value	
Called NSAP	

Table A–18 Templates

Information required	Your values
Name	
DTE class	
Call data	
Packet size	
Window size	
Destination DTE address	
Fast select option	
Reverse charging	Allow or Do not allow
Selected group	
Throughput class request	
Network User Identification	
Local facilities	
Charging information	Display or Do not display
RPOA sequence	
Local subaddress	
Target address extension	
NSAP mapping	Yes or No
Calling address extension	
Transit delay selection	

(continued on next page)

Table A–18 (Cont.) Templates

Information required	Your values
End-to-end delay	
Expedited data option	Use, Do not use, or Not specified

Table A–19 Reachable Addresses

Information required	Your values
Name	
Address prefix	
DTE class	
Address extensions	Yes or No
Conversion mechanism	X.121 or Manual
Destination DTE address (only for Manual)	

Table A–20 Incoming Security: Applications

Information required	Your values
Name	
DTE addresses, Access = Remote Charge	
DTE addresses, Access = All	
DTE addresses, Access = None	

Table A–21 Incoming Security: Filters

Information required	Your values
Name	
DTE addresses, Access = Remote Charge	
DTE addresses, Access = All	
DTE addresses, Access = None	

Table A–22 Outgoing Security: Local Processes

Information required	Your values
Rights identifier	
DTE addresses, Access = Remote Charge	
DTE addresses, Access = All	
PVC names, Access = All (only required if PVCs configured)	
DTE addresses, Access = None	
PVC names, Access = None (only required if PVCs configured)	

B

Example Startup Script

```
!
!
!      X25 CONFIGURATION SCRIPT
!  ==============================
!
! This script was produced on:  Thu Sep  2 11:49:50 1993
!
!
!
!
!
! Create the x25 access entity
!
!
create node 0 x25 access
!
!
! Create the Default Security DTE Class Entity
!
!
create node 0 x25 access security dte class Default
!
!
! Create the x25 protocol entity
!
!
create node 0 x25 protocol
!
!
! Create and set Line:  DSY-0-0
! to use device: DSY-0-0
!
create modem connect line DSY-0-0 communication port DSY-0-0
set modem connect line DSY-0-0 speed 256000
set modem connect line DSY-0-0 modem control full
set modem connect line DSY-0-0 suppress test indicator true
create node 0 lapb
!
! Create and set DTE:  dte-0
! and LAPB link:  link-0
! using Line:  DSY-0-0
!
create lapb link link-0 profile  "AUSTPAC"
set lapb link link-0 physical line modem connect line DSY-0-0
set lapb link link-0 interface type  dte
set lapb link link-0 holdback timer 508
set lapb link link-0 acknowledge timer 1016
set lapb link link-0 maximum data size 270
set lapb link link-0 window size 2
!
!
! Create and set DTE:  dte-0
! using Line:  DSY-0-0
!
!
```

Example Startup Script

```
create x25 protocol dte dte-0 profile  "AUSTPAC"
set x25 protocol dte dte-0 link service provider lapb link link-0
set x25 protocol dte dte-0 inbound dte class AUSTPAC
set x25 protocol dte dte-0 x25 address 123456789
set x25 protocol dte dte-0 interface type negotiated
set x25 protocol dte dte-0 segment size  64
set x25 protocol dte dte-0 outgoing list  {[10..4095]}
set x25 protocol dte dte-0 incoming list  {[10..4095]}
set x25 protocol dte dte-0 minimum packet size 128
set x25 protocol dte dte-0 maximum packet size 256
set x25 protocol dte dte-0 default packet size 128
set x25 protocol dte dte-0 minimum window size 1
set x25 protocol dte dte-0 maximum window size 4
set x25 protocol dte dte-0 default window size 2
!
!
! Create and setup LLC2 SAP
!
!
create node 0 llc2
create node 0 llc2 sap  sap-0
set node 0 llc2 sap  sap-0 lan station  csma-cd station  EAA
set node 0 llc2 sap  sap-0 local lsap address  7e
!
!
! Create and setup LLC2 SAP link
!
!
create node 0 llc2 sap  sap-0 link  dte-1
set node 0 llc2 sap  sap-0 link  dte-1 -
    remote mac address  aa-aa-aa-aa-aa-aa
set node 0 llc2 sap  sap-0 link  dte-1 remote lsap address  7e
!
! Create and setup llc2 dtes
!
create node 0 x25 protocol dte dte-1 profile  "ISO8881"
set node 0 x25 protocol dte dte-1 inbound dte class llc2-class-0
set node 0 x25 protocol dte dte-1 x25 address 987654321
set node 0 x25 protocol dte dte-1 link service provider llc2 sap  sap-0 -
    link  dte-1
set node 0 x25 protocol dte dte-1 outgoing list {[10..4095]}
set node 0 x25 protocol dte dte-1 incoming list {[10..4095]}
set node 0 x25 protocol dte dte-1 -
    extended packet sequencing false, maximum window size 7 -
    , minimum window size 1 , default window size 2
set node 0 x25 protocol dte dte-1 maximum packet size 1024
set node 0 x25 protocol dte dte-1 minimum packet size 16
set node 0 x25 protocol dte dte-1 default packet size 128
set node 0 x25 protocol dte dte-1 interface type negotiated
!
! Create Local DTE Class: dte-0
!
create x25 access dte class dte-0 type local
set x25 access dte class dte-0 security dte class Default
set x25 access dte class dte-0 local dtes (dte-0)
!
! Create Local DTE Class: AUSTPAC
!
create x25 access dte class AUSTPAC type local
set x25 access dte class AUSTPAC security dte class Default
set x25 access dte class AUSTPAC local dtes (dte-0)
!
! Create Local DTE Class: dte-1
!
create x25 access dte class dte-1 type local
set x25 access dte class dte-1 security dte class Default
set x25 access dte class dte-1 local dtes (dte-1)
!
! Create Local DTE Class: llc2-class-0
!
create x25 access dte class llc2-class-0 type local
set x25 access dte class llc2-class-0 security dte class Default
set x25 access dte class llc2-class-0 local dtes (dte-1)
```

```
!
!
! Create and set DTE GROUPS
!
!
create node 0 x25 protocol group GROUP-0
set x25 protocol group GROUP-0 members ((dte = dte-1 , index = 4444 -
    ), (dte = dte-0 , index = 8787 ))
set node 0 x25 protocol group GROUP-0 type CUG
!
! Enable commands related to DTE: dte-0
!
enable modem connect line DSY-0-0
enable lapb link link-0
enable x25 protocol dte dte-0
!
!
! Create and set PVCs
!
!
create x25 protocol dte  dte-0 pvc  PVC-0 channel 5
set x25 protocol dte  dte-0 pvc  PVC-0 window size 2
set x25 protocol dte  dte-0 pvc  PVC-0 packet size 128
set x25 protocol dte dte-0    pvc PVC-0 -
    acl ((identifier = (*), access = NONE))
create x25 protocol dte  dte-1 pvc  PVC-1 channel 8
set x25 protocol dte  dte-1 pvc  PVC-1 window size 2
set x25 protocol dte  dte-1 pvc  PVC-1 packet size 128
set x25 protocol dte dte-1    pvc PVC-1 -
    acl ((identifier = (*), access = NONE))
!
!
! Create and set up the DTE CLASSES
!
! Always 'type remote' for this section
!
!
create node 0 x25 access dte class  REMOTE-CLASS-0 type remote
set node 0 x25 access dte class  REMOTE-CLASS-0 -
    outgoing session template Default
set node 0 x25 access dte class  REMOTE-CLASS-0 segment size 64
set node 0 x25 access dte class  REMOTE-CLASS-0 -
    service nodes {(node = aus:.sydney -
    , rating = 512), (node = aus:.brisbane , rating = 512)}
set node 0 x25 access dte class  REMOTE-CLASS-0 -
    security dte class Default
!
!
! Create and set reachable addresses
!
!
create node 0 x25 access reachable address x121 address prefix 37
set node 0 x25 access reachable address x121 mapping X . 121
set node 0 x25 access reachable address x121 address extensions true
create node 0 x25 access reachable address x121d address prefix 36
set node 0 x25 access reachable address x121d mapping X . 121
set node 0 x25 access reachable address x121d address extensions true
create node 0 x25 access reachable address FRED address prefix 37:23
set node 0 x25 access reachable address FRED dte class remote-class-0
set node 0 x25 access reachable address FRED mapping X . 121
set node 0 x25 access reachable address FRED address extensions true
!
!
! Create and set up X25 Access FILTERS
!
!
create node 0 x25 access filter X29
set node 0 x25 access filter X29 priority 1127
set node 0 x25 access filter X29 call data value %x01 -
    , call data mask %xff
set node 0 x25 access filter X29 security filter Default
create node 0 x25 access filter X25_MAIL
set node 0 x25 access filter X25_MAIL priority 3000
```

Example Startup Script

```
set node 0 x25 access filter X25_MAIL -
    call data value %xFF00000056332E30204D41494C2D3131 -
    , call data mask %xFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF
set node 0 x25 access filter X25_MAIL security filter Default
create node 0 x25 access filter "OSI Transport"
set node 0 x25 access filter "OSI Transport" -
    call data value '03010100'H , call data mask 'FFFFFFFF'H
set node 0 x25 access filter "OSI Transport" -
    redirect reason not specified
set node 0 x25 access filter "OSI Transport" security filter Default
create node 0 x25 access filter FILTER_0
set node 0 x25 access filter FILTER_0 priority 1
set node 0 x25 access filter FILTER_0 incoming dte address 888877273
set node 0 x25 access filter FILTER_0 call data value %x12fe -
    , call data mask %x12fe
set node 0 x25 access filter FILTER_0 inbound dte class remote-class-0
set node 0 x25 access filter FILTER_0 sending dte address 987656789
set node 0 x25 access filter FILTER_0 receiving dte address 987655555
set node 0 x25 access filter FILTER_0 -
    security filter APPL_APPLICATION_0
create node 0 x25 access filter FILTER_1
set node 0 x25 access filter FILTER_1 priority 1
set node 0 x25 access filter FILTER_1 incoming dte address 987654444
set node 0 x25 access filter FILTER_1 call data value %x12fe -
    , call data mask %x12fe
set node 0 x25 access filter FILTER_1 inbound dte class remote-class-0
set node 0 x25 access filter FILTER_1 security filter FILT_FILTER_1
!
!
! Create and set application entities
!
!
create node 0 x25 access application X29_LOGIN
set node 0 x25 access application X29_LOGIN type x29 login
set node 0 x25 access application X29_LOGIN filters (X29)
set node 0 x25 access application X29_LOGIN template X29Server
set node 0 x25 access application X29_LOGIN maximum activations 5
create node 0 x25 access application X25_MAIL
set node 0 x25 access application X25_MAIL type x25
set node 0 x25 access application X25_MAIL filters (X25_MAIL)
set node 0 x25 access application X25_MAIL -
    file "sys$system:x25$mail.com"
set node 0 x25 access application X25_MAIL user "X25MAIL"
create node 0 x25 access application APPLICATION_0
set node 0 x25 access application APPLICATION_0 type x25
set node 0 x25 access application APPLICATION_0 filters (FILTER_0)
set node 0 x25 access application APPLICATION_0 -
    file "nac$user:[user1]app0.com"
set node 0 x25 access application APPLICATION_0 user "fred"
!
!
! Create and set templates
!
!
create node 0 x25 access template X29Login
set node 0 x25 access template X29Login dte class remote-class-0
set node 0 x25 access template X29Login call data %x01000000
set node 0 x25 access template X29Login packet size 512
set node 0 x25 access template X29Login window size 7
set node 0 x25 access template X29Login throughput class request [0..0]
set node 0 x25 access template X29Login reverse charging false
set node 0 x25 access template X29Login fast select not specified
set node 0 x25 access template X29Login network user identity %x12fe
set node 0 x25 access template X29Login charging information false
set node 0 x25 access template X29Login transit delay selection 0
set node 0 x25 access template X29Login end-to-end delay [0..0]
set node 0 x25 access template X29Login expedited data not specified
set node 0 x25 access template X29Login nsap mapping false
create node 0 x25 access template X29Server
set node 0 x25 access template X29Server -
    throughput class request [0..0]
set node 0 x25 access template X29Server reverse charging false
set node 0 x25 access template X29Server fast select not specified
```

```
set node 0 x25 access template X29Server charging information false
set node 0 x25 access template X29Server transit delay selection 0
set node 0 x25 access template X29Server end-to-end delay [0..0]
set node 0 x25 access template X29Server expedited data not specified
set node 0 x25 access template X29Server nsap mapping false
create node 0 x25 access template Default
set node 0 x25 access template Default throughput class request [0..0]
set node 0 x25 access template Default reverse charging false
set node 0 x25 access template Default fast select not specified
set node 0 x25 access template Default charging information false
set node 0 x25 access template Default transit delay selection 0
set node 0 x25 access template Default end-to-end delay [0..0]
set node 0 x25 access template Default expedited data not specified
set node 0 x25 access template Default nsap mapping false
create node 0 x25 access template "OSI Transport"
set node 0 x25 access template "OSI Transport" call data '03010100'H
set node 0 x25 access template "OSI Transport" packet size 2048
set node 0 x25 access template "OSI Transport" reverse charging false
set node 0 x25 access template "OSI Transport" fast select not specified
set node 0 x25 access template "OSI Transport" -
    charging information false
set node 0 x25 access template "OSI Transport" -
    transit delay selection 0
set node 0 x25 access template "OSI Transport" end-to-end delay [0..0]
set node 0 x25 access template "OSI Transport" -
    expedited data not specified
set node 0 x25 access template "OSI Transport" nsap mapping true
create node 0 x25 access template TEMPLATE-0
set node 0 x25 access template TEMPLATE-0 dte class remote-class-0
set node 0 x25 access template TEMPLATE-0 -
    destination dte address 3234234234
set node 0 x25 access template TEMPLATE-0 call data %x01
set node 0 x25 access template TEMPLATE-0 packet size 512
set node 0 x25 access template TEMPLATE-0 window size 7
set node 0 x25 access template TEMPLATE-0 -
    throughput class request [0..0]
set node 0 x25 access template TEMPLATE-0 reverse charging false
set node 0 x25 access template TEMPLATE-0 fast select not specified
set node 0 x25 access template TEMPLATE-0 network user identity %x12fe
set node 0 x25 access template TEMPLATE-0 charging information false
set node 0 x25 access template TEMPLATE-0 transit delay selection 0
set node 0 x25 access template TEMPLATE-0 end-to-end delay [0..0]
set node 0 x25 access template TEMPLATE-0 expedited data not specified
set node 0 x25 access template TEMPLATE-0 nsap mapping false
!
!
! Create Security filters
!
!
create x25 access security filter Default
set x25 access security filter Default acl ((identifier =( Default_ALL -
    ), access = ALL),(identifier = ( Default_REMOTE -
    ), access = REMOTE_CHARGE),(identifier = ( Default_NONE -
    ), access = NONE))
create x25 access security filter APPL_APPLICATION_0
set x25 access security filter APPL_APPLICATION_0 -
    acl ((identifier =( APPL_APPLICATION_0_ALL -
    ), access = ALL),(identifier = ( APPL_APPLICATION_0_REMOTE -
    ), access = REMOTE_CHARGE),(identifier = ( APPL_APPLICATION_0_NONE -
    ), access = NONE))
create x25 access security filter FILT_FILTER_1
set x25 access security filter FILT_FILTER_1 -
    acl ((identifier =( FILT_FILTER_1_ALL -
    ), access = ALL),(identifier = ( FILT_FILTER_1_REMOTE -
    ), access = REMOTE_CHARGE),(identifier = ( FILT_FILTER_1_NONE -
    ), access = NONE))
!
!
! Create Remote DTEs
!
!
create x25 access security dte class Default remote dte match_all -
    remote address prefix *
```

Example Startup Script

```
set x25 access security dte class Default remote dte match_all -
    rights identifiers (FILT_FILTER_1_NONE,APPL_APPLICATION_0_NONE)
set x25 access security dte class Default remote dte match_all -
    acl ( ( identifier = { docwriter }, access = NONE))
create x25 access security dte class Default remote dte remdte-0 -
    remote address prefix 9876*
set x25 access security dte class Default remote dte remdte-0 -
    rights identifiers (FILT_FILTER_1_REMOTE,APPL_APPLICATION_0_REMOTE)
set x25 access security dte class Default remote dte remdte-0 -
    acl ( ( identifier = { docwriter }, access = REMOTE_CHARGE))
create x25 access security dte class Default remote dte remdte-1 -
    remote address prefix 1234*
set x25 access security dte class Default remote dte remdte-1 -
    rights identifiers (FILT_FILTER_1_ALL,APPL_APPLICATION_0_ALL)
set x25 access security dte class Default remote dte remdte-1 -
    acl ( ( identifier = { docwriter }, access = ALL))
!
!
! Include the user's extra enable ncl script
!
!
do sys$startup:x25$extra_security.ncl
!
!
! Create x25 client
!
!
create node 0 x25 client maximum session connections 10
enable node 0 x25 client
!
!
! Include the user's extra create ncl script
!
!
do sys$startup:x25$extra_create.ncl
!
!
! Include the user's extra set ncl script
!
!
do sys$startup:x25$extra_set.ncl
!
! Enable the LLC2 SAPs
!
enable node 0 llc2 sap  sap-0
!
! Enable the LLC2 SAP links and DTEs
!
enable node 0 llc2 sap  sap-0 link  dte-1
enable x25 protocol dte  dte-1
!
!
! Enable x25 access
!
!
enable node 0 x25 access
!
!
! Enable application entities
!
!
enable node 0 x25 access application  X29_LOGIN
enable node 0 x25 access application  X25_MAIL
enable node 0 x25 access application  APPLICATION_0
!
!
! Include the user's extra enable ncl script
!
!
do sys$startup:x25$extra_enable.ncl
```

C

Characteristic Values of the 'Default' and 'OSI Transport' Templates

Table C–1 contains the characteristic values of the `Default` and `OSI Transport` templates.

Table C–1 Characteristic Values of 'Default' and 'OSI Transport' Templates

Characteristic	Value in 'Default' template	Value in 'OSI Transport' template
DTE class	–	–
Call data	–	%x03010100
Packet size	–	2048
Window size	–	–
Destination X.25 address	–	–
Fast select option	–	–
Reverse charging	False	False
Selected Group	–	–
Throughput class request	–	–
Charging information	False	False
RPOA sequence	–	–
Local subaddress	–	–
Target address extension	–	–
NSAP mapping	False	True
Calling address extension	–	–
Transit delay selection	–	–
End-to-end delay	–	–

D

Configuration Files - Location and Use

This appendix lists the location and use of configuration files that are either created as a result of running the configuration program in basic and advanced configuration modes or referenced when the system is booted. Table D–1 lists the location and use of files common to both basic and advanced modes. These include user NCL scripts, which contain user-supplied NCL commands that are used to augment the commands in the master NCL script. These scripts are called by `x25$config.ncl` whenever the system is booted.

Table D–2 and Table D–3 list the location and use of files specific to basic and advanced modes respectively.

Table D–1 Configuration Files Common to Both Basic and Advanced Modes

`sys$startup:x25$config.ncl`

The master NCL script that contains the NCL commands to create the X.25 configuration. This file is generated by running the configuration program in either basic or advanced mode and **should not** be edited.

If the configuration needs to be changed, either run `x25setup` in advanced mode or add the required NCL commands to the appropriate user NCL script (`x25_extra_create.ncl`, `x25_extra_set.ncl`, or `x25_extra_enable.ncl`).

`sys$startup:x25$enable_decnet_clients.ncl`

The NCL script that contains the NCL commands to enable the `x25 client` entity. This file is generated by running the configuration program in either basic or advanced mode and **should not** be edited.

`sys$startup:x25$extra_create.ncl`

File containing additional, user-supplied NCL commands specific to **creating** entities. By default, this file does not contain any NCL commands.

`sys$startup:x25$extra_enable.ncl`

File containing additional, user-supplied NCL commands specific to **enabling** entities. By default, this file does not contain any NCL commands.

`sys$startup:x25$extra_security.ncl`

File containing additional, user-supplied NCL commands specific to **security**. By default, this file does not contain any NCL commands.

(continued on next page)

Table D–1 (Cont.) Configuration Files Common to Both Basic and Advanced Modes

`sys$startup:x25$extra_set.ncl`	File containing additional, user-supplied NCL commands specific to **setting** the values of entities. By default, this file does not contain any NCL commands.

Table D–2 Configuration Files Specific to Basic Mode

`sys$startup:x25$basic_config.dat`	File in which the X.25 configuration created by running the configuration program in basic mode is saved. This file is created so that it is available for reloading if the option to modify the configuration is selected when running the configuration program in either basic or advanced modes. Refer to *Note* below.

Table D–3 Configuration Files Specific to Advanced Mode

`sys$startup:x25$config.dat`	File in which the X.25 configuration created by running the configuration program in advanced mode is saved. This file is created so that it is available for reloading if the option to modify the configuration is selected only when running the configuration program in advanced mode. Refer to *Note* below.

Note

If both `x25$config.dat` and `x25$basic_config.dat` have been created and the **Modify an existing configuration script** option is selected when running the configuration program in advanced mode, then `x25$config.dat` will be used.

If `x25$config.dat` is the only file created and the **Modify an existing configuration script** option is selected when running the configuration program in basic mode, `x25$config.dat` will not be used. You can either:

- Exit basic mode and re-invoke the configuration program in advanced mode.

  or

- Choose the **Create a new configuration script** option from the Main Menu.

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