

IBM X.25 over TCP/IP for Communication Controller for
Linux V1.2



User's Guide

Version 1.2

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Linux V1.2



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Note

Before using this information and the product it supports, be sure to read the general information under Appendix B, "Notices," on page 59.

Third Edition (August 2011)

This edition applies to Version 1.2 of IBM X.25 over TCP/IP for Communication Controller on Linux and to all subsequent releases and modifications until otherwise indicated in new editions.

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- Page number or topic related to your comment

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Contents

Figures	v
Tables	vii
About this document	ix
Who should read this document	ix
How this document is organized	ix
How to use this document	ix
Determining whether a publication is current	ix
How to contact IBM service	x
Conventions and terminology used in this document	x
Clarification of notes.	x
Prerequisite and related information	xi
Required information	xi
Related information.	xi
Summary of changes	xiii
Changes made in IBM X.25 over TCP/IP for Communication Controller for Linux Version 1 Release 2, as updated August 2011	xiii
Changes made in IBM X.25 over TCP/IP for Communication Controller for Linux Version 1 Release 2	xiii
Chapter 1. Installing and configuring IBM X.25 over TCP/IP for Communication Controller for Linux.	1
Requirements for IBM X.25 over TCP/IP	1
Installing IBM XOT using InstallShield	2
Steps for installing IBM X.25 over TCP/IP using the command line	3
Steps for installing IBM X.25 over TCP/IP using the graphical interface	3
Steps for performing unattended IBM X.25 over TCP/IP installation.	5
Uninstalling IBM X.25 over TCP/IP using InstallShield	5
Step for uninstalling IBM X.25 over TCP/IP using the command line	5
Steps for uninstalling IBM X.25 over TCP/IP using the graphical interface.	6
Step for performing unattended IBM X.25 over TCP/IP uninstallation	7
Configuring IBM X.25 over TCP/IP.	7
Starting IBM X.25 over TCP/IP	8
IBM X.25 over TCP/IP parameter definitions	8
Configuration file syntax rules	8
Defining X.25 logical channel numbers	19
Gathering documentation for IBM support	20
Chapter 2. Sample scenarios	21
Scenario 1: Using PVCs	21
Configuring CCLXOT Server #1	21
Configuring CCLXOT Server #2	22
Scenario 2: Using SVCs	23
Configuring CCLXOT Server #1	24
Configuring CCLXOT Server #2	25
Scenario 3: Using SVCs and PVCs for BNN traffic	26
Chapter 3. CCLXOT manager commands	29
Command editor features.	29
Context-sensitive help	29
Command syntax check	30
Command abbreviation	30
Command-line editing.	30

CCLXOT manager commands	31
quit command	32
help or ? command	32
history command	32
history buffer size command	33
start trace command	33
stop trace command	34
line status command	34
lapb status command	35
lapb statistics command	35
xot status command	36
xot statistics command	36
connection list lci command	37
connection list lcn command	38
Appendix A. XOT Messages	39
Appendix B. Notices	59
Trademarks	61
Index	63
Communicating your comments to IBM	65

Figures

1.	X.25 over TCP/IP component overview	1
2.	IBM X.25 over TCP/IP software adapter ports	7
3.	IBM X.25 for TCP/IP with X.25 PVCs	21
4.	IBM X.25 for TCP/IP with X.25 SVCs	24
5.	IBM X.25 for TCP/IP with X.25 SVCs and PVCs through remote DTE devices	26

Tables

1.	Softcopy collections	xi
2.	Other documents	xi
3.	IBM X.25 over TCP/IP configuration file sections	7
4.	Parameters for [xot_server] section of configuration file	9
5.	Parameters for [xot_server/port.nn] section of configuration file	9
6.	Parameters for [xot_server/port.nn/x25] section of configuration file	12
7.	Parameters for [xot_server/port.nn/hdlc] section of configuration file	13
8.	Parameters for [xot_server/port.nn/xotmap.mmm] section of configuration file	15
9.	PVC and SVC assignment to LCGN	20
10.	Context-sensitive help feature	29
11.	Keystrokes for command-line editing	30
12.	CCLXOT manager command summary	31

About this document

This document describes IBM® X.25 over TCP/IP for Communication Controller for Linux (XOT for CCL). XOT for CCL enables X.25 network traffic to be encapsulated and run over TCP/IP networks.

This document is designed to help users install, configure, and operate XOT for CCL. It provides information about the software and hardware environments that are supported by Communication Controller for Linux on System z (CCL).

Who should read this document

This book is intended for the following individuals:

- System programmers who are responsible for installing and configuring NCP and NPSI, and who want to understand how to run their NPSI X.25 traffic through CCL and XOT.
- Network operators who are responsible for operating SNA networks that use CCL and XOT to carry NPSI X.25 traffic.

Before reading this document, you should be familiar with the basic concepts of the Linux operating system, Communication Controller for Linux on System z (CCL), X.25 networking, and the NCP and NPSI products. Also, some familiarity with TCP/IP and XOT router configuration may be needed, since the IBM XOT configuration must be coordinated with the configuration of the XOT router that provides the X.25 physical interface.

How this document is organized

If you want to . . .	Refer to . . .
Learn about IBM X.25 over TCP/IP for Communication Controller for Linux and how to configure it	Chapter 1, "Installing and configuring IBM X.25 over TCP/IP for Communication Controller for Linux," on page 1
See sample scenarios that show how to setup and configure XOT features	Chapter 2, "Sample scenarios," on page 21
Control and query status and information of the CCLXOT Server	Chapter 3, "CCLXOT manager commands," on page 29
Read about IBM X.25 over TCP/IP messages	Appendix A, "XOT Messages," on page 39

How to use this document

Determining whether a publication is current

As needed, IBM updates its publications with new and changed information. For a given publication, updates to the hardcopy and associated softcopy are usually available at the same time. Sometimes, however, the updates to hardcopy and softcopy are available at different times. The following information describes how to determine if you are looking at the most current copy of a publication:

- At the end of a publication's order number there is a dash followed by two digits, often referred to as the dash level. A publication with a higher dash level

is more current than one with a lower dash level. For example, in the publication order number GC28-1747-07, the dash level 07 means that the publication is more current than previous levels, such as 05 or 04.

- If a hardcopy publication and a softcopy publication have the same dash level, it is possible that the softcopy publication is more current than the hardcopy publication. Check the dates shown in the Summary of Changes. The softcopy publication might have a more recently dated Summary of Changes than the hardcopy publication.
- To compare softcopy publications, you can check the last two characters of the publication's filename (also called the book name). The higher the number, the more recent the publication. Also, next to the publication titles in the CD-ROM booklet and the readme files, there is an asterisk (*) that indicates whether a publication is new or changed.

How to contact IBM service

For immediate assistance, go to the following Web site: <http://www.ibm.com/software/network/cclxot/support>

Most problems can be resolved at this Web site, where you can submit questions and problem reports electronically, as well as access a variety of diagnosis information.

For telephone assistance in problem diagnosis and resolution (in the United States or Puerto Rico), call the IBM Software Support Center anytime (1-800-IBM-SERV). You will receive a return call within 8 business hours (Monday – Friday, 8:00 a.m. – 5:00 p.m., local customer time).

Outside of the United States or Puerto Rico, contact your local IBM representative or your authorized IBM supplier.

Conventions and terminology used in this document

For definitions of the terms and abbreviations used in this document, you can view the latest IBM terminology at the IBM Terminology Web site.

Clarification of notes

Information traditionally qualified as **Notes** is further qualified as follows:

Note Supplemental detail

Tip Offers shortcuts or alternative ways of performing an action; a hint

Guideline

Customary way to perform a procedure

Rule Something you must do; limitations on your actions

Restriction

Indicates certain conditions are not supported; limitations on a product or facility

Requirement

Dependencies, prerequisites

Result Indicates the outcome

Prerequisite and related information

Required information

Before using this product you should understand the basic concepts of the Linux operating system, telecommunications, Systems Network Architecture (SNA), Communication Controller for Linux on System z (CCL) and the NCP and VTAM products.

Related information

This section contains subsections on:

- “Softcopy information”
- “Other documents”
- “Redbooks” on page xii
- “Where to find related information on the Internet” on page xii

Softcopy information

Softcopy publications are available in the following collections:

Table 1. Softcopy collections

Titles	Order Number	Description
<i>System Center Publication IBM S/390® Redbooks® Collection</i>	SK2T-2177	This collection contains over 300 ITSO redbooks that apply to the S/390 platform and host networking arranged into subject bookshelves
<i>ACF/NCP, ACF/SSP, EP, NPSI, and NTuneMON Softcopy Collection</i>	LK2T-0414	This collection contains all of the documents that support the Network Control Program, System Support Program, Emulation Program, and Network Control Program Packet Switching Interface

Other documents

The following table lists documentation that might be helpful to users:

Table 2. Other documents

Title	Publication number
<i>Linux for zSeries and S/390 Device Drivers and Installation Commands (for 2.4 kernel)</i>	For the current version, see the documentation page of the June 2003 stream at the following Web site: http://oss.software.ibm.com/developerworks/opensource/linux390/june2003_documentation.shtml
<i>Linux for zSeries and S/390 Device Drivers and Installation Commands (for 2.6 kernel)</i>	For the current version, see the documentation page of the October 2005 stream at the following Web site: http://www-128.ibm.com/developerworks/linux/linux390/october2005_documentation.html
<i>z/OS® Communications Server SNA Network Implementation</i>	SC31-8777

Table 2. Other documents (continued)

Title	Publication number
<i>z/OS Communications Server SNA Resource Definition Reference</i>	SC31-8778
<i>z/OS Communications Server SNA Operations</i>	SC31-8779
<i>z/OS Communications Server IP and SNA Codes</i>	SC31-8791
<i>NCP and EP Reference</i>	LY43-0029
<i>NCP and EP Reference Summary and Data Areas</i>	LY43-0030
<i>NCP, SSP, and EP Diagnosis Guide</i>	LY43-0033
<i>NCP, SSP, and EP Trace Analysis Handbook</i>	LY43-0037
<i>NCP, SSP, and EP Generation and Loading Guide</i>	SC31-6221
<i>NCP, SSP, and EP Messages and Codes</i>	SC31-6222
<i>NCP, SSP, and EP Resource Definition Guide</i>	SC31-6223
<i>NCP, SSP, and EP Resource Definition Reference</i>	SC31-6224
<i>NTuneMON User's Guide</i>	SC31-6266
<i>X.25 NPSI Version 3 General Information</i>	GC30-3469
<i>NCP Version 7 and X.25 NPSI Version 3 Planning and Installation</i>	SC30-3470
<i>NCP Version 7 and X.25 NPSI Version 3 Diagnosis, Customization, and Tuning</i>	LY30-5610
<i>X.25 NPSI Version 3 Host Programming</i>	SC30-3502
<i>X.25 NPSI Version 3 Release 9 Data Areas</i>	LY30-5627
<i>X.25 Planning and Installation</i>	SC30-3470

Redbooks

The following Redbook might help you as you implement IBM Communication Controller for Linux on System z:

Title	Publication number
<i>IBM Communication Controller Migration Guide</i>	SG24-6298
<i>IBM Communication Controller for Linux on System z V1.2.1 Implementation Guide</i>	SG24-7223

Where to find related information on the Internet

CCL newsgroup

<news://news.software.ibm.com/ibm.software.linux.ccl>

Linux on zSeries

<http://www.software.ibm.com/developerworks/opensource/linux390/index.shtml>

IBM System Center publications

<http://www.redbooks.ibm.com/>

IBM System Center flashes

<http://www.ibm.com/support/techdocs/atmastr.nsf/Web/TechDocs>

Summary of changes

Changes made in IBM X.25 over TCP/IP for Communication Controller for Linux Version 1 Release 2, as updated August 2011

This document contains information previously presented in SC31-6971-01, which supports IBM X.25 over TCP/IP for Communication Controller for Linux Version 1 Release 2.

This document contains terminology, maintenance, and editorial changes, including changes to improve consistency and retrievability.

Changes made in IBM X.25 over TCP/IP for Communication Controller for Linux Version 1 Release 2

This document contains information previously presented in SC31-6971-00, which supports IBM X.25 over TCP/IP for Communication Controller for Linux Version 1 Release 2.

Changed information:

These tables have been updated:

- Table 4 on page 9
- Table 5 on page 9
- Table 6 on page 12
- Table 7 on page 13
- Table 8 on page 15

This document contains terminology, maintenance, and editorial changes. Technical changes or additions to the text and illustrations are indicated by a vertical line to the left of the change.

You might notice changes in the style and structure of some content in this document—for example, headings that use uppercase for the first letter of initial words only, and procedures that have a different look and format. The changes are ongoing improvements to the consistency and retrievability of information in our documents.

Chapter 1. Installing and configuring IBM X.25 over TCP/IP for Communication Controller for Linux

IBM X.25 over TCP/IP for Communication Controller for Linux (IBM X.25 over TCP/IP) is a software product that operates in conjunction with the IBM Communication Controller for Linux on System z (CCL) product. Together, they enable a System z9 or zSeries machine running Linux to run the IBM Network Control Program (NCP) and NCP Packet Switching Interface (NPSI), to communicate with other X.25-capable nodes, using the X.25 Over TCP/IP (XOT) protocol as described by RFC1613.

IBM X.25 over TCP/IP maximizes consolidation onto the mainframes and enables you to maintain legacy end-to-end X.25 network-based applications without requiring the IBM 3745/46 hardware.

Figure 1 shows IBM X.25 over TCP/IP components

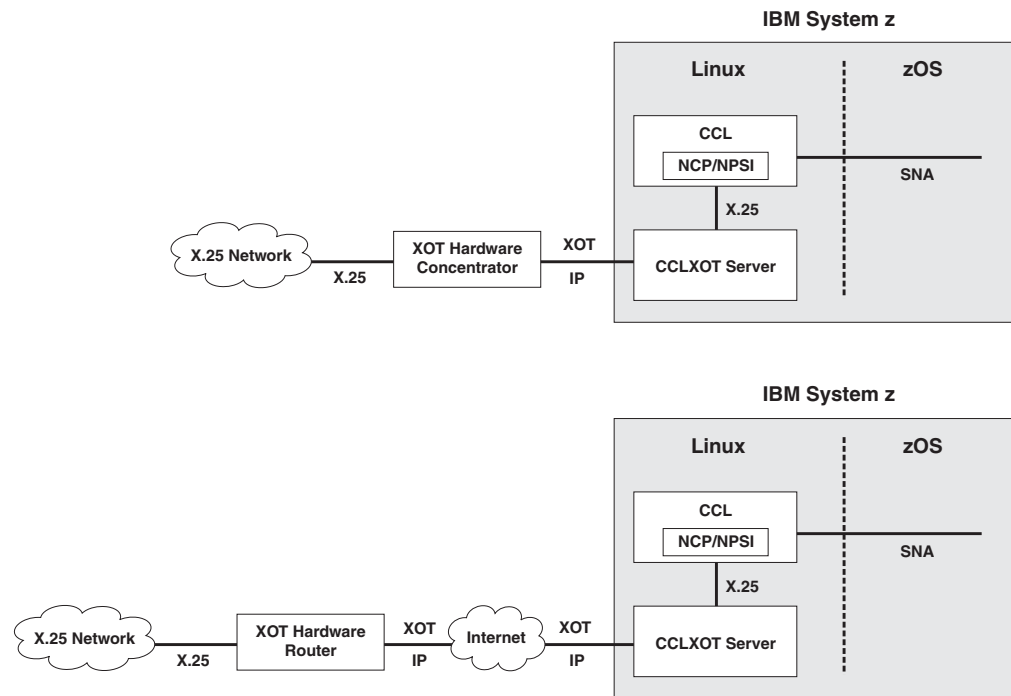


Figure 1. X.25 over TCP/IP component overview

Requirements for IBM X.25 over TCP/IP

IBM XOT requires the use of IBM Communication Controller for Linux on System z (CCL) V1.2 or later. CCL has hardware and software requirements of its own. Refer to the Communication Controller for Linux Web site <http://www.ibm.com/software/network/cclxot> for a complete description of the hardware and software requirements for running CCL.

IBM XOT does not have any software requirements other than those required for CCL.

IBM XOT requires a 31-bit or 64-bit System z9, zSeries, or G5/G6 system, with at least one interface that supports IP packets.

Storage and DASD requirements for IBM XOT are as follows:

- DASD for XOT, JVM, _uninst, configuration, documentation, license and samples directories = 56 MB
- DASD requirements for IBM XOT traces can vary depending on trace size settings defined in one of the following:
 - vport_trace_size parameter in the CCLXOT configuration file. See Table 5 on page 9.
 - trace_size parameter in the CCLXOT manager start trace command. See “start trace command” on page 33.
- Maximum storage used during steady state transactional workload including Linux, CCL and XOT storage up to 159 MB.

IBM XOT communicates with routers that have implemented the XOT standard, in order to transport the X.25 packets generated by NPSI onto X.25 wires. Although you do not need to have such a router in your network as a prerequisite for running IBM XOT in the mainframe, its usefulness is limited unless these routers are present.

Before you begin:

- For correct operation of IBM XOT, install the latest APAR maintenance for Communication Controller for Linux on System z V1R2 or later.
- The CCL library page at <http://www.ibm.com/software/network/ccl/library> provides additional information about configuring CCL, including a set of task-oriented configuration samples.
- The CCL support page at <http://www.ibm.com/software/network/ccl/support> has information about the latest CCL fixes.

Installing IBM XOT using InstallShield

The IBM X.25 over TCP/IP installation process uses an InstallShield executable to install the IBM X.25 over TCP/IP binaries onto the target system. The InstallShield executable is packaged in a compressed tar file. After you untar the file, the InstallShield executable program can be run using a command line or the graphical user interface.

Notes:

1. The InstallShield program uses Java, and includes a built-in Java Virtual Machine (JVM) for execution. Some systems have a Just-In-Time (JIT) compiler for Java that is incompatible with the CCL InstallShield executable. You might encounter the following error on such systems:

```
This application requires a Java Run Time Environment (JRE) to run.
Searching for one on your computer was not successful.
Please use the command line switch -ls:javahome to specify a valid JRE.
For more help use the option -is:help.
```

To avoid this error, disable the JIT by issuing the following command before running the InstallShield executable:

```
export JAVA_COMPILER=NONE
```

2. The InstallShield program needs approximately 100 MB of temporary space for the JVM and setup files. If you are out of space on the temporary directory

(such as /tmp) and need to set the temporary directory in another location, add the following parameter when invoking cclxot/setupxot.bin:

```
'-is:tempdir <alternate directory>'
```

3. The InstallShield program logs certain install activities in a text file named xotinstall.log, in the temporary directory being used for the install process (default: /tmp). If errors are reported during the install process, examine the contents of the xotinstall.log file.

Steps for installing IBM X.25 over TCP/IP using the command line

Perform the following steps to install IBM X.25 over TCP/IP using the installer by way of a console command line.

1. Copy the cclxot.tgz file to a temporary directory on the machine where IBM X.25 over TCP/IP will be installed:
2. Use the following command to untar the file:

```
tar -zxvf cclxot.tgz
```

The following files are extracted:

- cclxot/README
 - cclxot/setupxot.bin
3. Change to the newly created cclxot directory and type the following to run the CCL installation program:

```
./setupxot.bin -console
```
 4. Answer the questions prompted by InstallShield to continue the installation.

You know you are done when you see the following text:

```
The InstallShield Wizard has successfully installed IBM X.25 over TCP/IP for  
Communication Controller for Linux.  
Choose Finish to exit the wizard.
```

After you have installed IBM X.25 over TCP/IP, use the following command to remove the cclxot.tgz and cclxot/* files from the temporary directory:

```
rm -rf cclxot*
```

Steps for installing IBM X.25 over TCP/IP using the graphical interface

Perform the following steps to install IBM X.25 over TCP/IP using the graphical installation process.

Starting the installer with VNC

Perform the following steps to start the installer with VNC:

1. Type the following on a machine running InstallShield to start the VNC server:

```
vncserver
```
2. Set the password for the VNC server:

```
vncpasswd <password>
```

Note the host name and display number (hostname:displaynumber) in the output. For example:

```
New 'X' desktop is localhost:1
```

```
Starting applications specified in /home/user123/.vnc/xstartup  
Log file is /home/user123/.vnc/localhost:1.log
```

3. Locally, on your machine, run the following command:

```
vncviewer <hostname:displaynumber>
```
4. Copy the following file to a temporary directory on the machine where the CCL is to be installed:

```
cclxot.tgz
```
5. Use the following command to untar the file:

```
tar -zxvf cclxot.tgz
```

The following files are extracted:

 - cclxot/README
 - cclxot/setupxot.bin
6. Change to the newly created cclxot directory. In the VNC browser, start a virtual terminal and type the following to start the installation program:

```
./setupxot.bin
```
7. Answer the questions prompted by InstallShield to continue the installation.

You know you are done when you see the following text:

```
The InstallShield Wizard has successfully installed IBM X.25 over TCP/IP for
Communication Controller for Linux.
Choose Finish to exit the wizard.
```

After you have installed IBM X.25 over TCP/IP, use the following command to remove the cclxot.tgz and cclxot/* files from the temporary directory:

```
rm -rf cclxot
```

Starting the installer with a local X-window server

Perform the following steps to start the installer with a local X-window server:

1. Copy the following file to a temporary directory on the machine where you are installing IBM X.25 over TCP/IP:

```
cclxot.tgz
```
2. Use the following command to untar the file:

```
tar -zxvf cclxot.tgz
```

The following files are extracted:

 - cclxot/README
 - cclxot/setupxot.bin
3. If you are running without ssh X-forwarding, you *must* set the DISPLAY environment variable to the machine and display number where the window will appear. Set the DISPLAY environment variable in one of the following ways:
 - `setenv DISPLAY <hostname>:<displaynumber>`
 - `export DISPLAY= <hostname>:<displaynumber>`

If you are running with ssh X-forwarding enabled, do not set the DISPLAY environment variable.

4. Change to the cclxot directory and type the following command to run the installation program:

```
./setupxot.bin
```

The graphical installation process will run in a new X-window on your server.

5. Answer the questions prompted by InstallShield to continue the installation.

You know you are done when you see the following text:

The InstallShield Wizard has successfully installed IBM X.25 over TCP/IP for Communication Controller for Linux.
Choose Finish to exit the wizard.

After you have installed IBM X.25 over TCP/IP, use the following command to remove the cclxot.tgz and cclxot/* files from the temporary directory:

```
rm -rf cclxot*
```

Steps for performing unattended IBM X.25 over TCP/IP installation

InstallShield enables you to perform unattended installation using the silent install feature. InstallShield silent install uses a response file to drive the InstallShield installation. A sample InstallShield response file is located in the samples subdirectory of the XOT install directory called samples/iss/xot_silent.iss.

Use the following command to run InstallShield with the silent install option:

```
./setupxot.bin -silent -options <response file.iss>
```

Note: Silent install will not run if the cclxotd executable is currently running. For attended install or uninstall, you are prompted to indicate whether you want to continue with the install if cclxotd is currently running (but in another directory). However, silent installs or uninstalls will fail. You will have to use one of the attended methods.

Uninstalling IBM X.25 over TCP/IP using InstallShield

As with installation, IBM X.25 over TCP/IP uninstallation can be done using command line or graphical interface.

Notes:

1. The InstallShield program needs approximately 100 MB of temporary space for the JVM and setup files for uninstallation. If you are out of space on the temporary directory (such as, /tmp) and need to set the temporary directory in another location, add the following parameter:

```
'-is:tempdir <alternate directory>'
```

2. The following warning indicates that the IBM X.25 over TCP/IP installation directory could not be removed because it is not empty.

```
'WARNING: could not delete locked file <Install Directory>'
```

There might be configuration files, log files, or trace files still in that directory or one of its subdirectories. As a precaution, InstallShield does not remove that directory or any of the user-created contents in that directory. Instead, InstallShield shows a warning message.

Step for uninstalling IBM X.25 over TCP/IP using the command line

Perform the following step to uninstall IBM X.25 over TCP/IP by way of a console command line.

- The uninstall program is located in the _uninst subdirectory of the IBM X.25 over TCP/IP installation directory. Type the following command to run the program:

```
./uninstaller.bin -console
```

You know you are done when you see the following message:
The InstallShield Wizard has successfully installed IBM X.25 over TCP/IP for
Communication Controller for Linux.
Choose Finish to exit the wizard.

Steps for uninstalling IBM X.25 over TCP/IP using the graphical interface

Perform the following steps to uninstall IBM X.25 over TCP/IP using the graphical installation process.

Starting the uninstaller with VNC

1. Type the following on a machine running InstallShield to start the VNC server assuming the VNC binaries are in the current PATH:

```
vncserver
```

2. Set the password for the VNC server:

```
vncpasswd <password>
```

Note the host name and display number (hostname:displaynumber) in the output. For example:

```
New 'X' desktop is localhost:1
```

```
Starting applications specified in /home/user123/.vnc/xstartup  
Log file is /home/user123/.vnc/localhost:1.log
```

3. Locally, on your machine, run the following command:

```
vncviewer <hostname:displaynumber>
```

4. In the VNC browser, start a virtual terminal.
5. The uninstall program is located in the `_uninst` subdirectory of the IBM X.25 over TCP/IP install directory. Change to the `_uninst` subdirectory of the IBM X.25 over TCP/IP and type the following command in the virtual terminal to run the IBM X.25 over TCP/IP uninstallation program:

```
./uninstaller.bin
```

You know you are done when you see the following text:
The InstallShield Wizard has successfully installed IBM X.25 over TCP/IP for
Communication Controller for Linux.
Choose Finish to exit the wizard.

Starting the uninstaller with a local X-window server

1. If you run without ssh X-forwarding, you *must* set the DISPLAY environment variable to the machine and display number where the window will open. For example:

- `setenv DISPLAY <hostname:displaynumber>`
- `export DISPLAY= <hostname:displaynumber>`

2. The uninstall program is located in the `_uninst` subdirectory of the IBM X.25 over TCP/IP install directory. Change to the `_uninst` subdirectory and type the following command to run the IBM X.25 over TCP/IP uninstallation program:

```
./uninstaller.bin
```

You know you are done when you see the following text:
The InstallShield Wizard has successfully installed IBM X.25 over TCP/IP for
Communication Controller for Linux.
Choose Finish to exit the wizard.

Step for performing unattended IBM X.25 over TCP/IP uninstillation

Perform the following step to uninstall IBM X.25 over TCP/IP:

- The uninstall program is located in the `_uninst` subdirectory of the IBM X.25 over TCP/IP installation directory. Type the following command to run the program:

```
./uninstaller.bin -silent
```

You know you are done when you see the following message:

```
The InstallShield Wizard has successfully installed IBM X.25 over TCP/IP for
Communication Controller for Linux.
Choose Finish to exit the wizard.
```

Configuring IBM X.25 over TCP/IP

IBM X.25 over TCP/IP supports up to 64 virtual ports with individually configurable settings for HDLC and X.25. Each port supports up to 256 maps, which are used to define associations between X.25 and IP addresses so that calls can be setup and routed correctly. Figure 2 is an overview of ranges of ports and associated maps.

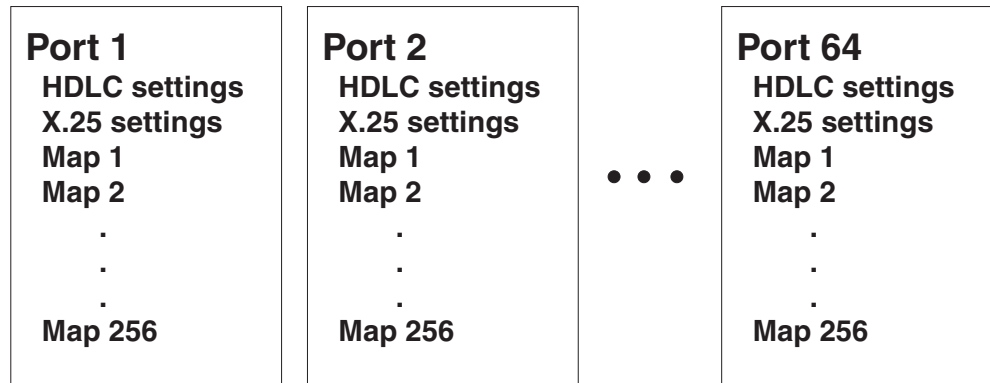


Figure 2. IBM X.25 over TCP/IP software adapter ports

You configure IBM X.25 over TCP/IP by creating an IBM X.25 over TCP/IP configuration file. This is a text file, with parameters organized into sections as shown in Table 3.

Table 3. IBM X.25 over TCP/IP configuration file sections

Section Name	Description
[xot_server]	Defines global settings for the IBM X.25 over TCP/IP, including the total number of active virtual ports.
[xot_server/port. <i>nn</i>]	Defines global settings for a virtual port. The number <i>nn</i> sets the port number. Up to 64 ports can be defined.
[xot_server/port. <i>nn</i> /hdlc]	Defines HDLC settings for port <i>nn</i> .
[xot_server/port. <i>nn</i> /x25]	Defines X.25 settings for port <i>nn</i> .
[xot_server/port. <i>nn</i> /xot_map. <i>mmm</i>]	Defines map <i>mmm</i> for port <i>nn</i> . This is used to define associations between X.25 and IP addresses so that calls can be setup properly. Up to 256 maps (numbered from 1 to 256) can be defined per port.

Starting IBM X.25 over TCP/IP

Issue the following command to start IBM X.25 over TCP/IP:

```
cclxotd [-f <filename>]
```

The `-f filename` parameter is an optional parameter that specifies the name of the configuration file to use. If this parameter is not specified, the default configuration file `config/cclxot.cfg` is used.

Messages are logged to the Linux system message log, which is file `/var/log/messages` on most Linux systems. Refer to Chapter 3, “CCLXOT manager commands,” on page 29 for a description of the error messages.

IBM X.25 over TCP/IP parameter definitions

You can define the following parameters in each section. Each parameter can be one of the following types:

- Num: A number in the range 0 to 4294967295
- Text: A string of alphanumeric characters

Configuration file syntax rules

The following syntax rules apply to the configuration file:

- The configuration file for IBM X.25 over TCP/IP uses keyword and equal sign type file syntax.
- Comments are indicated by a semicolon (;). The remainder of any line following a semicolon is ignored. If the first character in a line is a semicolon, the entire line is considered to be a comment.
- Blank lines are ignored.
- There are three types of keywords:

Section headers

A section header is enclosed in square brackets [...]. A keyword names the section and can include a variable name. For example, `[xot_server/port.1]` where the `port.1` value is a unique port and `xot-server` is the keyword.

Numeric values

Keywords defining a numeric value have a syntax of `keyword=n` where the `n` value is a digit value within the valid range for each keyword. For example, `vport_trace_enabled=2`.

String values

String keywords have a syntax of `keyword=string` where `string` is a value valid in size and value for each string type keyword. For example, `remote_pvc_interface=Serial1`.

[xot_server]

This section defines global IBM X.25 over TCP/IP settings.

In Table 4 on page 9, the parameters flagged with **M** are mandatory and must be used in the correct syntax; the parameters flagged with **O** are optional.

Table 4. Parameters for [xot_server] section of configuration file

M/O	Parameter	Type	Description
O	product_id	Text	Must be set to CCLXOTD .
O	product_name	Text	Must be set to XOT Software Adapter .
O	product_version	Text	Must be set to V1R2 .
M	number_of_ports	Num	Sets the total number of virtual ports supported by IBM X.25 over TCP/IP. Typically, you map one port to one NCP physical interface. Range: 1 - 64 Default: 1 Related NPSI section/keyword: BUILD Macro / X25.MCHCNT

[xot_server/port.*nn*]

The number *nn* specifies the virtual port that this definition applies to. You can define up to 64 ports.

In Table 5, the parameters flagged with **M** are mandatory and must be used in the correct syntax; the parameters flagged with **O** are optional.

Table 5. Parameters for [xot_server/port.*nn*] section of configuration file

M/O	Parameter	Type	Description
M	mch_name	Text	Name of NPSI MCH link associated with this port. The value is an alphanumeric, case-sensitive field for a maximum of 8 characters. Related NPSI section/keyword: label of the X25.MCH statement.

Table 5. Parameters for [xot_server/port.nn] section of configuration file (continued)

M/O	Parameter	Type	Description
M	lcn_support	Num	<p>Enables or disables support for preserving logical channel group numbers (LCGN).</p> <p>An X.25 virtual circuit is identified by a 12-bit field called the Logical Channel Identifier (LCI) that is composed of the 4-bit LCGN plus the 8-bit Logical Channel Number (LCN). For more information, see "Defining X.25 logical channel numbers" on page 19.</p> <p>Valid values:</p> <p>0 Disabled. IBM X.25 over TCP/IP assigns an LCI value according to the X.25 protocol standards.</p> <p>1 Enabled. IBM X.25 over TCP/IP allows the LCGN of the calling LCI to be maintained (preserved) on the called side if the calling LCN is available.</p> <p>Default: 1 (Enabled)</p> <p>When lcn_support=0, these [xot_server/port.nn/x25] parameters are required:</p> <ul style="list-style-type: none"> • lcn • first_pvc • num_pvc • first_svc • num_svc • remote_pvc_ip <p>See Table 6 on page 12.</p>
M	local_svc_x25_address	Text	<p>The X.25 DTE address assigned to this port. Incoming XOT calls that match this address are handled by this port and are sent to the NPSI MCH link identified by the mch_name parameter.</p> <p>Range: 0-15 numerical characters.</p>
M	local_pvc_interface	Text	<p>PVC interface name associated with this port. Local interface names are used in RFC 1613 PVC setup packets to reference a specific interface on local routers.</p> <p>Range: 0-20 ASCII characters. The name is case-insensitive with no padding or trailing zeros.</p> <p>Note: Some routers pre-pend the word "serial" to interface names.</p>
M	remote_pvc_interface	Text	<p>PVC interface name associated with a remote partner of this port. Remote interface names are used in RFC 1613 PVC setup packets to reference a specific interface on the remote routers.</p> <p>Range: 0-20 ASCII characters. The name is case-insensitive with no padding or trailing zeros.</p>

Table 5. Parameters for [xot_server/port.nn] section of configuration file (continued)

M/O	Parameter	Type	Description
M	number_of_xot_maps	Num	Total number of XOT maps for this port. Maps are used to determine the remote IP address for XOT calls using either both the LCGN and the DTE X.25 address when the lcn_support parameter is enabled, or only the DTE X.25 address when the lcn_support parameter is disabled. Range: 1-256. Default: 1. The value of this parameter must be equal to or less than the number of enabled maps for this port. At least one map must be enabled. See Table 8 on page 15.
M	pvc_reconnect_timer	Num	Number of seconds to wait before trying to reconnect a disconnected PVC. Range: 0 (disabled) -99 seconds. Default: 30 seconds.
O	vport_trace_enabled	Num	Controls virtual port tracing. Valid values: 0 Disabled. This is the default value. 1 LAPB trace in text format. 2 LAPB/X.25 trace in Ethereal format. The trace can be viewed using the Ethereal application with full decoding of X.25 packets.
O	vport_trace_size	Num	Size of virtual port trace files in MB. Range: 1 - 32 MB. Default: 2 MB
O	vport_trace_files	Num	Maximum number of trace files kept per trace. Range: 1-10 MB. Default: 1

[xot_server/port.nn/x25]

Defines X.25 settings for a virtual port. The number *nn* indicates the virtual port that this definition applies to.

In Table 6 on page 12, the parameters flagged with **M** are mandatory and must be used in the correct syntax; the parameters flagged with **O** are optional.

The following parameters are applicable only when the lcn_support parameter is set to 1 (enabled). See Table 5 on page 9. Even if you do not set the lcn_support parameter to 1, you must still use these parameters in the correct syntax.

- first_pvc
- num_pvc

- first_svc
- num_svc
- remote_pvc_ip

Table 6. Parameters for [xot_server/port.nn/x25] section of configuration file

M/O	Parameter	Type	Description
M	max_window_size	Num	<p>Number of packets that can be sent before waiting for an acknowledgment.</p> <p>Range: 1-127</p> <p>Default: 7</p> <p>Related NPSI section/keyword: X25.VCCPT / VWINDOW</p>
M	max_packet_size	Num	<p>Packet size limit during parameter negotiation.</p> <p>Range: 64-4096</p> <p>Default: 128</p> <p>Related NPSI section/keyword: X25.VCCPT / MAXPKTL</p>
M	first_pvc	Num	<p>Starting address (in decimal) of the first PVC.</p> <p>This parameter is applicable only when the lcn_support parameter is set to 1 (enabled).</p> <p>Range: 1-4 095</p> <p>Default: 1</p> <p>If both the num_pvc and num_svc values are greater than 0, ensure that the PVC and SVC ranges do not overlap and that PVCs are assigned before SVCs.</p>
M	num_pvc	Num	<p>Total number of PVCs.</p> <p>Range: 0-1024</p> <p>Default: 0</p> <p>This parameter is applicable only when the lcn_support parameter is set to 1 (enabled).</p> <p>Note: Ensure that the total number of PVCs and SVCs does not exceed 1024.</p>
M	first_svc	Num	<p>Starting address (in decimal) of the first SVC.</p> <p>This parameter is applicable only when the lcn_support parameter is set to 1 (enabled).</p> <p>Range: 1-4095</p> <p>Default: 1</p> <p>If both the num_pvc and num_svc values are greater than 0, ensure that the PVC and SVC ranges do not overlap and that PVCs are assigned before SVCs.</p>

Table 6. Parameters for [xot_server/port.nn/x25] section of configuration file (continued)

M/O	Parameter	Type	Description
M	num_svc	Num	Total number of two-way SVCs. Range: 0-1024 Default: 4 This parameter is applicable only when the lcn_support parameter is set to 1 (enabled). Note: Ensure that the total number of PVCs and SVCs does not exceed 1024.
M	remote_pvc_ip	Text	Destination IP address of a remote XOT router supporting PVCs. Specify the address as follows: <i>n.n.n.n</i> , where <i>n</i> is a number in the range 0-254. Default: 0.0.0.0 (none) This parameter is applicable only when the lcn_support parameter is set to 1 (enabled).

[xot_server/port.nn/hdlc]

Defines HDLC settings for a virtual port. The number *nn* indicates the virtual port that this definition applies to.

In Table 7, the parameters flagged with **M** are mandatory and must be used in the correct syntax; the parameters flagged with **O** are optional.

Table 7. Parameters for [xot_server/port.nn/hdlc] section of configuration file

M/O	Parameter	Type	Description
M	startup	Num	Port startup modes. Valid values: 0 Active mode. The port initiates the setup procedure. Typically used with DTE addressing. 1 Passive mode. The port waits for the other side to initiate the setup procedure. Default: 0 (Active mode)
M	station_type	Num	Station type. Valid values: 0 DCE. Use when connected to another computer configured as DTE. 1 DTE. Use when connected to an X.25 network, or to another computer configured as DCE. Default: 0 DCE Tip: Define IBM X.25 over TCP/IP as the DCE and the NPSI MCH as the DTE. Related NPSI section/keyword: X25.MCH / STATION

Table 7. Parameters for [xot_server/port.nn/hdlc] section of configuration file (continued)

M/O	Parameter	Type	Description
M	pack_format	Num	<p>Packet format.</p> <p>0 BASIC. Allows only the standard packets supported on all networks.</p> <p>1 EXTENDED. Allows use of extended clearing, call user data, and other features supported only by certain networks.</p> <p>Default: 0 (BASIC)</p> <p>Tip: Define IBM X.25 over TCP/IP as the DCE and the NPSI MCH as the DTE.</p> <p>Related NPSI section/keyword: X25.MCH / MMODULO</p>
M	max_window_size	Num	<p>Number of packets that can be sent before waiting for an acknowledgment.</p> <p>Range: 1-127</p> <p>Default: 7</p> <p>Related NPSI section/keyword: X25.MCH / MWINDOW</p>
M	max_retry_counter	Num	<p>Number of retries for negative acknowledgments of a frame.</p> <p>Range: 0-99</p> <p>Default: 10</p>
M	check_point_timer	Num	<p>Number of milliseconds to wait for an acknowledgment from the remote device after sending the last frame in the transmission cycle.</p> <p>Range: 200-9999 ms</p> <p>Default: 2900 ms</p>
M	ack_delay_timer	Num	<p>Number of milliseconds to wait for an outgoing information frame to piggyback an acknowledgment onto.</p> <p>Range: 500-9999 ms</p> <p>Default: 500 ms</p>
M	idle_probe_timer	Num	<p>Number of milliseconds to wait before sending an RR frame after the line has become idle.</p> <p>Range: 0-99999 ms</p> <p>Default: 15000 ms</p>

[xot_server/port.nn/xotmap.mmm]

Defines map settings for a virtual port. The number *nn* indicates the virtual port that this definition applies to. The number *mmm* indicates the map number. Up to 256 maps can be defined per port.

In Table 8, the parameters flagged with **M** are mandatory and must be used in the correct syntax; the parameters flagged with **O** are optional.

Note: The following parameters are applicable only when the `lcn_support` parameter is set to 1 (enabled). See Table 5 on page 9. Even if you do not set the `lcn_support` parameter to 1, you must still use these parameters in the correct syntax.

- `lcn`
- `remote_pvc_ip`
- `group_num_pvc`
- `group_first_pvc`
- `group_num_svc`
- `group_first_svc`

Table 8. Parameters for `[xot_server/port.nn/xotmap.mmm]` section of configuration file

M/O	Parameter	Type	Description
M	<code>map_enabled</code>	Num	Enables or disables this map. Valid values: 0 Disabled. 1 Enabled. Default: 1 (Enabled) There must be at least one map enabled.
M	<code>lcn</code>	Num	The LCGN assigned to this map. X.25 PVC or SVC calls on this LCGN are resolved using this map. This parameter is applicable only when the <code>lcn_support</code> parameter is set to 1 (enabled). See Table 5 on page 9. Range: 0-15 For more information about defining LCGN ranges, see "Defining X.25 logical channel numbers" on page 19.
M	<code>remote_svc_x25_address</code>	Text	Destination X.25 host address requested by an X.25 caller. The IBM X.25 over TCP/IP uses this address and the <code>lcn</code> number (if the <code>lcn_support</code> parameter is enabled) to match SVC calls. If a match is found, the call is forwarded to the XOT device at the address defined by the <code>remote_svc_ip</code> parameter. Valid value: 15 numeric characters Default: Blank You must set this parameter to a numeric X.25 address.

Table 8. Parameters for [xot_server/port.nn/xotmap.mmm] section of configuration file (continued)

M/O	Parameter	Type	Description
M	remote_svc_ip	Text	<p>IP address of the remote XOT device that an SVC call matching this map will be forwarded to.</p> <p>Specify the address as follows: <i>n.n.n.n</i>, where <i>n</i> is a number in the range 0-255.</p> <p>Default: 0.0.0.0</p> <p>This parameter is applicable only when the <code>lcn_support</code> parameter is set to 1 (enabled). See Table 5 on page 9.</p>
M	remote_pvc_ip	Text	<p>IP address of the remote XOT device that a PVC call matching this map will be forwarded to.</p> <p>Specify the address as follows: <i>n.n.n.n</i>, where <i>n</i> is a number in the range 0-255.</p> <p>Default: 0.0.0.0.</p> <p>Only applicable when the <code>lcn_support</code> parameter is set to 1 (enabled). See Table 5 on page 9.</p>
M	group_num_pvc	Num	<p>Total number of PVCs defined for this map.</p> <p>This parameter is applicable only when the <code>lcn_support</code> parameter is set to 1 (enabled). See Table 5 on page 9.</p> <p>Range:</p> <ul style="list-style-type: none"> • If the <code>lcn</code> parameter is set to 0, range is 1-255. • If the <code>lcn</code> parameter is set to a value in the range 1-15, then range is 0-255. <p>For more information about defining PVC ranges, see “Defining X.25 logical channel numbers” on page 19.</p>
M	group_first_pvc	Num	<p>Starting address (in decimal) of the first PVC for this map.</p> <p>This parameter is applicable only when the <code>lcn_support</code> parameter is set to 1 (enabled) and the <code>group_num_pvc</code> parameter is greater than 0. See Table 5 on page 9.</p> <p>For more information about defining PVC ranges, see “Defining X.25 logical channel numbers” on page 19.</p>

Table 8. Parameters for [xot_server/port.nn/xotmap.mmm] section of configuration file (continued)

M/O	Parameter	Type	Description
M	group_num_svc	Num	<p>Total number of SVCs defined for this map.</p> <p>This parameter is applicable only when the lcn_support parameter is set to 1 (enabled). See Table 5 on page 9.</p> <p>Range:</p> <ul style="list-style-type: none"> • If the lcn parameter is set to 0, range is 1-255. • If the lcn parameter is set to a value in the range 1-15, then range is 0-255. <p>Default: 4.</p> <p>For more information about defining SVC ranges, see "Defining X.25 logical channel numbers" on page 19.</p>
M	group_first_svc	Num	<p>Starting address (in decimal) of the first SVC for this map.</p> <p>This parameter is applicable only when the lcn_support parameter is set to 1 (enabled) and the group_num_svc parameter is greater than 0. See Table 5 on page 9.</p> <p>For more information about defining SVC ranges, see "Defining X.25 logical channel numbers" on page 19.</p>
O	backup_svc_ip	Text	<p>If an XOT connection cannot be established with the address defined by the remote_svc_ip parameter, then IBM X.25 over TCP/IP attempts to establish a connection with this address instead.</p> <p>Specify the address as follows: <i>n.n.n.n</i>, where <i>n</i> is a number in the range 0-255.</p> <p>Default: 0.0.0.0</p>
O	backup_timer	Num	<p>Specifies the number of seconds that IBM X.25 over TCP/IP waits for the connection to the remote IP address specified the remote_svc_ip parameter to be established before attempting to connect to the address specified by the backup_svc_ip parameter.</p> <p>Range: 0-255 seconds.</p> <p>Default: 0 (disable backup)</p>
O	caller_address	Text	<p>Sets the X.25 caller's address, if not specified by the X.25 caller.</p> <p>Range: Up to 15 numeric characters</p> <p>Default: Blank</p> <p>You must set this parameter to a numeric X.25 address.</p>

Table 8. Parameters for [xot_server/port.nn/xotmap.mmm] section of configuration file (continued)

M/O	Parameter	Type	Description
O	caller_override	Num	<p>Enables or disables insertion of the X.25 caller address into X.25 call requests, even if the address is specified by the caller.</p> <p>Valid values:</p> <p>0 Disabled. Always insert X.25 caller address.</p> <p>1 Enabled. Insert X.25 caller address only if one is not present in X.25 call request.</p> <p>Default: 1 (Enabled)</p>
O	call_timer	Num	<p>Controls how long IBM X.25 over TCP/IP waits for an X.25 call to complete (in seconds) before clearing a call.</p> <p>Range: 0-60 seconds</p> <p>Default: 0 (Disabled, wait for local caller to clear the call)</p>
O	call_retries	Num	<p>Controls how many X.25 calls IBM X.25 over TCP/IP tries before clearing a call.</p> <p>Applies only if the call_timer parameter is not set to 0 (disabled).</p> <p>Range: 0-10</p> <p>Default: 0 (Disabled)</p>
O	call_retry_delay	Num	<p>Controls how long IBM X.25 over TCP/IP waits between X.25 call retries (in milliseconds). This setting is useful if the remote XOT device is very busy because it gives the remote device additional time to clear its IP and X.25 resources from previous call attempts, and reduces the chance of failure.</p> <p>Applies only if the call_timer parameter is enabled.</p> <p>Range: 100-5000 milliseconds</p> <p>Default: 0 (Disabled)</p>
O	cug	Num	<p>Sets the X.25 caller's Closed User Group (CUG) facility.</p> <p>Range:</p> <ul style="list-style-type: none"> • 0-99 (basic format). Requires that the cug_ext_format parameter is set to 0. • 0-9999 (extended format). Requires that the cug_ext_format parameter is set to 1. <p>Default: 0 (Disabled)</p>

Table 8. Parameters for [xot_server/port.nn/xotmap.mmm] section of configuration file (continued)

M/O	Parameter	Type	Description
	cug_ext_format	Num	Enables or disables support for CUG extended format. Valid values: 0:Disabled Basic format. 1:Enabled Extended format.
O	cug_override	Num	Enables or disables insertion of CUG into X.25 call requests. Valid values: 0 Disabled. The CUG setting is inserted only when the X.25 call request does not include a CUG facility. 1 Enabled. The CUG setting is always inserted to X.25 call requests even if a CUG facility is specified by the caller. (The original CUG is overwritten.) Default: 0 (Disabled).
O	idle_timer	Num	When connected, idle X.25 hosts periodically generate a small amount of traffic in the form of RR packets to ensure that the other host is still connected. This timer controls how long XOT waits (in seconds) for X.25 idle traffic before clearing a call. Range: 0-3600 seconds Default: 0 (Disabled. Let the X.25 hosts clear the call)

Defining X.25 logical channel numbers

An X.25 virtual circuit is identified by a 12-bit field called the Logical Channel Identifier (LCI). The LCI is composed of the 4-bit LCGN plus the 8-bit Logical Channel Number (LCN).

Because the LCN is an 8-bit number, it can be used to identify up to 256 virtual circuits. The LCGN, being a 4-bit number, is used to assign virtual circuits to one of 16 different groups. The pair (LCGN=0, LCN=0) is reserved for system commands.

It works as follows:

- If LCGN is set to 0, the range of possible LCNs for numbering virtual circuits is 1-255.
- If LCGN is set to a number in the range 1-15, then the range of possible LCNs for numbering virtual circuits is 0-255.

Table 9 shows how 10 PVCs and 10 SVCs could be assigned to the first three logical channel group numbers.

Table 9. PVC and SVC assignment to LCGN

Number of VCs	LCGN	LCN	LCI	Description
0	0	0	0	Reserved for system commands.
10	0	1-10	1-10	10 PVC circuits in group 0.
10	0	11-20	11-20	10 SVC circuits in group 0.
10	1	0-9	256-265	10 PVC circuits in group 1.
10	1	10-19	266-275	10 SVC circuits in group 1.
10	2	0-9	512-521	10 PVC circuits in group 2.
10	2	10-19	522-531	10 SVC circuits in group 2.

Tip: For each logical channel group number, you can define a mix of PVCs and SVCs. The PVCs must be defined before the SVCs.

Guideline: Do not allow the PVC and SVC ranges to overlap. If ranges overlap, IBM X.25 over TCP/IP cannot successfully map the calls.

Gathering documentation for IBM support

To simplify the process of gathering the problem determination information needed by IBM support to diagnose XOT problems, XOT provides the `xotgetpd.sh` shell script. The `xotgetpd.sh` script gathers the necessary documentation, compresses it, and packages it into a single file that can be easily sent to your IBM Support Center.

Rule: To collect the appropriate problem documentation, you must execute the `xotgetpd.sh` script while logged in as a user that has root authority.

After verifying that the invoking user has the necessary authority, the `xotgetpd.sh` script prompts you for all the information it needs to collect the problem determination information. You will need to provide the following:

- problem identifier (optional, but recommended)
- the full path of the XOT install directory. All files in that directory will be collected.
- path and filename of core file not in XOT install directory (optional)
- path and filename for a TCP/IP trace not in XOT install directory (optional)
- path to temporary directory where collected doc will be placed

Once `xotgetpd.sh` has collected all the information, a message with the name and location of the compressed output file is printed. You should send the file to IBM support for problem diagnosis.

Chapter 2. Sample scenarios

This chapter provides sample scenarios that show how to setup and configure IBM X.25 for TCP/IP.

Scenario 1: Using PVCs

This scenario shows how to configure IBM X.25 for TCP/IP to use X.25 PVCs.

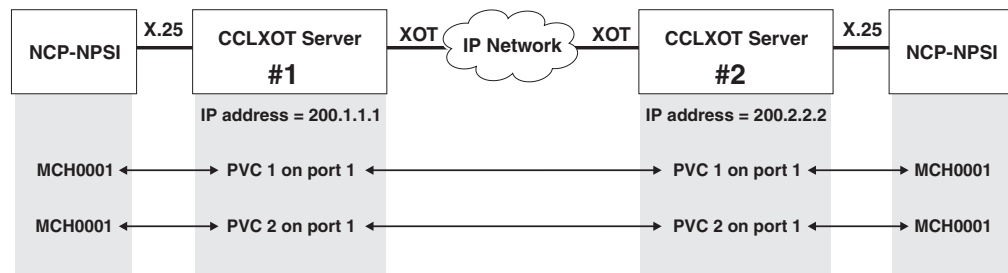


Figure 3. IBM X.25 for TCP/IP with X.25 PVCs

In this scenario, two instances of IBM X.25 for TCP/IP are connected by way of an IP network. Two PVCs are defined as follows:

- PVC 1 on LCGN 1 and LCN 1
- PVC 2 on LCGN 2 and LCN 1

Configuring CCLXOT Server #1

The following parameters are defined.

```
[xot_server]
product_id=CCLXOTD
product_name=XOT Software Adapter
product_version=V1R2
number_of_ports=1

[xot_server/port.1]
mch_name=MCH0001                               ;Name of the associated NPSI MCH link.
lcn_support=1                                   ;Enables LCGN support.
local_svc_x25_address=1
local_pvc_interface=Serial1
remote_pvc_interface=Serial2
number_of_xot_maps=2                           ;Two maps are defined.
pvc_reconnect_timer=30
vport_trace_enabled=0
vport_trace_size=2

[xot_server/port.1/x25]
max_window_size=7
max_packet_size=128

[xot_server/port.1/hdlc]
startup=0
station_type=0
pack_format=0
max_window_size=7
max_retry_counter=10
check_point_timer=2900
ack_delay_timer=1000
```

idle_probe_timer=15000

[xot_server/port.1/xot_map.1]

```
map_enabled=1                ;Enables this map.
lcn=1                        ;Assigns this map to LCGN 1.
remote_svc_x25_address=0
remote_svc_ip=0.0.0.0
remote_pvc_ip=200.2.2.2     ;IP address of the remote XOT device.
group_first_pvc=1          ;Starting LCN of the PVCs in this map.
group_num_pvc=1            ;Number of PVCs in this map.
group_first_svc=0
group_num_svc=0
backup_svc_ip=0.0.0.0
backup_timer=0
caller_address=
caller_override=0
call_timer=0
call_retries=0
call_retry_delay=0
cug=0
cug_ext_format=0
cug_override=0
idle_timer=0
```

[xot_server/port.1/xot_map.2]

```
map_enabled=1                ;Enables this map.
lcn=2                        ;Assigns this map to LCGN 2.
remote_svc_x25_address=0
remote_svc_ip=0.0.0.0
remote_pvc_ip=200.2.2.2     ;IP address of the remote XOT device.
group_first_pvc=1
group_num_pvc=1
group_first_svc=0
group_num_svc=0
backup_svc_ip=0.0.0.0
backup_timer=0
caller_address=
caller_override=0
call_timer=0
call_retries=0
call_retry_delay=0
cug=0
cug_ext_format=0
cug_override=0
idle_timer=0
```

Configuring CCLXOT Server #2

The following parameters are defined. Descriptions are provide in italics for settings changed from defaults. Differences between this configuration and that of IBM X.25 for TCP/IP #1 are marked with asterisks (**).

[xot_server]

```
product_id=CCLXOTD
product_name=XOT Software Adapter
product_version=V1R2
number_of_ports=1
```

[xot_server/port.1]

```
mch_name=MCH0001           ;Name of the associated NPSI MCH link.
lcn_support=1              ;Enables LCGN support.
local_svc_x25_address=1
local_pvc_interface=Serial2
remote_pvc_interface=Serial1
number_of_xot_maps=2      ;Two maps are defined.
pvc_reconnect_timer=30
vport_trace_enabled=0
```

```
vport_trace_size=2
```

```
[xot_server/port.1/x25]  
max_window_size=7  
max_packet_size=128
```

```
[xot_server/port.1/hdlc]  
startup=0  
station_type=0  
pack_format=0  
max_window_size=7  
max_retry_counter=10  
check_point_timer=2900  
ack_delay_timer=1000  
idle_probe_timer=15000
```

```
[xot_server/port.1/xot_map.1]  
map_enabled=1  
lcn=1  
remote_svc_x25_address=0  
remote_svc_ip=0.0.0.0  
remote_pvc_ip=200.1.1.1  
group_first_pvc=1  
group_num_pvc=1  
group_first_svc=0  
group_num_svc=0  
backup_svc_ip=0.0.0.0  
backup_timer=0  
caller_address=  
caller_override=0  
call_timer=0  
call_retries=0  
call_retry_delay=0  
cug=0 cug_ext_format=0  
cug_override=0  
idle_timer=0
```

```
;Enables this map.  
;Assigns this map to LCGN 1.
```

```
;IP address of the remote XOT device.***  
;Starting LCN of the PVCs in this map.  
;Number of PVCs in this map.
```

```
[xot_server/port.1/xot_map.2]  
map_enabled=1  
lcn=2  
remote_svc_x25_address=0  
remote_svc_ip=0.0.0.0  
remote_pvc_ip=200.1.1.1  
group_first_pvc=1  
group_num_pvc=1  
group_first_svc=0  
group_num_svc=0  
backup_svc_ip=0.0.0.0  
backup_timer=0  
caller_address=  
caller_override=0  
call_timer=0  
call_retries=0  
call_retry_delay=0  
cug=0  
cug_ext_format=0  
cug_override=0  
idle_timer=0
```

```
;Enables this map.  
;Assigns this map to LCGN 2.
```

```
;IP address of the remote XOT device.  
;Starting LCN of the PVCs in this map.  
;Number of PVCs in this map.
```

Scenario 2: Using SVCs

This scenario shows how to configure IBM X.25 for TCP/IP to use X.25 SVCs.

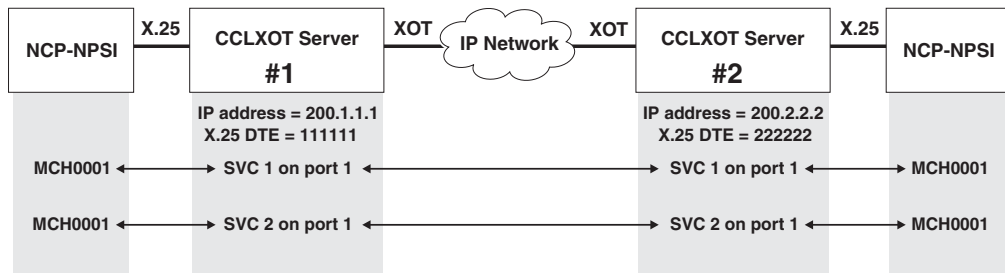


Figure 4. IBM X.25 for TCP/IP with X.25 SVCs

In this scenario, two instances of IBM X.25 for TCP/IP are connected using an IP network. Two SVCs are defined as follows:

- SVC 1 on LCGN 1 and LCN 1
- SVC 2 on LCGN 2 and LCN 5

Configuring CCLXOT Server #1

The following parameters are defined. Descriptions are provide in italics for settings changed from defaults.

xot_server]

```
product_id=CCLXOTD
product_name=XOT Software Adapter
product_version=V1R2
number_of_ports=1
```

[xot_server/port.1]

```
mch_name=MCH0001 ;Name of the associated NPSI MCH link.
lcn_support=1 ;Enables LCGN support.
local_svc_x25_address=111111 ;X.25 address of this device.
local_pvc_interface=Serial1
remote_pvc_interface=Serial2
number_of_xot_maps=2 ;Two maps are defined.
pvc_reconnect_timer=30
vport_trace_enabled=0
vport_trace_size=2
```

[xot_server/port.1/x25]

```
max_window_size=7
max_packet_size=128
```

[xot_server/port.1/hdlc]

```
startup=0
station_type=0
pack_format=0
max_window_size=7
max_retry_counter=10
check_point_timer=2900
ack_delay_timer=1000
idle_probe_timer=15000
```

[xot_server/port.1/xot_map.1]

```
map_enabled=1 ;Enables this map.
lcn=1 ;Assigns this map to LCGN 1.
remote_svc_x25_address=222222 ;X.25 address of the remote XOT device.
remote_svc_ip=200.2.2.2 ;IP address of the remote XOT device.
remote_pvc_ip=0.0.0.0
group_first_pvc=0
group_num_pvc=0
group_first_svc=1 ;Starting LCN of the SVCs in this map.
group_num_svc=1 ;Number of SVCs in this map.
backup_svc_ip=0.0.0.0
```



```

backup_timer=0
caller_address=
caller_override=0
call_timer=0
call_retries=0
call_retry_delay=0
cug=0
cug_ext_format=0
cug_override=0
idle_timer=0

[xot_server/port.1/xot_map.2]
map_enabled=1                ;Enables this map.
lcn=2                        ;Assigns this map to LCGN 2.
remote_svc_x25_address=222222 ;X.25 address of the remote XOT device.
remote_svc_ip=200.2.2.2      ;IP address of the remote XOT device.
remote_pvc_ip=0.0.0.0
group_first_pvc=0
group_num_pvc=0
group_first_svc=5            ;Starting LCN of the SVCs in this map.
group_num_svc=1              ;Number of SVCs in this map.
backup_svc_ip=0.0.0.0
backup_timer=0
caller_address=
caller_override=0
call_timer=0
call_retries=0
call_retry_delay=0
cug=0
cug_ext_format=0
cug_override=0
idle_timer=0

```

Configuring CCLXOT Server #2

The following parameters are defined. Descriptions are provide in italics for settings changed from defaults. Differences between this configuration and that of IBM X.25 for TCP/IP #1 are marked with asterisks (**).

```

[xot_server]
product_id=CCLXOTD
product_name=XOT Software Adapter
product_version=V1R2
number_of_ports=1

[xot_server/port.1]
mch_name=MCH0001            ;Name of the associated NPSI MCH link.
lcn_support=1              ;Enables LCGN support.
local_svc_x25_address=222222 ;X.25 address of this device. ***
local_pvc_interface=Serial2
remote_pvc_interface=Serial1
number_of_xot_maps=2       ;Two maps are defined.
pvc_reconnect_timer=30
vport_trace_enabled=0
vport_trace_size=2

[xot_server/port.1/x25]
max_window_size=7
max_packet_size=128

[xot_server/port.1/hd1c]
startup=0
station_type=0
pack_format=0
max_window_size=7
max_retry_counter=10
check_point_timer=2900

```

```
ack_delay_timer=1000
idle_probe_timer=15000
```

[xot_server/port.1/xot_map.1]

```
map_enabled=1 ;Enables this map.
lcn=1 ;Assigns this map to LCGN 1.
remote_svc_x25_address=111111 ;X.25 address of the remote XOT device. ***
remote_svc_ip=200.1.1.1 ;IP address of the remote XOT device. ***
remote_pvc_ip=0.0.0.0
group_first_pvc=0
group_num_pvc=0
group_first_svc=1 ;Starting LCN of the SVCs in this map.
group_num_svc=1 ;Number of SVCs in this map.
backup_svc_ip=0.0.0.0
backup_timer=0
caller_address=
caller_override=0
call_timer=0
call_retries=0
call_retry_delay=0
cug=0 cug_ext_format=0
cug_override=0
idle_timer=0
```

[xot_server/port.1/xot_map.2]

```
map_enabled=1 ;Enables this map.
lcn=2 ;Assigns this map to LCGN 2.
remote_svc_x25_address=111111 ;X.25 address of the remote XOT device. ***
remote_svc_ip=200.1.1.1 ;IP address of the remote XOT device. ***
remote_pvc_ip=0.0.0.0
group_first_pvc=0
group_num_pvc=0
group_first_svc=5 ;Starting LCN of the SVCs in this map.
group_num_svc=1 ;Number of SVCs in this map.
backup_svc_ip=0.0.0.0
backup_timer=0
caller_address=
caller_override=0
call_timer=0
call_retries=0
call_retry_delay=0
cug=0
cug_ext_format=0
cug_override=0
idle_timer=0
```

Scenario 3: Using SVCs and PVCs for BNN traffic

Figure 5 shows how to configure IBM X.25 for TCP/IP to use X.25 SVCs and PVCs to remote DTE devices.

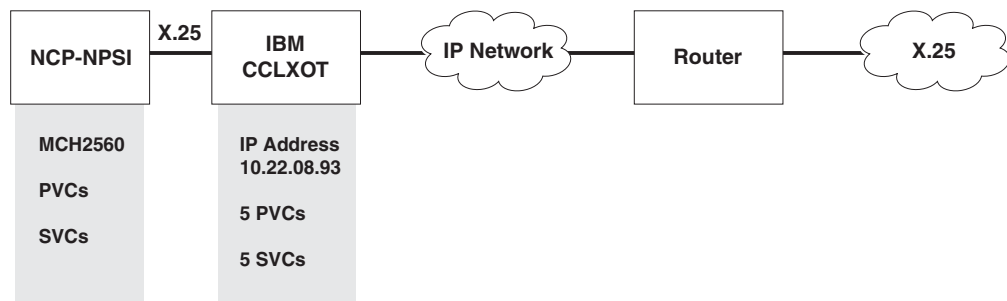


Figure 5. IBM X.25 for TCP/IP with X.25 SVCs and PVCs through remote DTE devices

In this scenario, one instance of IBM X.25 for TCP/IP is connected using an IP network to a remote router that has XOT. Several SVCs and PVCs are defined over one MultiCHannel (MCH).

PVCs are defined as LCGN 0 VC 1 through 5. SVCs are on LCGN 0 VC 6 to 11.

```
[xot_server]
product_id=CCLX0TD
product_name=XOT Software Adapter
product_version=V1R2
number_of_ports=1
;
[xot_server/port.1]
mch_name=MCH2560
lcn_support=1
local_svc_x25_address=111111
local_pvc_interface=Serial1
remote_pvc_interface=Serial5/0
number_of_xot_maps=0
pvc_reconnect_timer=30
vport_trace_enabled=0
vport_trace_size=2
;
[xot_server/port.1/x25]
max_window_size=7
max_window_size=7
max_packet_size=128
group_num_pvc=0
first_pvc=1
num_pvc=5
group_num_svc=0
first_svc=6
num_svc=5
remote_pvc_ip=10.22.08.93
remote_svc_x25_address=123456
remote_svc_ip=10.22.08.93
;
[xot_server/port.1/hdlc]
startup=0
station_type=0
pack_format=0
max_window_size=7
max_retry_counter=10
check_point_timer=290
ack_delay_timer=1000
idle_probe_timer=300
idle_probe_timer=30
```

Note:The remote_pvc_interface value must match the serial interface on the remote router. The local_pvc_interface value is coded on the router side to map the PVCs back to this interface.

Chapter 3. CCLXOT manager commands

CCLXOT can be monitored using the `cclxotm` program. This program is installed with `cclxotd`, and enables you to manage the X.25 circuits that are being maintained by `cclxotd`. For example, you can query status and statistics of circuits, start and stop traces, and so on. This chapter contains CCLXOT manager commands that you can use to control and query status and information regarding the CCLXOT server.

Use the following syntax for the CCLXOT manager commands:

```
cclxotm -m <NDHSocketName> -c "command"
```

-m <NDHSocketName>

This is the name of the NDH socket to be used to communicate with the `cclxotd` executable. Its value must match the value specified (or the default value) on the `-m` parameter during startup of `cclxotd`. The default value is XOTMANAGER

-c "command"

Single command mode. If `-c` is specified, `cclxotm` executes the command and exits. If the command to be executed contains embedded spaces, it must be enclosed in quotation marks (for example, `./cclxotm -c "lapb status"`).

If `-c` is not specified, `cclxotm` is issued in interactive mode, in which the user can enter a series of commands to issue. Interactive mode includes a command editor with context-sensitive help and syntax checking, and supports command shortcuts and a command history, among other features.

Command editor features

Following is a list of command editor features.

Context-sensitive help

With the context-sensitive help feature you can get help that is specific to a command. Each command consists of one or more keywords followed by required and optional arguments, or parameters. The following table summarizes the context-sensitive help feature.

Table 10. Context-sensitive help feature

Command	Purpose
<i>(prompt)</i> help	Displays a brief description of the help system.
<i>(prompt)</i> ? or F1	Lists all commands available.
<i>(prompt)</i> command <space>?	If command is complete, lists the arguments for the command and a brief description. If the command is not complete, lists the next available keyword for the command.
<i>(prompt)</i> abbreviated-command-entry ?	Lists all commands in the current mode that begin with a particular character string.

Table 10. Context-sensitive help feature (continued)

Command	Purpose
(prompt) abbreviated-command-entry<Tab>	Completes a partial keyword or command name if possible.

Command syntax check

If you enter a command incorrectly (for example, you made a typographical error or enter an invalid command option), the Command Editor informs you of the error and indicates where the error has occurred. A caret symbol (^) appears under the incorrect command, keyword or argument.

Command abbreviation

Commands and keywords can be abbreviated to the minimum number of characters that identify a unique selection. The Command Editor issues an error message if you do not supply enough characters.

Command-line editing

A variety of shortcuts or hot keys are described in the following section.

Specific key combinations or sequences can move the cursor on the command line so you can make corrections or changes. You must press the Ctrl key simultaneously with its associated letter key. You must press the Esc key first, followed by its associated letter key. Keys are not case sensitive. Many letters used for navigation and editing provide an easy way to remember their functions.

Table 11. Keystrokes for command-line editing

Keystrokes	Function summary	Function details
Left arrow (←) or Ctrl-B	Back character	Moves the cursor one character to the left.
Right arrow (→) or Ctrl-F	Forward character	Moves the cursor one character to the right.
Esc, B	Back word	Moves the cursor backward one word.
Esc, F	Forward word	Moves the cursor forward one word.
Ctrl-A	Beginning of line	Moves the cursor to the beginning of the line.
Ctrl-E	End of line	Moves the cursor to the end of the command line.
Up arrow (↑) key		Recalls commands in the history buffer, beginning with the most recent command. Repeat the key sequence to recall successively older commands.
Down arrow (↓) key		Returns to more recent commands in the history buffer after recalling commands with Ctrl-P or the up arrow (↑) key. Repeat the key sequence to recall successively more recent commands.
Ctrl-K		Deletes all characters from the cursor to the end of the command line.

Table 11. Keystrokes for command-line editing (continued)

Keystrokes	Function summary	Function details
Ctrl-U or Ctrl-X		Deletes all characters from the cursor to the beginning of the command line.
Ctrl-W		Deletes all characters from the cursor to the beginning of the command line.
Esc, D		Deletes all characters from the cursor to the end of the word.

CCLXOT manager commands

The following sections describe the CCLXOT manager commands. Enter all the CCLXOT manager commands following the CCLXOTM> prompt as shown in the following example:

Table 12. CCLXOT manager command summary

Command	Function
quit	Exits the CCLXOT manager.
help help <command> ? ? <command>	Displays a brief description of the help system or help for the specified command.
history	Provides a history of commands.
history buffer size	Sets the size of a buffer, in terms of the number of commands resulting from the history command.
start trace	Starts the tracing operation for one or more virtual ports on the CCLXOT server.
stop trace	Stops the tracing operation for one or more virtual ports on the CCLXOT server.
line status	Shows current status of the virtual wire component for the specified virtual port or ports of the CCLXOT server.
lapb status	Shows current status of the LAPB component for the specified virtual port or ports of the CCLXOT server.
lapb statistics	Shows current statistics of the LAPB component for the specified virtual port or ports of the CCLXOT server.
xot status	Shows current status of the XOT component for the specified virtual port or ports of the CCLXOT server.
xot statistics	Shows current statistics of the XOT component for the specified virtual port or ports of the CCLXOT server.
connection list lci	Shows a list of connections for one or more virtual ports on the CCLXOT server. Virtual circuits are identified using LCI (Logical Channel Identifier).
connection list lcg	Shows a list of connections for one or more virtual ports on the CCLXOT server. Virtual circuits are identified using LCGN (Logical Channel Group Number) and LCN (Logical Channel Number).

quit command

Use the **quit** command to exit the CCLXOT manager.

Abbreviation: q

help or ? command

Use the **help** or **?** command to display a brief description of the help system or help for a specific command.

Abbreviation: he

help or ?

General help.

help <command>

? <command>

Command-specific help.

For example:

```
CCLXOTM> ?
```

```
HELP How to use CLI command.
HISTORY Display/Enable command history.
HISTORY BUFFER SIZE Set the history buffer size.
QUIT Quit the application.
```

```
CONNECTION LIST LCGN List connections for one or more ports.
CONNECTION LIST LCI List connections for one or more ports.
LAPB STATISTICS Show LAPB statistics for one or more ports.
LAPB STATUS Show LAPB status for one or more ports.
LINE STATUS Show "virtual wire" status for one or more ports.
START TRACE Start tracing for one or more ports.
STOP TRACE Stop tracing for one or more ports.
XOT STATISTICS Show XOT statistics for one or more ports.
XOT STATUS Show XOT status for one or more port
```

history command

Use the **history** command to recall a history of commands in the buffer or to disable history.

Abbreviation: hi

history

If history is enabled, the command lists all the commands in the buffer; otherwise, this command enables history. When the list is returned, a command can be recalled by using an exclamation point (!) followed by the number of the command on the list. For example:

```
CCLXOTM> history
```

```
1 history
2 lapb status
3 lapb statistics
4 line status
5 start trace MCHLAB1
6 stop trace
```

```
CCLXOTM> !5 ←reissues the 5th command in the list
```


no history

Disables history.

↑ Use to recall commands in the history beginning with the most recent command.

↓ Use to return to more recent commands after using the arrow key (↑).

history buffer size command

Use the **history buffer size** command to set the size of a buffer, in terms of the number of commands, used by the **history** command.

Abbreviation: hb

history buffer size <n>

Sets the buffer to *n* lines where *n* is a value in range 1 - 50 representing the number of commands stored in the history buffer.

default history buffer size

Sets the buffer to a default of 15 commands.

For example:

```
CCLXOTM> history buffer size 24
```

start trace command

Use the **start trace** command to start the tracing operation for one or more virtual ports on the CCLXOT server.

Abbreviation: sta

start trace <mch_name> <trace_type> <trace_size> <trace_file>

<mch_name>

MCH name associated with a virtual port. Wildcard characters (*,?) are accepted. The **start trace** command is applied to all virtual ports if you do not specify the MCH name or if you type an empty string ("").

<trace_type>

The following values are valid for trace type:

- 1 LAPB in text format (.txt).
- 2 LAPB/X.25 in Ethereal format (.cap).

The default value is 1.

<trace_size>

A decimal integer in the range 1 - 32 representing the size of the trace in megabytes. The default value is 2 megabytes.

<trace_file>

This value indicates the name of the trace file. The CCLXOT manager concatenates the <mch_name> value to the specified file to produce a unique file for each port being traced. For example:

```
vport_lapbtxt.trace-port-x.txt
```

```
vport_ether_trace_port_x.cap
```

where *x* represents the port number.

To start tracing for all virtual ports and use default trace options:

```
start trace
```

To start tracing for the named virtual ports and use default trace options:

```
start trace <mch_name>
```

To cause the svctest_port_3.txt trace file to be used:

```
sta MCH2496 1 5 svctest
```

To cause the pvcinn_port_x.cap trace file to be used:

```
sta MCH2560 2 10 pvcinn
```

Note: Ethereal does not support Extended LAPB. When you start the trace, the trace type for the port is set to LAPB text format (.txt).

stop trace command

Use the **stop trace** command to stop the tracing operation for one or more virtual ports on the CCLXOT server.

Abbreviation: sto

```
stop trace <mch_name>
```

Stop tracing for the virtual port indicated by the <mch_name> value.

<mch_name>

MCH name associated with a virtual port. Wildcards (*, ?) are accepted. The **stop trace** command is applied to all virtual ports if you do not specify the MCH name or if you type an empty string ("").

For example:

```
stop trace MCH2345
```

```
stop trace MCH25*
```

```
stop trace ← to stop all traces
```

line status command

Use the **line status** command to display current status of the virtual wire component for the specified virtual port or ports on the CCLXOT server.

Abbreviation: li

```
line status <mch_name>
```

Indicates the virtual wire status for the port indicated by the <mch_name> value.

<mch_name>

MCH name associated with a virtual port. Wildcards (*, ?) are accepted. The **line status** command is applied to all virtual ports if you do not specify the MCH name or if you type an empty string ("").

For example, the following command displays the status for MCH name MCH2304:

```
line status MCH2304
```

```
MCH Name: MCH2304          Port Number: 1
-----
Line state.....: Connected
Packets received from NDH.: 1357
Packets sent to NDH.....: 1507
Trace file.....: vport_lapbtxt_trace_port_1.txt
Trace type.....: LAPB Text
Trace file size (Mbytes)...: 4
Trace.....: 0n
```

lapb status command

Use the **lapb status** command to display the current status of the LAPB component for the specified virtual port or ports on the CCLXOT server.

Abbreviation: la statu

lapb status <mch_name>

Displays the LAPB status for the port indicated by the <mch_name> value.

<mch_name>

MCH name associated with a virtual port. Wildcards (*, ?) are accepted. The **lapb status** command is applied to all virtual ports if you do not specify the MCH name or if you type an empty string ("").

For example, the following command displays the lapb status for MCH name MCH2304:

```
lapb status MCH2304
```

```
MCH Name: MCH2304          Port Number: 1
-----
Station type.....: DCE          Check point timer T1 (msec): 2900
Startup.....: Active          Ack delay timer T2 (msec)...: 200
Maximum retry count N2.....: 10      Idle probe timer T3 (msec)..: 15000
Maximum window size K.....: 7        Maximum frame size N1 (byte): 136
Packet format.....: NORMAL
Protocol state.....: Opened
Line state.....: Opened
```

lapb statistics command

Use the **lapb statistics** command to display the current statistics of the LAPB component for the specified virtual port or ports on the CCLXOT server.

Abbreviation: la stati

lapb statistics <mch_name>

Displays the LAPB statistics for the port indicated by the <mch_name> value.

<mch_name>

MCH name associated with a virtual port. Wildcards (*, ?) are

accepted. The **lapb statistics** command is applied to all virtual ports if you do not specify the MCH name or if you type an empty string ("").

For example, the following command displays the lapb statistics for MCH name MCH2304:

```
lapb statistics MCH2304
```

```
MCH Name: MCH2304      Port Number: 1
-----
T1 expired.....: 0      Retransmissions...: 0
Underrun.....: 0
Overrun.....: 0
      Sent      Received      Sent      Received
SABM.....: 1      1      XID.....: 0      0
DISC.....: 0      0      I.....: 206      6
UA.....: 1      1      RR.....: 1301      1351
DM.....: 0      0      RNR.....: 0      0
FRMR.....: 0      0      Rejects.....: 0      0
Abort.....: 0      0
Bad type.....: 0
Bad CRC.....: 0
```

xot status command

Use the **xot status** command to display the current status of the XOT component for the specified virtual port or ports of the CCLXOT server.

Abbreviation: x statu

xot status <mch_name>

Displays the xot status for the port indicated by the <mch_name> value.

<mch_name>

MCH name associated with a virtual port. Wildcards (*, ?) are accepted. The **xot status** command is applied to all virtual ports if you do not specify the MCH name or if you type an empty string ("").

For example, the following command displays the xot status for MCH name MCH2304:

```
xot status MCH2304
```

```
MCH Name: MCH2304      Port Number: 1
-----
Window size.....: 7
Packet size (bytes).....: 128
      Configured  Connecting  Connected
SVC.....: 4      0      0
PVC.....: 4      0      4
```

xot statistics command

Use the **xot statistics** command to display the current statistics of the XOT component for the specified virtual port or ports of the CCLXOT server.

Abbreviation: x stati

xot statistics <mch_name>

Displays the xot statistics for the port indicated by the <mch_name> value.

<mch_name>

MCH name associated with a virtual port. Wildcards (*, ?) are accepted. The **xot statistics** command is applied to all virtual ports if you do not specify the MCH name or if you type an empty string ("").

For example, the following command displays the xot statistics for MCH name MCH2304:

```
xot statistics MCH2304
```

```
MCH Name: MCH2304
```

```
Port Number: 1
```

		Sent		Received		Sent		Received	
Call	request..:	0	0	Data packets.....:	0	0			
	Confirm..:	0	0	Data segments.....:	0	0			
Restart	request..:	1	1	Characters.....:	0	0			
	Confirm..:	1	1	Receiver Ready....:	0	0			
Register	request..:	0	0	Receiver Not Ready:	0	0			
	Confirm..:	0	0	Diagnostic packets:	0	0			
Clear	request..:	0	0	Unknown packets...:	0	0			
	Confirm..:	0	0	Rejects.....:	0	0			
Reset	request..:	200	4						
	Confirm..:	4	0						
Interrupt	request..:	0	0						
	Confirm..:	0	0						

connection list lci command

Use the **connection list lci** command to display a list of connections for one or more virtual ports on the CCLXOT server. Virtual circuits are identified using LCI (Logical Channel Identifier).

Abbreviation: c l lci

```
connection list lci <mch_name> <start_lci> <end_lci>
```

<mch_name>

MCH name associated with a virtual port. Wildcards (*, ?) are accepted. The **connection list lci** command is applied to all virtual ports if you do not specify the MCH name or if you type an empty string ("").

<start_lci>

The starting Logical Channel Identifier. A decimal integer in the range 1 - 4095 identifies the first connection. The default value is 1.

<end_lci>

The ending Logical Channel Identifier. A decimal integer in the range 1 - 4095 identifies the last connection. The default value is 4095.

For example, the following command displays the connection list for MCH name MCH2369:

```
Connection list lci MCH2369
```

```
MCH Name: MCH2369      Port Number: 4
LCI  Local Address    Remote Address Type  Status
-----
```

1			PVC	Connected
2			PVC	Connected
3			PVC	Connected
257	712369	331028	SVC	Connected
258	712369	331028	SVC	Connected
259	712369	331028	SVC	Connected

connection list lcg command

Use the **connection list lcg** command to display a list of connections for one or more virtual ports on the CCLXOT server. Virtual circuits are identified using LCGN (Logical Channel Group Number) and LCN (Logical Channel Number).

Abbreviation: c l lcg

connection list lcg <mch_name> <start_lcg> <end_lcg> <start_lcn> <end_lcn>

<mch_name>

MCH name associated with a virtual port. Wildcards (*, ?) are accepted. The **connection list lcg** command is applied to all virtual ports if you do not specify the MCH name or if you type an empty string ("").

<start_lcg>

The starting Logical Channel Group Number. A decimal integer in the range 0 - 15 identifies the first logical group. The default value is 0.

<end_lcg>

The ending Logical Channel Group Number. A decimal integer in the range 0 - 15 identifies the last logical group. The default value is 15.

<start_lcn>

The starting Logical Channel Number. A decimal integer in the range 0 - 255 identifies the first connection in the logical group range. The default value is 0.

<end_lcn>

The ending Logical Channel Number. A decimal integer in the range 0 - 255 used to identify the last connection in the logical group range. The default value is 255.

Note: When the start_lcg value is 0, the start_lcn value must not be 0.

For example, the following command displays the connection list for MCH name MCH2369:

Connection list lcg MCH2369

MCH Name: MCH2369		Port Number: 4			
LCGN	LCN	Local Address	Remote Address	Type	Status
0	1			PVC	Connected
0	2			PVC	Connected
0	3			PVC	Connected
1	1	712369	331028	SVC	Connected
1	2	712369	331028	SVC	Connected
1	3	712369	331028	SVC	Connected

Appendix A. XOT Messages

This appendix describes the messages logged in the system log by IBM X.25 over TCP/IP. The messages in this appendix are logged using the syslog facility and by default will be logged in /var/log/messages.

CCZT011I PVC thread (TID) has terminated.

Explanation: The PVC thread reconnects PVC connections. This thread stopped as a result of a fatal error or the termination of IBM X.25 over TCP/IP.

System action: None

System programmer response: Determine the cause by examining previous messages.

CCZT012I Listen thread (TID) has terminated.

Explanation: The listen thread listens for connection requests on the XOT port. This thread stopped as a result of a fatal error or the termination of IBM cclxotd.

System action: None

System programmer response: Determine the cause by examining previous messages.

CCZT013I Port listen thread for port (port number) has terminated.

Explanation: The port thread listens for connections on the XOT port to receive data from the remote peer. This thread stopped as a result of a fatal error or the termination of IBM cclxotd.

System action: None

System programmer response: Determine the cause by examining previous messages.

CCZT014I IBM X.25 over TCP/IP has terminated.

Explanation: IBM X.25 over TCP/IP stopped as a result of a fatal error or it was terminated.

System action: IBM X.25 over TCP/IP stops.

System programmer response: None.

CCZT015I Tx thread for port (port number)/(mchname) has terminated.

Explanation: The virtual port component Transmit thread sends the data to its peer through the Network Device Handler (NDH). This thread stopped as a result of a fatal error or the termination of IBM cclxotd.

System action: None

System programmer response: Determine the cause

by examining previous messages.

CCZT016I HDLC is up for port (port number)/(mchname).

Explanation: HDLC component has completed its initialization process.

System action: None.

System programmer response: None.

CCZT017I Rx thread for port (port number)/(mchname) has terminated.

Explanation: The virtual port component Receive thread receives the data to its peer through the Network Device Handler (NDH). This thread stopped as a result of a fatal error or the termination of IBM cclxotd.

System action: None

System programmer response: Determine the cause by examining previous messages.

CCZT018I Remote NDH peer for port (port number)/(mchname) disconnected.

Explanation: The virtual port component Receive thread receives the X.25 packages from its peer through the Network Device Handler (NDH). The read failed because the peer has disconnected or exited.

System action: Connection to remote peer is disconnected.

System programmer response: Determine the cause by examining previous messages. Restart the connection.

CCZT019I Port(number) MCH name(mchname) LCI(number) - PVC Setup completed successfully.

Explanation: The PVC setup process has been completed successfully for the specified PVC of the specified port. The PVC is now active and ready to send and receive data.

System action: None.

System programmer response: None.

CCZT020I Port(*port number*) MCH name(*mchname*) - LAPB is up.

Explanation: The LAPB component of IBM X.25 over TCP/IP is ready.

System action: None

System programmer response: None.

CCZT021I Port(*port number*) MCH name(*mchname*) - Rx thread - Waiting for NDH peer.

Explanation: The virtual port component Receive thread is waiting to connect to its NDH peer.

System action: None

System programmer response: None.

CCZT021I Port(*port number*) MCH name(*mchname*) - Rx thread - Waiting for NDH peer.

Explanation: The virtual port component Receive thread is waiting to connect to its NDH peer.

System action: None

System programmer response: None.

CCZT023I Port(*port number*) MCH name(*mchname*) - Rx thread - Remote NDH peer disconnected.

Explanation: The virtual port component Receive thread failed to read from its NDH peer. The peer may be disconnected.

System action: None

System programmer response: None.

CCZT100E Command (*specific command*) - No virtual port found for MCH name (*mchname*).

Explanation: cclxotm failed to find a virtual port associated with the MCH name.

System action: The command is ignored.

System programmer response: Check the configuration file for correct MCH name and retry the command.

CCZT101E Command (*specific command*) - MCH name must be a string.

Explanation: cclxotm found that MCH name is not of the type text.

System action: The command is ignored.

System programmer response: Check the configuration file for correct MCH name and retry the command.

CCZT102E Command (*specific command*) - There is no virtual port found in the configuration.

Explanation: cclxotm found that there is no virtual port in the configuration.

System action: The command is ignored.

System programmer response: Check the configuration file for valid port definitions and retry the command.

CCZT103E Command (*specific command*) - (*specific parameter*) must be numeric.

Explanation: cclxotm found that the specified parameter is not numeric.

System action: The command is ignored.

System programmer response: Retry the command with a numeric parameter.

CCZT104E Command stop trace failed for port(*port number*) MCH name (*mchname*).

Explanation: cclxotm failed to stop tracing for the specified port.

System action: The error condition is sent to cclxotm for further processing.

System programmer response: Determine the cause of failure by examining previous messages.

CCZT105E Send data to CCLXOTM failed with error(*error message*).

Explanation: cclxotm failed to send data to cclxotd. *error msg* is the errno that caused the socket to close.

System action: The command fails.

System programmer response: Check the value specified for the -m parameter in your startup to ensure that it matches the NDH socket name for cclxotd.

CCZT106E Unknown command received from cclxotm.

Explanation: cclxotm received an unknown command from cclxotm.

System action: The command is ignored.

System programmer response: Call IBM support.

CCZT107E Failed to create a NDH socket. Exited.

Explanation: cclxotm failed to open an NDH socket to communicate with cclxotd.

System action: Socket creation fails and cclxotm stops.

System programmer response: Determine the cause of

failure by examining previous messages. Restart cclxotm.

CCZT108E Failed to bind the manager NDH socket with error (error message). Close the socket and exit.

Explanation: cclxotm fails to bind the previously opened NDH socket.

System action: The socket is closed and cclxotm exits.

System programmer response: Determine the cause of failure by examining previous messages. Restart cclxotm.

CCZT109E Command start trace - Trace file name must be a string.

Explanation: cclxotm found that the trace file name is not of the type text.

System action: The command is ignored.

System programmer response: Check the command and restart the trace.

CCZT200E Failed to open NDH socket with error (error message). The NDH module is probably not loaded.

Explanation: cclxotm failed to open an NDH socket to communicate with cclxotd.

System action: cclxotm displays an error message and exits.

System programmer response: Use the lsmod command to verify that NDH is installed. Reload NDH if necessary. Restart cclxotm.

CCZT201E Failed to open NDH socket with error (error message).

Explanation: While processing a command from user, cclxotm failed to open an NHD socket to communicate with cclxotd.

System action: cclxotm displays an error message and the command is ignored.

System programmer response: Retry the command. If the problem persists, call IBM support.

CCZT202E Failed to bind NDH socket (socket number) to (name) with error (error message).

Explanation: While processing a command from user, cclxotm failed to bind the previously opened NHD socket to communicate with cclxotd.

System action: cclxotm displays an error message and the command is ignored.

System programmer response: Retry the command. If the problem persists, call IBM support.

CCZT203E CCLXOTD did not respond after (number of seconds) seconds

Explanation: While processing a command from user, cclxotm failed to communicate with cclxotd after the specified number of seconds

System action: cclxotm displays an error message and the command is ignored.

System programmer response: Check the status of cclxotd and reissue the command.

CCZT204E Write to socket (socket number) failed with error (error message)

Explanation: While processing a command from user, cclxotm failed to send data to cclxotd using the specified NDH socket.

System action: cclxotm displays an error message and the command is ignored.

System programmer response: Check the status of cclxotd and reissue the command.

CCZT205E (Specific command) - Waiting for reply from CCLXOTD failed with error (error message)

Explanation: After sending the specified command to cclxotd, cclxotm waits for the reply from cclxotd. The waiting process returns with the specified error message.

System action: cclxotm displays an error message, closes the socket and the command is ignored.

System programmer response: Check the status of cclxotd and reissue the command.

CCZT206E (Specific command) CCLXOTD failed to reply after (number of seconds) seconds.

Explanation: After sending the specified command to cclxotd, cclxotm waits for the reply from cclxotd. There is no reply after the specified number of seconds.

System action: cclxotm displays an error message, closes the socket and the command is ignored.

System programmer response: Check the status of cclxotd and reissue the command.

CCZT207E (Specific command) - Failed to receive data from CCLXOTD socket (socket number).

Explanation: After sending the specified command to cclxotd, cclxotm fails to receive the reply from cclxotd using the specified NDH socket.

System action: cclxotm displays an error message,

closes the socket and the command is ignored.

System programmer response: Check the status of cclxotd and reissue the command.

CCZT400E Failed to open trace file (file name).

Explanation: IBM cclxotd failed to open the specified file.

System action: Trace does not start.

System programmer response: Determine the cause of failure by examining the file system. Review space allocation and update values to adequate levels.

CCZT401E Failed to get Packet Capture handle.

Explanation: IBM cclxotd failed to get a handle to capture network packets.

System action: Trace does not start.

System programmer response: Retry trace. If failure persists, restart cclxotd.

CCZT402E Failed allocate memory for trace object.

Explanation: IBM cclxotd failed to allocate memory for its trace component.

System action: Trace does not start.

System programmer response: Determine the cause of failure by examining the operating system. Review memory allocation and update values to adequate levels.

CCZT403E Failed to re-open trace file (file name). Trace will be disabled.

Explanation: IBM cclxotd failed to re-open the specified file.

System action: Trace does not start.

System programmer response: Determine the cause of failure by examining the trace file. Review space allocation and update values to adequate levels.

CCZT404E Failed to get current file size of the LAPB trace file. Trace will be disabled.

Explanation: IBM cclxotd needs the current trace file size in order to limit the size to a given maximum value. It failed to obtain the current size of the trace file.

System action: Trace is disabled.

System programmer response: Determine the cause of the error. Restart trace.

CCZT405E Failed to trace packet in file(file name) with error(error message). Trace will be disabled.

Explanation: IBM cclxotd failed to trace packet. The error condition is reported with the *error message*.

System action: Trace is disabled.

System programmer response: Restart the trace.

CCZT406E Failed to trace packet: unknown trace type or trace closed. Trace will be disabled.

Explanation: IBM cclxotd failed to trace packet because the trace file has been closed or an unsupported trace type was found.

System action: Trace is disabled.

System programmer response: Restart the trace.

CCZT500E Configuration file not found (file name). Exited.

Explanation: IBM cclxotd did not find the specified file.

System action: IBM cclxotd stops.

System programmer response: Check the configuration for file location. Check the value specified for the *-f* parameter in the cclxotd command. Restart cclxotd.

CCZT501E Invalid configuration file (file name). Exited.

Explanation: The specified file is not a valid configuration. The configuration file for IBM cclxotd must contain the [xot_server] section.

System action: IBM cclxotd stops.

System programmer response: Check the configuration file for a valid [xot_server] section. Restart cclxotd.

CCZT502E There must be at least one port defined. Exited.

Explanation: IBM cclxotd supports up to 64 virtual ports. There must be at least one port defined in the configuration file.

System action: IBM cclxotd stops.

System programmer response: Check the configuration file for valid port definitions. Restart cclxotd.

CCZT503E Server section not found in configuration. Exited.

Explanation: The configuration file for IBM X.25 for TCP/IP must contain required sections. After loading the configuration into memory, the [xot_server] section was not found.

System action: IBM cclxotd stops.

System programmer response: Check the configuration file for a valid [xot_server] section. Restart cclxotd.

CCZT504E (*Section name*) - Section not found in configuration for port (*port number*). Exited.

Explanation: The configuration file for IBM cclxotd must contain required sections. After loading the configuration into memory, the specified *section name* was not found.

System action: IBM cclxotd stops.

System programmer response: Check the configuration file for a valid specified *section name*. Restart cclxotd.

CCZT505E Missing required (*section name*) parameter (*param name*) for port (*port number*). Exited.

Explanation: Each section of the configuration file contains required configurable parameters. The specified *param name* was not found.

System action: IBM cclxotd stops.

System programmer response: Check the configuration file for valid parameters. Restart cclxotd.

CCZT506E No parameter found in the (*section name*) for port (*port number*). Exited.

Explanation: Each section of the configuration file contains required configurable parameters. The specified *section name* is either empty or does not contain any valid parameters.

System action: IBM cclxotd stops.

System programmer response: Check the configuration file for valid parameters. Restart cclxotd.

CCZT507E Port (*port number*) MCH name (*mchname*) There must be at least one XOT map defined. Exited.

Explanation: IBM cclxotd uses XOT maps to find the remote IP addresses for XOT calls. There must be at least one map defined for each port. No map was defined for at least one *port number*.

System action: IBM cclxotd stops.

System programmer response: Check the configuration file for valid map definitions. Restart cclxotd.

CCZT508E Port (*port number*) local PVC interface (*interface name*) too long. Exited.

Explanation: The *interface name* of the PVC local interface for the specified *port number* exceeds the limit of 20 ASCII characters.

System action: IBM cclxotd stops.

System programmer response: Check the configuration file for a valid *interface name*. Restart cclxotd.

CCZT509E Port (*port number*) remote PVC interface (*interface name*) too long. Exited.

Explanation: The *interface name* of the PVC remote interface for the specified *port number* exceeds the limit of 20 ASCII characters.

System action: IBM cclxotd stops.

System programmer response: Check the configuration file for a valid *interface name*. Restart cclxotd.

CCZT510E Port (*port number*) local X.25 address (*address*) too long. Exited.

Explanation: The local X.25 *address* for the specified *port number* exceeds the limit of 15 decimal digits.

System action: IBM cclxotd stops.

System programmer response: Check the configuration file for a valid *address* definition. Restart cclxotd.

CCZT512E Same MCH name (*name*) used for port (*port number*) and port (*port number*). Exited.

Explanation: The same MCH link (*name*) is used for more than one port. Each of the ports of IBM cclxotd must be associated with a single unique NPSI MCH link.

System action: IBM cclxotd stops.

System programmer response: Check the configuration file for a valid MCH link name. Restart cclxotd.

CCZT513E Same local X.25 address (*address*) used for port (*port number*) and port (*port number*). Exited.

Explanation: The same local X.25 *address* is used for more than one port. Each of the ports of IBM cclxotd

must be associated with a single unique local X.25 address.

System action: IBM cclxotd stops.

System programmer response: Check the configuration file for a valid address definition. Restart cclxotd.

CCZT514E Same local PVC interface (*interface name*) used for port (*port number*) and port (*port number*). Exited.

Explanation: The same PVC local *interface name* is used for more than one port. Each of the ports of IBM cclxotd must be associated with a single unique local interface name for PVC.

System action: IBM cclxotd stops.

System programmer response: Check the configuration file for a valid PVC local interface name. Restart cclxotd.

CCZT515E There are too many VCs (*number of VCs*) defined for port (*port number*). Exited.

Explanation: The number of SVCs and PVCs defined for the specified *port number* exceeds the total number of virtual circuits (975) supported by the current version of IBM cclxotd.

System action: IBM cclxotd stops.

System programmer response: Check the configuration file for a valid number of VCs. Restart cclxotd.

CCZT516E There are too many PVCs (*number of PVCs*) defined for port (*port number*). Exited.

Explanation: The *number of PVCs* defined for the specified *port number* exceeds the total number of virtual circuits (975) supported by the current version of IBM cclxotd.

System action: IBM cclxotd stops.

System programmer response: Check the configuration file for a valid number of PVCs. Restart cclxotd.

CCZT517E There are too many SVCs (*number of SVCs*) defined for port (*port number*). Exited.

Explanation: The *number of SVCs* defined for the specified *port number* exceeds the total number of virtual circuits (975) supported by the current version of IBM cclxotd.

System action: IBM cclxotd stops.

System programmer response: Check the

configuration file for a valid number of SVCs. Restart cclxotd.

CCZT519E All XOT maps are disabled for port (*port number*). Exited.

Explanation: All maps defined for the specified port are disabled. IBM cclxotd uses XOT maps to find the remote IP addresses for XOT calls. There must at least one enabled map defined for each port.

System action: IBM cclxotd stops.

System programmer response: Determine the cause of failure by examining previous messages. Check the configuration file for valid map definitions. Restart cclxotd.

CCZT520E Parameter (*parameter name*) of (*section name*) out of range (*from-to*) for port (*port number*). Exited.

Explanation: The specified parameter for the specified port is not in the acceptable range.

System action: IBM cclxotd stops.

System programmer response: Check the configuration file for valid parameter definitions. Restart cclxotd.

CCZT521E Parameter (*parameter name*) has invalid value for port (*port number*). Exited.

Explanation: The specified *parameter name* for the specified *port number* is not valid.

System action: IBM cclxotd stops.

System programmer response: Check the configuration file for valid parameter definitions. Restart cclxotd.

CCZT522E There is no VC defined for port (*port number*). Exited.

Explanation: There must be at least one virtual circuit defined for each port.

System action: IBM cclxotd stops.

System programmer response: Check the configuration file for valid port definitions. Restart cclxotd.

CCZT523E Overlapped PVCs and SVCs defined for port (*port number*) MCH name(*mchname*). Exited.

Explanation: The ranges of PVCs and SVCs for the specified port overlap.

System action: IBM cclxotd stops.

System programmer response: Check the

configuration file for valid port definitions. Restart cclxotd.

CCZT524E Invalid PVC remote IP address (*address*) for port (*port number*). Exited.

Explanation: The specified PVC remote IP address for the specified port is not valid.

System action: IBM cclxotd stops.

System programmer response: Check the configuration file for valid port definitions. Restart cclxotd.

CCZT526E Map(*map number*) for port (*port number*) MCH name (*mchname*)- Missing required parameter (*parameter name*). Exited.

Explanation: The specified parameter is not defined.

System action: Parsing continues. cclxotd stops.

System programmer response: Check the map for valid parameter definitions. Restart cclxotd.

CCZT527E Map(*map number*)- Invalid parameter name(*parm value*) defined for port(*port number*), MCH name(*mchname*). Exited.

Explanation: The specified parameter is invalid.

System action: Parsing continues. cclxotd stops.

System programmer response: Check the map for valid parameter definitions. Restart cclxotd.

CCZT528E Map(*map number*) for port(*port number*) MCH name(*mchname*)- (*parameter name*) (*parameter value*) out of range (*from-to*). Exited.

Explanation: The specified parameter is not in the required range.

System action: Parsing continues. cclxotd stops.

System programmer response: Check the map for valid parameter definitions. Restart cclxotd.

CCZT529E Map (*map number*) for port (*port number*) - There is no VC defined. in this map.

Explanation: IBM cclxotd uses XOT maps to find the remote IP addresses for XOT calls with LCIs defined in these maps. In order for a map to be valid, there must be at least one VC defined.

System action: Parsing continues. The map is disabled.

System programmer response: Check the map for valid parameter definitions. Restart cclxotd.

CCZT530E Map (*map number*) for port (*port number*) - VC cannot start with 0 for this map.

Explanation: The pair (LCGN, LCN) with value (0, 0) is reserved for system command. Therefore, the virtual circuits defined in the map with the value LCGN=0, should not start with the value 0.

System action: Parsing continues. The map is disabled.

System programmer response: Check the map for valid parameter definitions. Restart cclxotd.

CCZT531E Map (*map number*) for port (*port number*) - Too many PVC/SVC (*number of VCs*) defined in this map.

Explanation: The number of PVC/SVC defined in the specified map exceeds the total number of virtual circuits (975) supported by the current version of IBM cclxotd.

System action: Parsing continues. The map is disabled.

System programmer response: Check the map for valid parameter definitions. Restart cclxotd.

CCZT532E Map (*map number*) for port (*port number*) - PVC must be assigned before SVC

Explanation: When both PVCs and SVCs are assigned in a map, the PVC range must be assigned before the SVC range.

System action: Parsing continues. The map is disabled.

System programmer response: Check the map for valid parameter definitions. Restart cclxotd.

CCZT533E Map(*map number*) for port (*port number*) MCH name(*mchname*) - PVC and SVC ranges are overlapped.

Explanation: When both PVCs and SVCs are assigned in a map, the ranges of PVC and SVC must be assigned so that they do not overlap.

System action: Parsing continues. cclxotd stops.

System programmer response: Check the map for valid parameter definitions. Restart cclxotd.

CCZT534E X.25 - VC starting value must not be zero. Port(*port number*) MCH name(*mchname*). Exited.

Explanation: For a VC, the Logical Channel Identifier (LCI) must be in the range of 1 - 4095.

System action: Parsing continues. cclxotd stops.

System programmer response: Check the map for

valid parameter definitions. Restart cclxotd.

CCZT535E Map(*map number*) for port (*port number*) – Total number of VCs (*number*) exceeds the limit (*number*). Exited.

Explanation: The total number of VCs defined in the specified map exceeds the total number of virtual circuits (975) supported by the current version of IBM cclxotd.

System action: Parsing continues. cclxotd stops.

System programmer response: Check the map for valid parameter definitions. Restart cclxotd.

CCZT536E Too many maps defined with LCGN(*LCGN number*). Port(*port number*), MCH name(*mchname*). Exited.

Explanation: The total number of maps defined with the given LCGN exceeds the total number of maps defined in the specified port.

System action: Parsing continues. cclxotd stops.

System programmer response: Check the map for valid parameter definitions. Restart cclxotd.

CCZT537E PVCs in map(*map number*) are overlapped with PVCs in map(*map number*). Port(*port number*), MCH name(*mchname*). Exited.

Explanation: PVCs assigned in different maps of the given port must not overlap.

System action: IBM cclxotd stops.

System programmer response: Check the configuration file for valid port definitions. Restart cclxotd.

CCZT538E SVCs in map(*map number*) are overlapped with PVCs in map(*map number*). Port(*port number*), MCH name(*mchname*). Exited.

Explanation: PVCs and SVCs assigned in different maps of the given port must not overlap.

System action: IBM cclxotd stops.

System programmer response: Check the configuration file for valid port definitions. Restart cclxotd.

CCZT539E SVCs in map(*map number*) are overlapped with SVCs in map(*map number*). Port(*map number*), MCH name(*mchname*). Exited.

Explanation: SVCs assigned in different maps of the given port must not overlap.

System action: IBM cclxotd stops.

System programmer response: Check the configuration file for valid port definitions. Restart cclxotd.

CCZT540E Too many maps(*number*) for port(*port number*), MCH name(*mchname*). Maximum number of maps configured is (*number*). Exited.

Explanation: The total number of maps found for the given port exceeds the total number of maps defined for this port.

System action: Parsing continues. cclxotd stops.

System programmer response: Check the map for valid parameter definitions. Restart cclxotd.

CCZT541E Map(*map number*) for port (*port number*), MCH name(*mchname*) – (*parameter name*) (*parameter value*) is too long.

Explanation: The specified parameter is invalid (too many digits).

System action: Parsing continues. cclxotd stops.

System programmer response: Check the map for valid parameter definitions. Restart cclxotd.

CCZT542E Map (*map number*) for port (*port number*), MCH name (*mchname*) - Missing required parameters. Exited.

Explanation: A number of required parameters are not defined in this map.

System action: Parsing continues. cclxotd stops.

System programmer response: Check the map for valid parameter definitions. Restart cclxotd.

CCZT543E PVCs in map(*map number*) are assigned after the SVCs in map(*map number*). Port(*port number*), MCH name(*mchname*). Exited.

Explanation: The two mentioned maps are in the same group (same LCGN value). Within a group, PVCs must be assigned before SVCs.

System action: Parsing continues. cclxotd stops.

System programmer response: Check the map for valid parameter definitions. Restart cclxotd.

CCZT650W CFG_WARN: Map (*map number*) for port (*port number*)(*mchname*) – Remote X.25 address (*address*) defined in this map is the same as port local X.25 address.

Explanation: The remote X.25 address defined in a given map is used to find the remote XOT router. The

port local X.25 address is used to identify the local XOT router. These two addresses should not be the same. If they are and if this map is used, connection problems might result.

System action: Parsing continues. The map is disabled.

System programmer response: Check the map for valid parameter definitions. Restart cclxotd.

CCZT651W CFG_WARN: Bad configuration data. Ignored the line (actual line).

Explanation: IBM cclxotd failed to interpret the specified line in the configuration file. This line contains one or more characters that are not valid.

System action: The line from configuration file is discarded. Parsing continues.

System programmer response: Correct the line that is not valid in the configuration file. Restart cclxotd.

CCZT700E Handle to configuration corrupted. Exited.

Explanation: IBM X.25 for TCP/IP has loaded the configuration from the configuration file. However, the configuration cannot be retrieved from memory. The memory has probably been corrupted.

System action: IBM cclxotd stops.

System programmer response: Restart cclxotd. If the problem persists, contact IBM support.

CCZT704E Failed to initialize HDLC for port (*port number*). Exited.

Explanation: The port definition of the specified *port number* is not valid.

System action: The port does not initialize.

System programmer response: Check the configuration file for valid port definitions. Restart cclxotd.

CCZT705E Failed to initialize XOT for port (*port number*) MCH name (*mchname*). Exited.

Explanation: IBM cclxotd initialization process has failed. The causes of this failure are reported in error messages during the initialization process.

System action: The port does not initialize.

System programmer response: Determine the cause of failure by examining previous messages. Check the configuration file for valid port definitions. Restart cclxotd.

CCZT706E Failed to load configuration file. Memory allocation failure. Exited.

Explanation: IBM cclxotd stores the information from the configuration file in its internal memory. The memory allocation failed as a result of lack of memory or memory corruption.

System action: IBM cclxotd stops.

System programmer response: Review memory allocations and failures and update values to adequate levels. Restart cclxotd. If the problem persists, contact IBM support.

CCZT707E Failed to allocate the required memory. (Error Code) Exited.

Explanation: IBM cclxotd failed to allocate memory for its internal data. The failure is the result of a lack of memory or memory corruption.

System action: IBM cclxotd stops.

System programmer response: Review memory allocations and failures and update values to adequate levels. Restart cclxotd. If the problem persists, contact IBM support.

CCZT708E Internal data of port (*port number*) corrupted. Exited.

Explanation: IBM cclxotd internal memory for the specified port has been corrupted.

System action: IBM cclxotd stops.

System programmer response: Restart cclxotd. If the problem persists, contact IBM support.

CCZT709E Failed to get socket for XOT port (1998). Exited.

Explanation: IBM cclxotd uses the Sockets API to communicate with the remote XOT router using the XOT port (1998). cclxotd failed to open a XOT socket.

System action: IBM cclxotd stops.

System programmer response: Restart cclxotd. If the problem persists, contact IBM support.

CCZT710E Failed to bind socket (*socket number*) to remote IP (*IP addr*) with error (*error msg*). Close socket and exited.

Explanation: IBM cclxotd uses the Sockets API to communicate with the remote XOT router at the IP address (*IP addr*) using the XOT port (1998). cclxotd failed to bind to the previously opened XOT socket. *error msg* is the errno that caused the socket to close.

System action: IBM cclxotd stops.

System programmer response: Restart cclxotd. If the

problem persists, contact IBM support.

CCZT711E Listen for connections on socket (*socket number*) **failed with error** (*error msg*).
Close socket and exited.

Explanation: IBM cclxotd failed to listen for connections on its XOT socket. *error msg* is the errno that caused the socket to close.

System action: IBM cclxotd stops.

Programmer response: Determine the cause of failure by examining previous messages. Restart cclxotd. If the problem persists, contact IBM support.

CCZT712E Failed to set socket (*socket number*) **option REUSEADDR with error** (*error msg*). **Close socket and exited.**

Explanation: IBM cclxotd failed to set its socket SO_REUSEADDR option. *error msg* is the errno that caused the socket to close.

System action: IBM cclxotd stops.

Programmer response: Determine the cause of failure by examining previous messages. Restart cclxotd. If the problem persists, contact IBM support.

CCZT713E Wait on receiving data failed with error (*error msg*). **Exited**

Explanation: IBM cclxotd failed to receive data or connection request from remote XOT router. *error msg* is the errno that caused the socket to close.

System action: IBM cclxotd stops.

Programmer response: Determine the cause of failure by examining previous messages. Restart cclxotd. If the problem persists, contact IBM support.

CCZT714E Virtual port (*port number*) **– Failed to create** (*Rx/Tx*) **thread with error** (*error msg*). **Exited.**

Explanation: The virtual port component creates Receive and Transmit threads to handle the communication with its NHD peer. The thread creation failed. *error msg* is the errno that caused the socket to close.

System action: IBM cclxotd stops.

Programmer response: Determine the cause of failure by examining previous messages. Restart cclxotd. If the problem persists, contact IBM support.

CCZT716E Rx thread for port (*port number*)/(*mchname*) **- Failed on reading from the NDH peer with error** (*error msg*).

Explanation: The virtual port component Receive thread failed to receive data from the Network Device Handler (NDH) peer. *error msg* is the errno that caused the socket to close.

System action: IBM cclxotd stops.

Programmer response: Check that Network Device Handler (NDH) is loaded. Determine the cause of failure by examining previous messages. Restart cclxotd. If the problem persists, contact IBM support.

CCZT717E Rx thread for port (*port number*)/(*mchname*) **- Failed on reading from the NDH peer since it has been disconnected. Close the socket.**

Explanation: The virtual port component Receive thread failed to receive data from the Network Device Handler (NDH) peer because that peer has disconnected. This thread closes its own socket.

System action: IBM cclxotd stops.

Programmer response: Check that Network Device Handler (NDH) is loaded. Determine the cause of failure by examining previous messages. Restart cclxotd. If the problem persists, contact IBM support.

CCZT718E Internal data for virtual port(*port number*)/(*mchname*) **corrupted. Exited.**

Explanation: The internal memory for the specified virtual port has been corrupted.

System action: IBM cclxotd stops.

Programmer response: Restart cclxotd. If the problem persists, contact IBM support.

CCZT719E Failed to open an NDH socket for port (*port number*)/(*mchname*) **with error** (*error msg*). **Exited.**

Explanation: The virtual port component uses the NDH Sockets API to communicate with its peer. cclxotd failed to open an Network Device Handler (NDH) socket. *error msg* is the errno that caused the socket to close.

System action: IBM cclxotd stops.

Programmer response: Determine the cause of failure by examining previous messages. Restart cclxotd. If the problem persists, contact IBM support.

CCZT720E Rx thread for port (*port number*) - Failed to bind to (*NDH mchname*) with error (*error msg*). Close socket and exited.

Explanation: The virtual port component uses the Sockets API to communicate with its peer. It failed to bind to the previously opened Network Device Handler (NDH) socket. *error msg* is the errno that caused the socket to close.

System action: IBM cclxotd stops.

Programmer response: Determine the cause of failure by examining previous messages. Restart cclxotd. If the problem persists, contact IBM support.

CCZT721E Port (*port number*)/MCH name(*mchname*)HDLC frame size (*number of bytes*) out of range (*to-from*).

Explanation: The virtual port component uses the HDLC frame size to allocate its receiving buffer. The HDLC frame size was not in the valid range.

System action: Port connection closes.

Programmer response: Check the configuration file for valid port definitions. Restart cclxotd.

CCZT722E Port (*port number*)/(*mchname*) Failed to allocate (*number of bytes*) for receive buffer.

Explanation: The virtual port component uses the HDLC frame size to allocate its receiving buffer. There is not enough free memory or memory has been corrupted.

System action: IBM cclxotd stops.

Programmer response: Restart cclxotd. If the problem persists, contact IBM support.

CCZT723E TCP/IP connection for port (*port number*)/(*IP addr*) - Failed to open a socket with error (*error msg*).

Explanation: IBM cclxotd uses the Sockets API to communicate with remote XOT router using the XOT port (1998). cclxotd failed to open a socket to establish a connection. *error msg* is the errno that caused the socket to close.

System action: IBM cclxotd stops.

System programmer response: Check the configuration file for valid definitions. Restart cclxotd. If the problem persists, contact IBM support.

CCZT724E TCP/IP connection for port (*port number*) - Failed to connect to (*IP address*) with error (*error msg*). Close the socket.

Explanation: IBM cclxotd uses the Sockets API to communicate with the remote XOT router using the XOT port (1998). cclxotd failed to connect to the specified remote host. The previously opened socket is closed. *error msg* is the errno that caused the socket to close.

System action: Connection fails

System programmer response: Determine the cause of failure by examining previous messages. Restart cclxotd. If the problem persists, contact IBM support.

CCZT726E PVC initialization for port (*port number*)/(*mchname*) - All VCs are used.

Explanation: All PVC connections of a given port are established during the initialization process. All PVCs specified for the given port are already being used.

System action: VC connection fails.

System programmer response: Check the configuration definitions for port and NCP. Restart cclxotd.

CCZT727E Received packet for port (*port number*)/(*IP addr*)/(*mchname*) - Bad XOT header. Close the socket and disconnect the related connection if any.

Explanation: IBM cclxotd processed the received XOT packet and found that the packet has an invalid XOT header.

System action: The packet is discarded, the socket is closed and the connection, if any is disconnected.

System programmer response: Restart cclxotd. If the problem persists, call IBM support.

CCZT728E Received packet for port (*port number*)/(*IP addr*)/(*mchname*) - Unknown control packet. The packet is discarded.

Explanation: IBM cclxotd processed the received XOT packet as an unknown X.25 control packet.

System action: The packet is discarded.

System programmer response: Check cclxotd and cclxotd partner definitions. Check IP traces to insure that XOT packets are valid. If definitions are correct, restart cclxotd.

CCZT729E Received packet for port (*port number*)/(*IP addr*)/(*mchname*) – Invalid modulo type. The packet is discarded. The socket is closed and connection is disconnected.

Explanation: IBM cclxotd processed the received XOT packet and found that the X.25 packet header has an invalid modulo type.

System action: The packet is discarded. If found, the socket is closed and the connection is disconnected.

System programmer response: Restart cclxotd. If the problem persists, contact IBM support.

CCZT730E Received packet for port (*port number*)(*IP addr*)(*mchname*) – packet size is too large. The packet is discarded. The socket is closed and connection is disconnected.

Explanation: IBM cclxotd processed the received XOT packet and found that the length of the X.25 packet is too big.

System action: The packet is discarded. If found, the socket is closed and the connection is disconnected.

System programmer response: Check the configuration file for valid definitions. Restart cclxotd.

CCZT732E Received packet for port (*port number*)(*IP addr*)(*mchname*) – PVC (*LCI number*) failed to connect with unsupported status (*hex number*). Close the socket and disconnect.

Explanation: IBM cclxotd processed the received XOT packet and found that it is a PVC setup packet with an unsupported status.

System action: The packet is discarded, the socket is closed and the connection is disconnected.

System programmer response: Check remote partner configuration. Determine the cause of failure by examining the IP trace file. Restart cclxotd.

CCZT733E Received packet for port (*port number*)(*IP addr*)(*mchname*) – Received PVC setup packet but the link layer (HDLC) is down. Close the socket and disconnect.

Explanation: IBM cclxotd processed the received XOT packet and found that it is a PVC setup packet but the HDLC layer is down.

System action: The packet is discarded, the socket is closed and the connection is disconnected.

System programmer response: Determine the cause of failure by examining previous messages. Restart cclxotd.

CCZT734E Received packet for port (*port number*)(*mchname*) – Received Call Request packet but failed to find a free virtual circuit.

Explanation: IBM cclxotd processed the received XOT packet and found that it is a Call Request setup but XOT cannot find a free virtual circuit.

System action: The packet is discarded.

System programmer response: Determine the cause of failure by examining previous messages. Restart cclxotd.

CCZT735E Received packet for port (*port number*)(*mchname*) – Received Call Request packet but failed setup . Close the socket and disconnect.

Explanation: IBM cclxotd processed the received XOT packet and found that it is a Call Request setup but XOT failed to setup the connection.

System action: The packet is discarded. Socket is closed and disconnected.

System programmer response: Determine the cause of failure by examining previous messages. Restart cclxotd.

CCZT736E Receive data packet for port (*port number*)(*IP addr*) failed with error (*error msg*). Close the socket and disconnect if required.

Explanation: IBM cclxotd has failed to receive data or a connection request from the remote XOT router.

System action: Socket closes and disconnects the associated connection.

System programmer response: Determine the cause of failure by examining previous messages. Restart cclxotd.

CCZT737E Accepting a connection request from remote failed with error (*error msg*). Close the socket (*number*).

Explanation: IBM cclxotd has failed to accept a connection request from the remote XOT router. The socket is closed.

System action: Connection fails.

System programmer response: Determine the cause of failure by examining previous messages. Restart cclxotd.

CCZT738E Receive data from remote(IP addr) failed. Close the socket.

Explanation: IBM cclxotd is expecting a Call request or a PVC setup packet from the remote but the receive data call has failed.

System action: Socket is closed.

System programmer response: Determine the cause of failure by examining the remote XOT configuration. Restart cclxotd.

CCZT743E Failed to process configuration file (*file name*). Exited.

Explanation: IBM cclxotd parses the specified configuration to create an internal representation of the configuration.

System action: cclxotd process terminates.

System programmer response: Determine the cause of failure by examining previous messages.

CCZT745E Problem accessing license file. Exited.

Explanation: cclxotd Check for the license file and this file does not exist.

System action: cclxotd stops.

System programmer response: Check that the license file exists. Check that the license file was correctly installed. Restart cclxotd.

CCZT746E Port(*number*) MCH name(*mchname*) - No connection with LCI(*number*) - LCI out of range (1 to 4095).

Explanation: VC Logical Channel Identifier must be in the range 1 - 4095.

System action: The connection fails.

Programmer response: Check the configuration file for valid parameter definitions. Restart cclxotd.

CCZT747E Port(*port number*) MCH name(*mchname*) LCI(*LCI number*) - No XOT map found for LCGN(*LCGN number*).

Explanation: An attempt to find a XOT map for the specified VC failed since there is no map defined for the value of LCGN of the VC.

System action: No VC is established.

Programmer response: If a map should be defined, check the configuration file and create the appropriate map.

CCZT748E Port(*port number*) MCH name(*mchname*) - Invalid socket.

Explanation: A socket with handle (-1) found while searching for a connection associated with the given socket.

System action: The virtual circuit closes.

Programmer response: Check messages accompanying this message for problems. This could be a normal result of a circuit closing.

CCZT749E Port(*port number*) MCH name(*mchname*) - No connection associated with socket(*number*). The socket may have been closed.

Explanation: No connection found while searching for a connection associated with the given socket.

System action: The virtual circuit closes.

Programmer response: Check messages accompanying this message for problems. This could be a normal result of a circuit closing.

CCZT750E Receive X.25 packet for port (*port number*) MCH name (*mchname*) - Invalid modulo type. Send Call Clear code (0x13, 0x28)

Explanation: The modulo type extracted from the General Format Indicator (GFI) field of the X.25 packet is not one of the supported values, modulo 8 (0x01) or modulo 128 (0x02). IBM cclxotd sends a Call Clear with diagnostic codes (0x13, 0x28).

System action: The connection is reset and terminated.

Programmer response: Determine the cause of failure by examining the trace file. The problem might be corruption on a link or a programming error. Restart cclxotd. If the problem persists, contact IBM support.

CCZT751E Port(*port number*) MCH name(*mchname*) - Receive X.25 packet - Packet size too long. Send Call Clear with codes (cause, diag).

Explanation: IBM cclxotd processed the received XOT packet and found that the length of the X.25 packet is too large. cclxotd sends a Call Clear with cause and diagnostic codes (0x13, 0x27).

System action: The virtual circuit closes.

Programmer response: Check remote and local definitions. Restart connection.

CCZT752E Port(*port number*) MCH name(*mchname*) PVC(*pvc number*) - Receive PVC Setup with status (0x00) - Failed to send PVC Setup to remote. Close socket (*socket number*) and disconnect.

Explanation: IBM cclxotd processed the received XOT packet and found that it is a PVC Setup packet. cclxotd sends a PVC Setup packet to reply but the send fails.

System action: The socket is closed and the connection is disconnected.

Programmer response: Restart connection. If the failure persists, contact IBM support.

CCZT753E Port(*port number*) MCH name(*mchname*) PVC(*pvc number*) - Receive PVC Setup with status (0x00) - Failed to setup internal data for the connection. Close socket (*socket number*) and disconnect.

Explanation: IBM cclxotd processed the received XOT packet and found that it is a PVC Setup packet. cclxotd allocates internal data for the connection but the process fails.

System action: The socket is closed and the connection is disconnected.

Programmer response: Restart connection. If the failure persists, contact IBM support.

CCZT754E Port(*port number*) MCH name(*mchname*) PVC(*pvc number*) - Receive PVC Setup with status (0x00) - Failed to send operational reset to remote. Close socket (*socket number*) and disconnect.

Explanation: IBM cclxotd processed the received XOT packet and found that it is a PVC Setup packet. cclxotd sends an operational reset to the remote router but the send fails.

System action: The socket is closed and the connection is disconnected.

Programmer response: Restart connection. If the failure persists, contact IBM support.

CCZT755E PVC Setup packet - No interface named (*name*). Close the socket(*number*).

Explanation: IBM cclxotd processed the received XOT packet and found that it is a PVC Setup packet, and it failed to match the packet remote interface name to any local_pvc_interface of the configuration file.

System action: The related socket is closed.

System programmer response: Check the configuration in local and remote routers. Restart cclxotd.

CCZT756E Port(*port number*) MCH name(*mchname*) - Receive PVC Setup packet - Failed to allocate PVC. Close the socket(*socket number*).

Explanation: IBM cclxotd processed the received XOT packet and found that it is a PVC Setup packet. cclxotd attempts to find a pre-allocated internal data structure for this PVC.

System action: This process fails. The related socket is closed.

System programmer response: Restart connection. If the failure persists, contact IBM support.

CCZT757E Port(*port number*) MCH name (*mchname*) PVC(*PVC number*) - Send operational reset to remote failed. Close socket(*socket number*) and disconnect.

Explanation: IBM cclxotd sends an operational reset to the remote router but the send fails.

System action: The socket is closed and the connection is disconnected.

System programmer response: Restart connection. If the failure persists, contact IBM support.

CCZT759E Port(*port number*) MCH name (*mchname*) SVC(*SVC number*) - Receive Call Request - Host not found for X.25 address (*address*). Send Call Clear with codes(*cause,diag*).

Explanation: IBM cclxotd processes the received Call Request packet and could not find the IP address from the X.25 address extracted from the packet. cclxotd sends a Call Clear with proper cause and diagnostic codes.

System action: VC disconnects.

System programmer response: Check local and remote configuration files.

CCZT760E Port(*port number*) MCH name (*mchname*) - Receive Call Request - Failed to establish TCP connection to (IP). Send a Call Clear with codes(*cause, diag*).

Explanation: IBM cclxotd processes the received Call Request packet, finds the remote but fails to establish a connection to this host. cclxotd sends a Call Clear with proper cause and diagnostic codes.

System action: VC disconnects.

System programmer response: Check local and remote configuration files.

CCZT761E Port(*port number*) MCH name (*mchname*) SVC (*SVC number*) - Receive X.25 Data packet to remote failed. Close socket (*socket number*) and disconnect.

Explanation: IBM cclxotd forwards the data packet to the remote router but the send fails.

System action: The socket is closed and the connection is disconnected.

System programmer response: Determine the cause of failure by examining previous messages. Restart the connection.

CCZT762E Port(*port number*) MCH name (*mchname*) - Receive X.25 Data packet - The packet does not contain a valid LCI.

Explanation: IBM cclxotd received a X.25 data packet but the packet does not contain a valid LCI.

System action: The packet is discarded.

System programmer response: If problem persists, diagnose the circuit.

CCZT763E Receive socket data for port(*port number*) MCH name (*mchname*) on PVC(*pvc number*) - VC not ready - Drop the packet.

Explanation: IBM cclxotd processed the received XOT packet for the specified PVC connection but the mentioned connection is not at connected state. The data packet is dropped.

System action: The packet is discarded. The connection is retried.

System programmer response: Check to be sure that the remote partner is active. Check for valid partner definitions.

CCZT764E Port(*port number*) MCH name (*mchname*) PVC (*PVC number*) - Receive X.25 data packet - PVC not ready - Drop the packet.

Explanation: IBM cclxotd processed the received X.25 data packet for the specified PVC connection but the connection is not in connected state.

System action: The data packet is dropped.

System programmer response: If the problem persists, restart the PVC.

CCZT770E Write to remote (*socket number*) failed with error (*error message*).

Explanation: IBM cclxotd failed to send process a XOT packet to the remote using the mentioned socket. The reason for failing is explained in the *error message* which

is the errno that caused the socket to close.

System action: The packet is discarded.

Programmer response: Check the error message.

CCZT771E Port(*port number*) MCH name(*mchname*) - PVC Setup for PVC (*PVC number*) rejected by remote with error (Destination disconnected). Close the socket(*socket number*) and disconnect.

Explanation: IBM cclxotd sent a PVC Setup packet to the remote router and the remote router responded with a PVC Setup packet to indicate the specified error condition.

System action: The socket is closed and the connection is disconnected.

Programmer response: Check error conditions from remote router. Check local and remote configurations. Restart the PVC.

CCZT772E Port(*port number*) MCH name(*mchname*) - PVC Setup for PVC (*PVC number*) rejected by remote with error (TCP connection refused). Close the socket(*socket number*) and disconnect.

Explanation: IBM cclxotd sent a PVC Setup packet to the remote router and the remote router responded with a PVC Setup packet to indicate the specified error condition.

System action: The socket is closed and the connection is disconnected.

Programmer response: Check the remote router for errors. Restart the PVC.

CCZT773E Port(*port number*) MCH name(*mchname*) - PVC Setup for PVC (*PVC number*) rejected by remote with error (TCP routing error). Close the socket(*socket number*) and disconnect.

Explanation: IBM cclxotd sent a PVC Setup packet to the remote router and the remote router responded with a PVC Setup packet to indicate the specified error condition.

System action: The socket is closed and the connection is disconnected.

Programmer response: Check local and remote router configuration files. Restart PVC.

CCZT774E Port(*port number*) MCH name(*mchname*) - XOT initialization - Failed to send PVC Setup packet to (IP). Close the socket(*socket number*) and disconnect.

Explanation: IBM cclxotd failed to send a PVC Setup

packet to the remote using the mentioned socket.

System action: The socket is closed and the connection is disconnected.

Programmer response: Retry the circuit. If problem persists, restart cclxotd.

CCZT775E Port(*port number*) MCH name(*mchname*) - PVC Setup for PVC (*PVC number*) rejected by remote with error (TCP connection timed out). Close the socket(*socket number*) and disconnect.

Explanation: IBM cclxotd sent a PVC Setup packet to the remote router and the remote router responded with a PVC Setup packet to indicate the specified error condition.

System action: The socket is closed and the connection is disconnected.

Programmer response: Check local and remote definitions. Restart the PVC.

CCZT776E Port(*port number*) MCH name(*mchname*) - PVC Setup for PVC (*PVC number*) rejected by remote with error (no such destination interface). Close the socket(*socket number*) and disconnect.

Explanation: IBM cclxotd sent a PVC Setup packet to the remote router and the remote router responded with a PVC Setup packet to indicate the specified error condition.

System action: The socket is closed and the connection is disconnected.

Programmer response: Check local and remote definitions. Restart the PVC.

CCZT777E Port(*port number*) MCH name(*mchname*) - PVC Setup for PVC (*PVC number*) rejected by remote with error (Destination interface is not up). Close the socket(*socket number*) and disconnect.

Explanation: IBM cclxotd sent a PVC Setup packet to the remote router and the remote router responded with a PVC Setup packet to indicate the specified error condition.

System action: The socket is closed and the connection is disconnected.

Programmer response: Check local and remote definitions. Restart the PVC.

CCZT778E Port(*port number*) MCH name(*mchname*) - PVC Setup for PVC (*PVC number*) rejected by remote with error (No such destination PVC). Close the socket(*socket number*) and disconnect.

Explanation: IBM cclxotd sent a PVC Setup packet to the remote router and the remote router responded with a PVC Setup packet to indicate the specified error condition.

System action: The socket is closed and the connection is disconnected.

Programmer response: Check local and remote definitions. Restart the PVC.

CCZT779E Port(*port number*) MCH name(*mchname*) - PVC Setup for PVC (*PVC number*) rejected by remote with error (Destination PVC configuration mismatch). Close the socket(*socket number*) and disconnect.

Explanation: IBM cclxotd sent a PVC Setup packet to the remote router and the remote router responded with a PVC Setup packet to indicate the specified error condition.

System action: The socket is closed and the connection is disconnected.

Programmer response: Check local and remote definitions. Restart the PVC.

CCZT780E Port(*port number*) MCH name(*mchname*) - PVC Setup for PVC (*PVC number*) rejected by remote with error (Mismatched flow control values). Close the socket(*socket number*) and disconnect.

Explanation: IBM cclxotd sent a PVC Setup packet to the remote router and the remote router responded with a PVC Setup packet to indicate the specified error condition.

System action: The socket is closed and the connection is disconnected.

Programmer response: Check local and remote definitions. Restart the PVC.

CCZT781E Port(*port number*) MCH name(*mchname*) - PVC Setup for PVC (*PVC number*) rejected by remote with error (PVC setup protocol error). Close the socket(*socket number*) and disconnect.

Explanation: IBM cclxotd sent a PVC Setup packet to the remote router and the remote router responded with a PVC Setup packet to indicate the specified error condition.

System action: The socket is closed and the connection is disconnected.

Programmer response: Check local and remote definitions. Restart the PVC.

CCZT782E Only one instance of CCLXOTD is allowed. Exited.

Explanation: Only one instance of cclxotd is allowed to run.

System action: This instance of cclxotd stops.

Programmer response: None.

CCZT783E Port(*port number*) MCH name(*mchname*) VC (*VC number*) - Connection initialization failed - Connection data structure already used.

Explanation: The internal data of the connection associated with the specified VC cannot be initialized because it is in use. The problem may be corrupted internal data or internal data that has not been freed when the connection was previously removed.

System action: The connection fails.

Programmer response: If problem persists, restart cclxotd.

CCZT784E Port(*port number*) MCH name(*mchname*) PVC (*PVC number*) - PVC initialization failed to establish TCP connection to (IP)

Explanation: During the PVC initialization process, cclxotd failed to establish a connection to the remote XOT router.

System action: The initialization of this PVC is aborted.

Programmer response: Check local and remote definitions. Restart the PVC.

CCZT785E Port(*port number*) MCH name(*mchname*) - No connection found. VC (*VC number*) out of range

Explanation: IBM cclxotd failed to find the connection associated with the specified VC since the LCI of this VC is not in the implemented range of 1-1024.

System action: The socket is closed and the connection is disconnected.

Programmer response: Check local definitions. Restart the VC.

CCZT786E Port(*port number*) MCH name(*mchname*) - No connection found. VC (*VC number*) not defined

Explanation: IBM cclxotd failed to find the connection associated with the specified VC since the LCI of this VC is not within the configured range.

System action: The socket is closed and the connection is disconnected.

Programmer response: Check local definitions. Restart the VC.

CCZT787E Port(*port number*) MCH name(*mchname*) PVC (*PVC number*) - PVC Setup packet - This PVC already has an active connection. Send PVC Setup with sttaus(0x17). close the socket (*socket number*)

Explanation: IBM cclxotd received a PVC Setup packet from the remote router for the specified PVC but this PVC is already connected.

System action: The socket is closed.

Programmer response: If problem persists, check remote and local configuration. Restart the PVC.

CCZT789E Port(*port number*) MCH name(*mchname*) - PVC Setup for PVC (*PVC number*) rejected by remote with error status=(*number*). Close the socket (*socket number*)

Explanation: IBM cclxot sent a PVC Setup packet to the remote router and the remote router responded with a PVC Setup packet to indicate the specified error condition.

System action: The socket is closed and the connection is disconnected.

Programmer response: Check local and remote definitions. Restart the PVC.

CCZT790E Port(*port number*) MCH name(*mchname*) - PVC Setup for PVC (*PVC number*) rejected by remote with error (Wrong host IIP)). Close the socket (*socket number*)

Explanation: IBM cclxotd sent a PVC Setup packet to the remote router and the remote router responded with a PVC Setup packet to indicate the specified error condition.

System action: The socket is closed and the connection is disconnected.

Programmer response: Check local and remote configuration. Restart the PVC.

CCZT791E Try to delete invalid timer (id = number).

Explanation: IBM cclxotd tries to delete the data structure for expired timer but this timer handle has a invalid value (-1). This error condition indicates that either the internal data structure has been corrupted or a call to stop the timer that has not been started.

System action: Expired timer fails to stop.

Programmer response: If problem persists, restart cclxotd.

CCZT792E Failed to set time for timer (index=number id=number) - Delete the timer.

Explanation: Unable to set the specified timer. Either the internal data structure has been corrupted or a call to stop the timer that has not been started.

System action: The timer is deleted.

Programmer response: If problem persists, restart cclxotd.

CCZT793E Try to reload bad interval timer (id=number).

Explanation: The IBM cclxotd timer component tries to restart an interval timer that is an expired timer. This timer handle has a invalid value (-1). This error condition indicates that either the internal data structure has been corrupted or a call to stop the timer that has not been started.

System action: The timer is deleted.

Programmer response: If problem persists, restart cclxotd.

CCZT794E start timer failed on sigaction().

Explanation: Unable to set the sigaction facility to handle timer when it expires.

System action: No timer will be started.

Programmer response: If problem persists, restart cclxotd.

CCZT795E Create timer failed for timer (index=number).

Explanation: Unable to create a timer.

System action: No timer will be started.

Programmer response: If problem persists, restart cclxotd.

CCZT796E Try to stop invalid timer.

Explanation: Unable to stop a timer since its handle has a invalid value (-1). This error condition indicates that either the internal data structure has been corrupted or a call to stop the timer that has not been started.

System action: No timer will be started.

Programmer response: If problem persists, restart cclxotd.

CCZT797E Port(port number) MCH name (mchname) PVC(PVC number) - Send operational reset to remote failed . Close socket(socket number) and disconnect.

Explanation: IBM cclxotd fails to send an operational reset to the remote using the mentioned socket.

System action: The socket is closed and the connection is disconnected.

Programmer response: None.

CCZT850W Map (map number) port (port number) MCH name/(mchname - Error during processing of this map. This map will be disabled.

Explanation: The XOT map processing has failed for the specified map. The causes of this failure are reported in error messages during this processing.

System action: The specified map is disabled internally and will not be used by IBM cclxotd.

System programmer response: Determine the cause of failure by examining the previous messages. Restart cclxotd.

CCZT851W Failed to set socket (socket number) option SO_LINGER with error (error msg).

Explanation: IBM cclxotd has failed to set its socket SO_LINGER option. *error msg* is the errno that caused the socket to close.

System action: Connection fails.

System programmer response: Restart cclxotd. If the problem persists, call IBM support.

CCZT852W Listen for XOT port(1998) failed on reading - invalid socket or socket has been closed.

Explanation: IBM cclxotd has failed to receive data or a connection request from the remote XOT router. This occurred because the socket has been closed by the remote router.

System action: Connection fails.

System programmer response: Check remote router and connections.

CCZT853W HDLC - Transmit Frame Reject
(*mchname*).

Explanation: IBM cclxotd HDLC component transmits the Frame Reject when the received HDLC frame cannot be interpreted correctly.

System action: HDLC connection fails.

System programmer response: Check HDLC messages (NCP, VTAM) on partner.

CCZT854W Accept a connection request from remote - client socket (*socket number*) **exceeds the limitation of Socket API.**

Explanation: IBM cclxotd has failed to accept a connection request from the remote XOT router. The client socket exceeds the limit of the Linux implementation of the Sockets API (maximum of 1024 sockets per process).

System action: The socket does not open.

System programmer response: Contact IBM support.

CCZT855W Accept connection request from remote - Bad client socket - Ignore the request.

Explanation: IBM cclxotd failed in accepting a connection request from a remote XOT router. The client socket handle has a negative value.

System action: The request is ignored.

System programmer response: If problem persists, restart cclxotd.

CCZT856W Port(*port number*) **MCH name**(*mchname*) - **Found connection (LCI=number*) with invalid socket.***

Explanation: While searching its internal data structure for all connected VCs, cclxotd found a connection with bad socket handle (-1).

System action: This connection is ignored.

System programmer response: If problem persists, restart cclxotd.

CCZT857W Port(*port number*) **MCH name**(*mchname*) - **Found allocated internal data with invalid socket.**

Explanation: While searching its internal data structure for all connected VCs, cclxotd found a structure that has a bad socket handle (-1) in its internal data. There is no connection associated with this socket.

System action: This structure ignored.

System programmer response: If problem persists, restart cclxotd.

CCZT858W Port(*port number*) **MCH name**(*mchname*) - **Found socket**(*socket number*) **with no connection.**

Explanation: While searching its internal data structure for all connected VCs, cclxotd found a structure that has no connection associated with this socket in its internal data.

System action: This structure ignored.

System programmer response: If problem persists, restart cclxotd.

CCZT859W Port(*port number*) **MCH name**(*mchname*) - **Failed to allocate VC**(*VC number*) - **Unsupported VC type**(*VC type number*).

Explanation: While allocating an internal data structure for the specified virtual circuit, cclxotd found that this VC has an unsupported type. Two-Way VC is the only type supported.

System action: VC fails to start.

System programmer response: Check the local and remote configurations. Restart cclxotd.

CCZT860W Port(*port number*) **MCH name**(*mchname*) - **Failed to allocate VC**(*VC number*) - **Invalid VC range: starting value**(*number*) **is greater than the ending value**(*number*).

Explanation: While allocating an internal data structure for the specified virtual circuit, cclxotd found that the starting value of the VC range is greater than its ending value.

System action: cclxotd fails to start.

System programmer response: Check the cclxotd configuration. Restart cclxotd.

CCZT861W Port(*port number*) **MCH name**(*mchname*) - **Failed to allocate VC**(*VC number*) - **All configured virtual circuits are used.**

Explanation: While allocating an internal data structure for the specified virtual circuit, cclxotd found that all configured virtual circuits are in use.

System action: cclxotd fails to start.

System programmer response: Check the cclxotd configuration. Restart cclxotd.

CCZT862W Port(*port number*) MCH name(*mchname*) - Failed to allocate VC(*VC number*) - No map defined for this VC.

Explanation: While allocating an internal data structure for the specified virtual circuit, cclxotd found that this VC does not belong to any of the configured maps.

System action: cclxotd fails to start.

System programmer response: Check the cclxotd configuration. Restart cclxotd.

CCZT863W Port(*port number*) MCH name(*mchname*) - Receive PVC Setup with status(*number*) - Packet responder lcn (*lcn number*) does not match with this PVC(*PVC number*). Ignore the Setup packet.

Explanation: IBM cclxotd received a PVC Setup packet from the remote router and found that the packet responder LCN does not match the LCN for this connection.

System action: The Setup packet is discarded.

System programmer response: Check local and remote configurations.

CCZT864W Port(*port number*) MCH name(*mchname*) - Receive PVC Setup with status(*number*) - This PVC(*PVC number*) is already connected. Ignore the Setup packet.

Explanation: IBM cclxotd received a PVC Setup packet from the remote router and found that this PVC has been connected.

System action: The Setup packet is discarded.

System programmer response: Check local and remote configurations.

CCZT865W Port(*port number*) MCH name(*mchname*) - Wait to read from socket failed - Invalid socket or socket has been closed.

Explanation: IBM cclxotd failed to receive data from remote XOT router. The socket may have been closed by the remote.

System action: The socket closes.

System programmer response: If remote server is operational, check local configuration. Restart cclxotd.

CCZT866W PVC/SVC - Try to connect to(IP) - Set socket(*socket number*) to non-blocking failed.

Explanation: While trying to connect to the remote router, cclxotd failed to set the specified socket to non-blocking socket.

System action: This structure ignored.

System programmer response: If problem persists, restart cclxotd.

CCZT867W Port(*port number*) MCH name(*mchname*) VC(*VC number*) - Receive X.25 Data packet - Send only (*number*) of (*number*) bytes

Explanation: IBM cclxotd is able to forward only part of the data packet to the remote router.

System action: Fragmented data is sent.

System programmer response: Check local and remote X.25 parameters. Restart cclxotd.

CCZT868W Port(*port number*) MCH name(*mchname*) - Ethernet does not support LAPB extended packet format. Trace type is set to LAPB Text.

Explanation: The trace type for the specified port has changed.

System action: Text-only data will be traced.

System programmer response: None.

CCZT869W Transmit FRMR/FRMR

Explanation: The HDLC component transmitted a framing error.

System action: The port and MCH are reset.

System programmer response: Determine the cause of the failure by examining previous messages. If the problem persists, restart cclxotd.

CCZT870W Map(*map number*) for port(*port number*), MCH name(*mchname*) - (*parameter name*) is set to (*number*). This feature is not supported in this release

Explanation: The mentioned parameter is not supported in this release of the IBM X.25 over TCP/IP.

System action: The corresponding feature is disabled by resetting the parameter to zero.

System programmer response: Check local configuration.

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Index

I

IBM Software Support Center, contacting x

Installation

- unattended 5
- using a local X-window server 4
- using command line 3
- using VNC 3

L

license, patent, and copyright information 59

S

SSP xi

U

Unattended installation

- IBM X.25 over TCP/IP 5

Uninstallation

- unattended 7
- using a local Xserver 6
- using command line 5
- using InstallShield 5
- using VNC 6

V

VNC

- installing IBM X.25 over TCP/IP with 3
- uninstalling IBM X.25 over TCP/IP with 6

X

X-window server

- installing IBM X.25 over TCP/IP with 4

Xserver

- uninstalling IBM X.25 over TCP/IP with 6

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User's Guide

Version 1.2