Lucent Technologies
Bell Labs Innovations

Network Communications Controller Release 3.2

Operations Systems Engineering Guide

an InfoWare® Product

365-370-108
Issue 2
August 2000

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Operations Systems Engineering Guide

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Contents

Contents

Contents

Contents

Contents

Contents

List of Figures

2 Operations Systems Interfaces

List of Figures

List of Tables

About This Document

2 Operations Systems Interfaces

List of Tables

3 TL1 Message Details

List of Tables

List of Tables

List of Tables

A NCC TL1 Parameter Tables

List of Tables

About This Document

Contents

Using the OSEG

Introduction

The Operations Systems Engineering Guide (OSEG) provides information on operations system (OS) interfaces, protocol conversions, and the Transaction Language 1 (TL1) commands/messages of Lucent Technologies Network Communications Controller (NCC) Release 3.2.

Intended Audience

This document is written primarily for network operations engineers/planners, facility maintenance center personnel, transmission engineers, and technical support staff. It may be used by anyone who needs

- specific information about the OS interfaces
- to set up OS management systems, communications interfaces, or directory services

Using the OSEG, *continued*

Chapter Descriptions

Table 1 briefly describes the type of information found in each chapter.

Table 1. Chapter Descriptions

Chapter	Title	Description
Preface	About This Document	■ describes the guide's purpose, intended audience, and organization ■ references related documentation ■ explains how to comment on this document
1	Introduction	provides a brief overview of the Operations Systems Interfaces
2	Operations Systems Interfaces	■ provides information on the protocol conversions performed by the NCC for the following OS interfaces: X.25, TCP/IP, RFC1006++ (Transport Service Bridge), RS-232, and OSI. ■ describes the directory services supported by the NCC — SDS (SONET Directory Services) — TARP (Target Identifiers Address Resolution Protocol) ■ describes the T5 (TARP-X.500) Gateway used by both TARP and an X.500-based directory service ■ explains FTAM (File Transfer Access and Management)
3	NCC TL1 Message Details	■ provides detailed information on the TL1 messages
Appendix A	NCC TL1 Parameter Tables	lists the NCC TL1 parameter tables for: ■ access identifiers (AID)s ■ alarm/event condition types ■ password character sets
	Index	lists specific subjects and their corresponding page numbers

NCC Documentation Set

Introduction

The Lucent Technologies documents listed in this section provide additional information about NCC.

Table

Table 2 lists the documents included in the NCC documentation set.

Table 2. NCC Documentation Set

Document Number	Title
365-370-107	*Network Communications Controller User's Guide 3.2*
108763426	*Network Communications Controller Software Release Description 3.2.1*
365-370-108	*Network Communications Controller Operations Systems Engineering Guide 3.2*

Description of Documentation Set

Introduction

This section briefly describes the documents that are included in the NCC documentation set.

User's Guide

The *NCC User's Guide* is a step-by-step guide to system installation and setup. It also contains NCC feature and application descriptions.

Operations Systems Engineering Guide

The *NCC Operations Systems Engineering Guide* provides detailed information on OS interfaces, TL1 commands, messages, and error codes.

Software Release Description

The *NCC Software Release Description* provides software installation information and describes release-specific software details.

Documentation Ordering Information

Introduction

This section describes ordering

- additional copies of this document and requesting placement in the standing order list
- electronic documentation (CD-ROMs)
- product drawings from the Lucent Technologies Customer Information Center (CIC)

Ordering Standard Documentation

Table 3 provides the information necessary for commercial customers to order standard documentation or request placement on the standing order list (for reissues of any document) by mail, internet, telephone, or fax.

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	From North American Region (NAR): **1-317-322-6619**	**1-317-322-6359**
	From Asia/Pacific Region and China; Caribbean/ Latin America Region (CALA): **1-317-322-6411**	**1-317-322-6699**
	From Europe/Middle East/Africa (EMEA): **1-317-322-6416**	**1-317-322-6699**

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Documentation Ordering Information, *continued*

Ordering CD-ROMs

Documentation for the NCC is available on CD-ROM. Table 4 lists the contacts for specific information about CD-ROM documentation.

Table 4. Ordering CD-ROM Documentation

IF you wish to...	THEN contact...
order an annual subscription	■ your Account Executive.
obtain pricing information	■ Lucent Technologies Customer Information Center (contact information is provided in Table 3 on page xxiv)
obtain a list of documents available on CD-ROM	

Ordering Drawings

To order any of the drawings listed in Table 5, contact Lucent Technologies' Customer Information Center (contact information is provided in Table 3 on page xxiv).

(Continued on next page)

Documentation Ordering Information, *continued*

Available Drawings

Table 5 lists the drawings available from the Customer Information Center (CIC). These drawings provide valuable product information.

Table 5. Drawings Available from CIC

Drawing Number	Drawing Title
ED9C280-45	Network Communications Controller
ED9C280-46	Network Communications Controller Software

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- charge number

NOTE:
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Introduction

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Customer Training and Information Products
Building 21, Room 3A-06
1600 Osgood Street
North Andover, MA 01845

Fax: 1-978-960-6835

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Introduction

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On-Site Training

On-site training is available for all NCC-related training courses.

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Training Courses

Introduction

This section describes the NCC-related training courses.

WaveStar Product Family Overview

Content

The WaveStar Product Family Overview Course (LW2260) provides an introduction to Network Communications Controller : Wavestar TDM 2.5G (OC-48) 10G (OC-192) (2-Fiber), WaveStar TDM 10G (OC-192) (4-Fiber), WaveStar BandWidth Manager, WaveStar SNMS, WaveStar OLS 40G, WaveStar OLS 80G, and WaveStar OLS 400G. Emphasis is placed on the products' network topologies and the relationships among the individual products.

Audience

Lucent sales, marketing, and product management; prospective customers.

Course Length

1 day

Introduction

1

Contents

Introduction to Operations Systems Interfaces

Purpose

This document provides information on operations system (OS) interfaces, protocol conversions, and the Transaction Language 1 (TL1) commands/ messages of the Lucent Technologies Network Communications Controller (NCC).

NCC Protocol Conversion Options

NCC Release 3.2 supports the following protocol conversion options for communications towards the OS:

- X.25
- TCP/IP
- RFC1006++ (Transport Service Bridge)
- RS-232 (with additional hardware)
- OSI/LAN

The NCC Release 3.2 also supports OSI/LAN for communications towards the network element (NE).

TL1 Interface

The Transaction Language 1 (TL1) interface communicates alarm, status, and control information to/from the alarm surveillance OS. The TL1 interface is based on Telcordia (formerly Bellcore) GR-833-CORE, Issue 2, and GR-199-CORE, Issue 2.

Operations Systems Interfaces

2

Contents

Contents (cont)

Operations Systems Interfaces

Overview

Introduction

Operations Systems (OSs) need to communicate with Network Elements (NEs) for the purposes of sending control information and receiving status and alarm information. This communication is made possible over non-OSI WANs with the help of operations communications interfaces supported on an intermediate network entity, known as the Network Communications Controller (NCC). The communications pathways include X.25 links, TCP/IP, and RFC1006++ on a Wide Area Network (WAN) as well as OSI on Local Area Networks (LAN).

The NCC plays a key role in several directory services functions. The NCC can act as a directory server or registration manager when SONET Directory Services (SDS) is used. Also, the NCC can act as a T5 Gateway in networks with TARP NEs as well as SDS.

In addition, the NCC supports file transfer functions (software downloads, database backups/restores). For example, the NCC can act as an FTP to FTAM Gateway for file transfers from a TCP/IP-based network to an OSI-based network or vice versa. The NCC also provides a file server that can be used as a local repository for NE software downloads and NE database backups/restores.

About This Chapter

This chapter provides information about the

- protocol conversion options,
- directory services, and
- file transfer options

available for OS communications with the NCC and the NE.

For information on TL1 commands/messages for the NCC, refer to Chapter 3, *NCC TL1 Message Details*.

The *Network Communications Controller User's Guide* provides information on managing an NCC using the WaveStar Craft Interface Terminal (CIT).

Protocol Conversions

NCC Protocol Conversion Options

The NCC supports a variety of OS interfaces. The following protocol conversion options for communications towards the OS are supported:

- X.25
- TCP/IP
- RFC1006++ (Transport Service Bridge)
- RS-232 (with additional hardware)
- OSI/LAN

The NCC also supports OSI/LAN for communications towards the network element (NE).

Protocol Conversions, *continued*

X.25 Interface

Overview

This section discusses:

- OS Communication over X.25
- X.25 Interface Details
- X.25 Technical Specifications

Protocol Conversions, *continued*

OS Communication over X.25

Using NCC as an X.25 Gateway

Figure 2-1 shows the physical and logical connectivity between the OS and NE, with the NCC used as the X.25 to OSI gateway for TL1. The X.25 to OSI Gateway allows an X.25 link between the OS and NCC to be the vehicle which allows TL1 commands/messages to flow between the OS and the NE.

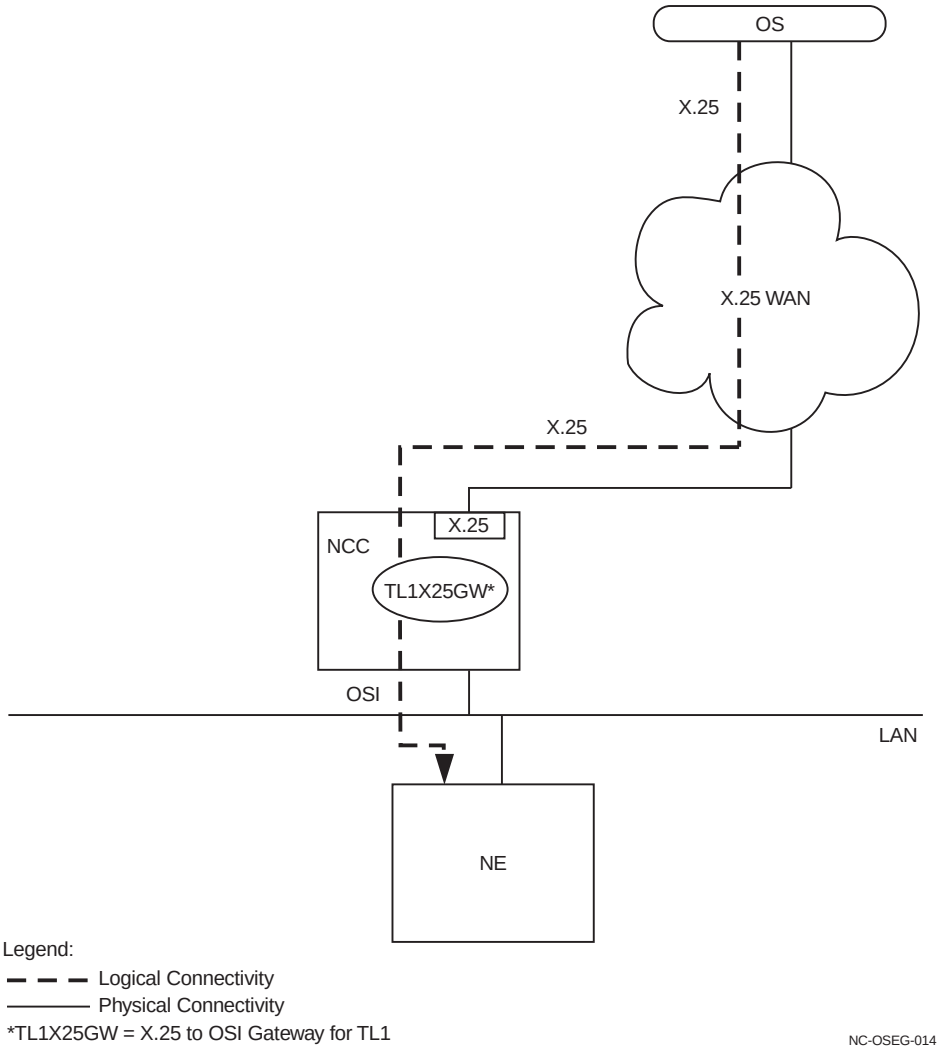

Figure 2-1. OS Communication over X.25 through the NCC to the NE

Protocol Conversions, *continued*

OS Communication over X.25, *continued*

Logical Connectivity between OS and NE

Figure 2-2 shows the logical connectivity between the OS and the NE. This figure illustrates the TL1 over X.25 Gateway function and relevant protocol stacks in the NCC.

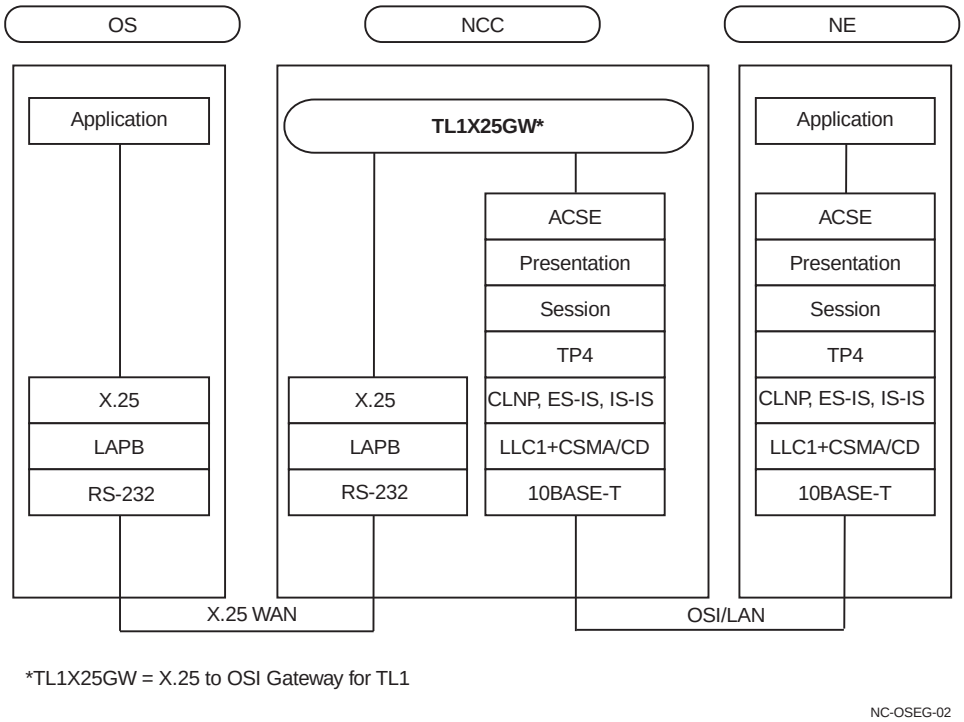

Figure 2-2. TL1 X.25 Gateway - Logical Connectivity between OS and NE

Logical Connectivity between OS and NCC

The X.25 Gateway on an NCC can be used for operations communications between an OS and NE as shown in Figure 2-1 and Figure 2-2. The X.25 Gateway on an NCC can also be used for operations communications between an OS and an NCC (another NCC or the same NCC that has the X.25 Gateway).

Protocol Conversions, *continued*

X.25 Interface Details

References

X.25-related references are:

- CCITT Recommendations X.25 (1988)
- ITU-T Recommendations X.25, Data Communications Networks: Services and Facilities, Interfaces (1988)

TL1-related references are:

- Telcordia (formerly Bellcore) GR-199-CORE, Issue 2
- Telcordia GR-833-CORE, Issue 2
- Telcordia TR-NWT-00835 Issue 3

DB-25 Connector Figure

Figure 2-3 shows the serial port connector for the X.25 interface. For signal descriptions assigned to the pins see Table 2-1.

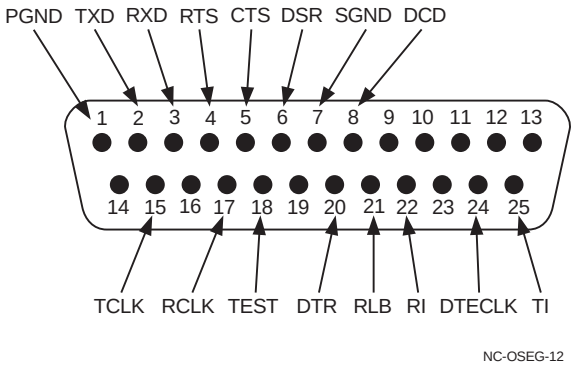

Figure 2-3. Female DB-25 Connector

Protocol Conversions, *continued*

X.25 Interface Details, *continued*

DB-25 Connector Table

Table 2-1. DB-25 Connector Pins and Signal Description

Pin	Signal	Signal Name
1	PGND	Protective Ground (Shield)
2	TXD	Transmit Data
3	RXD	Receive Data
4	RTS	Request To Send[a]
5	CTS	Clear To Send[b]
6	DSR	Data Set Ready
7	SGND	Signal Ground
8	DCD	Data Carrier Detect
9	X	Unused
10	X	Unused
11	X	Unused
12	X	Unused
13	X	Unused
14	X	Unused
15	TCLK	Transmit Clock (DCE)
16	X	Unused
17	RCLK	Receive Clock
18	TEST	Local Loopback Activation
19	X	Unused
		Continued on next page

a. DTR is always on when NCC is equipped with X.25 hardware and powered on

b. NCC will only transmit data via X.25 when CTS is on.

Protocol Conversions, *continued*

X.25 Interface Details, *continued*

DB-25 Connector Table, *continued*

Table 2-1. DB-25 Connector Pins and Signal Description, *continued*

Pin	Signal	Signal Name
20	DTR	Data Terminal Ready
21	RLB	Remote Loopback
22	RI	Ring Indicator
23	X	Unused
24	DTECLK	Transmit Clock (DTE)
25	TI	Test Indicator

Protocol Conversions, *continued*

X.25 Technical Specifications

Operating Parameters/Values Table

Each NCC is capable of supporting an X.25 direct synchronous link to an X.25 packet switched network for which the characteristics shown in Table 2-2 apply.

Table 2-2. X.25 Operating Parameters/Values

Parameter	Operating Value(s)[a]
General	
VC type	Incoming Only SVC
OS types	Any OS-compliant type with TL1 standards
Network function	DCE
NCC function	DTE
Link Operation	Single
Operations mode	Modulo 8
X.25 Packet Layer	
X.25 version	1988 (CCITT Blue Book)
Packet format	Basic
Packet Size	128 or 256 (negotiable)
Window size	2 - 7 (negotiable by protocol)
Q-bit support	No
D-bit support	No
M-bit support	Yes
P/F-bit support	Yes
	Continued on next page

a. Not Provisionable

Protocol Conversions, *continued*

X.25 Technical Specifications, *continued*

Operating Parameters/Values Table, *continued*

Table 2-2. X.25 Operating Parameters/Values, *continued*

Parameter	Operating Value(s)[a]
LAPB Link Layer (HDLC)	
k = max # of outstanding I-frames	7
N1 = Bits per I-frame (excluding flags and zero bit insertion for transparency)	2048
N2 = Retransmission count	7
Link setup	Passive
Sequence no.	Normal
Physical Layer	
Synchronous	
Line interface	Leased
Duplex	Full
Type	Point-to-point
Modem interface	RS232
Data Encoding	NRZ
Clocking	External
Link Speeds	Any of the following: 2.4, 4.8, 9.6, 19.2, or 38.4 Kb/s (maximum serial line speed of up to 64 Kb/s)

a. Not Provisionable

Protocol Conversions, *continued*

X.25 Technical Specifications, *continued*

EIA-232C Pin Connections

For an interface configured as a DTE, the following EIA-232C pin connections shown in Table 2-3 apply.

Table 2-3. EIA-232C Pin Connections

Pin	Description
1	Protective Ground (Shield)
2	Transmitted Data
3	Received data
4	Request To Send (RTS)[a]
5	Clear To Send (CTS)[b]
6	DCE Ready
7	Signal Ground
8	Received Line Signal Detector
15	Transmit Clock
17	Receive Clock
20	Data Terminal Ready (DTR)[c]

a. DTR always on when NCC is powered

b. NCC will only transmit data via X.25 when CTS is On

c. RTS always on when NCC is powered

Protocol Conversions, *continued*

X.25 Technical Specifications, *continued*

Timer Values Table

Table 2-4. X.25 Timer Values

Name	Description	Standard Range	Value Used
T1	Waiting acknowledgment (retry) timer	for up to 9.6Kb/s, 2 to 20s for 56Kb/s, 0.2 to 20s	3s 3s
T2	Response delay timer	Set < 0.3s use PF2K value	0.29s
T3	Disconnect Timer (warns no messages are being sent over the link)	15s	
T4	Inactive Link Timer	Not supported	
T10	Timer started when DCE issues a *restart indication*	≥ 60s	60s
T11	Timer started when DCE issues an *incoming call*	≥ 180s	180s
T12	Timer started when DCE issues a *reset indication*	≥ 60s	60s
T13	Timer started when DCE issues a *clear indication*	≥ 60s	60s
T20	Restart Request Response Timer (started when DTE transmits a *restart request)*	≥ 180s	180s
T21	Call Request Response Timer (started when DTE transmits a *call request)*	≥ 200s	200s

Continued on next page

Protocol Conversions, *continued*

X.25 Technical Specifications, *continued*

Timer Values Table, *continued*

Table 2-4. X.25 Timer Values, *continued*

Name	Description	Standard Range	Value Used
T22	Reset Request Response Timer (started when DTE transmits a *reset request)*	≥ 180s	180s
T23	Clear Request Response Timer (started when DTE transmits a *clear request)*	≥ 180s	180s
T28	Registration Request Response Timer (started when DTE transmits a *registration request)*	Not supported	
T24	Window Status Transmission Timer (started when DTE transmits a packet with a P(R))	≥ 60s	60s
T25	Window Rotation Timer (started when DTE transmits a *DATA* packet or DTEs window is rotated but there are still outstanding Data packets)	≥ 200s	200s
T26	Interrupt Response Timer (started when DTE transmits an *Interrupt* packet)	≥ 180s	180s
T27	Reject Response Timer (started when DTE transmits a *Reject* packet)	Not supported	

Protocol Conversions, *continued*

X.25 Technical Specifications, *continued*

Performance-related Parameters Table

Table 2-5. X.25 Performance-related Parameters

Parameter	Operating Value
Maximum number of active login sessions per X.25 interface	150
Maximum number of SVCs	20
Maximum user data size	256 octets
Maximum delay for connection establishment	10s
Logical channel numbers (LCN) allowed	4 through 23 inclusive

Provisionable Parameters Table

Table 2-6. X.25 Provisionable Parameters

Parameter	Default Value
TL1 X.25 Gateway function	Disable
X.121 Link Addresses of OSs*	20 entries maximum
OS type on each SVC*	20 entries maximum

* Both these parameters must be entered together.

Protocol Conversions, *continued*

TCP/IP Interface

Overview

This section discusses:

- OS Communication over TCP/IP
- TCP/IP Interface Details
- TCP/IP Technical Specifications

Protocol Conversions, *continued*

OS Communication over TCP/IP

Using the NCC as a TCP/IP Gateway

Figure 2-4 shows the physical and logical connectivity between the OS and NE, with the NCC used as the TCP/IP to OSI gateway for TL1. The TCP/IP to OSI gateway allows TCP/IP between the OS and NCC to be the vehicle which allows TL1 commands/messages to flow between the OS and the NE.

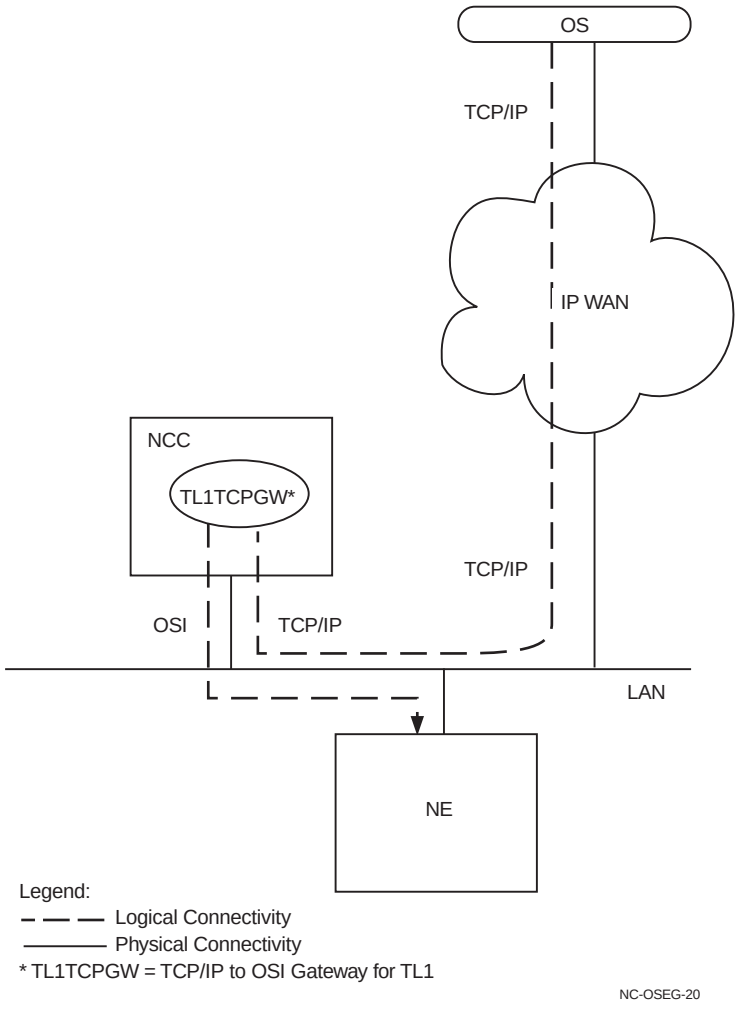

Figure 2-4. OS Communication over TCP/IP through the NCC to the NE

Protocol Conversions, *continued*

OS Communication over TCP/IP, *continued*

Logical Connectivity between OS and NE

Figure 2-5 shows the logical connectivity between the OS and the NE. This figure illustrates the TL1 over TCP/IP gateway function and relevant protocol stacks in the NCC.

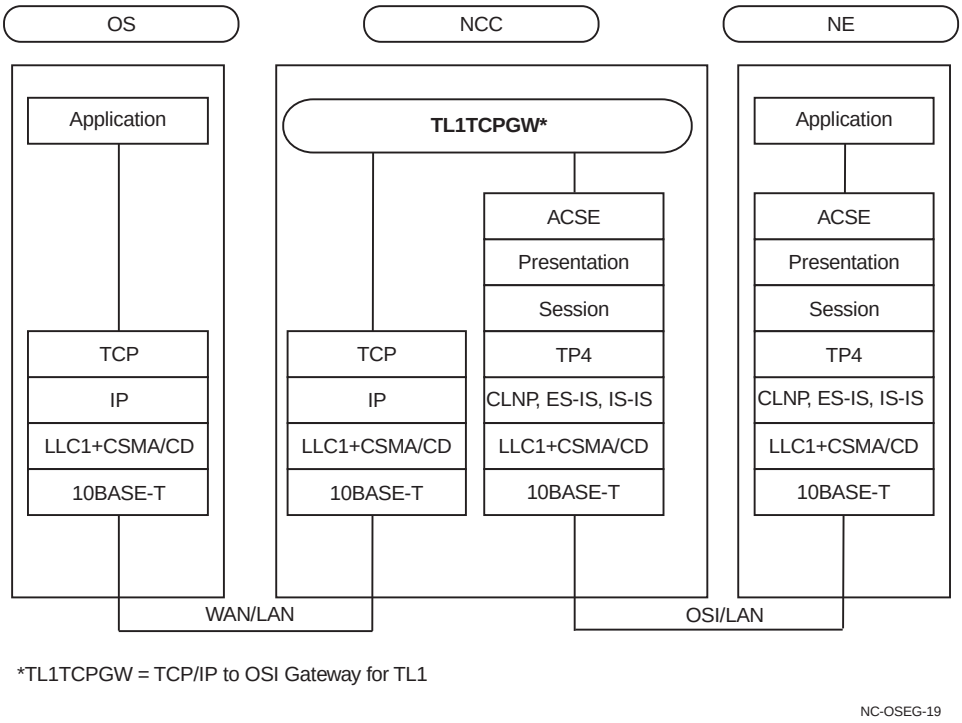

Figure 2-5. TL1 TCP Gateway - Logical Connectivity between OS and NE

Logical Connectivity between OS and NCC

The TCP/IP Gateway on an NCC can be used for operations communications between an OS and NE as shown in Figure 2-4 and Figure 2-5. The TCP/IP Gateway on an NCC can also be used for operations communications between an OS and an NCC (another NCC or the same NCC that has the TCP/IP Gateway).

Protocol Conversions, *continued*

TCP/IP Interface Details

TL1 TCP/IP Gateway Variations

Three variations of the TCP/IP to OSI Gateway for TL1 are supported on the NCC. These three variations use the following different encodings for TL1:

- Telnet Encoding
- Raw Encoding
- Length-Value Encoding

Telnet Encoding

This variation of the TL1 TCP/IP gateway uses Telnet, the widely used application layer protocol for transmitting text over TCP/IP. A minimally modified version of Telnet, that eliminates unnecessary banners and prompts, is supported on the NCC. This version of the TL1 TCP/IP gateway works with any standard Telnet client. The TL1 TCP/IP Gateway with Telnet encoding uses port number 3083. The telnet encoding is primarily used for human-machine interactions.

Raw Encoding

This variation of the TL1 TCP/IP gateway is used with OSs that use raw encoding for transmitting TL1. With raw encoding, the TL1 message is transmitted in a TCP data stream of length 1 - 4096 bytes. The TL1 message must be parsed to find the boundary between successive TL1 messages. The TL1 TCP/IP Gateway with raw encoding uses port number 3082. The raw encoding is provided for machine-machine interactions.

Protocol Conversions, *continued*

TCP/IP Interface Details, *continued*

Length-Value Encoding

This variation of the TL1 TCP/IP gateway is used with OSs that use length-value encoding for transmitting TL1. With length-value encoding, each TL1 message is encapsulated into the TCP data stream as follows:

- Version Number (1 byte, value set to 3)
- Reserved (1 byte)
- Length (2 bytes, value set to length in bytes of TL1 message + 4)
- TL1 Message (variable length)

The TL1 TCP/IP Gateway with length-value encoding uses port number 3081. The length-value encoding is provided for machine-machine interactions.

Protocol Conversions, *continued*

TCP/IP Interface Details, *continued*

RJ45 Connector Figure

The RJ45 connector shown in Figure 2-6 is used by the NCC to connect to the LAN. For signal descriptions assigned to the pins see Table 2-7.

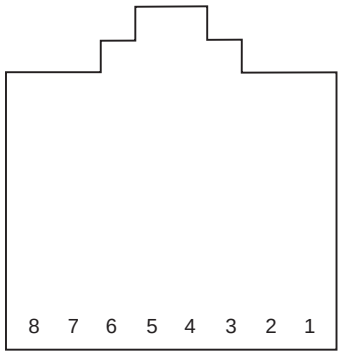

Figure 2-6. RJ45 Connector

RJ45 Connector Table

Table 2-7. RJ45 Pin Configuration

Pin	Color Code	Signal Description
1	Blue	Protective Ground (Shield)
2	Orange	Transmitted Data
3	Black	Received data
4	Red	Request To Send (RTS)
5	Green	Clear To Send (CTS)
6	Yellow	DCE Ready
7	Brown	Signal Ground
8	White	Received Line Signal Detector

Protocol Conversions, *continued*

TCP/IP Technical Specifications

Introduction

The following tables list the technical specifications for the TCP/IP to OSI gateway.

Physical and MAC Layer TCP/IP Specifications Table

The following parameters in Table 2-8 are non-provisionable.

Table 2-8. Physical, MAC Layer (ISO 8802-3), and Logical Link Control (LLC) Layer (ISO 8802-2) Attribute Values for TCP/IP

Parameter	Value
Medium	10BASE-T
Maximum Frame Size	1518 octets
Minimum Frame Size	64 octets
Address Size	6 octets
Padding	up to 64 octets
Jam size	32 ones
Backoff limit	10
Tx attempt	15
Inter Frame gap	9.6 µs
Slot time	512 bit times
LLC Layer	Per RFC894
Type	0800 hex
MA-UNITDATA Request/Indication	Yes
MA-UNITDATA-STATUS Indication	No

Protocol Conversions, *continued*

TCP/IP Technical Specifications, *continued*

Provisionable Parameters Table

The following parameters shown in Table 2-9 must be set by the user at the time of connection to the network:

Table 2-9. TCP/IP Provisionable Parameters

Parameter	Default Value
TCP/IP Gateway function	Disable
IP Address	NULL
Subnet Mask	NULL
Default Router Address	NULL
Domain	NULL
Domain Name Server (DNS)	NULL

Additional Parameters

The following parameters, normally set for a domain name-address resolution service when connected to a network, can be ignored because the NCC acts only as a host and does not provide any routing functionality:

- DHCP Server Address
- DNS Server
- WINS Server

The Adapter Address is automatically extracted from the network interface circuit card on startup.

Protocol Conversions, *continued*

RFC1006++ Interface

Overview

This sections discusses:

- OS Communication over RFC1006++
- RFC1006++ Interface Details
- TCP/IP Technical Specifications for the RFC1006++

Protocol Conversions, *continued*

OS Communication over RFC1006++

Using NCC as an RFC1006++ Transport Service Bridge

Figure 2-7 shows the physical and logical connectivity between the OS and NE, with the NCC used as the Transport Service Bridge. The Transport Service Bridge on an NCC allows OS-NE communications to take place when the OS is in a TCP/IP based communications domain, and the NE is in an OSI TP4/CLNP based communications domain. The Transport Service Bridge bridges the TCP transport service on the IP WAN to the OSI TP4 transport service on the LAN.

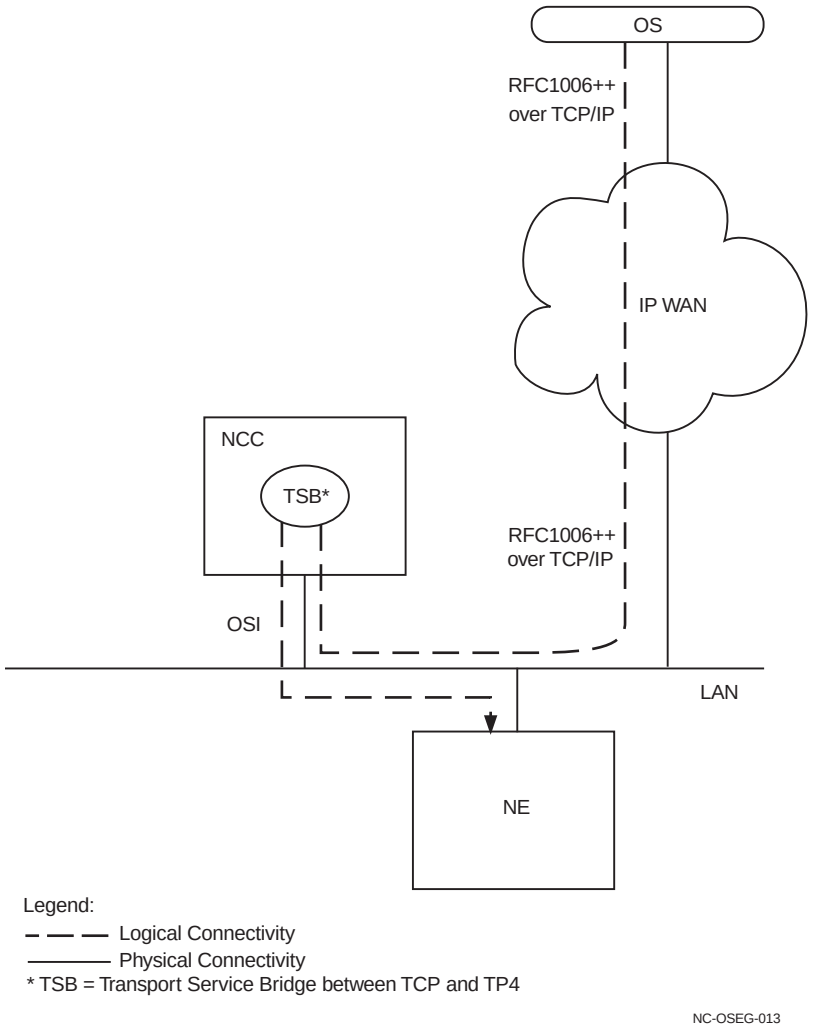

Figure 2-7. OS Communication over RFC1006++ through the NCC to the NE

Protocol Conversions, *continued*

OS Communication over RFC1006++, *continued*

Logical Connectivity from OS to NE

Figure 2-8 shows the logical connectivity initiated by the OS to the NE. This figure also shows the Transport Service Bridge and the relevant protocol stacks in the NCC.

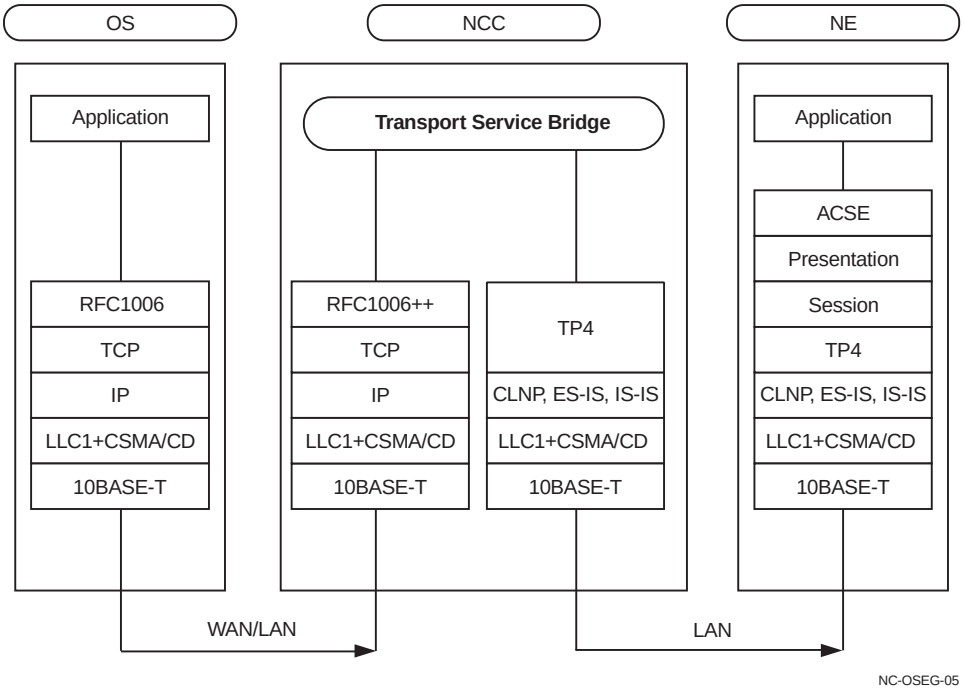

Figure 2-8. Transport Service Bridge Function - Logical Connectivity from OS to NE

NOTE:
RFC1006++ is a Lucent proprietary modification of IETF RFC1006 to include addressing needed to support the Transport Service Bridge functionality.

Protocol Conversions, *continued*

OS Communication over RFC1006++, *continued*

Logical Connectivity from NE to OS

Logical connectivity initiated by the NE to the OS is shown in Figure 2-9.

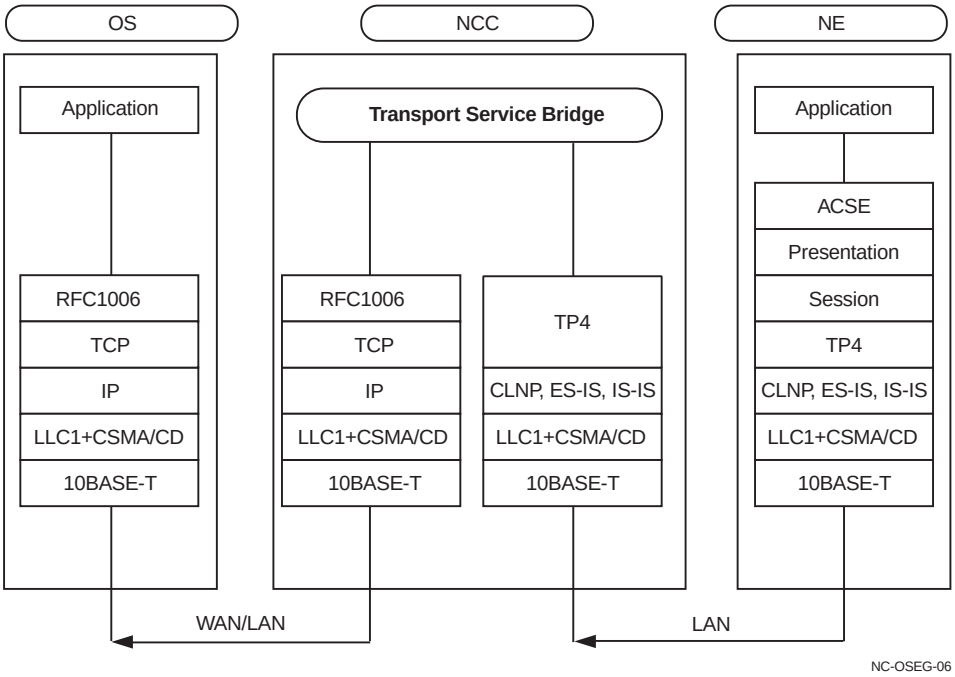

Figure 2-9. Transport Service Bridge Function - Logical Connectivity from NE to OS

Logical Connectivity between OS and NCC

The Transport Service Bridge on an NCC can be used for operations communications between an OS and NE as shown in Figure 2-7, Figure 2-8, and Figure 2-9. The Transport Service Bridge on an NCC can also be used for operations communications between an OS and an NCC (another NCC or the same NCC that has the Transport Service Bridge).

Protocol Conversions, *continued*

RFC1006++ Interface Details

Protocol Stack

The RFC1006++ protocol stack on the NCC differs only in Layers 3 and 4 from the OSI/LAN Protocol Stack. The Transport Service Bridge is used to reconcile the mismatch between the RFC1006, TCP/IP portions of the OS communications stack and the TP4, CLNP portions of the communications stack at the NE and the NCC.

RJ45 Connector

The RJ45 connector shown in Figure 2-6 is used by the NCC to connect to the LAN. For the signal descriptions assigned to the pins see Table 2-7.

Protocol Conversions, *continued*

TCP/IP Technical Specifications for RFC1006++

Introduction

The technical specifications for the TCP to TP4 Transport Service Bridge are specified in this section. The following tables list application-specific and user-provisionable parameters for IP, TCP, and RFC1006++.

Physical and MAC Layer TCP/IP Specifications Table

See Table 2-8 for the physical, MAC layer (ISO 8802-3), and logical link control (LLC) layer (ISO 8802-2) attribute values for RFC1006++.

Network Layer TCP/IP Specifications Table

The parameters in Table 2-10 are non-provisionable.

Table 2-10. Network Layer: TCP/IP Attribute Values

Parameter	Value
System Role	Host (not router or gateway)
Precedence	Not Supported
Minimum Datagram Data Area	1 octet
Fragmentation & Re-Assembly	Supported
Minimum Received Datagram	576 octets
IP Addressing Formats Supported	A, B, and C
Version (VERS)	4
Service Type	Ignored
Time to Live	64 hops
Protocol	6 (TCP), 1 (ICMP)

Protocol Conversions, *continued*

TCP/IP Technical Specifications for RFC1006++, *continued*

TCP Transport Layer Specifications Table

The parameters in Table 2-11 are non-provisionable.

Table 2-11. Transport Layer: (TCP) Attribute Values

Parameter	Value
Maximum Segment Size, distant physical network	536 octets
Maximum Segment Size, local area network	1452 octets

RFC1006++ Transport Layer Specifications Table

The parameters in Table 2-12 are non-provisionable.

Table 2-12. Transport Layer: (RFC1006)* Attribute Values

Parameter	Value
Initial Data exchanged during connection establishment	Yes
Expedited Service	No
Network Service	via TCP
Connection Establishment	per ISO 8073, 2-way Class 0
	Continued on next page

Protocol Conversions, *continued*

TCP/IP Technical Specifications for RFC1006++, *continued*

RFC1006++ Transport Layer Specifications Table, *continued*

Table 2-12. Transport Layer: (RFC1006)* Attribute Values, *continued*

Parameter	Value
IDP Value	5400728722 decimal
AFI Value	54 decimal
DSP Prefix Value	03 decimal
IP Address Format for NSAP Encoding	Concrete Decimal Form
TSEL Value	5454 hex

TCP Packet Header Specifications Table

The parameters in Table 2-13 are non-provisionable.

Table 2-13. TPKT Packet Header Format

Parameter	Field Size	Value
Version	8 bits	3 decimal
Reserved	8 bits	0 decimal
Packet Length, in octets	16 bits	Minimum = 7, Maximum = 65535

Protocol Conversions, *continued*

TCP/IP Technical Specifications for RFC1006++, *continued*

Provisionable Parameters Table

The following parameters shown in Table 2-14 must be set by the user at the time of connection to the network:

Table 2-14. TCP/IP over RFC1006++ Provisionable Parameters

Parameter	Default Value
Transport Service Bridge function	Disable
IP Address	NULL
Subnet Mask	NULL
Default Router Address	NULL
Domain	NULL
Domain Name Server (DNS)	NULL
ISO-TSAP Listen Port Identifier	49152 decimal
ISO-TSAP Called Port Identifier	1024 decimal

Additional Parameters

The following parameters, normally set for a domain name-address resolution service when connected to a network, can be ignored because the NCC acts only as a host and does not provide any routing functionality:

- DHCP Server Address
- DNS Server
- WINS Server

The Adapter Address is automatically extracted from the network interface circuit card on startup.

RS-232 Interface

OS Communication over RS-232

Using Terminal Server with NCC for RS-232 Interface

The NCC and a terminal server are used to support an RS-232 interface for OSs that use asynchronous communication. The terminal server multiplexes multiple RS-232s to TCP/IP. The NCC serves as the TCP/IP to OSI Gateway for TL1 when the RS-232 interface is used. Figure 2-10 shows the physical and logical connectivity between the OS and the NE.

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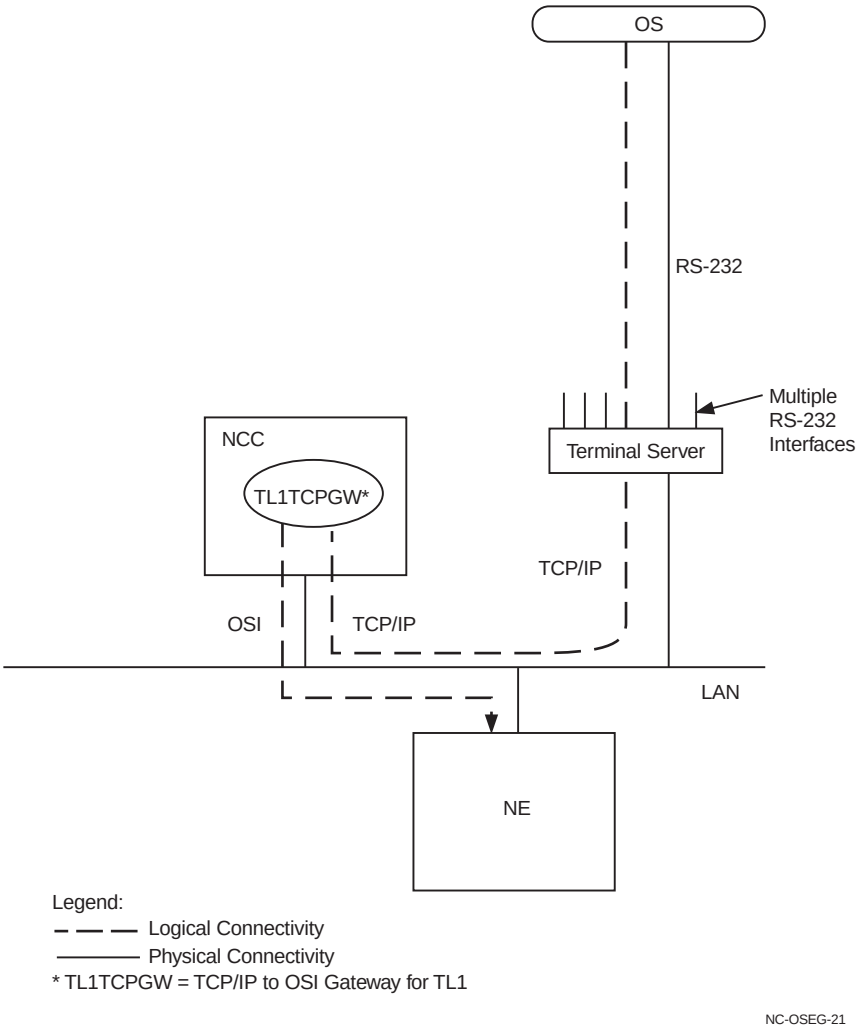


Figure 2-10. OS Communication over RS-232 through the NCC to the NE

Protocol Conversions, *continued*

OS Communication over RS-232, *continued*

Logical Connectivity between OS and NE

Figure 2-11 illustrates the Transport Service Bridge function and relevant protocol stacks in the NCC for the RS-232 interface.

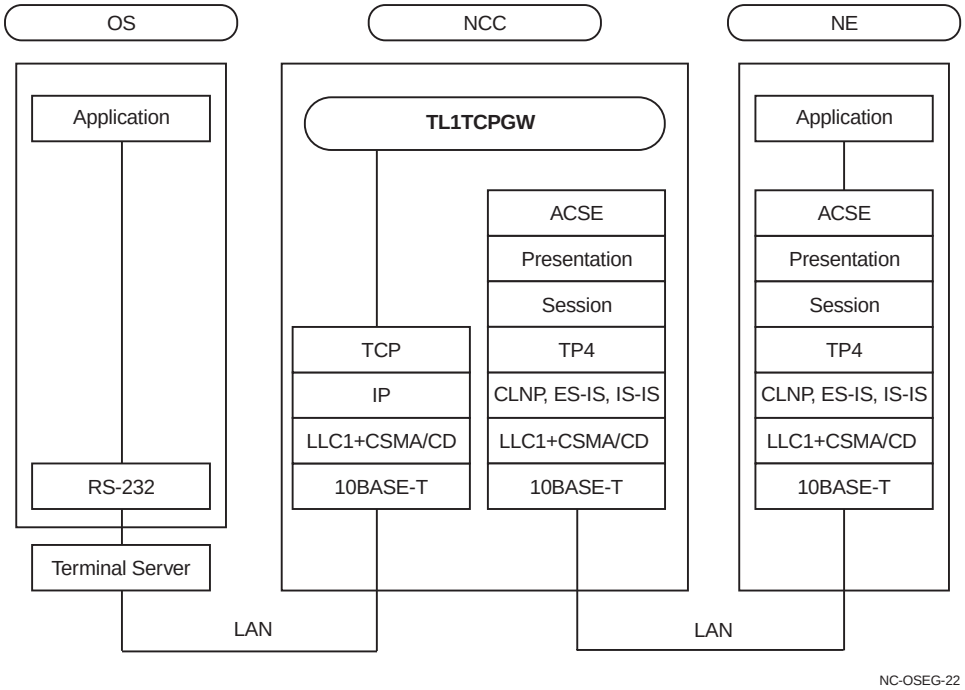


Figure 2-11. TL1 TCP Gateway over RS-232 - Logical Connectivity between OS and NE

Logical Connectivity between OS and NCC

The RS-232 interface can be used for operations communications between an OS and an NE as shown in Figure 2-10. The RS-232 interface can also be used for operations communications between an OS and NCC (another NCC or the same NCC that has the TCP/IP Gateway).

Protocol Conversions, *continued*

OSI Interface

Overview

This section discusses:

- OS Communication over OSI
- OSI Interface Details
- OSI Technical Specifications

Protocol Conversions, *continued*

OS Communication over OSI

OSI WAN/LAN Communication between OS and NCC

Figure 2-12 shows the physical and logical connectivity for OSI WAN/LAN communications between an OS and an NCC.

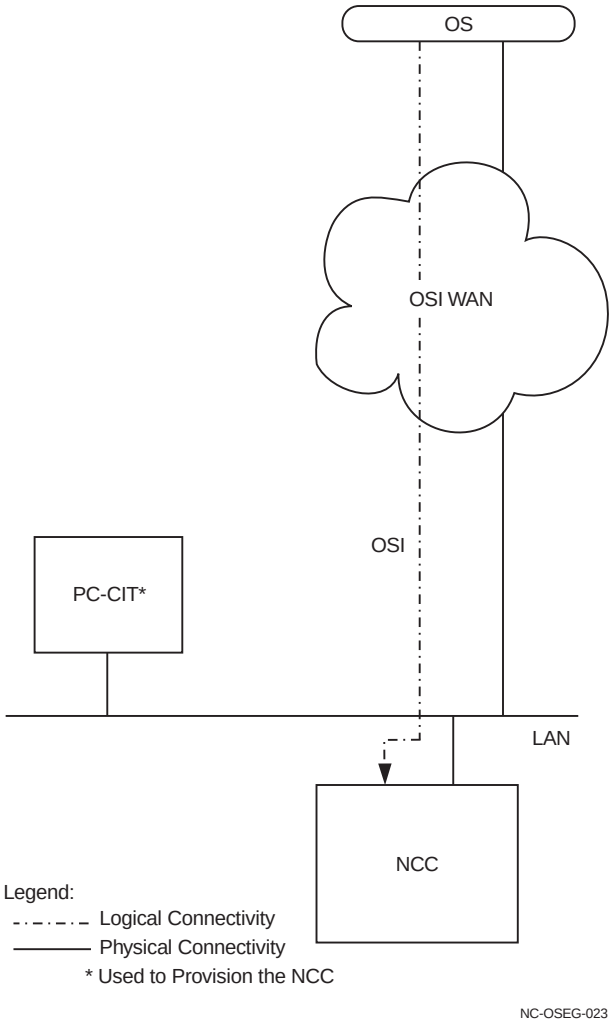


Figure 2-12. OS Communication over OSI Directly for OS Management of an NCC

Protocol Conversions, *continued*

OS Communication over OSI, *continued*

OSI LAN Communication between NCC and NE

OSI/LAN communication occurs between the NCC and an NE when the NCC acts as a gateway/bridge for communication across a non-OSI WAN/LAN towards the OS.

The following figures show OSI LAN communication between an NCC and an NE:

- Figure 2-1 - OS Communication over X.25 through the NCC to the NE
- Figure 2-4 - OS Communication over TCP/IP through the NCC to the NE
- Figure 2-7 - OS Communication over RFC1006++ through the NCC to the NE
- Figure 2-10 - OS Communication over RS-232 through the NCC to the NE

Protocol Conversions, *continued*

OSI/LAN Interface Details

OSI References

The OSI/LAN protocol stack allows the LAN to be the link which carries communication messages between the applications on the NCC and peer applications on other NEs or on the OS. This stack (Table 2-15) is a data communications infrastructure adhering to the OSI 7-layer model.

Table 2-15. OSI Stack References

Layer	Stack Component
Application	ACSE (ISO 8649/8650); FTAM (ISO 8571); DS (ISO 9594/ANSI T1.245); TARP (Telcordia GR-253-CORE); ROSE (ISO 13712-3)
Presentation	CO-Service (ISO 8822/8823); ASN.1 (ISO 8824); BER (ISO 8825)
Session	BCS Kernel/Full Duplex (ISO 8326/8327-AD2)
Transport	TP4 (ISO 8073)
Network	CLNP (ISO 8473); ES-IS (ISO 9542); IS-IS (ISO 10589)
Data Link- Logical Link Control	LLC1 (ISO 8802-2)
Data Link- Media Access Control	CSMA/CD (ISO 8802-3)
Physical	10BASE-T (ISO 8802-3)

RJ45 Connector

The RJ45 connector shown in Figure 2-6 is used by the NCC to connect to the LAN. See Table 2-7 for more information.

Protocol Conversions, *continued*

OSI Technical Specifications

Physical and MAC Layer Technical Specifications Table

The parameters in Table 2-16 are non-provisionable.

Table 2-16. Physical and MAC Layer (ISO 8802-3) Attribute Values

Parameter	Operating Value
Medium	10BASE-T
Maximum Frame Size	1518 octets
Minimum Frame Size	64 octets
Address Size	6 octets
Padding	up to 64
Jam Size	32 ones
Backoff Limit	Random
Tx Attempt	15
Inter Frame Gap	9.6us
Slot Time	512 bit times
MA-UNITDATA Request/Indication	Yes
MA-UNITDATA-STATUS Indication	No

Protocol Conversions, *continued*

OSI Technical Specifications, *continued*

Logical Link Control Specifications Table

The following parameters in Table 2-17 are non-provisionable.

Table 2-17. Logical Link Control Layer (ISO 8802-2) Attribute Values

Parameter	Operating Value
LLC Operation Type	Type 1
LLC Class Type	Class 1
C/R bit	0,1
P/F bit	0,1
UI PDU	Command only
XID PDU	Command or Response
Test PDU	Command or Response
LLC SAP	FEhex
DL-UNITDATA Request/Indication	Yes

Protocol Conversions, *continued*

OSI Technical Specifications, *continued*

CLNP Network Layer Specifications Table

The parameters in Table 2-18 are non-provisionable. This table represents the values held by the attributes of the CLNP protocol engine.

Table 2-18. Network Layer: CLNP (ISO 8473) Attribute Values

Parameter	Operating Value
Category 1 Functions[a]	Supported
Category 2 Functions[b]	Not supported
Category 3 Functions[c]	Not supported[d]
PDU Lifetime	255 hops[e]
Segmenting Reassembly queue length	50
NSDU-SNDATA mapping	always 1-1
NSAP length	20 octets[f]
N-SEL for TP4	1Dhex
N-SEL for TARP	AFhex
CLNP echo	Request/Response
E/R Flag	Yes (default = off)

a. PDU Comp./Decomp., Header Format Analysis, PDU Lifetime Control, Route/Forward/Segment/Reassemble/Discard PDU, Error Reporting and Header Error Detection functions.

b. Security, Complete Source Routing and Complete Route Recording Functions.

c. Partial Source Routing, Partial Route Recording, Priority, QoS Maintenance, Congestion Notification and Padding Functions.

d. Except for QoS Maintenance and Padding functions, which are supported for forwarding only.

e. hop = 0.5s; 127 hops if CLNP PDU is transporting a TARP PDU.

f. ISO DCC syntax

Protocol Conversions, *continued*

OSI Technical Specifications, *continued*

EI-IS Network Layer Specifications Table

The parameters in Table 2-19 are non-provisionable. This table represents the values held by the attributes of the ES-IS protocol engine.

Table 2-19. Network Layer: ES-IS (ISO 9542) Attribute Values

Parameter	Operating Value
IS Holding Timer	10 seconds
IIH Timer	10 seconds
Holding Multiplier	3
Send ES Hellos	No

Protocol Conversions, *continued*

OSI Technical Specifications, *continued*

IS-IS Network Layer Specifications Table

The parameters in Table 2-20 are non-provisionable. This table represents the values held by the attributes of the IS-IS protocol engine.

Table 2-20. Network Layer: IS-IS (ISO 10589) Attribute Values

Parameter	Operating Value
Maximum Adjacencies/subnet	50 for LAN, 1 for point-to-point
Maximum Multiple Area Addresses	3
NSAP format	20 octets (ISO DCC syntax)
IIH Timer for non-Designated Router	10 seconds
IIH Timer for Designated Router	3 seconds
Holding Multiplier	3
Maximum LSP generation interval time	900 seconds
Minimum LSP generation interval time	30 seconds
Minimum LSP transmission interval time	5 seconds
Maximum LSP length	512 octets (restricted by the maximum LSP length on DCC connections)
Maximum Age	1200 seconds
Zero Age Lifetime	60 seconds
CSNP interval timer	10 seconds
PSNP Interval timer	2 seconds
Waiting Time timer	60 seconds
LAN Designated Router (L1/2) Priority	64
Routing metric	Default
Maximum Path metric	1023

Continued on next page

Protocol Conversions, *continued*

OSI Technical Specifications, *continued*

IS-IS Network Layer Specifications Table, *continued*

Table 2-20. Network Layer: IS-IS (ISO 10589) Attribute Values, *continued*

Parameter	Operating Value
Maximum Path splits	1
Maximum Least cost paths	1
Adjacency Alarms	Not supported
SPF hold off timer	5 seconds
Reachable Address Prefix for Interdomain routing	Not supported

Protocol Conversions, *continued*

OSI Technical Specifications, *continued*

Network Layer Provisionable Parameters Table

Table 2-21 represents the characteristics of the network layer (CLNP, ES_IS, IS-IS) that are provisionable.

Table 2-21. Network Layer Provisionable Parameters

Parameter	Range	Default Value	Increment
NSAP-DFI	1 octet	80 hex	1
NSAP-ORG	3 octets	000000 hex	1
NSAP-RES	2 octets	0000 hex	1
NSAP-RD	2 octets	0000 hex	1
NSAP-AREA	2 octets	0000 hex	1
NSAP-N-SEL	1 octet	00 hex	1
ESCT timer	10 - 1000s	10s	10s
ISCT timer	10 - 1000s	10s	10s
IS L2 Routing	Enabled, Disabled	Disabled	Not Applicable
CLNP Lifetime Control Parameter	2 - 255 hops	255 hops	1

Protocol Conversions, *continued*

OSI Technical Specifications, *continued*

TP4 Transport Layer Specifications Table

Table 2-22 represents the non-provisionable values held by the attributes of the TP4 protocol engine.

Table 2-22. Transport Layer: TP4 (ISO 8073) Attribute Values

Parameter	Default Value
N (maximum retransmissions)	6
T1 (Local Retransmission Time)	2 seconds
I (Inactivity Timer)	50 seconds
T-SEL (for ISO Session Layer)	5454 hex
Use of Checksum	Not supported
Use of Extended Data TPDU numbering format	Not supported
Use of Selective Acknowledgment	Not supported
Use of Request Acknowledgment	Not supported
TL4 Sever Bit for disconnect on unsuccessful connect request	Yes
Delay Acknowledgment policy	Not supported
CLTP echo	Not supported
Concatenation	Not supported
QoS	0
Sending queue size	10
TIDU size	2636 octets
Diagnostics T-SEL	“Twtr”
Adaptive Roundtrip Timer	Yes
Expedited Data Transfer (network expedited) service	Not supported

Protocol Conversions, *continued*

OSI Technical Specifications, *continued*

Transport Layer Provisionable Parameters Table

Table 2-23 represents the characteristics of the transport layer (TP4) that are provisionable.

Table 2-23. Transport Layer Provisionable Parameters

Parameter	Range	Default Value	Increment
Window Time (W)	1 - 255s	16 seconds	1s
Local Acknowledgment Time (A_L)	1 - 255s	1 second	1s
TSAP-ID (same as T-SEL)	1 - 4 octets	5454 hex	Not Applicable
Maximum TPDU Size	128, 256, 512, 1024, 2048, 4096, 8192	1024 decimal	Not Applicable
Transport Credit	1 - 15 PDUs	5 PDUs	1

Protocol Conversions, *continued*

OSI Technical Specifications, *continued*

Session Layer Specifications Table

The parameters in Table 2-24 are non-provisionable. This table represents the characteristics of the session layer. The Basic Combined Subset and Kernel/Full Duplex are subset options of the session layer standard.

Table 2-24. Session Layer (ISO 8327) Attribute Values

Parameter	Operating Value
Protocol Version	2
Maximum size of SS-user-data	10240 octets

Session Layer Provisionable Parameter

The following session layer parameter is provisionable:

- Parameter Name: S-SEL (for ISO Presentation layer)
- Default Value: 5353 hex, Range: 1 - 4 octets

Protocol Conversions, *continued*

OSI Technical Specifications, *continued*

Presentation Layer Specifications Table

The parameters in Table 2-25 are non-provisionable. This table represents the values held by the attributes of the presentation layer.

Table 2-25. Presentation Layer Attribute Values

Parameter	Operating Value (Hex)
P-SEL for FTAM	02
P-SEL for TL1	AF
P-SEL for DUA	FD
P-SEL for DSA	04
P-SEL for RRP	FC

Dual LAN Ports

Introduction

The dual LAN ports hardware feature enables the NCC to separate the OSI and TCP/IP domains. Additionally, the dual LAN ports can provide redundant connections towards the OS.

These dual LAN ports are identified and labeled respectively, as ETH1 and ETH2. Each port can support:

- the OSI protocol stack (OSI),
- the TCP/IP protocol stack (TCP/IP),
- both TCP/IP and OSI protocol stacks (ALL),
- no protocol stack (NONE).

Dual LAN Port Configuration

The dual LAN ports on the NCC are configured by using the **ED-NE** TL1 command. (For more complete information on this TL1 command see OSEG Chapter 3, NCC TL1 Message Details.)

By default the LAN port, ETH1 is set to ALL; the port, ETH2 defaults to NONE. Additionally, the dual LAN ports can be configured according to the options shown in the following table:

Table 2-26. Dual LAN Port Configuration Settings

If ETH1 is set to....	Then ETH2 can only be set to...
ALL	NONE
NONE	ALL
OSI	TCP/I
TCP/IP	OSI

Dual LAN Ports, *continued*

Dual LAN Port Engineering Rules and Restrictions

In order to use the dual LAN ports of the NCC the following engineering rules and restrictions must be followed:

1. The OSI protocol must be supported on one of the two LAN ports.
2. The OSI protocol can not be supported on both LAN ports simultaneously.
3. The TCIP/IP protocol must be supported on one of the two LAN ports.
4. The TCP/IP protocol can not be supported on both LAN ports simultaneously

---

Separation of the OSI and TCP/IP Domains

The dual LAN ports enable port-based separation of the OSI and TCP/IP protocols. Support for the OSI protocol on one LAN port, and the TCP/IP protocol on the other port, enables the separation of an OSI-based Central Office LAN and a TCP/IP-based WAN.

Backup Link

Support for TCP/IP and OSI protocols on the same LAN port enables connectivity to the OS to be maintained if one of the two LAN ports should fail. If one of the two LAN ports fails, a user can manually switch the port setting on the remaining working port to ALL and the failed port to NONE to restore connectivity between the OS and the OSI network.

Backward Compatibility

Backward-compatibility is maintained with previous NCC releases by having port ETH1 default to supporting both OSI and TCP/IP protocols and port ETH2 default to supporting neither. For more information on the dual LAN port hardware feature see the NCC User Manual, Release 3.2.

Directory Services

Directory Services Overview

Introduction

The NCC plays a key role in several directory services functions. The following sections give a general overview of directory services.

Purpose

A Directory Service provides information about network entities in a network. This information is stored in a directory. The information in the directory may consist of:

- TIDs
- NSAPs
- vendor names
- entity types, etc.

The information in the directory may be centralized or decentralized, depending on the type of Directory Service used.

Features

A Directory Service primarily provides client services for obtaining information from the directory. The service also supports appropriate responses when the information sought is not present in the directory or the connection with the directory has been dropped.

Directory Service also provides administrative services for:

- first-time storage of the information in the directory
- maintenance of this information by means of add, delete and modify functions.

Directory Services, *continued*

Directory Services Overview, *continued*

Directory Services Provided by the NCC

The NCC supports two types of Directory Services:

1. SDS — SONET Directory Services
2. TARP — TID Address Resolution Protocol

A Lucent OS/NE will first attempt to perform an SDS directory query. If the SDS directory query fails, then by default, the TARP directory query will be used.

Directory Services Table

Table 2-27. Directory Service Characteristics

Service Type	Main Characteristics	Standard Reference
SDS	Centralized Server; Distributed Clients	ANSI T1.245
TARP	Decentralized; relies on responses to queries which are propagated throughout the network	Telcordia[a] GR-253-CORE

a. Formerly Bellcore.

Directory Services, *continued*

SONET Directory Services

SDS Standard

SONET Directory Services (SDS) are defined by the ANSI T1.245 standard. This standard is a profile of the ITU-T X.500 (1993) Directory standard, adapted for use in support of management communications in a SONET environment.

SDS selects the X.500 features most appropriate to management communications in a SONET network, and includes additional features specifically created for SONET directory applications. Most notable among these are the definition of supplementary objects as well as a new protocol designed for auto-population of network element information in the SDS directory.

SDS Components and Functions

A network element participating in a SONET Directory Service (SDS) may be a server, a client, or both. As such, it may assume one or more functional roles. The functional components of SDS are:

- Directory Information Base (DIB)
- Directory System Agent (DSA)
- Directory User Agent (DUA)
- Registration Manager (RM)
- Registration Agent (RA)

Directory Information Base (DIB)

The DIB is a centralized information repository that resides on the NCC. Hereafter, the DIB is simply referred to as the **directory**.

In the current SDS implementation, there is only one directory and one directory domain. However, it is possible to have multiple directory domains, and multiple directories in each domain.

Directory System Agent (DSA)

A DSA is an OSI application process which acts as a ***server***. The DSA provides user access to the directory. A user can only communicate with the directory via the DSA, and there is only one DSA in the directory domain. One NCC or SNMS in the directory domain must act as the DSA.

Directory Services, *continued*

SONET Directory Services, *continued*

Directory User Agent (DUA)

A DUA is an OSI application process which in its ***client*** role represents a user or an application-process accessing the directory. There is one DUA per NE, and one for each administrator (or Operations System) of the directory.

Users gain access to the Directory by DUA communication with the DSA. This communication occurs with help of the Directory Access Protocol (DAP).

Registration Manager and Registration Agent

The Registration Manager (RM) and Registration Agent (RA) are used for automatic registration of NEs into the directory and are described later in this chapter.

Originating Directory Entries

There are entries in the directory for each NE in the network. The entries are organized hierarchically. The information includes a variety of attributes about an NE. Such attributes may include the NEs:

- name (TID)
- address (NSAP)
- type (for example, BandWidth Manager)
- vendor (Lucent Technologies)
- supported applications.

Directory Services, *continued*

SONET Directory Services, *continued*

Storing Directory Entries

Entries may be stored in the SDS Directory by one or more of the following ways:

- Automatic self-registration by all NEs in the network;
- Manual registration of individual NEs based on provisioned information;
- An NE or NCC may automatically register other NEs that do not have the ability to register themselves
- Administrator may load a file or script containing all the information for all NEs.

Updating Directory Entries

Entries are updated automatically if the automatic process is in operation. If the Directory fails for whatever reason, the automatic process will update the new Directory.

Directory Services, *continued*

Automatic Registration of NEs in the SDS Directory

Introduction

Lucent supports an optional feature of ANSI T1.245 called Automatic Registration to automate the process of initializing the Directory and keeping it up-to-date. The Automatic Registration feature populates the directory with the SDS information about all of the NEs in the directory domain.

The process of automatically* registering network element information in the Directory requires the prior knowledge of the physical location of the Directory and the logical place in the Directory where the information has to be stored. This is achieved by using the Registration Manager (RM) and Registration Agent (RA) and a protocol for interaction between them: Registration Request Protocol (RRP).

Each network element has an RA and there is one RM per OSI Network Layer Level 1 routing area. At least one NCC or other NE must be enabled for RM services in the Level 1 routing area.

Automatic Registration Process

The process of automatic registration follows these steps:

1. When a network element is powered up and initialized, it uses the OSI Network Layer facilities to announce its presence in the network.
2. This presence is detected by the Registration Manager (RM). The RM has been previously manually provisioned with:
   - the network address of the location of the Directory, and
   - a naming prefix to use when adding objects to the Directory.
3. The RM then uses the Registration Request Protocol (RRP) to interact with the RA on the newly detected system to inform it of the two pieces of information listed above.
4. The RA then transfers the information to its co-located DUA.
5. The network element's DUA can now communicate with the DSA, using the DAP protocol, to initialize or modify the Directory.

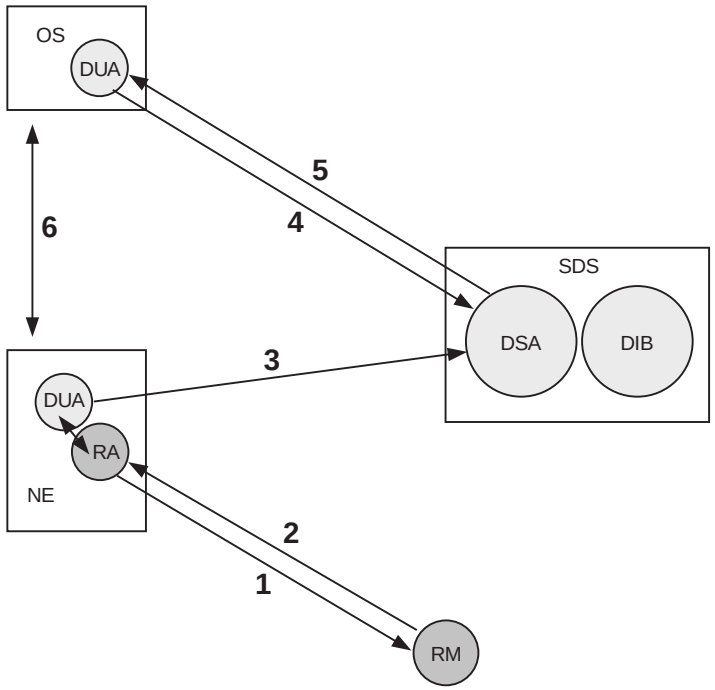
* It is also possible to manually enter entries into the SDS directory using the WaveStar CIT or an external OS.

Directory Services, *continued*

Automatic Registration of NEs in the SDS Directory, *continued*

Figure

Figure 2-13 shows an overview of the steps that occur for a new NE to be added to the SDS directory and the resulting OS to NE communication.



1. Network Layer of NE makes the NE presence known in the network
2. RM detects presence of NE and sends address of Directory and Naming Prefix
3. Based on the information in Step #2, the DUA in the NE registers the NE in the SDS Directory
4. OS queries DSA to get NE information
5. DSA responds to OS Query
6. OS communicates with the NE

NC-OSEG-32

Figure 2-13. Overview of SDS Interaction and OS to NE Communication

Directory Services, *continued*

Structure of NE Information in the SDS Directory

Relationships between Directory Entries

The highest-level entry in the Directory information tree is the "***root***" and all entries are attached below it. This is a mandatory entry.

Subordinate to root is the ***Country*** specification. The default value of Country is ***US***; it will be different for an international service provider. This is also a mandatory entry.

Subordinate to Country is the ***Organization*** entry. The default value of Organization is ***Lucent***; this will be different for each service provider. This is also a mandatory entry.

Subordinate to Organization is an optional entry called ***Organizational Unit 1*** and ***Organizational Unit 2***, of which there can be none or one or several instances. Organizational Unit 1 entries pertain to the OSI subnetwork. Organization Unit 2 entries are comprised of Level 1 areas within each subnetwork.

Below the Org. Unit 1 and Org. Unit 2 entries are objects called the tmnNE, applicationProcess and applicationEntity.

Sample SDS Directory Conventions

Here is a sample convention for naming Organizational units:

— Org. Unit 1 entries group together NEs that are within the same OSI subnetwork.

— Org. Unit 2 entries group together NEs that are within the same OSI Level 1 area within each subnetwork.

Directory Services, *continued*

Directory Update Notification

Introduction

The service for NCC directory update notification:

- Detects the addition and removal of NE and NCC entries in the T1.245 directory
- Provides automatic notification of the affected TIDs.

The service periodically checks the contents of the T1.245 directory (using an LDAP query) and determines what entries have been added or removed since the previous check.

Notification Messages and Log

The notification messages contain the following information for each directory update that is detected:

- Time stamp (yyyy:mm:dd:hh:mm:ss)
- TID
- Type of update (added or removed)

A record of these notification messages is kept in a local log.

Using Directory Update Notification

Directory update notification is provided to address a specific OS need. After receiving notification that an NE has been added, the OS can make a standard directory query to obtain full information on the new NE. The notification log can be used by the OS to discover NE changes made when the OS was either not in operation or unable to communicate with the NCC.

Availability of Update Notification

Directory update notification is available to any system which has permission to receive it. As with other notification messages, permission to receive the directory update notification is assigned on a per-login basis.

Directory Services, *continued*

Directory Update Notification, *continued*

Enable/Disable Directory Update Notification

Directory update notification service can be enabled or disabled on the NCC by a user command. The service is only possible to enable on an NCC with an active DSA. The frequency of checking the directory for updates is user-provisionable. Notification is sent upon completion of each check, if any additions or deletions are detected.

Directory Services, *continued*

TARP

Introduction

This section presents:

- An overview of TARP
- TARP Technical Specifications

Directory Services, *continued*

TARP Overview

Introduction

TARP (TID (Target Identifiers) Address Resolution Protocol) is a name/address resolution mechanism. It provides TID-to-NSAP and NSAP-to-TID translation in TL1 environments.

An OS (Operations System) has to communicate with NEs in order to perform various functions. The OS addresses a remote network element by its "name" or TID (Target ID), and communicates with it by means of TL1 messages. However, the OSI communications infrastructure, particularly the Network Layer, only knows an NE's "address", the NSAP (Network Service Access Point) or at least the NET (Network Entity Title). Before the OS - NE communication can take place, name - address resolution must occur.

Name/Address Resolutions

A system that needs to resolve a TID to an NSAP does not know the network address of the target and hence it broadcasts the TID in the form of TARP queries to adjacent network elements in the network. If an adjacent network element is the target, it provides the NSAP to the originating system using a TARP response.

It is more likely, however, that the adjacent network element is not the target. In that case the second network element "propagates" the TARP queries to its network adjacencies but excluding the one from which it received it in the first place. In this way the TARP queries migrate through the network until they reach the target network element. It is, of course, possible that the target could not be found or the lifetime of the query expired. The user will get an appropriate indication in these cases

For NSAP-to-TID resolution, since the network address is known, the target system is queried directly.

Directory Services, *continued*

TARP Overview, *continued*

Query-Response

The Query - Response information that TARP sends and receives are packaged as TARP PDUs (Protocol Data Units). TARP PDUs are transported around the network in the payload section of CLNS PDUs. Hence it is essential that the OSI CLNS mechanism be supported.

In TARP terminology, a “propagation rule” addresses the question- “If this PDU is not for me, to whom should I forward it”? TARP Propagation rules are designed so as to minimize network traffic and prevent looping of messages in the network

Splitting the Routing Domain into Areas

The set of all NEs which are reachable by CLNS is said to comprise the ***routing domain***. Within this domain, NEs in the End System role send and receive CLNS PDUs, while NEs in the IS role “route” or forward CLNS PDUs.

For reasons of convenience and efficiency, the routing domain may be subdivided into contiguous ***areas*** and ISs redefined. Each NE will find itself in some area. Some ISs are only given the capability to route within the local area of that NE. These ISs are called Level 1 ISs. Other ISs are given the additional capability to route from one area to another. These are called Level 2 ISs.

Directory Services, *continued*

TARP Technical Specifications

Introduction

The following table lists the technical specifications for TARP.

TARP Provisioning Parameters Table

Table 2-28. TARP Provisioning Parameters

Parameter (Attribute)	Allowed Values and Defaults
TARP Origination Function Enable	Enable/disable (Default = disable)
TARP Responder Function Enable	Enable/disable (Default = enable)
TARP Propagation Functions Enable	Enable/disable (Default = disable)
Manual Adjacency Entries	NSAP of adjacent NEs
TARP Loop Detection Buffer Entry Timer	1 - 10 minutes (Default = 5 minutes)
TARP Loop Detection Buffer Flush Timer	1 - 1440 minutes (Default = 5 minutes)
TARP Lifetime (Tar-lif)	1 - 65535 hops at 1 hop increments (Default = 100 hops)
T1 Timer	1 - 3600 seconds at 1 second increments (Default = 15 seconds)
T2 Timer	1 - 3600 seconds at 1 second increments (Default = 25 seconds)
	Continued on next page

Directory Services, *continued*

TARP Technical Specifications, *continued*

TARP Provisioning Parameters Table, *continued*

Table 2-28. TARP Provisioning Parameters, *continued*

Parameter (Attribute)	Allowed Values and Defaults
T3 Timer	1 - 3600 seconds at 1 second increments (Default = 40 seconds)
T4 Timer	1 - 3600 seconds at 1 second increments (Default = 20 seconds)
TARP Data Cache (TDC) Enable	Enable/disable (Default = disable)
TARP Clipping Function Enable	Enable/disable (Default = disable)
TARP Clipping Limit	10 - 2550 PDUs at 10 PDU increments (Default = 240 PDUs)
TARP Clipping Interval	1 - 255 seconds at 1 second increments (Default = 12 seconds)

Directory Services, *continued*

T5 Gateway

Introduction

This section presents:

- An overview of the T5 Gateway
- T5 Gateway Technical Specifications

Directory Services, *continued*

T5 Gateway Overview

Introduction

The T5 Gateway feature of the NCC permits intermixing of TARP-only and X.500-only (SDS capable) systems in the network. TARP-only NEs include Lucent DDM-2000 Multiplexers and FT-2000 Lightwave products.

This functionality allows the interoperability of the TARP and SDS environments and works in a variety of network topologies.

Description

Using information obtained by the OSI IS-IS Routing Exchange protocol, the NCC T5 Gateway feature discovers TARP systems in its area and creates DIB entries for them as needed, thus acting as “registration proxy” for the non-X.500 NEs. After the Directory entry is made, the OS is free to obtain its NETs from the Directory via the standard query - response approach. It uses both X.500 Directory Access Protocol (DAP) and TARP in response to TARP request PDUs. It also alleviates the need for TARP connectivity between OSI routing areas because it effectively uses the DIB as a repository for storing TID/NSAP information.

Additionally, since T5 Gateway registers TARP-only systems in the Directory, TARP-only subnetworks can discover other TARP-only subnetworks which they would normally not be able to do.

Limited Information retrieved from TARP-only NEs

Since the T5 Gateway uses TARP mechanisms to discover TARP-only NEs, the information available to it is limited to only the TID and NET of the TARP-only NE. Mappings into the directory for TARP-only NEs will contain only a TID and NET.

Directory Services, *continued*

T5 Gateway Overview, *continued*

T5 Gateway Area Cache

The T5 Gateway Area Cache (TAC) contains the list of TID/NET mappings representing the systems supporting TARP that are in the same level 1 area as the T5 Gateway, and which have TARP connectivity to the TG5W. Entries in this cache are either in the directory, or are in the process of being added into the directory. Entries are added to the TAC as a result of the T5 Gateway Discovery Procedure.

The T5 Gateway does not respond to TARP type 1 or 2 requests if the target TID is present in the TAC, since the T5 Gateway can assume that the target system itself will respond to the query. This reduces network traffic between the system and the managing DSA.

TAC entries for which TARP no longer respond are flushed from the TAC.

Directory Services, *continued*

T5 Gateway Technical Specifications

Introduction

The following table lists the technical specifications for the T5 Gateway.

T5 Gateway Provisioning Parameters Table

Table 2-29. T5 Gateway Provisioning Parameters

Parameter (Attribute)	Allowed Values and Defaults
TARP/X500 Gateway Enable	Enable/disable (Default = enable)
Discovery Timer (Timer E)	10 - 2550 minutes at 10 minute increments (Default = 20 minutes)
Anti-Flooding Timer (Timer F)	1 - 60 seconds at 0.5 second increments (Default = 1 second)

File Transfers

Overview

Introduction

This section discusses:

- FTAM File Service
- FTAM Service Roles
- Using FTAM
- FTP to FTAM Gateway
- FTP Server

File Transfers, *continued*

FTAM File Service

Introduction

FTAM (File Transfer Access and Management) is an OSI protocol that can be used to support file transfer across the network from one machine to another.

FTAM does not specify the interfaces to a file transfer or access facility within the local system. However, FTAM provides the capability for NEs to perform operations such as:

- software download
- database backup
- database restore

Virtual File Store

FTAM service is based on the concept of virtual file store: the user accesses files, which may or may not be stored in the actual physical location to which the user has access. The virtual file store is used to define the file structure and allowable actions allowed on those files being accessed. The structure type and behavior assigned to each file defines the FTAM services available for accessing and manipulating files.

File Transfers, *continued*

FTAM Service Roles

Client-Server Model

FTAM follows a client-server model where a server is a system that:

- stores files, and
- services requests from clients (other systems) to access those files.

In order to perform file transfers FTAM relies upon an OSI method of setting up and releasing associations between applications.

Initiator (Client) and Responder (Server)

In FTAM, the client is called the initiator and server is called the responder (see Figure 2-14). Depending upon the type and direction of communications needed, a system may assume either role.

A file service defines a single activity between an initiator and a responder. FTAM supports multiple, simultaneous file transfer activities. Each file transfer is based on a separate FTAM association.

Initiator/Responder Figure

The following figure shows how the client and server interact as an FTAM initiator and an FTAM responder.

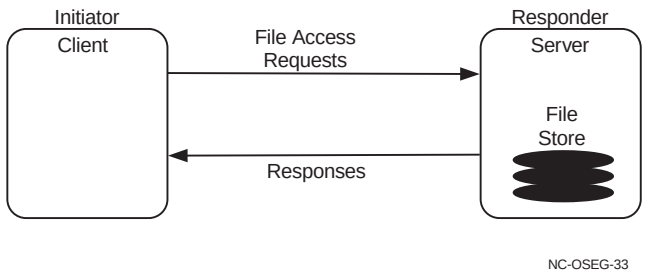


Figure 2-14. FTAM Initiator and Responder Roles

File Transfers, *continued*

FTAM Service Roles, *continued*

Initiator/Responder Roles

Within a network or subnetwork there can be one or more FTAM responders and many FTAM initiators. The initiator role is supported by all WaveStar NEs and the NCC. However, depending upon the type of architecture deployed, the responder role may be supported by:

- an OS, or an EMS (Element Management System,
- the WaveStar CIT, or
- an NCC.

Sender/Receiver Actions

An FTAM initiator or FTAM responder may both send and receive files. The following figure shows the sender/receiver actions of an FTAM initiator/responder.

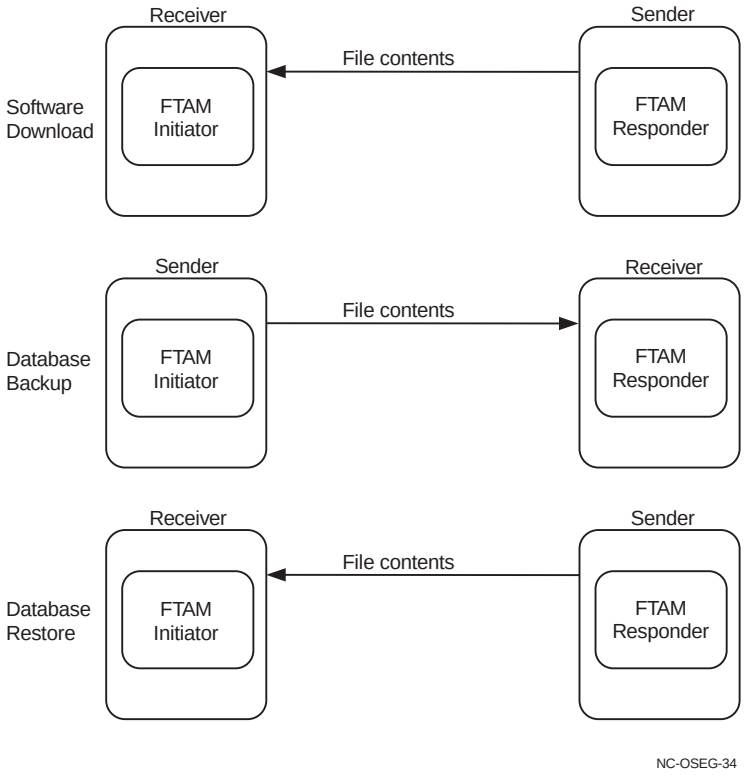


Figure 2-15. FTAM Sender/Receiver Actions

File Transfers, *continued*

FTAM Service Roles, *continued*

Initiator/Responder Interaction

The initiator requests the FTAM association and specifies the selection of files and actions on a selected file. Within an FTAM association, an initiator may send files to a responder or receive files from a responder.

An FTAM responder (server) supports a virtual file store, whereas, an FTAM initiator does not. FTAM file transfer service allows an initiator to access files in a responder file store. The interaction process between an initiator and responder is shown in the following steps:

1. The initiator and responder must establish each other's identity
2. The needed file is identified and the initiator's authority is established
3. The file structure attributes and access controls on the selected file are established
4. The selected file and/or its attributes can be accessed

Unstructured File Transfer

Over the interaction between initiator and responder, only the transfer of unstructured or flat (one to one) files containing either binary or character data is supported.

Unstructured file transfer includes the ability to:

- Read a complete file
- Write (replace and/or extend) a file
- Create and delete a file
- Read attributes of a file

File Transfers, *continued*

Using FTAM

Introduction

FTAM can be most commonly used to:

- Download software from an OS to an NE
- Backup databases from an NE to an OS
- Restore databases from an OS to an NE

In all three cases the same FTAM file transfer service is used. An example is provided which demonstrates this common use of FTAM.

File Transfer Example Table

Scenario: A user on one system wants to transfer a file to another user on a remote system via a network. Table 2-30 lists the steps that occur between the initiator and responder during a file transfer.

NOTE:
Both Figure 2-16 and Figure 2-17 are a condensed summary of the steps shown in Table 2-30 for performing a basic file transfer using FTAM over OSI and a file transfer through a Transport Service Bridge, respectively.

Table 2-30. File Transfer Example

Step	Action
1	The initiating user requests an FTAM association. This association provides the information necessary to address the remote system and to identify itself. FTAM chooses the necessary quality of service and presentation contexts on the basis of its system control information, and selects the file transfer class.
2	The responding remote system performs any necessary authentication of the calling system's location, including the identity of the initiating user, and accepts the association.
	Continued on next page

File Transfers, *continued*

Using FTAM, *continued*

File Transfer Example Table, *continued*

Table 2-30. File Transfer Example, *continued*

Step	Action
3	The initiating system sends the specifications of the file to be created on the remote system.
4	The responding system accepts this file specification.
5	The initiating system sends the following data to the responding system, in a continuous stream of transmissions: a. The specification of the write action to be performed b. The file contents c. An end of data marker d. A request that the end of the transfer be confirmed
6	The responding system confirms receipt of the file contents.
7	The initiating system releases the FTAM association with the newly created file (responder).
8	The responding system confirms that the file has been released.
9	The initiating system requests the release of the FTAM association with the remote system.
10	The responding system confirms that the FTAM association has been released.
11	The initiating system releases the supporting network connections, and records any necessary logging and audit trail information.

File Transfers, *continued*

Using FTAM, *continued*

Basic File Transfer through FTAM over OSI

The following figure is a condensed summary of the sequence of commands and data flow for a basic file transfer using FTAM over OSI.

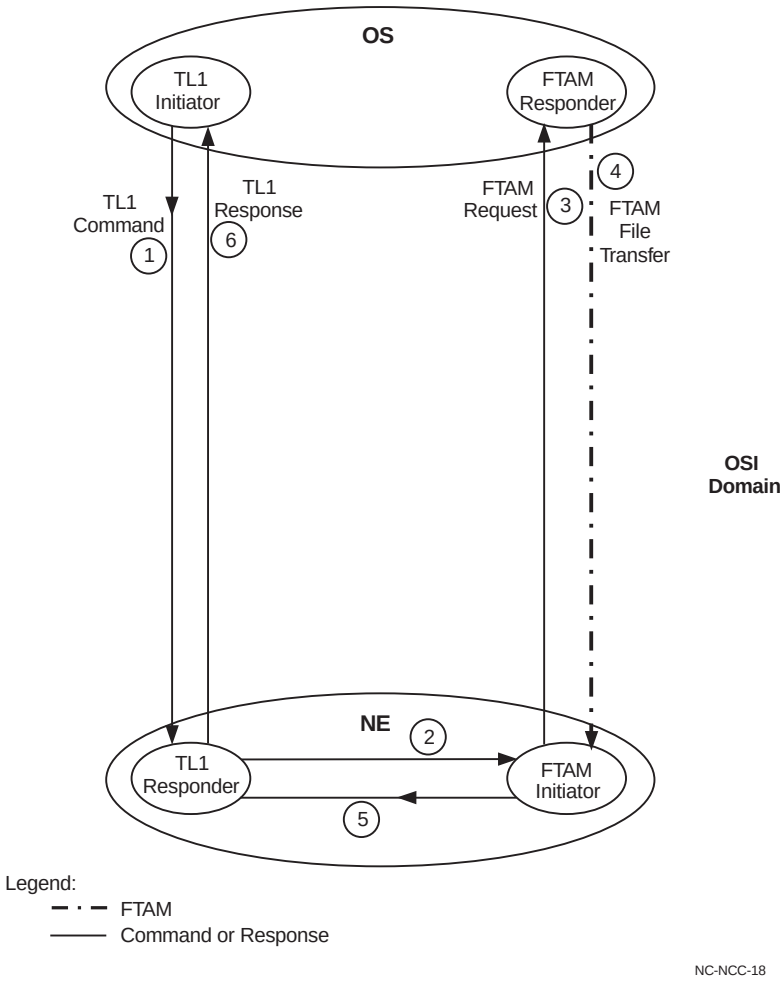


Figure 2-16. Basic File Transfer through FTAM over OSI

File Transfers, *continued*

Using FTAM, *continued*

File Transfer through a Transport Service Bridge

The following figure is a condensed summary of the sequence of commands and data flow for a file transfer through a Transport Service Bridge (TSB) in an NCC.

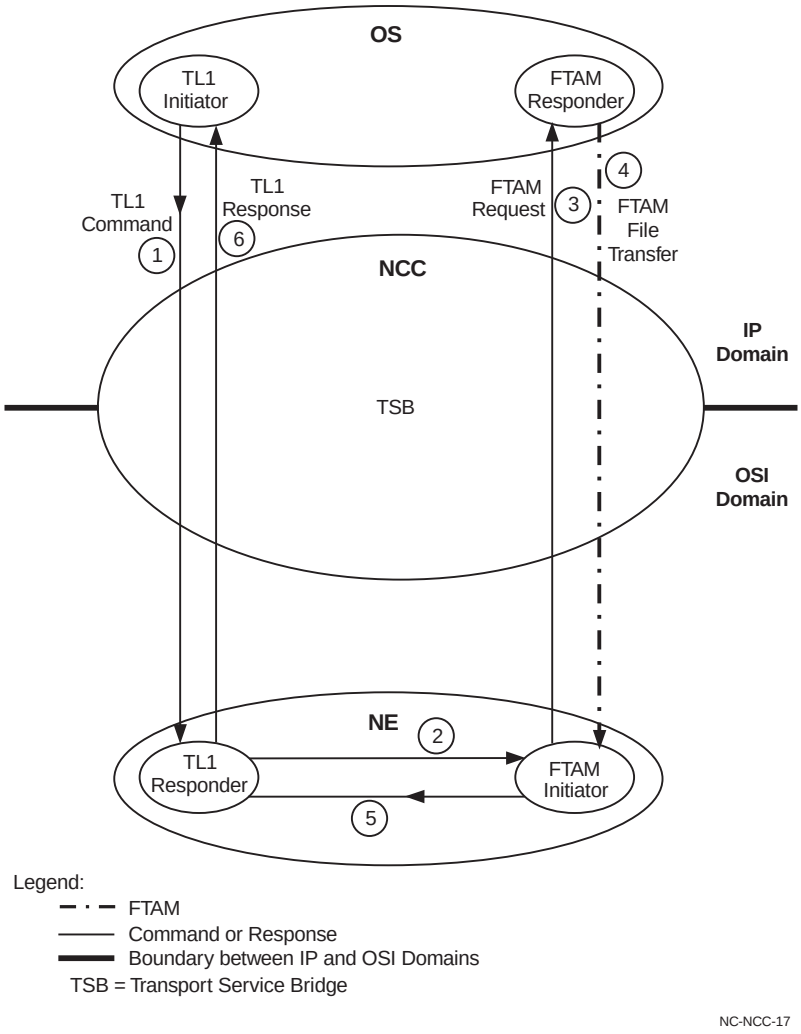


Figure 2-17. File Transfer through a Transport Service Bridge

File Transfers, *continued*

Using FTAM, *continued*

Note on Using FTAM over TSB

In order to perform a file transfer through a Transport Service Bridge (TSB) the TL1 **CPY-MEM** command must include TSB-specific information. The TSEL parameter of the **CPY-MEM** command must contain the SSEL parameter and the hex-encoded IP address of the SubNetwork Management System (SNMS) system.

The TSEL parameter in the **CPY-MEM** command is specified as:

dc[bytesize][tsel]bc[bytesize][hexofsnmsipaddress]

For example: dc025454bc04870da379

In addition, the NSAP field must contain the NSAP address of the Transport Service Bridge with the "0D" port selector appended.

CPY-MEM Syntax for Download through TSB

Here is an example of a **CPY-MEM** command syntax used for performing a software download through the Transport Service Bridge:

CPY-MEM:TID::2::
"EMS,02,5353,dc025353bc04870da379,39840F80000000000000000000000104B3BFD550D", "C:\\directory", "PRI",, download;

CPY-MEM Syntax for Backup through TSB

Here is an example of a **CPY-MEM** command syntax used for performing a database backup through the Transport Service Bridge:

CPY-MEM:TID::2:: "PRI",,
"EMS,02,5353,dc025353bc04870da379,39840F80000000000000000000000104B3BFD550D", "C:\\directory", backup;

File Transfers, *continued*

FTP to FTAM Gateway

Introduction

The FTP to FTAM Gateway is used to transfer files to/from a TCP/IP-based network from/to an OSI-based network. This gateway performs translation between the FTP file transfer protocol in the TCP/IP network and the FTAM file transfer protocol in the OSI network without intermediate storage of the files being transferred.

The three common uses of this feature are:

- software download from a TCP/IP-based server,
- database backup to a TCP/IP-based server, and
- database restore from a TCP/IP-based server.

The FTP to FTAM Gateway is initiated using the TL1 **CPY-MEM** command with an FTP-based file specification. The FTP to FTAM Gateway is also referred to as a File Transfer Translation Device (FT-TD).

Software Downloads

Software downloads (OS to NE) are accomplished by issuing the **CPY-MEM** TL1 command and specifying an FTP site (ftp://servername). The files are transferred from the internal FTP server on the TCP/IP network, across the FTP to FTAM Gateway, and then through the OSI network to the specified NE.

Database Backups and Restores

Database backups (NE to OS) are similar to software downloads (OS to NE), with the exception that the files are transferred from the NE, across the FTP to FTAM Gateway, to the FTP server.

For database restores (OS to NE) the requested files are transferred from the external FTP server through the FTP to FTAM Gateway to the NE that received the initial TL1 (**CPY-MEM**) command.

File Transfers, *continued*

FTP to FTAM Gateway, *continued*

File Transfer Download (OS to NE) Example

The following table shows the steps for downloading software using the FTP to FTAM Gateway.

Table 2-31. Downloading Files Using the FTP to FTAM Gateway

Step(s)	Action(s)
1. and 2.	A user sends a TL1 command (**CPY-MEM**) to the NE initiating the FTAM file transfer. The TL1 command contains two addresses: a. The NSAP (OSI) address of the NCC that hosts the FTP to FTAM Gateway applications software. b. The IP address of the FTP server that the file is being transferred to or accessed from.
3.	The NE starts an FTAM initiation process towards the NCC.
4.	The NE FTAM initiation reaches the NCC FTAM Responder which determines that the file resides on an FTP server.
5.	The FTP to FTAM Gateway initiates an FTP client call to the FTP server specified.
6.	The FTP server receives the call and starts the file transfer from the FTP server.
7. and 8.	The software being downloaded reaches the NE that initiated the FTAM file transfer.
9. and 10.	Upon completion of the software download, the user is informed about the completion through a TL1 response.

File Transfers, *continued*

FTP to FTAM Gateway, *continued*

File Transfer through an FTP to FTAM Gateway

The following figure shows the sequence of commands and data flow of a file transfer through an FTP to FTAM Gateway in an NCC.

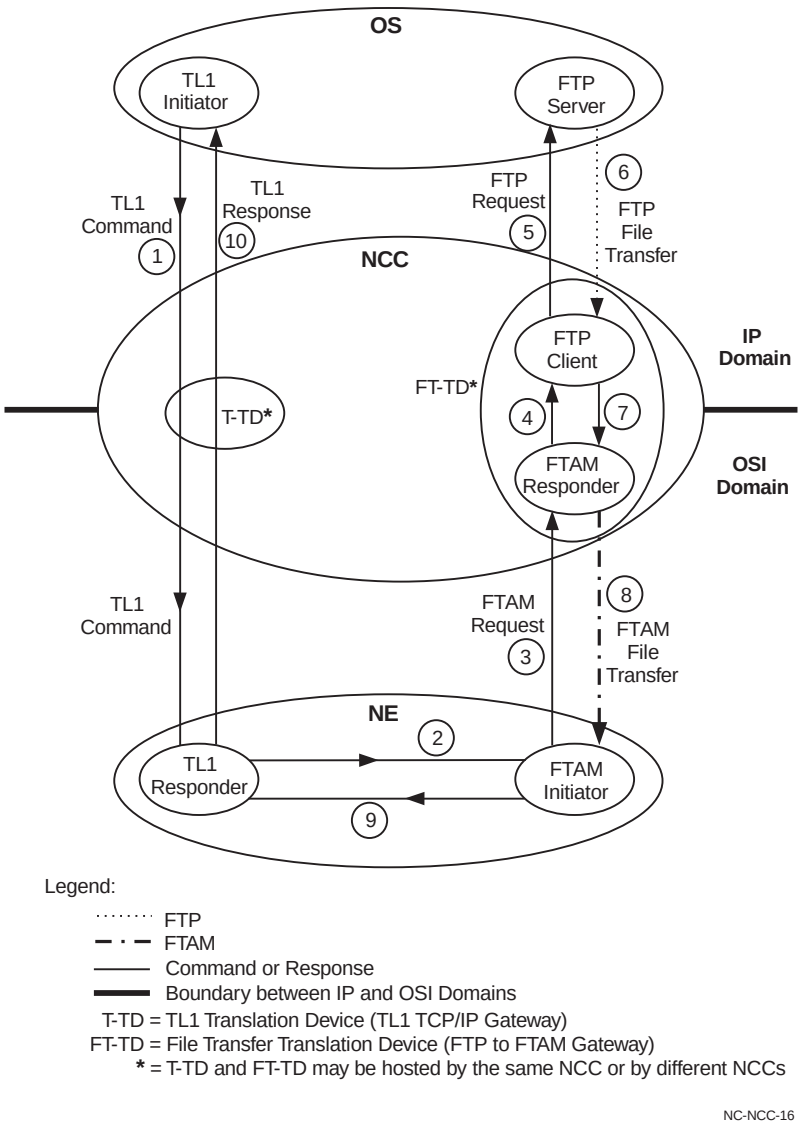


Figure 2-18. File Transfer through an FTP to FTAM Gateway

File Transfers, *continued*

FTP to FTAM Gateway, *continued*

Addressing Files in the FTP Server

When using the FTP to FTAM Gateway, a user must specify the address of the FTP server and the location of the source/destination file in that server. This address is specified in the TL1 **CPY-MEM** command using an FTP Universal Resource Locator (URL).

File Transfers, *continued*

FTP to FTAM Gateway, *continued*

FTP URL Syntax

The complete syntax of an FTP URL is

ftp://username:password@hostname:portnumber/directory/filename

where:

username is	optional, defaults to "anonymous" if not included
colon character (:) is	optional, but needed to delimit username (when present) from password
password is	needed when username is present, but defaults to "anonymous" when not included
at sign character (@) is	optional, but needed to delimit password (when present) from hostname
hostname is	not optional, but the IP address of the host can be used instead if no Domain Name Server (DNS) is available.
colon character (:) is	optional, but needed if portnumber is included
portnumber is	optional, defaults to the FTP portnumber if not included
forward slash character (/) is	optional, but needed if directory or filename is included
directory is	optional, will create these directory names on a remote FTP server if it does not exist already
forward slash character (/) is	optional, but needed to delimit directory (when present) from filename
filename is	optional, usually left empty
	When a request is sent to an NE, the NE knows what files to retrieve or send, thereby requiring the user only to specify up to the directory level.

File Transfers, *continued*

FTP to FTAM Gateway, *continued*

CPY-MEM Syntax Example for Backup through FT-TD

Here is an example of a TL1 **CPY-MEM** command used for performing a database backup through the FTP to FTAM Gateway:

```
CPY-MEM:NE-TID::3::"PRI",,
"EMS,02,5353,5454,39840F80000000000000000000000104B3BFD551D",
"ftp://johndoe:pwd123@ftphost.company.com/directorytostorein",
BACKUP;
```

When performing a database backup to an FTP server, the user must specify a username and password for write permission on the FTP server. The NSAP address used in the **CPY-MEM** command is the address of the FTP to FTAM Gateway.

CPY-MEM Syntax Example for Download through FT-TD

Here is an example of a TL1 **CPY-MEM** command used for performing a software download through the FTP to FTAM Gateway:

```
CPY-MEM:NE-TID::2::
"EMS,02,5353,5454,39840F80000000000000000000000104B3BFD551D",
"ftp://ftphost.company.com",
"PRI",,DOWNLOAD;
```

Since username and password are not specified, anonymous FTP is used. Also, the file needed for download has to reside at the root location of the FTP server, since a directory was not specified in the FTP URL. The NSAP address used in the **CPY-MEM** command is the address of the FTP to FTAM Gateway.

Note

If a Domain Name Server (DNS) resolution service is not available, then the direct IP address of the FTP server is used as the hostname. The following TL1 **CPY-MEM** command example shows the IP address, 135.14.197.43 as the hostname of the FTP server:

```
CPY-MEM:NE-TID::2::
"EMS,02,5353,5454,39840F80000000000000000000000104B3BFD551D",
"ftp://135.14.197.43",
"PRI",,DOWNLOAD;
```

File Transfers, *continued*

FTP Server

Overview

The FTP server feature of the NCC provides a local repository for NE software downloads and NE database backups/restores. The feature allows the NCC to act as a file server in both the OSI and TCP/IP networks. NE software generics can be downloaded to the NCC FTP server and later loaded onto an NE. Similarly, the file store of the NCC FTP server can serve as an intermediate or final data storage repository for NE database backups/restores.

FTP Server Features

The NCC uses an FTP server which is compliant with the Internet Standard RFC 959, File Transfer Protocol.

Local File Storage

Files uploaded to the NCC FTP server are stored locally on the hard drive of the NCC in the “C:\ftp\” or “D:\ftp\” directory. This is called the “root” directory of the NCC FTP server.

Additional subdirectories can be created under the root directory for organization purposes.

Comparison with FTP to FTAM Gateway

The FTP to FTAM Gateway feature on the NCC allows file transfer between an OSI network that uses FTAM, and an IP network that uses FTP without intermediate storage of the files being transferred.

In comparison, the NCC FTP server feature allows a store-and-forward mechanism for transferring files between an OSI network and an IP network. The FTP server feature on the NCC uses the following two protocols independently of each other:

- FTP (between the external file server and the NCC file server), and
- FTAM (between the NCC file server and the NE)

File Transfers, *continued*

FTP Server, *continued*

File Access through the OSI Network

The files in the NCC FTP server can be accessed through the OSI network using the TL1 **CPY-MEM** command. For more details on the **CPY-MEM** command see Chapter 3 of the NE OSEGs and NCC OSEG.

File Access through the IP Network

The files in the NCC FTP server can be accessed through the IP network using the NCC TL1 **CPY-FTP** command.

File Transfers, *continued*

FTP Server, *continued*

FTP Server File Management Using TL1 Commands

The files in the NCC FTP server can be managed by an OS using TL1 commands. The NCC supports four TL1 FTP commands: **CPY-FTP**, **RTRV-FTP**, **DLT-FTP**, and **DLT-FTP** for accessing and maintaining files on the FTP server.

Table 2-32 lists these NCC TL1 commands and their basic function. Refer to Chapter 3, NCC TL1 Message Details for the complete descriptions and parameters of each NCC TL1 command.

Table 2-32. NCC TL1 FTP Commands

Command Name	Function
CPY-FTP	The TL1 **CPY-FTP** command copies files between a local file server on the NCC and a remote file server using the file transfer protocol (FTP). This NCC TL1 command can also be used for copying files locally on the NCC; however, this local operation does not use FTP.
RTRV-FTP	The TL1 **RTRV-FTP** command retrieves information about a specified file or directory in the FTP file server on the NCC.
DLT-FTP	The TL1 **DLT-FTP** command deletes a specified file or directory in the FTP file server on the NCC.
ENT-FTP	The TL1 **ENT-FTP** command creates a specified directory in the FTP file server on the NCC.

NOTE:
When specifying the FTP directory in the TL1 **CPY-MEM** command the full path of the file must be specified and additional slashes must be added to the path as shown in the following example: “D:\\ftp\\NCC\\generic”.

File Transfers, *continued*

FTP Server, *continued*

Copying Files Using FTP

An FTP-based file transfer between the NCC and an external server often accompanies an FTAM-based file transfer between the NCC and an NE. For example, prior to downloading software generics from the NCC to an NE, the generic needs to be copied into the NCC. (A single copy of the generic in the NCC will likely be downloaded into the NEs several times.) Similarly, NE database backup/restore using an NCC may need an FTP-based file copy between the NCC and an external server on the IP network.

Table 2-33 describes the steps in an FTP-based file copy using the TL1 **CPY-FTP** command. Figure 2-19 illustrates a file copy to/from the NCC using FTP. The file transfers using FTAM between the NCC and the NEs are described in the "Using FTAM" section of the NCC OSEG.

Table 2-33. Copying Files Using FTP

Step	Action
1	The TL1 initiator on the OS initiates an NCC TL1 **CPY-FTP** command request for a file from an external FTP server.
2	The TL1 Responder on the NCC receives the request from the OS.
3	The NCC FTP server on the NCC initiates a request to the external FTP server for the files specified in the NCC TL1 **CPY-FTP** command.
4	The file on the FTP server is downloaded to the local file store on the NCC.
5	The TL1 Responder on the NCC replies back to the OS that the file transfer is complete.

File Transfers, *continued*

FTP Server, *continued*

Figure

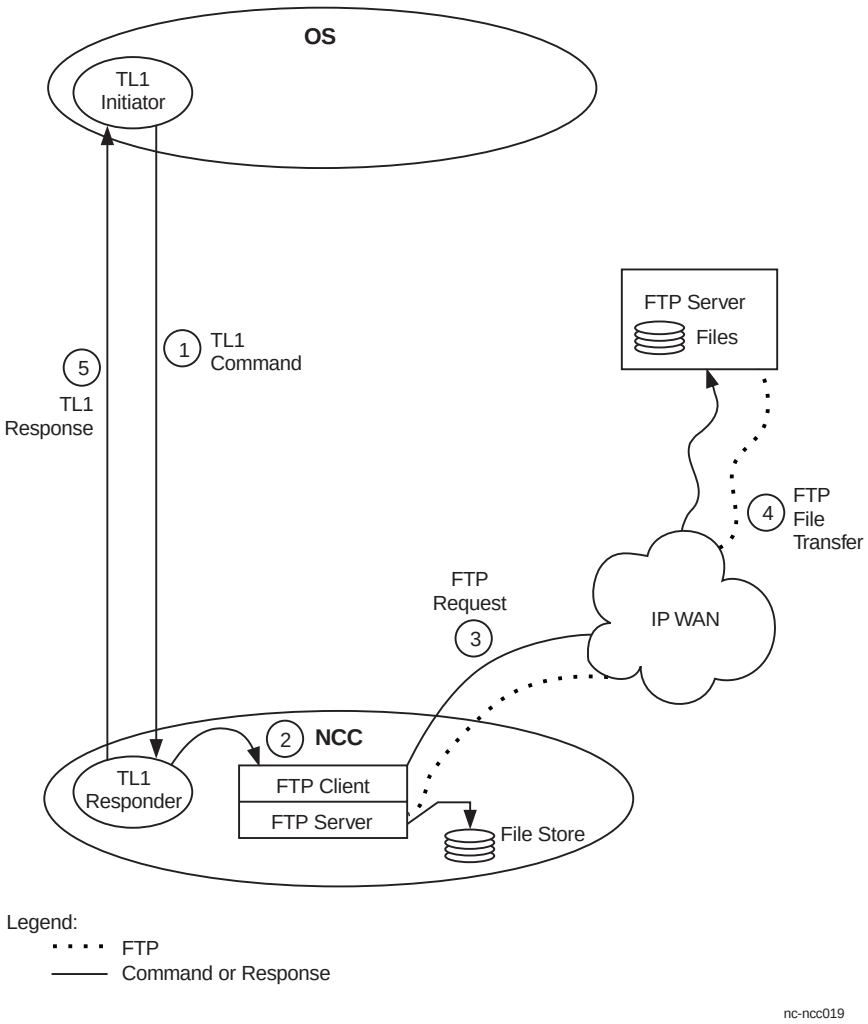


Figure 2-19. Copying Files Using FTP

File Transfers, *continued*

FTP Server, *continued*

Alternate FTP Server File Management

Files on the NCC FTP server can be alternatively managed using one of the following options:

- Web browser such as Netscape or Internet Explorer
- Command line FTP interface
- Third-party FTP application such as FTP Voyager

Web Browser Access

Access to the NCC FTP server from a web browser is initiated by specifying the username, password, and IP address of the NCC in the following format:

ftp://user:password@ip_address/

Text-based Access

Access to the FTP server from a command line interface such as the Windows command line FTP client or the UNIX FTP client is detailed in the Internet Standard, RFC 959.

Third-party FTP Application Access

Please see your vendor user-documentation if you are using a third-party FTP client application to access the NCC FTP server.

TL1 Message Details

3

Contents

TL1 Command Conventions

Introduction

This chapter provides detailed SONET information about the input and output parameters for the supported TL1 commands. Both autonomous messages (generated by the network element independent of any command) and command/response messages (generated in response to a command from the OS or OS user) are supported.

TL1 Command Response Output

All alphabetic characters in the TL1 command responses and autonomous messages are output in uppercase except:

- parameter values,
- access identifier (aid) condition description (conddescr),
- alarm message description (almmsg), and
- error text.

The access identifier (aid) text is displayed in lowercase in both the user interface, and the same is done for the TL1 interface. The conddescr, almmsg, and error text are output in both lower and UPPERcase for readability.

TL1 Command User Entries

TL1 command user input, which must be typed exactly as shown, are printed in bold type.The responses are printed in `courier type`. Descriptive names of user entry values are shown in *italic* type. Items enclosed in brackets "[ ]" indicate optional parameters.

Input Parameter Names and Values

This document presents input parameter names in *italic*, **bold**, lowercase characters. Input parameter values are shown as **bold**, UPPERCASE characters.

Output Parameter Names and Values

This document shows output parameter names in *italic*, lowercase characters. Output parameter values are UPPERCASE.

TL1 Command Conventions, *continued*

Command Function Categories

Commands are separated by three command function categories (FC):

- M - Maintenance
- P - Provisioning
- S - Security and System Administration

User Authorization Levels

Each command has been assigned a user authorization level (AL) to verify the user's login ID authorization level. Five user authorization levels for each function category, based upon login ID, are provided to control which Network Element functions a particular user may perform:

- Expert (level 5)
- Privileged (level 4)
- General (level 3)
- Basic (level 2)
- Reports (level 1)

Users may execute any commands on their function category authorization level, as well as all commands at levels lower than theirs.

Example

For example, a user with authorization level 4 in Security Management function category (S4), can execute commands listed in levels 4, 3, 2, and 1 in the Security Management function category.

NAME

ACT-USER: Activate User

The **ACT-USER** command is available beginning in:

- Network Communication Controller, Release 1.0

LOGIN PRIVILEGE

User Privilege Code (UFC/UCAL): Any

INPUT FORMAT

ACT-USER:*tid*:*uid*:*ctag*::*pid*;

DESCRIPTION

The **ACT-USER** command can be initiated to set up a login session with the network element.

An active TL1 access login session is required at each NE in order to interact with that NE (including receiving autonomous message output as well as using TL1 commands).

A maximum of one login per active session is allowed. Any subsequent attempt on the same session is denied.

Until a successful login attempt is complete for a given network element, there is no communication (autonomous or command responses) outbound from the network element except to DENY unsuccessful login attempts.

No response will be provided for any command with an invalid syntax or parameter, unless an active login session is established with the network element.

In those cases only, any other invalid commands are denied by the NE (refer to the **RTRV-HDR** command **ERROR RESPONSES** section for details).

If a user password has expired upon execution of the **ACT-USER** command, the **ACT-USER** will be accepted but that user will not be able to perform any function or receive any autonomous message output until the associated password has successfully been modified.

A special banner message will be displayed as part of the command completion response, informing the user that the password has expired and must be updated (see the **OUTPUT FORMAT** section). The user is allowed to use either **ED-PID** to update the password identifier or **CANC-USER** to terminate the session.

When the network element receives an **ACT-USER** command, the given login ID will initiate a login session on the network element provided that a provisioned login ID and correct password are entered.

When the communication with the network element fails, all active logins to that Network Element are terminated without notice to the user. Similarly, all active logins to a targeted network element are terminated if a communication failure occurs between the local NE and that remote network element or if an intermediate network element is reset or initialized.

The **ACT-USER** command does not generate a **REPT DBCHG** message.

INPUT PARAMETERS

Table 3-1. ACT-USER Input Parameters (Sheet 1 of 2)

Parameter Name	Description
tid	Target Identifier. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.
uid	User Identifier. This parameter is available starting in Release 1.0. This is the unique user login identifier for which the **ACT-USER** login command is intended. Grouping and/or ranging of ***uid*** values for the **ACT-USER** command are not allowed. Valid ***uid*** values for the **ACT-USER** command are case-sensitive alphanumeric strings of 1 to 10 characters which have been previously provisioned as valid login IDs in the network element.
ctag	Correlation Tag. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.

Table 3-1. ACT-USER Input Parameters (Sheet 2 of 2)

Parameter Name	Description
pid	Password Identifier. This required parameter is the confidential password authenticator for the given ***uid***. Valid ***pid*** values consist of case-sensitive strings of six to ten alphabetic, numeric, and special characters where at least two characters are non-alphabetic and at least one is a special character (white space is ignored). Passwords are transmitted in unencrypted form in the **ACT-USER** command, are encrypted when stored in the network element, and are never transmitted from the network element. Values: 6 to 10 legal characters. Valid passwords consist of at least two non-alphabetic characters with at least one special character. The special character can be one of the required non-alpha characters. For example, **TEST1+** is a valid password. The special characters are "#", "%", and "+". The first character of a password must be a letter. Starting with Release 3.0, the special characters are defined in the OSEG, Appendix A.

OUTPUT FORMAT

If the initial login request completes successfully, the following completion response is returned:

```
   sid date time
M  ctag COMPLD
   "uid:lastdate,lasttime,attempts,systype,release,upc"
   /* Lucent Technologies systype Release release
   User Privilege Code: upc
   LUCENT TECHNOLOGIES - PROPRIETARY
   THIS SOFTWARE CONTAINS INFORMATION OF LUCENT TECHNOLOGIES
   AND IS NOT TO BE DISCLOSED OR USED EXCEPT IN ACCORDANCE
   WITH APPLICABLE AGREEMENTS.
   NOTICE: THIS IS A PRIVATE COMPUTER SYSTEM.
   USE OF THIS SOFTWARE IS GOVERNED SOLELY AS EXPRESSLY
   AUTHORIZED IN THE RELEVANT AGREEMENT BETWEEN
   LUCENT TECHNOLOGIES AND CUSTOMER.
   UNAUTHORIZED ACCESS OR USE MAY LEAD TO PROSECUTION.
   */
;
```

If the login request would otherwise complete successfully, but the user password has expired, the following partial completion response is returned:

```
   sid date time
M  ctag PRTL
   "uid:lastdate,lasttime,attempts"
   /* Your password has expired. Until you change your password (ED-PID)
      you will not be allowed further access to this Network Element.
   */
;
```

The user will be allowed three attempts to change their password. If the third attempt fails, the user will be logged out and the association dropped. The execution of any command prior to the successful change of the password will be counted as one of the three attempts to change the password. This includes failures of the **ED-PID** command due to incorrect data, attempts to execute valid commands other than the **ED-PID** command, or invalid commands, possibly due to a data entry error. In all cases, the system will return the error response **ICNV, Input, Command Not Valid**.

OUTPUT PARAMETERS

The output parameters *sid*, *date*, *time*, and *ctag* included in the output response are specified in the **OUTPUT PARAMETERS** section for the **RTRV-HDR** command.

Table 3-2. ACT-USER Output Parameters (Sheet 1 of 2)

Parameter Name	Description
uid	User Identifier. This parameter is available starting in Release 1.0. This is included in the command by the OS/CIT and repeated by the network element as a confirmation that the given user identifier is successfully logged in. Value: Any combination of up to 10 alphanumeric characters.
lastdate	This parameter is available starting in Release 1.0. This is the date of the last session established by this *uid*. Values: YY-MM-DD
lasttime	This parameter is available starting in Release 1.0. This is the time of the last session established by this *uid*. Values: HH-MM-SS

Table 3-2. ACT-USER Output Parameters (Sheet 2 of 2)

Parameter Name	Description
attempts	This parameter is available starting in Release 1.0. This is the number of unsuccessful login attempts since the last successful login session on this network element. Values: Any integer ranging from 0 to 98.
systype	This parameter is available starting in Release 1.0. This specifies the type of system. Values: WaveStar_2.5G_10G, WaveStar_BandWidth_Manager, Network_Communication_Controller, WaveStar_10G_STM64 WaveStar_4F192 WaveStar_uBWM
release	This parameter is available starting in Release 1.0. This is the software Release number of the system, in the form xx.yy.zz. Example: 01.02.03.
upc	Specifies the User Privilege Code (User Community Functional Category and User Community Authorization Level pair [UCFC/UCAL]). Multiple UCFC/UCALs may be shown each separated by an ampersand(&). Values: The values are Pi, Mi, Si, Di. “i” is an integer ranging from 1 to 5. Note: ‘Di’ is a Lucent-only category which can only be used with a special password. uids with Di as the upc will be unable to set up a successful TL1 session. Upon executing the **ACT-USER** command, this user would be dumped into a debug session where he/she will not be able to pass the additional security tests and execute commands.

EXAMPLE INPUT/OUTPUT

No response message is transmitted except to convey that the login is granted (or denied).

The following example shows a successful login session initiation attempt:

```
ACT-USER:LT-WBM-789:mvdlm5:123456::kj5lee+3;

   LT-WBM-789 98-01-01 08:00:00
M  123456 COMPLD
   “mvdlm5:97-12-31,09-00-00,1,WaveStar_BandWidth_Manager,1.1.13,P3&M3
”
   /* Lucent Technologies WaveStar_BandWidth_Manager Release 1.1.13
   User Privilege Code: P3&M3
   LUCENT TECHNOLOGIES - PROPRIETARY
   THIS SOFTWARE CONTAINS INFORMATION OF LUCENT TECHNOLOGIES
   AND IS NOT TO BE DISCLOSED OR USED EXCEPT IN ACCORDANCE
   WITH APPLICABLE AGREEMENTS.
   NOTICE: THIS IS A PRIVATE COMPUTER SYSTEM.
   USE OF THIS SOFTWARE IS GOVERNED SOLELY AS EXPRESSLY
   AUTHORIZED IN THE RELEVANT AGREEMENT BETWEEN
   LUCENT TECHNOLOGIES AND CUSTOMER.
   UNAUTHORIZED ACCESS OR USE MAY LEAD TO PROSECUTION.
   */
;
```

The following example shows a partial completion response to a login session initiation attempt:

```
ACT-USER:LT-WBM-789:mvdlm5:123456::kj5lee+3;

   LT-WBM-789 98-01-01 08:00:00
M  123456 PRTL
   “mvdlm5:97-12-31,09-00-00,23”
   /* Your password has expired. Until you change your password (ED-PID)
   you will not be allowed further access to this Network Element */
;
```

ERROR RESPONSES

Refer to the **RTRV-HDR** command **ERROR RESPONSES** section. The listed requirements apply to the **ACT-USER** command.

If a user attempts to login after the maximum number of login sessions has been reached, the following error message will be displayed. There can be a maximum of 24 login sessions for a “normal” user with an additional 2 sessions for a superuser. (Once the maximum of 24 sessions has been reached, no more

"normal" user sessions will be allowed. No more superuser sessions are allowed once the 24 +2 overload sessions have been activated.)

```
   sid date time
M  ctag DENY
   SARB
   /* Status, All Resources Busy */
;
```

RELATED TL1 MESSAGES

CANC-USER

CANC-USER-SECU

ED-PID

DLT-USER-SECU

ED-NE-SECU

ED-USER-SECU

ENT-USER-SECU

RTRV-NE-SECU

RTRV-USER-SECU

NAME

APPLY: Install New Software Generic

The **APPLY** command is available beginning in:

- Network Communication Controller, Release 1.0

LOGIN PRIVILEGE

User Privilege Code (UCFC/UCAL): S4

INPUT FORMAT

APPLY:*tid*::*ctag*;

DESCRIPTION

The **APPLY** command can be used to install a copy of a software generic stored in the network element, overwriting the currently executing software. Installation of the software causes the system to reset.

Background Information about NVM

The Non Volatile Memory (NVM) is assumed to be partitioned into a previous section and a current section. Current NVM contains a copy of the generic that is currently executing. Previous NVM usually contains a copy of the generic that the system previously used. New generics are downloaded to previous NVM. Installation via **APPLY** causes the contents of previous NVM to be installed. During installation, a “pointer” is changed so that what is identified as current NVM contains the currently executing generic and previous NVM contains the previous generic.

The **APPLY** command generates a **REPT DBCHG** message. The message will be generated before the command causes the system to be reset.

INPUT PARAMETERS

Table 3-3. APPLY Input Parameters (Sheet 1 of 2)

Parameter Name	Description
tid	Target Identifier. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.

Table 3-3. APPLY Input Parameters (Sheet 2 of 2)

Parameter Name	Description
ctag	Correlation Tag. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.
qualifier	Allowed values for the ***qualifier*** parameter are: ■ **INSTALL** causes the software download to be installed. This is the default action if no value is specified for ***qualifier***. Prior to installation, the software state must be equal to **DOWNLOADED**. The software state can be retrieved via **RTRV-PRMTR-SFTWR**. ■ **PREVIOUS** forces the generic that is in previous NVM to be installed, even if it has been previously installed.

The **initiation** of an installation is recorded in the history log.

When a network element receives an **APPLY** command and as a result successfully installs a new software generic, the network element loses any command messages that were pending and all alarms are cleared. All performance monitoring bins are cleared, and any standing conditions are cleared.

If an installation is already in progress, then another request for an installation will be DENY'd.

OUTPUT FORMAT

If **APPLY** specifies an immediate installation, then the COMPLD response is as shown below:

```
   sid date time
M  ctag COMPLD
   /* New software generic installation in progress */
;
```

OUTPUT PARAMETERS

The output parameters *sid, date, time* in the normal completion response are specified in the **OUTPUT PARAMETERS** section of the **RTRV-HDR** command.

When the **APPLY** command is used for an immediate installation, then the command will not report COMPLD immediately, but as late in the installation procedure as possible. At some stage of installation, probably around system reset, communications will fail. The command will indicate completion before that occurs.

EXAMPLE INPUT/OUTPUT

The following example shows an **APPLY** command that requests immediate installation of a new generic:

```
APPLY:LT-WBM::123456;

   LT-WBM 98-01-01 08:00:00
M  123456 COMPLD
   /* New Software generic installation in progress */
;
```

ERROR RESPONSES

Refer to the **RTRV-HDR** command **ERROR RESPONSES** section. The error responses listed there also pertain to the **APPLY** command.

RELATED TL1 MESSAGES

CPY-MEM

RTRV-PRMTR-DATA

RTRV-PRMTR-SFTWR

NAME

CANC-USER: Cancel User

The **CANC-USER** command is available beginning in:

- Network Communication Controller, Release 1.0

LOGIN PRIVILEGE

User Privilege Code (UFC/UCAL): Any

INPUT FORMAT

Beginning in Release 1.0, the input syntax is:
CANC-USER:*tid*:[*uid*]:*ctag*;

DESCRIPTION

The **CANC-USER** command can be initiated to terminate the login session of the user with the network element.

When the network element receives a **CANC-USER** command, the login session on the network element will be terminated provided that the user is currently active on the network element.

The **CANC-USER** command does not generate a **REPT DBCHG** message.

INPUT PARAMETERS

Table 3-4. CANC-USER Input Parameters

Parameter Name	Description
tid	Target Identifier. Refer to the **RTRV-HDR** command for input parameter syntax and description of this parameter.
ctag	Correlation Tag. Refer to the **RTRV-HDR** command for input parameter syntax and description of this parameter.

OUTPUT FORMAT

If the logout request completes successfully, the following normal completion response is returned:

```
   sid date time
M  ctag COMPLD
;
```

OUTPUT PARAMETERS

The output parameters included in the normal completion response are specified in the **OUTPUT PARAMETERS** section for the **RTRV-HDR** command.

EXAMPLE INPUT/OUTPUT

The following example shows a successful command completion and login session termination:

```
CANC-USER:LT-WBM-789::123456;

   LT-WBM-789 98-01-01 08:00:00
M  123456 COMPLD
;
```

ERROR RESPONSES

Refer to the **RTRV-HDR** command **ERROR RESPONSES** section. The error responses listed there also apply to the **CANC-USER** command.

RELATED TL1 MESSAGES

ACT-USER

CANC-USER-SECU

DLT-USER-SECU

ED-USER-SECU

ENT-USER-SECU

RTRV-USER-SECU

NAME

CANC-USER-SECU: Cancel User Security

The **CANC-USER-SECU** command is available beginning in:

- Network Communication Controller, Release 3.1

LOGIN PRIVILEGE

User Privilege Code (UFC/UCAL): S5

INPUT FORMAT

CANC-USER-SECU:*tid*:[*uid*]:*ctag*;

DESCRIPTION

Execution of this command on a network element by an administrator terminates a login session of another user with the network element.

The **CANC-USER-SECU** command does not generate a **REPT DBCHG** message.

INPUT PARAMETERS

Table 3-5. CANC-USER--SECU Input Parameters

Parameter Name	Description
tid	Target Identifier. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.
uid	User Identifier. This is the ***uid*** of the user whose session is being terminated. If an administrator wants to force log out another user, then the administrator could do so by specifying that ***uid***. If an administrator wants to force log out all the users that are currently logged in, then the administrator could do so by omitting the ***uid***. Logging out all users by omitting the ***uid*** does not include the administrators logins. An administrator could log out the other administrator. Values: Refer to **ACT-USER** for the syntax/values.
ctag	Correlation Tag. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.

OUTPUT FORMAT

If the logout request completes successfully, the following normal completion response is returned:

```
   sid date time
M  ctag COMPLD
;
```

OUTPUT PARAMETERS

The output parameters *sid*, *date*, *time*, and *ctag* included in the normal completion response are specified in the **OUTPUT PARAMETERS** section for the **RTRV-HDR** command.

EXAMPLE INPUT/OUTPUT

The following example shows a successful command completion and login session termination:

```
CANC-USER-SECU:LT-WBM-789:jsmith:123456;

   LT-WBM-789 98-01-01 08:00:00
M  123456 COMPLD
;
```

ERROR RESPONSES

Refer to the **RTRV-HDR** command **ERROR RESPONSES** section. The error responses listed there apply to the **CANC-USER-SECU** command.

RELATED TL1 MESSAGES

ACT-USER

CANC-USER

DLT-USER-SECU

ED-NE-SECU

ED-USER-SECU

ENT-USER-SECU

RTRV-NE-SECU

RTRV-USER-SECU

NAME

CPY-FTP: Copy using File Transfer Protocol (FTP)

The **CPY-FTP** command is available beginning in:

- Network Communication Controller, Release 3.2

LOGIN PRIVILEGE

User Privilege Code (UCFC/UCAL): S4

INPUT FORMAT

CPY-FTP*:tid::ctag::from,to;*

DESCRIPTION

The **CPY-FTP** command is used to copy files between a local file server on the NCC and a remote file server using the file transfer protocol (FTP). This command can also be used for copying files locally on the NCC (this local operation does not use FTP).

The **CPY-FTP** command does not generate a **REPT DBCHG** message.

INPUT PARAMETERS

Table 3-6. CPY-FTP Input Parameters (Sheet 1 of 2)

Parameter Name	Description
tid	Target Identifier. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.
ctag	Correlation Tag. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.

Table 3-6. CPY-FTP Input Parameters (Sheet 2 of 2)

Parameter Name	Description
from	Source File. This parameter is available starting in Release 3.2. This is the source file for the file transfer. Value: ■ localfile or ftpurl. localfile is a string of directory names followed by a file with "\\" used as separator. The root of the file structure is a predefined directory on the NCC file server, usually “C:\\ftp” or “D:\\ftp”. ftpurl is an FTP style URL similar to “ftp://host/directory/file.ext”
to	Destination File/Directory. This parameter is available starting in Release 3.2. This is the destination for the file transfer. A directory that does not already exist will be created. Value: ■ localfile or localdir or ftpurl. localfile is a string of directory names followed by a file with “\\” used as separator. The root of the file structure is a predefined directory on the NCC file server, usually “C:\\ftp” or "D:\\ftp". localfile is a string of directory names with “\\” used as separator. ftpurl is an FTP style URL similar to “ftp://user:password@host/directory/file.ext,” or “ftp://user:password@host/directory/”

OUTPUT FORMAT

If the network element fully complies with the **CPY-FTP** command, then the following normal completion response is returned:

```
   sid date time
M  ctag COMPLD
;
```

OUTPUT PARAMETERS

Refer to the **RTRV-HDR** command **OUTPUT PARAMETERS** section for a normal completion response. The output parameters listed there also apply to the **CPY-FTP** command.

EXAMPLE INPUT/OUTPUT

The following example transfers a file (for instance, a software generic) from a remote location to the NCC's file server:

```
CPY-FTP:LT-NE1::1234::"ftp://host.company.com/sfwr/nerel3.zip",
"rel3sfwr";

   LT-NE1 00-05-25 09:22:07
M  1234 COMPLD
;
```

The following example transfers a file (for instance, a database being backed up) from the NCC's file server to a remote location:

```
CPY-FTP:LT-NE1::1234::"dbbkp\\apr01bkp", "ftp://
johndoe:pwd123@ftphost.company.com/apr01";

   LT-NE1 00-04-28 08:24:08
M  1234 COMPLD
;
```

The following example illustrate a local file copy on the NCC file server:

```
CPY-FTP:LT-NE1::123456::"lastbkp","dbbkp\\apr01bkp";

   LT-NE1 00-04-01 09:22:00
M  123456 COMPLD
;
```

ERROR RESPONSES

Refer to the **RTRV-HDR** command **ERROR RESPONSES** section. The error responses listed there also apply to the **CPY-FTP** command.

If the specified file in the ***from*** parameter is invalid, or if the specified directory/ host in the ***from*** parameter is invalid, then the following error response is returned:

```
   sid date time
M  ctag DENY
   IDNV
   /* Input, Data Not Valid, invalid from parameter */
;
```

If the specified file, directory, host, or access user/password in the ***to*** parameter are invalid, then the following error response is returned:

```
   sid date time
M  ctag DENY
   IDNV
   /* Input, Data Not Valid, invalid to parameter */
;
```

RELATED TL1 MESSAGES

RTRV-FTP

DLT-FTP

ENT-FTP

NAME

CPY-MEM: Copy Memory

The **CPY-MEM** command is available beginning in:

- Network Communication Controller, Release 1.0

LOGIN PRIVILEGE

User Privilege Code (UCFC/UCAL): S4

INPUT FORMAT

CPY-MEM:*tid*::*ctag*::*from*,[*src*],*to*,[*dst*],*class*;

DESCRIPTION

The **CPY-MEM** command can be used to download software generics and also backup/restore the database. This command copies either program data or database from one memory device to another.

The memory devices are identified by directory names if they are located remotely from the network element, for example, at the CIT. The primary memory device (hard drive) is located at the network element, and will be referred to as PRI. The network element also contains a removable disk and this will be referred to as the secondary memory (SEC). **CPY-MEM** can be used to copy between a directory and PRI or from PRI to a directory. Similarly, it can be used to copy between PRI and SEC or vice versa.

The **DOWNLOAD** option of **CPY-MEM** is used to download new generics to the network element. The new generic does not start executing until the **APPLY** command has been used. That is, **APPLY** is used to *install* the program.

The **BACKUP** option of **CPY-MEM** may be used to copy the database that currently is in use to a file store. The **RESTORE** option copies a database from a file store to the hard drive and then causes it to become active.

The **CPY-MEM** command generates a **REPT DBCHG** message.

INPUT PARAMETERS

Table 3-7. `CPY-MEM` Input Parameters (Sheet 1 of 2)

Parameter Name	Description
tid	Target Identifier. Refer to the **`RTRV-HDR`** command for the input parameter syntax and description of this parameter.
ctag	Correlation Tag. Refer to the **`RTRV-HDR`** command for the input parameter syntax and description of this parameter.
from	From Memory Type. Specifies the memory where the data is being transferred from: ■ "**CIT**,***psel***,***ssel***,***tsel***,***nsap***" Craft Interface Terminal ■ "**EMS**,***psel***,***ssel***,***tsel***,***nsap***" Element Measurement System ■ "**PRI**" PRImary Non Volatile Memory Details about ***psel***,***ssel***,***tsel***,***nsap*** are given later in the text. To use the FTP to FTAM gateway on the NCC for file transfers, specify the first subfield as EMS. EMS should no longer be used for FTP transfers. Instead, **NCC** should be used if the NSAP indicates the Network Communications Controller or **FTTD** if the NSAP indicates a File Transfer Translation Device. "**SEC**" Secondary Memory
src	A directory name. It is omitted if ***from*** is **PRI**. It is also omitted if ***from*** is **SEC**.
to	To Memory Type. Specifies the memory where the data is being transferred to. See ***from*** for values. "**SEC**" Secondary Memory
dst	A directory name. It is omitted if ***to*** is **PRI**. It is also omitted if ***to*** is **SEC**.
class	Specifies the class of the copy: ■ **DOWNLOAD** Download the program. ■ **BACKUP** Copy the database to a backup location.

Table 3-7. CPY-MEM Input Parameters (Sheet 2 of 2)

Parameter Name	Description
	■ **BACKUP_DS** Copy the directory services information to a backup location. Since the directory services backup is separate from the rest of the database backup, directory service information can easily be copied from one NCC to another. ■ **RESTORE** Restore the database from a backup directory. ■ **RESTORE_DS** Restore the directory services information from a backup directory.

In the **CPY-MEM** Input Parameters Table, ***sel***, ***ssel***, ***tsel***, and ***nsap*** are part of the ***from*** or ***to*** parameters. The size of ***sel***, ***ssel***, ***tsel***, and ***nsap*** as follows:

- ***psel*** (path selector): 0-4 bytes (0-8 hex characters)
- ***ssel*** (session selector): 0-4 bytes (0-8 hex characters)
- ***tsel*** (transport selector): 0-16 bytes (0-32 hex characters)
- ***nsap*** (network session): 20 bytes (40 hex characters).

There can only be an even number of hex characters since they are generated from bytes and each byte corresponds to 2 hex characters.

From Most Significant Byte (MSB) to LSB, these bytes are (the number in parenthesis equals number of bytes): IDP(3), DFI(1), ORG(3), RES(2), RD(2), AREA(2), SYS(6), SEL(1). The SEL field of the NSAP is also called the NSEL (network selector).

When the Graphical User Interface (GUI) version of CIT is used to enter a directory name for download, backup, or restore, the craft is not required to enter psel, ssel, tsel, and nsap; they will be entered automatically.

If **CPY-MEM** utilizes the Transport Service Bridge (TSB), the command must contain some TSB information to work correctly. The TSEL field of the **CPY-MEM** command must contain the SSEL and the hex encoded IP address of the SNMS system. The format for the TSEL field becomes:

dc[bytesize][tsel]bc[bytesize][hexofsnmsipaddress].

For example, if SSEL is 5454, then TSEL might be dc025454bc04870da379.

The directory that is specified as an *src* or *dst* must be enclosed in double quotes. Because backslash (\) is the TL1 escape character, to include a backslash as part of a directory name, it must be entered as a double backslash. Craft personnel will not have to type it for the GUI. The second backslash is automatically inserted.

The directory name is limited to a maximum of 128 characters. A double backslash counts as only one character. Examples of valid directory names are: 1) "d:\\bwm\\data\\file1.dat"; 2) "/bwm/generic/01_02_15.prog".

To use the FTP to FTAM gateway on the NCC for file transfers, the *src* or *dst* directory must be in the FTP file format: ftp://[login]:[password]@[directory address]. For security reasons, the [password] portion of the FTP file format must be masked prior to generating any autonomous messages.

The following table outlines functions that are supported by the **CPY-MEM** command.

Table 3-8. CPY-MEM Capabilities

Class	*From*	*Src*	*To*	*Dst*
DOWNLOAD	CIT, EMS	directory	PRI	
BACKUP	PRI		CIT, EMS	directory
BACKUP	PRI		SEC	
BACKUP_DS	PRI		CIT, EMS	directory
BACKUP_DS	PRI		SEC	
RESTORE	CIT, EMS	directory	PRI	
RESTORE	SEC		PRI	
RESTORE_DS	CIT, EMS	directory	PRI	
RESTORE_DS	SEC		PRI	

The **CPY-MEM** command can be used to download a program. The download can come from the CIT or EMS. A directory must be specified for ***src***.

After **CPY-MEM** has been used to download a program, the autonomous message "Program download complete" will be sent. This is a transient message, there is no associated "clear" message. When the craft uses **APPLY** to initiate an installation of the software on the NCC, the autonomous message "Program installation started" will be sent. This is a transient message, there is no associated "clear" message.

The **CPY-MEM** command can be used to backup the database from the hard drive (PRI) to a destination which is located at the SEC, CIT, or EMS. If the destination

is either the CIT or EMS then a directory must be specified. If ***class*** is specified as **BACKUP,** then all of the database except directory services information is backed up. If ***class*** is specified as **BACKUP_DS,** then just the directory services are backed up.

The **CPY-MEM** command can be used to restore the database from a source at the SEC, CIT, or EMS. If the source is either the CIT or EMS then a directory must be specified. The database is copied to PRI (hard drive). If ***class*** is specified as **RESTORE,** then all of the database except directory services information is restored. If ***class*** is specified as **RESTORE_DS,** then just the directory services are restored.

When **CPY-MEM** is used to restore a database to the hard drive, the network element will install the database to working memory before **CPY-MEM** returns COMPLD.

OUTPUT FORMAT

If the network element fully complies with the **CPY-MEM** command, then the network element sends the following normal completion response after the copy has been completed:

```
   sid date time
M  ctag COMPLD
;
```

OUTPUT PARAMETERS

Refer to the **RTRV-HDR** command **OUTPUT PARAMETERS** section for a normal completion response. The output parameters listed there also apply to the **CPY-MEM** command.

EXAMPLE INPUT/OUTPUT

The following examples show input and output of **CPY-MEM** commands.

The first example shows a **CPY-MEM** request that downloads a new generic from the EMS to PRI. To cause *prgm* to execute, the **APPLY** command must be used.

```
CPY-MEM:LT-WBM::123456::"EMS,02,04,02,39840F800000000000000000000008006
A19784500","/nbm/release1/prgm","PRI",,DOWNLOAD;

   LT-WBM 98-01-01 08:00:00
M  123456 COMPLD
;
```

The following example shows a **CPY-MEM** request that backs up the database in NVM to the CIT and stores it in a directory named data in a location named 98_01_01. (When the GUI is used to specify a download, backup, or restore, the GUI prompts the craft for a directory name and automatically replaces each backslash with a double backslash).

```
CPY-MEM:LT-WBM::123456::"PRI",,"CIT,01,01,03,39840F8000000000000000000
008006A11234500","\\data\\98_01_01",BACKUP;

   LT-WBM 98-01-01 08:00:00
M  123456 COMPLD
;
```

The following example shows a **CPY-MEM** command that restores the database from the CIT:

```
CPY-MEM:LT-WBM::123456::"CIT,01,01,03,39840F800000000000000000008006A
13244500","\\data\\98_01_01","PRI",,RESTORE;

   LT-WBM 98-01-02 08:00:00
M  123456 COMPLD
;
```

The following example shows the **CPY-MEM** command used for performing a database backup through the FTP to FTAM Gateway:

```
CPY-MEM:NETID::3::"PRI",,"EMS,02,5353,5454,39840F8000000000000000000
00104B3BFD5511D","ftp://johndoe:pwd123@ftphost.company.com/directoryt
ostorein",BACKUP;

   LT-WBM 98-01-01 08:00:00
M  123456 COMPLD
;
```

Note that when performing a backup to an FTP server, the user must specify a username and password for write permission on the FTP server. The NSAP address used in the **CPY-MEM** command is the address of the FTP to FTAM Gateway.

The following example shows the **CPY-MEM** command used for performing a software download through the FTP to FTAM Gateway:

```
CPY-MEM:NE-TID::123456::"EMS,02,5353,5454,39840F800000000000000000000
8006A1978451D","ftp://ftphost.company.com","PRI",,DOWNLOAD;

   LT-WBM 98-01-01 08:00:00
M  123456 COMPLD
;
```

Since username and password are not specified, anonymous FTP is used. Also, the file needed for download has to reside at the root location of the FTP server, since a directory was not specified in the FTP URL. The NSAP address used in the **CPY-MEM** command is the address of the FTP to FTAM Gateway.

ERROR RESPONSES

Refer to the **RTRV-HDR** command **ERROR RESPONSES** section. The error responses listed there also apply to the **CPY-MEM** command.

RELATED TL1 MESSAGES

APPLY

ED-NE

INIT-SYS

RTRV-PRMTR-DATA

RTRV-PRMTR-SFTWR

NAME

DLT-FTP: Delete FTP Server contents

The **DLT-FTP** command is available beginning in:

- Network Communication Controller, Release 3.2

LOGIN PRIVILEGE

User Privilege Code (UCFC/UCAL): S4

INPUT FORMAT

DLT-FTP*:tid::ctag::pathname;*

DESCRIPTION

The **DLT-FTP** command is used to delete a specified file or directory in the NCC's FTP file server.

The **DLT-FTP** command does not generate a **REPT DBCHG** message.

INPUT PARAMETERS

Table 3-9. DLT-FTP Input Parameters

Parameter Name	Description
tid	Target Identifier. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.
ctag	Correlation Tag. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.
pathname	Path Name. This parameter is available starting in Release 3.2. This is the pathname for the file or directory that needs to be deleted. Value: a string of directory names followed by an optional file with "\\" used as separator.

OUTPUT FORMAT

If the network element fully complies with the **DLT-FTP** command, then the following normal completion response is returned:

```
   sid date time
M  ctag COMPLD
;
```

OUTPUT PARAMETERS

Refer to the **RTRV-HDR** command **OUTPUT PARAMETERS** section for a normal completion response. The output parameters listed there also apply to the **DLT-FTP** command.

EXAMPLE INPUT/OUTPUT

The following example deletes the directory called “oldsw” off the root directory of the FTP server in an NCC named LT-NE1:

```
DLT-FTP:LT-NE1::123456::"oldsw";

   LT-NE1 00-05-01 12:26:23
M  123456 COMPLD
;
```

The following example deletes a file called “apr01bkp” in a directory called “oldbkp” on the same FTP server:

```
DLT-FTP:LT-NE1::123456::"dbbkp\\apr01bkp";

   LT-NE1 00-05-01 12:26:46
M  123456 COMPLD
;
```

ERROR RESPONSES

Refer to the **RTRV-HDR** command **ERROR RESPONSES** section. The error responses listed there also apply to the **DLT-FTP** command.

If an invalid ***pathname*** parameter is specified, then the following error response is returned:

```
   sid date time
M  ctag DENY
   IDNV
   /* Input, Data Not Valid, invalid pathname */
;
```

RELATED TL1 MESSAGES

CPY-FTP

RTRV-FTP

ENT-FTP

NAME

DLT-IP-MAP: Delete TCP/IP map

The **DLT-IP-MAP** command is available beginning in:

- Network Communication Controller, Release 3.1

LOGIN PRIVILEGE

User Privilege Code (UFC/UCAL): S3

INPUT FORMAT

DLT-IP-MAP:*tid*::*ctag*:::*spec_block*;

DESCRIPTION

The **DLT-IP-MAP** command deletes one entry from the Operations Systems application context ID map created by the **ENT-IP-MAP** command. This map provides associations between OS IP addresses or host names and the Operation Systems application ID contexts. The IP entry of the map can be deleted. The ***tl1tcpipgw*** parameter in the **ED-NE** command enables or disables the mapping feature.

The **DLT-IP-MAP** command does not generate a **REPT DBCHG** message.

INPUT PARAMETERS

Table 3-10. DLT-IP-MAP Input Parameters (Sheet 1 of 2)

Parameter Name	Description
tid	Target Identifier. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.
ctag	Correlation Tag. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.

Table 3-10. `DLT-IP-MAP` Input Parameters (Sheet 2 of 2)

Parameter Name	Description	
spec_block	***ip***	This parameter is available starting in Release 3.1. IP is the IP address or host name for the OS. The IP address is a 32-bit address consisting of four dot-separated decimal numbers ranging from 0 to 255. The host name consists of 1 to 15 alphanumeric characters. Note that the host name does not include the domain name. If this parameter is omitted, the mapping is not changed and a COMPLD normal completion response is returned.

OUTPUT FORMAT

If the command completes successfully, the following normal completion response is returned:

```
   sid date time
M  ctag COMPLD
;
```

OUTPUT PARAMETERS

The output parameters *sid*, *date*, *time*, and *ctag* included in the normal completion response are specified in the **OUTPUT PARAMETERS** section for the **`RTRV-HDR`** command.

EXAMPLE INPUT/OUTPUT

The following example shows a successful command completion:

```
DLT-IP-MAP:LT-WBM::123456:::ip=1798.78.46.8;

   LT-WBM 98-01-01 08:00:00
M  123456 COMPLD
;
```

The following example shows another successful command completion:

```
DLT-IP-MAP:LT-WBM::123456:::ip=os1;

   LT-WBM 98-01-01 08:00:00
M  123456 COMPLD
;
```

ERROR RESPONSES

Refer to the **ERROR RESPONSES** section of the **RTRV-HDR** command. The error responses listed there also apply to the **DLT-IP-MAP** command.

RELATED TL1 MESSAGES

ED-NE

ENT-IP-MAP

RTRV-NE

RTRV-IP-MAP

NAME

DLT-USER-SECU: Delete User Security

The **DLT-USER-SECU** command is available beginning in:

- Network Communication Controller, Release 1.0

LOGIN PRIVILEGE

User Privilege Code (UCFC/UCAL): S5

INPUT FORMAT

DLT-USER-SECU:*tid*:*uid*:*ctag*;

DESCRIPTION

The **DLT-USER-SECU** command is used by an administrator to remove a non-administrator type user from the network element.

The network element shall always have two preinstalled users with full privileges in all functional categories. These two users will be referred to as Administrators (or Superusers). The network element will allow neither adding additional administrator type users (i.e., adding a user with S5 user privilege code) nor modify the existing login IDs of the two administrators. It will not be possible to remove either of the original administrator login IDs.

The **DLT-USER-SECU** command is used by an appropriate administrator to delete a user id from the network element. The **DLT-USER-SECU** command is applicable where a user account has to be deleted from the network element.

The **DLT-USER-SECU** command generates a **REPT DBCHG** message.

INPUT PARAMETERS

Table 3-11. DLT-USER-SECU Input Parameters

Parameter Name	Description
tid	Target Identifier. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.

Table 3-11. DLT-USER-SECU Input Parameters

Parameter Name	Description
uid	User Identifier. Valid values are a case-sensitive alphanumeric string of 1 to 10 characters. Only a single ***uid*** is supported in the command. Refer to the **ACT-USER** command.
ctag	Correlation Tag. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.

OUTPUT FORMAT

If the network element fully complies with the delete user security request, the following normal completion response is returned:

```
   sid date time
M  ctag COMPLD
;
```

If the ***uid*** is currently logged into any network element when this command is successfully executed, the user session identified by this ***uid*** is terminated, and the network element responds to the user who entered the **DLT-USER-SECU** command with a normal completion response.

OUTPUT PARAMETERS

The output parameters included in the normal completion response are specified in the **OUTPUT PARAMETERS** section for the **RTRV-HDR** command.

EXAMPLE INPUT/OUTPUT

The following example shows the successful completion of the **DLT-USER-SECU** command by the network element:

```
DLT-USER-SECU:LT-WBM-789:kjlee:123456;

   LT-WBM-789 98-01-01 08:00:00
M  123456 COMPLD
;
```

ERROR RESPONSES

Refer to the **RTRV-HDR** command **ERROR RESPONSES** section. The error responses listed there apply to the **DLT-USER-SECU** command.

RELATED TL1 COMMANDS

ENT-USER-SECU

ED-USER-SECU

RTRV-USER-SECU

DLT-USER-SECU
Network Communications Controller R3.2

NAME

DLT-X25-MAP: Delete X.25 map

The **DLT-X25-MAP** command is available beginning in:

- Network Communication Controller, Release 3.0

LOGIN PRIVILEGE

User Privilege Code (UFC/UCAL): S3

INPUT FORMAT

DLT-X25-MAP:*tid*::*ctag*:::*spec_block*;

DESCRIPTION

The **DLT-X25-MAP** command deletes data terminal equipment (DTE) calling addresses of operations systems (OS) that are assigned to a switched virtual circuit (SVC) in the X.25 subnetwork application context map. This map contains Operations Systems (OS) X.25 DTE calling addresses and maps them to Operation Systems application ID contexts. The DTE entry of the SVC can be deleted. The **DLT-X25-MAP** command deletes an entry in the X.25 subnetwork application context ID map.

The **DLT-X25-MAP** command generates a **REPT DBCHG** message.

INPUT PARAMETERS

Table 3-12. DLT-X25-MAP Input Parameters (Sheet 1 of 2)

Parameter Name	Description
tid	Target Identifier. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.
ctag	Correlation Tag. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.

Table 3-12. `DLT-X25-MAP` Input Parameters (Sheet 2 of 2)

Parameter Name	Description	
spec_block	***snpa***	This parameter is available starting in Release 3.0. SNPA is the X.25 subnetwork point of attachment address for the OS. It is the SVC Data Terminal Equipment (DTE) calling address, which is 1 to 15 digits. If this parameter is omitted, the mapping is not changed and a COMPLD normal completion response is returned.

OUTPUT FORMAT

If the logout request completes successfully, the following normal completion response is returned:

```
   sid date time
M  ctag COMPLD
;
```

OUTPUT PARAMETERS

The output parameters *sid*, *date*, *time*, and *ctag* included in the normal completion response are specified in the **OUTPUT PARAMETERS** section for the **`RTRV-HDR`** command.

EXAMPLE INPUT/OUTPUT

The following example shows a successful command completion and login session termination:

```
DLT-X25-MAP:LT-WBM::123456:::snpa=12345678901234;

   LT-WBM 98-01-01 08:00:00
M  123456 COMPLD
;
```

ERROR RESPONSES

Refer to the **RTRV-HDR** command **ERROR RESPONSES** section. The error responses listed there apply to the **DLT-X25-MAP** command.

RELATED TL1 MESSAGES

ED-NE

ENT-X25-MAP

RTRV-NE

RTRV-X25-MAP

NAME

ED-DAT: Edit Date and Time

The **ED-DAT** command is available beginning in:

- Network Communication Controller, Release 1.0

LOGIN PRIVILEGE

User Privilege Code (UCFC/UCAL): S4

INPUT FORMAT

ED-DAT:*tid*::*ctag*::[*date*][,*time*];

DESCRIPTION

The **ED-DAT** command can be initiated by a user to change the date and time information in the network element.

The **ED-DAT** command generates a **REPT DBCHG** message.

INPUT PARAMETERS

Table 3-13. ED-DAT Input Parameters

Parameter Name	Description
tid	Target Identifier. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.
ctag	Correlation Tag. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.
date	The date specifies the current date as YY-MM-DD. Values: Refer to the **RTRV-HDR** command for more information. If the parameter ***time*** is not specified, the current value is not changed, but ***date*** must be specified for the **ED-DAT** command to complete successfully.
time	The time specifies the current time of day as HH-MM-SS. Values: {**00**-**23**}-{**00**-**59**}-{**00**-**59**}. If the parameter ***date*** is not specified, the current value is not changed, but ***time*** must be specified for the **ED-DAT** command to complete successfully.

OUTPUT FORMAT

If the **ED-DAT** request completes successfully, the following normal completion response is returned:

```
   sid date time
M  ctag COMPLD
;
```

OUTPUT PARAMETERS

The output parameters included in the normal completion response are specified in the **OUTPUT PARAMETERS** section for the **RTRV-HDR** command.

EXAMPLE INPUT/OUTPUT

The following example shows the successful modification of the date and time in the network element:

```
ED-DAT:LT-WBM-789::123456::01-12-31,11-50-30;

   LT-WBM-789 01-12-31 11:51:41
M  123456 COMPLD
;
```

ERROR RESPONSES

Refer to the **RTRV-HDR** command **ERROR RESPONSES** section. The error responses listed there also apply to the **ED-DAT** command.

RELATED TL1 MESSAGES

RTRV-HDR

NAME

ED-NE: Edit network element

The **ED-NE** command is available beginning in:

- Network Communication Controller, Release 1.0

LOGIN PRIVILEGE

User Privilege Code (UCFC/UCAL): S3

INPUT FORMAT

ED-NE:*tid*::*ctag*:::*spec_block*;

DESCRIPTION

The **ED-NE** command modifies attributes associated with the network element at the system level but not associated with any particular facility or equipment unit.

This command is also used to activate and deactivate a function such as TL1X25GW or TL1TCPIPGW.

The **ED-NE** command generates a **REPT DBCHG** message.

INPUT PARAMETERS

Table 3-14. ED-NE Input Parameters (Sheet 1 of 4)

Parameter Name	Description
tid	Target Identifier. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.
ctag	Correlation Tag. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.
spec_block	The following are the spec_block parameters.

Table 3-14. ED-NE Input Parameters (Sheet 2 of 4)

Parameter Name	Description
	dsa Directory System Agent. This parameter is available starting in Release 1.0. This parameter enables the directory service function, supporting queries for network element name-address resolution and queries for other network element data. Values: ■ **ENABLE** ■ **DISABLE** (initial value). This parameter cannot be disabled if the ***rm*** is enabled. If the parameter is omitted, the current value is not modified. ***duara*** This parameter is available starting in Release 3.2. Directory User Agent and Registration Agent. Values: ■ **ENABLE** (initial value) ■ **DISABLE**. If the parameter is omitted, the current value is not modified. ***rm*** Registration Manager. This parameter is available starting in Release 1.0. This function helps new NEs in a Level 1 OSI area register themselves in the appropriate directory, which may be on this Network Communication Controller or may be on a remote Network Communication Controller. Values: ■ **ENABLE** ■ **DISABLE** (initial value). This parameter can only set to **ENABLE** if the ***dsa*** is enabled. If the parameter is omitted, the current value is not modified. ***tcpiptb*** TCP/IP Transport Bridge. This parameter is available starting in Release 1.0. This function performs TCP/IP to OSI protocol conversion for management interfaces to NEs using RFC 1006. Values: ■ **ENABLE** ■ **DISABLE** (initial value). If the parameter is omitted, the current value is not modified.

Table 3-14. ED-NE Input Parameters (Sheet 3 of 4)

Parameter Name	Description
	shlfalmon Shelf Alarm Monitor. This parameter is available starting in Release 1.0. When serving this function, the Network Communication Controller will monitor and report shelf alarm conditions (e.g., power supply and fan failures) for equipment shared by all systems in the shelf. Values: ■ **ENABLE** ■ **DISABLE** (initial value). This can only be enabled for slots 1 and 2. If the parameter is omitted, the current value is not modified. ***dsun*** Directory Services Update Notification. This parameter is available starting in Release 1.0. When serving this function, the Network Communication Controller will report the addition and removal of network element entries in the directory. Values: ■ **ENABLE** ■ **DISABLE** (initial value). This can only be enabled if the ***dsa*** parameter is set to **ENABLE**. If the parameter is omitted, the current value is not modified. ***dsunf*** Directory Services Update Notification Frequency, in minutes. This parameter is available starting in Release 1.0. Determines the frequency of checking the directory to report addition and removal of network element entries. Values: **1** (initial value) - **60**. The ***dsun*** parameter must be set to **ENABLE** for this to have an effect. If the parameter is omitted, the current value is not modified. ***tl1x25gw*** This parameter is available starting with Release 3.0. It enables or disables the TL1X25GW application. Values: ■ **ENABLE** ■ **DISABLE** (initial value). ***tl1tcpipgw*** This parameter is available starting with Release 3.0. It enables or disables the TCP/IP Gateway application which allows a pure TCP/IP to OSI conversion. Values: ■ **ENABLE** (initial value) ■ **DISABLE**.

Table 3-14. ED-NE Input Parameters (Sheet 4 of 4)

Parameter Name	Description
	ftpserver This parameter is available starting in Release 3.2. This parameter enables or disables the FTP server function. Values: ■ **ENABLE** ■ **DISABLE** (initial value). ***eth1*** This parameter is available starting in Release 3.2. It indicates the communication protocols supported on LAN Port 1 of the NCC. Values: ■ **TCPIP** ■ **OSI** ■ **ALL** (initial value) ■ **NONE**. ***eth2*** This parameter is available starting in Release 3.2. It indicates the communication protocols supported on LAN Port 2 of the NCC. Values: ■ **TCPIP** ■ **OSI** ■ **ALL** ■ **NONE** (initial value).

OUTPUT FORMAT

If the **ED-NE** command completes successfully, then the following normal completion response is returned:

```
   sid date time
M  ctag COMPLD
;
```

OUTPUT PARAMETERS

The output parameters in the normal completion response are specified in the **OUTPUT PARAMETERS** command section of the **RTRV-HDR** command.

EXAMPLE INPUT/OUTPUT

The following is an example of the **ED-NE** command:

```
ED-NE:LT-WBM::123456:::duara=DISABLE;

   LT-WBM 98-01-01 08:00:00
M  123456 COMPLD
;
```

ERROR RESPONSES

Refer to the **ERROR RESPONSES** section of the **RTRV-HDR** command. The requirements listed there also apply to this command.

If the hardware supports only one LAN port and the **ED-NE** command tries to modify the ***eth2*** parameter, the following response is returned:

```
   sid date time
M  ctag DENY
   IDNV
   /* Input, Data Not Valid, port eth2 not supported */
;
```

If the command attempts to run the OSI protocol on both LAN ports or to remove OSI from both ports, then the following response is returned:

```
   sid date time
M  ctag DENY
   IDNV
   /* Input, Data Not Valid, OSI required on eth1 or eth2 but not on
   both */
;
```

If the command attempts to run TCP/IP on both LAN ports or to remove TCP/IP from both ports, then the following response is returned:

```
   sid date time
M  ctag DENY
   IDNV
   /* Input, Data Not Valid, TCP/IP required on eth1 or eth2 but not on
   both */
;
```

If the ***rm*** is being set to **ENABLE** with the DSA not enabled locally, and the dsa_nsap field does not end with 0d (when dsaip is set) or 1d (when dsaip is not set), the following response is returned:

```
   sid date time
M  ctag DENY
   SROF
   /* Status, Requested Operation Failed, invalid dsa_nsap nsel or
   dsaip */
;
```

RELATED TL1 MESSAGES

RTRV-NE

NAME

ED-NE-SECU: Edit network element Security

The **ED-NE-SECU** command is available beginning in:

- Network Communication Controller, Release 3.1

LOGIN PRIVILEGE

User Privilege Code (UCFC/UCAL): S4

INPUT FORMAT

Beginning in Release 1.0, the syntax is:

ED-NE-SECU:*tid*::*ctag*:::*spec_block*;

DESCRIPTION

The **ED-NE-SECU** command can be initiated by a user to modify global security parameters in the network element.

The **ED-NE-SECU** command generates a **REPT DBCHG** message.

INPUT PARAMETERS

Table 3-15. ED-NE-SECU Input Parameters (Sheet 1 of 2)

Parameter Name	Description
tid	Target Identifier. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.
ctag	Correlation Tag. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.
spec_block	

Table 3-15. ED-NE-SECU Input Parameters (Sheet 2 of 2)

Parameter Name	Description
	thrshld Lockout Threshold. The maximum number of consecutive invalid login attempts that are allowed by a ***uid***. If the count of invalid login attempts is equal to the threshold, the ***uid*** is locked out for ***intrvl*** period of time. If a login attempt is successful, the count of invalid login attempts by that ***uid*** is reset to zero. If the parameter is not specified, it retains its current value. The initial value is **5**. Values: **2**-**99**
	intrvl Lockout Period. This parameter is available starting in Release 3.1. The time during which login attempts using that ***uid*** will not be allowed. This occurs when the number of consecutive invalid login attempts by a ***uid*** reaches ***thrshld***. When ***intrvl*** expires, login attempts will again be allowed from that ***uid***. If this parameter is set to **0** (zero), the lockout feature is disabled. If the parameter is not specified, it retains its current value. Initial value is **10**. Values (in minutes): **0**-**99**
	usrage User ID Aging Period. This parameter is available beginning in Release 3.1. If a ***uid*** has not been used during this time interval, it will be disabled. User ID aging does not apply to the superuser logins. Value (in days): **0**-**999**. The initial value is 10. A value of 0 disables user ID aging.

OUTPUT FORMAT

If the **ED-NE-SECU** command is successful, the network element returns the following completed response:

```
   sid date time
M  ctag COMPLD
;
```

The network element returns the successful completion response even if none of the parameter values are modified using the **ED-NE-SECU** command.

OUTPUT PARAMETERS

The output parameters included in the normal completion response are specified in the **OUTPUT PARAMETERS** section for the **RTRV-HDR** command.

EXAMPLE INPUT/OUTPUT

The following example shows the successful completion of the **ED-NE-SECU** command by the network element:

```
ED-NE-SECU:LT-WBM-789::123456:::THRSHLD=5,INTRVL=2;

   LT-WBM-789 98-01-01 08:00:00
M  123456 COMPLD
;
```

ERROR RESPONSES

Refer to the **RTRV-HDR** command **ERROR RESPONSES** section. The error responses listed there apply to the **ED-NE-SECU** command.

RELATED TL1 MESSAGES

ACT-USER

RTRV-NE-SECU

NAME

ED-PID: Edit Password Identifier

The **ED-PID** command is available beginning in:

- Network Communication Controller, Release 1.0

LOGIN PRIVILEGE

User Privilege Code (UCFC/UCAL): S1

INPUT FORMAT

ED-PID:*tid*::*ctag*::*old_pid*,*new_pid*;

DESCRIPTION

The **ED-PID** command can be initiated by a user to change the user's own password on the network element.

When the network element receives an **ED-PID** command, the password associated with the user's login identifier will be changed on the network element provided that:

- The user is currently logged in on the network element.
- The ***old_pid*** provided matches the current password for that login identifier.
- The ***new_pid*** provided satisfies the password requirements of the network element.

The **ED-PID** command generates a **REPT DBCHG** message.

INPUT PARAMETERS

Table 3-16. ED-PID Input Parameters (Sheet 1 of 2)

Parameter Name	Description
tid	Target Identifier. Refer to the **RTRV-HDR** command for input parameter syntax and description of this parameter.
ctag	Correlation Tag. Refer to the **RTRV-HDR** command for input parameter syntax and description of this parameter.

Table 3-16. ED-PID Input Parameters (Sheet 2 of 2)

Parameter Name	Description
old_pid	Old Password Identifier. This is the current ***pid*** of the user. Refer to the **ACT-USER** command.
new_pid	New Password Identifier. Password strings are transmitted in unencrypted form in the **ED-PID** command; are encrypted when stored in the network element; and are never transmitted from the network element. The ***new_pid*** value must differ from the ***old_pid*** value by at least one character. Refer to the **ACT-USER** command.

OUTPUT FORMAT

If the password change request completes successfully, the following normal completion response is returned:

```
   sid date time
M  ctag COMPLD
;
```

If the password change request completes successfully and transitions the state of the login procedure from the “Password_Expired” state to the “Login_Active” state, the following normal completion response is returned:

```
   sid date time
M  ctag COMPLD
   "uid:lastdate,lasttime,attempts,systype,release,upc"
   /* Lucent Technologies systype release
   User Privilege Code: upc
   LUCENT TECHNOLOGIES - PROPRIETARY
   THIS SOFTWARE CONTAINS INFORMATION OF LUCENT TECHNOLOGIES
   AND IS NOT TO BE DISCLOSED OR USED EXCEPT IN ACCORDANCE
   WITH APPLICABLE AGREEMENTS.
   NOTICE: THIS IS A PRIVATE COMPUTER SYSTEM.
   USE OF THIS SOFTWARE IS GOVERNED SOLELY AS EXPRESSLY
   AUTHORIZED IN THE RELEVANT AGREEMENT BETWEEN
   LUCENT TECHNOLOGIES AND CUSTOMER.
   UNAUTHORIZED ACCESS OR USE MAY LEAD TO PROSECUTION.
   */
;
```

OUTPUT PARAMETERS

The output parameters included in the normal completion response are specified in the **OUTPUT PARAMETERS** section for the **RTRV-HDR** command.

EXAMPLE INPUT/OUTPUT

The following example shows a successful password change operation:

```
ED-PID:LT-WBM-789::123456::soup3r+,mash%52;

   LT-WBM-789 98-01-01 08:00:00
M  123456 COMPLD
;
```

The following example shows a successful completion response of **ED-PID** while attempting the **ACT-USER** command:

```
ED-PID:LT-WBM-789::123456::soup3r+,mash%52;

   LT-WBM-789 98-01-01 08:00:00
M  123456 COMPLD
   "mvdlm5:97-12-31,09-00-00,1,WaveStar_BandWidth_Manager,1.1.13,S1"
   /* Lucent Technologies WaveStar_BandWidth_Manager Release 1.1.13
   User Privilege Code: S1
   LUCENT TECHNOLOGIES - PROPRIETARY
   THIS SOFTWARE CONTAINS INFORMATION OF LUCENT TECHNOLOGIES
   AND IS NOT TO BE DISCLOSED OR USED EXCEPT IN ACCORDANCE
   WITH APPLICABLE AGREEMENTS.
   NOTICE: THIS IS A PRIVATE COMPUTER SYSTEM.
   USE OF THIS SOFTWARE IS GOVERNED SOLELY AS EXPRESSLY
   AUTHORIZED IN THE RELEVANT AGREEMENT BETWEEN
   LUCENT TECHNOLOGIES AND CUSTOMER.
   UNAUTHORIZED ACCESS OR USE MAY LEAD TO PROSECUTION.
   */
;
```

ERROR RESPONSES

Refer to the **RTRV-HDR** command **ERROR RESPONSES** section. The error responses listed there also apply to the **ED-PID** command.

RELATED TL1 MESSAGES

ACT-USER

CANC-USER

CANC-USER-SECU

DLT-USER-SECU

ENT-USER-SECU

RTRV-USER-SECU

NAME

ED-USER-SECU: Edit User Security

The **ED-USER-SECU** command is available beginning in:

- Network Communication Controller, Release 1.0

LOGIN PRIVILEGE

User Privilege Code (UCFC/UCAL): S5

INPUT FORMAT

ED-USER-SECU:*tid*:*uid:ctag*::,[*new_pid*],,[*upc*][:*spec_block*];

DESCRIPTION

The **ED-USER-SECU** command is used by an administrator to edit the security parameters associated with a user.

The network element shall always have two preinstalled users with full privileges in all functional categories. These two users will be referred to as Administrators (or Superusers). The network element will not allow adding additional administrator type users. It will not be possible to remove either of the original administrator login IDs. An administrator's ***upc*** cannot be modified using the **ED-USER-SECU** command.

An existing login ID (***uid***) cannot be renamed. It must be deleted and re-entered.

The **ED-USER-SECU** command enables an administrator to modify the password, user privilege code(s), and/or user security parameters of the non-administrative users. An administrator may modify the password and/or user security parameters (except the user privilege code) of the other administrator.

The **ED-USER-SECU** command generates a **REPT DBCHG** message.

INPUT PARAMETERS

Table 3-17. ED-USER-SECU Input Parameters (Sheet 1 of 3)

Parameter Name	Description
tid	Target Identifier. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.
uid	Specifies the User ID. Only users with a UCFC/UCAL of **S5** can change parameters of another user. This parameter must be entered by an administrator when changing parameters of another user; otherwise, the **ED-USER-SECU** command is denied. Refer to the **ACT-USER** command.
ctag	Correlation Tag. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.
new_pid	Specifies the New Password ID. The administrator need not have to enter this parameter to be able to change parameter values associated with that user. This is an optional parameter and in the absence of a value default is the current value. Refer to the **ACT-USER** command.
upc	The following values specify the user privilege code UCFC/ UCAL pair for NCC. Values: ■ **P**i, **M**i, **S**i, **D**i where “i” is an integer ranging from **1** to **5** Note: ‘**D**i’ is a Lucent-only category which can only be used with a special password. ***uid***s with ***D***i as the ***upc*** will be unable to set up a successful TL1 session. Upon executing the **ACT-USER** command, this user would be dumped into a debug session where he/she will not be able to pass the additional security tests and execute commands.
spec_block	
	screen Message screening specifies the type of notifications that are received by the ***uid***. If a value is not specified, the parameter retains its current value. ■ **DBCHG** Establish/Modify/Remove Notifications - report changes in creation of entities/report changes in user provisionable parameters/ report changes in deletion of entities. Reports database changes. User will receive **REPT DBCHG** messages.

Table 3-17. ED-USER-SECU Input Parameters (Sheet 2 of 3)

Parameter Name	Description
	■ **DSUPDATE** Notifications on Addition or Deletion of TIDs to the Directory - report changes to the directory. User will receive **REPT DBCHG** messages. ■ **ALARMS** Alarm Notifications. User will receive **REPT ALM** and **REPT EVT** messages. ■ **ALL** All Notifications Listed Above. If **ALL** is specified, it is needless to specify other values. If **ALL** is one of the values specified, the NE will disregard the other values. ■ **NONE** The User Will Receive No Notification (other than responses to their own commands). If **NONE** is specified, no other values should be specified. If **NONE** is specified together with other values, the value **NONE** will be disregarded. Starting with Release 3.1.5, the value **NONE** is renamed as **OWN**. ■ **OWN** Responses to the user's own commands. User will receive no other notifications. Starting with Release 1.0, if **OWN** is specified, no other values should be specified. If **OWN** is specified together with other values, the value **OWN** will be disregarded. ***page*** Password Aging Interval. This parameter is available starting in Release 3.1.5. This parameter specifies the period in days after which the user has to change the password of their account. A value of 0 disables the password aging interval function. The initial value is 90 days. If the parameter is not specified, it retains its current value. Values: ■ **0**, **7-999 days**

Table 3-17. ED-USER-SECU Input Parameters (Sheet 3 of 3)

Parameter Name	Description
	tmout Inactivity Timeout Period. This parameter is available starting in Release 3.1.5. If there are no messages between the user and the NE over the Timeout Period, the session is logged off. A value of 0 disables the timeout function.The initial value is 30 minutes. If the parameter is not specified, it retains its current value. Values: ■ **0-999 minutes** ***alw_login*** Allow Login. This parameter is available starting in Release 3.2. This parameter allows an administrator to enable or disable a User ID. When a User ID is manually disabled, any active sessions for that login shall be terminated. Values: ■ **YES** User ID is enabled. ■ **NO** User ID is disabled. ***newuid*** New ***uid***. This parameter is available starting in Release 3.2. This parameter allows an existing administrator login to be renamed. It cannot be used to rename a non-administrator login. Values: Refer to the ***uid*** parameter in the **ACT-USER** command.

OUTPUT FORMAT

If the **ED-USER-SECU** request is successful, the network element returns the following normal completion response:

```
   sid date time
M  ctag COMPLD
;
```

If the ***uid*** is currently logged into any network element when the **ED-USER-SECU** command is successfully executed, regardless of altering any or none of the login parameters, the user session identified by the ***uid*** is terminated.

Starting with Release 3.1, if the ***uid*** is currently logged in when the **ED-USER-SECU** command is successfully executed, the user session identified by the ***uid*** is not terminated and is unaffected. It will continue to use the previous values. The changes will take effect the next time the user logs in.

If the **ED-USER-SECU** command does not alter existing user security parameters, the network element provides a normal completion response. An example is when the ***upc*** of the ***uid*** is **P3** and an **ED-USER-SECU** command is received which sets the ***upc*** to **P3**.

OUTPUT PARAMETERS

The output parameters included in the normal completion response are specified in the **OUTPUT PARAMETERS** section for **RTRV-HDR** command.

EXAMPLE INPUT/OUTPUT

The following is an NCC example of the **ED-USER-SECU** command:

```
ED-USER-SECU:TID123:eureka:123456::,pass13+,,P3&M3&S3:SCREEN=ALL;

   TID123 00-05-01 08:25:32
M  123456 COMPLD
;
```

ERROR RESPONSES

Refer to the **RTRV-HDR** command **ERROR RESPONSES** section. The error responses listed there apply to the **ED-USER-SECU** command.

RELATED TL1 MESSAGES

DLT-USER-SECU

ENT-USER-SECU

RTRV-USER-SECU

ED-USER-SECU
Network Communications Controller R3.2

NAME

ENT-FTP: Create FTP Server directory

The **ENT-FTP** command is available beginning in:

- Network Communication Controller, Release 3.2

LOGIN PRIVILEGE

User Privilege Code (UCFC/UCAL): S4

INPUT FORMAT

ENT-FTP*:tid::ctag::dirpath;*

DESCRIPTION

The **ENT-FTP** command is used to create a specified directory in the NCC's FTP file server.

The **ENT-FTP** command does not generate a **REPT DBCHG** message.

INPUT PARAMETERS

Table 3-18. ENT-FTP Input Parameters

Parameter Name	Description
tid	Target Identifier. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.
ctag	Correlation Tag. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.
dirpath	Directory Path Name. This parameter is available starting in Release 3.2. This is the pathname for the directory that needs to be created. The root of the file structure is a predefined directory on the NCC file server, usually "C:\\ftp" or "D:\\ftp". Value: a string of directory names with "\\" used as separator.

OUTPUT FORMAT

If the network element fully complies with the **ENT-FTP** command, then the following normal completion response is returned:

```
   sid date time
M  ctag COMPLD
;
```

OUTPUT PARAMETERS

Refer to the **RTRV-HDR** command **OUTPUT PARAMETERS** section for a normal completion response. The output parameters listed there also apply to the **ENT-FTP** command.

EXAMPLE INPUT/OUTPUT

The following example creates a directory called “rel3sfwr” off the root directory of the FTP server in an NCC named LT-NE1:

```
ENT-FTP:LT-NE1::123456::"rel3sfwr";

   LT-NE1 00-05-25 08:29:42
M  123456 COMPLD
;
```

ERROR RESPONSES

Refer to the **RTRV-HDR** command **ERROR RESPONSES** section. The error responses listed there also apply to the **ENT-FTP** command.

If an invalid ***dirpath*** parameter is specified, then the following error response is returned:

```
   sid date time
M  ctag DENY
   IDNV
   /* Input, Data Not Valid, invalid dirpath */
;
```

RELATED TL1 MESSAGES

CPY-FTP

RTRV-FTP

DLT-FTP

NAME

ENT-IP-MAP: Enter TCP/IP map

The **ENT-IP-MAP** command is available beginning in:

- Network Communication Controller, Release 3.1

LOGIN PRIVILEGE

User Privilege Code (UFC/UCAL):S3

INPUT FORMAT

ENT-IP-MAP:*tid*::*ctag*:::*spec_block*;

DESCRIPTION

The **ENT-IP-MAP** command creates entries in the TCP/IP subnetwork application context map. This map lists the IP addresses or host names of the operation systems (OS) and maps them to OS application contexts. The **ENT-IP-MAP** command allows an OS to specify a management association to a network element through the Network Communications Controller (NCC) over TCP/IP. The ***tl1tcpipgw*** parameter in the **ED-NE** command enables or disables the mapping feature.

The **ENT-IP-MAP** command does not generate a **REPT DBCHG** message.

INPUT PARAMETERS

Table 3-19. ENT-IP-MAP Input Parameters (Sheet 1 of 2)

Parameter Name	Description
tid	Target Identifier. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.
ctag	Correlation Tag. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.

Table 3-19. `ENT-IP-MAP` Input Parameters (Sheet 2 of 2)

Parameter Name	Description
spec_block	***ip*** This parameter is available starting in Release 3.1. IP is the IP address or host name for the OS. The IP address is a 32-bit address consisting of four dot-separated decimal numbers ranging from 0 to 255. The host name consists of 1 to 15 alphanumeric characters. Note that the host name does not include the domain name. More than one IP address or host name can be mapped by executing the **`ENT-IP-MAP`** command multiple times. This is a required parameter. ***acid*** OS application context ID. This parameter is available starting in Release 3.1. This is a value of up to twenty-three alphanumeric characters, which is the application context ID to be assigned to the particular IP address or host name. If this parameter is omitted, the current value is not changed. Values: ■ **TL1MAINTENANCE** ■ **TL1MEMORYADMINISTRATION** ■ **TL1TEST** ■ **TL1OTHER1**. The default acid value for all addresses and host names is TL1PEERCOMM. (The ***acid*** parameter cannot be assigned the TL1PEERCOMM by the user. When an ***ip*** is unassigned with the **`DLT-IP-MAP`** command, the system will assign the value TL1PEERCOMM to the ***ip***). The same ACID can be mapped to more than one address.

OUTPUT FORMAT

If the command completes successfully, the following normal completion response is returned:

```
   sid date time
M  ctag COMPLD
;
```

OUTPUT PARAMETERS

The output parameters *sid*, *date*, *time*, and *ctag* included in the normal completion response are specified in the **OUTPUT PARAMETERS** section of the **RTRV-HDR** command.

EXAMPLE INPUT/OUTPUT

The following example shows a mapping of an IP address:

```
ENT-IP-MAP:LT-WBM::123456:::acid=tl1memoryadministration,
ip=198.78.46.8;

   LT-WBM 98-01-01 08:00:00
M  123456 COMPLD
;
```

The following example shows a mapping of a host name:

```
ENT-IP-MAP:LT-WBM::123456:::acid=tl1memoryadministration,
ip=os1;

   LT-WBM 98-01-01 08:00:00
M  123456 COMPLD
;
```

ERROR RESPONSES

Refer to the **RTRV-HDR** command **ERROR RESPONSES** section. The error responses listed there apply to the **ENT-IP-MAP** command.

RELATED TL1 MESSAGES

DLT-IP-MAP

ED-NE

RTRV-NE

RTRV-IP-MAP

NAME

ENT-ULS: Enter Upper Layer Stack

The **ENT-ULS** command is available beginning in:

- Network Communication Controller, Release 1.0

LOGIN PRIVILEGE

User Privilege Code (UCFC/UCAL): S3

INPUT FORMAT

ENT-ULS:*tid*::*ctag*::*type*:*spec_block*;

DESCRIPTION

The **ENT-ULS** command is used to provision the user-settable parameters in the upper layer OSI stack. The parameters include user-settable fields of the Registration Manager (RM). RM provisioning includes setting the Network Service Access Point (NSAP) of the Directory System Agent (DSA) address and the name prefix parameters. The DSA address is the address of the directory in which network elements (NE) from a particular subnetwork are registered. The name prefix specifies where in the directory tree structure the NEs of this subnetwork are registered.

The **ENT-ULS** command also sets fields in the Transmission Control Protocol/ Internet Protocol (TCP/IP). TCP/IP provisioning consists of setting the IP address, subnet mask, default router address, domain name, and domain name server (DNS) address. The **ENT-ULS** command provisions either RM or IP parameters. To provision both types, it will have to be used twice.

The **ENT-ULS** command generates a **REPT DBCHG** message.

INPUT PARAMETERS

In the following parameter descriptions, “communications software reset” means a system reset on the NCC. The provisioned values do not take effect until after the reset.

Table 3-20. ENT-ULS Input Parameters (Sheet 1 of 4)

Parameter Name	Description
tid	Target Identifier. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.
ctag	Correlation Tag. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.
type	This parameter determines whether the Registration Manager fields or the Internet Protocol fields will be provisioned by the **ENT-ULS** command. Values: ■ **RM** ■ **IP** - This will reset the system. Beginning with Release 3.1, this parameter can also have value: ■ **TSB**
spec_block	***rm*** Registration Manager. This parameter is available starting in Release 1.0. This parameter belongs to RM type. The Registration Manager helps new NEs in a Level 1 OSI area register themselves in the appropriate directory, which may be on this network element or may be on a remote network element. Values: ■ **ENABLE** ■ **DISABLE** (initial value). If the value is omitted, the current value is not modified. ***dsa_nsap*** DSA NSAP Address. This parameter is available starting in Release 1.0. This parameter belongs to RM type. It is characterized by its NSAP address. This is the only provisionable field of the DSA address. Value: A string of 20-byte (40-digit hex) NSAP address. Initial value: NSAP address of the local system. ***dsaip*** DSA IP Address. This parameter is available starting in Release 3.1.5. This parameter belongs to RM type. This is a 32-bit IPv4 address. Value: It is made up of four dot-separated decimal numbers ranging from 0 to 255. Entering two double quotes ("") for the value will remove this parameter.

Table 3-20. ENT-ULS Input Parameters (Sheet 2 of 4)

Parameter Name	Description
	np_co Name Prefix Country. This parameter is available starting in Release 1.0. This parameter belongs to RM type. This is the country field of the name prefix parameter. It indicates the highest level of the directory tree. This parameter is required and must be provisioned first before any of the other three name prefix parameters are provisioned. The initial value for this parameter is an empty value; that is, it has no value until provisioned by the user. Value: Consists of 2 alphanumeric characters. ***np_org*** Name Prefix Organization. This parameter is available starting in Release 1.0. This parameter belongs to RM type. This is the organization field of the name prefix parameter. Its level is just below country in the directory tree. This parameter is required and must be provisioned along with country. The initial value for this parameter is an empty value; that is, it has no value until provisioned by the user. Value: Consists of 1 to 64 alphanumeric characters. ***np_orgu1*** Name Prefix Organization Unit 1. This parameter is available starting in Release 1.0. This parameter belongs to RM type. This is the organization unit one of the name prefix parameter. Its level is just below organization in the directory tree. This parameter is optional. The initial value for this parameter is an empty value; that is, it has no value until provisioned by the user. Entering the value " " will remove a provisioned value of this field from the name prefix address. Value: Consists of 1 to 64 alphanumeric characters. ***np_orgu2*** Name Prefix Organization Unit 2. This parameter is available starting in Release 1.0. This parameter belongs to RM type. This is the organization unit two of the name prefix parameter. Its level is just below organization unit one in the directory tree. This parameter is optional, but if it is provisioned, then organization unit one parameter must be provisioned as well. The initial value for this parameter is an empty value; that is, it has no value until provisioned by the user. Entering the value " " will remove a provisioned value of this field from the name prefix address. Value: Consists of 1 to 64 alphanumeric characters.

Table 3-20. `ENT-ULS` Input Parameters (Sheet 3 of 4)

Parameter Name	Description
	ip_ad IP Address. This parameter is available starting in Release 1.0. This parameter belongs to IP type. This is the 32-bit IPv4 address of the system. Modifying this parameter causes a communications software reset. Value: It is made up of four dot-separated decimal numbers ranging from 0 to 255. This parameter has no value until provisioned by the user. ***ip_snm*** IP Subnet Mask. This parameter is available starting in Release 1.0. This parameter belongs to IP type. This is the 32-bit IPv4 subnet mask of the system. Modifying this parameter causes a communications software reset. Value: It is made up of four dot-separated decimal numbers ranging from 0 to 255. This parameter has no value until provisioned by the user. ***ip_drad*** IP Default Router Address. This parameter is available starting in Release 1.0. This parameter belongs to IP type. This is the 32-bit IPv4 default router address of the system and is an optional parameter. Modifying this parameter causes a communications software reset. Value: It is made up of four dot-separated decimal numbers ranging from 0 to 255. This parameter has no value until provisioned by the user. ***domain*** Domain name. This parameter is available starting in Release 3.1. This parameter belongs to IP type. The system can register itself with a Domain Name Server (DNS). The ***domain*** parameter, together with the system host name (***tid***), is used in the registration process. This is an optional parameter. Modifying this parameter causes a communications software reset. Value: The domain consists of 1 to 40 characters. The characters are alphanumeric characters and periods. This parameter has no value until provisioned by the user.

Table 3-20. ENT-ULS Input Parameters (Sheet 4 of 4)

Parameter Name	Description
	dns_ad Domain Name Server IP address. This parameter is available starting in Release 3.1. This parameter belongs to IP type. This is the IP address of the DNS with which the system can register itself and is an optional parameter. The DNS is used to translate the OS host names entered with the **ENT-IP-MAP** command. Modifying this parameter causes a communications software reset. Value: Either a single IP address or a list of IP addresses. Specifically, the DNS address is a 32-bit IPv4 address made up of four dot-separated decimal numbers ranging from 0 to 255, or a double quoted (“ ”) list of space-separated IP addresses. When a list of addresses is entered, the search order is left to right. This parameter has no value until provisioned by the user. ***tsb_cport*** Transport Service Bridge called port number. This parameter is available starting in Release 3.1.4. This parameter belongs to TSB type. Value: An integer in the range **1** to **65535**. The initial value is **1024**.

OUTPUT FORMAT

If the **ENT-ULS** request is successful, then the network element returns the following normal completion response:

```
   sid date time
M  ctag COMPLD
;
```

OUTPUT PARAMETERS

Refer to the **RTRV-HDR** command **OUTPUT PARAMETERS** section. The output parameters listed there for the normal completion response also apply to the **ENT-ULS** command.

EXAMPLE INPUT/OUTPUT

The following example shows the successful completion of the **ENT-ULS** command by the network element:

```
ENT-ULS:LT-WBM::123456::RM:dsa_nsap=39840F800000007AE0000000001234567
8901200,np_co=us,np_org=abcd1234;

   LT-WBM 98-01-01 08:00:00
M  123456 COMPLD
;
```

This is another example:

```
ENT-ULS:LT-WBM::123456::IP:ip_ad=198.78.46.8,ip_snm=255.255.255.128,
ip_drad=198.84.65.20;

   LT-WBM 98-01-01 08:00:00
M  123456 COMPLD
;
```

ERROR RESPONSES

Refer to the **RTRV-HDR** command **ERROR RESPONSES** section. The error responses listed there also apply to the **ENT-ULS** command.

If the dsaip field is being set, and the dsa_nsap field does not end with 0d, the following response is returned:

```
   sid date time
M  ctag DENY
   IDNV
   /* Input, Data Not Valid, ds_nsap must end with 0d to set dsaip */
;
```

RELATED TL1 MESSAGES

ENT-ULSDCC-L3

ENT-ULSDCC-L4

RTRV-ULSDCC-L3

RTRV-ULSDCC-L4

RTRV-ULS

NAME

ENT-ULSDCC-L3: Enter Upper Layer Stack DCC Layer 3

The **ENT-ULSDCC-L3** command is available beginning in:

- Network Communication Controller, Release 1.0

LOGIN PRIVILEGE

User Privilege Code (UCFC/UCAL): S3

INPUT FORMAT

ENT-ULSDCC-L3:*tid*::*ctag*:::[*spec_block*];

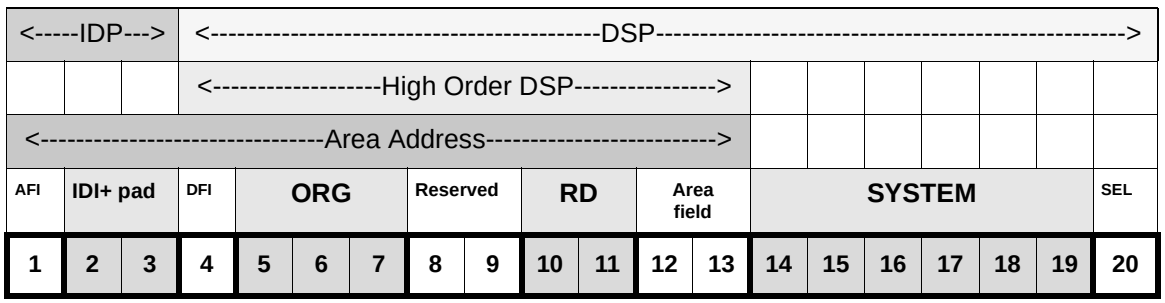
DESCRIPTION

The **ENT-ULSDCC-L3** command is used to provision the user-settable parameters in Layer 3 of the OSI stack. Layer 3 parameters include user-settable fields of the Network Service Access Point (NSAP) address and the multiple area addresses and enabling of Level 2 Routing.

The NSAP address is required by OSI to provide unique identification within the OSI network and consists of a number of fields, some of which are predefined and some of which are user-settable.

For reference, here is how the 20 octets of the NSAP are subdivided:

Table 3-21. SONET NSAP Format (From GR-253)



The **ENT-ULSDCC-L3** command generates a **REPT DBCHG** message.

INPUT PARAMETERS

In the following parameter descriptions, “communications software reset” means a system reset on the NCC. The provisioned values do not take effect until after the reset.

Table 3-22. ENT-ULSDCC-L3 Input Parameters (Sheet 1 of 3)

Parameter Name	Description
tid	Target Identifier. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.
ctag	Correlation Tag. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.
spec_block	
	l3dfi NSAP DSP (Domain Specific Part) Format Identifier. This parameter is available starting with Release 1.0. Modification of this parameter causes a communications software reset. This is a 1 octet (2-digit hexadecimal) field to specify the format for the rest of the address. The initial value is **80** hex, which identifies the SONET DSP format.
	l3org NSAP Organization Identifier Field. This parameter is available starting with Release 1.0. Modification of this parameter causes a communications software reset. This is a 3 octet (6-digit hexadecimal) field used to provision into the NSAP address the allocated Company Code. The initial value for this parameter is **000000** hex.
	l3res NSAP Reserved Field. This parameter is available starting with Release 1.0. Modification of this parameter causes a communications software reset. This is a 2 octet (4-digit hexadecimal) field that currently has not been assigned a specific purpose by the standards. Until the standard use of this field has been defined, users should not assign a value that is different from the initial value. The initial value for this parameter is **0000** hex.

Table 3-22. `ENT-ULSDCC-L3` Input Parameters (Sheet 2 of 3)

Parameter Name	Description
	l3rd NSAP Routing Domain. This parameter is available starting with Release 1.0. This NSAP field identifies a unique Routing Domain within an administrative domain. Standard use of this parameter has not been defined in the standards. Until the standard use of this field has been defined, users should not assign a value that is different from the initial value. Modification of this parameter causes a communications software reset. This parameter has a 2 octet (4-digit hexadecimal) value with the initial value of **0000** hex. ***l3area*** NSAP Area Identifier Field. This parameter is available starting with Release 1.0. This field identifies the area within the Routing Domain to which the NSAP address belongs. Modification of this parameter causes a communications software reset. This parameter has a 2 octet (4-digit hexadecimal) value with the initial value of **0000** hex. ***l3lv2is*** This parameter is available starting in Release 1.0. This parameter enables or disables the network element specified by the ***tid*** as a Level 2 IS in addition to being a Level 1 IS. Modification of this parameter causes a communications software reset. Values: ■ **DISABLE** ■ **ENABLE**. The initial value is **DISABLE**. ***l3esct*** End System Configuration Timer. This parameter is available starting with Release 1.0. This field is used when the network element is acting in the End System role. Values: **10**-**1000** seconds. The initial value is **10** seconds. ***l3isct*** Intermediate System Configuration Timer. This parameter is available starting with Release 1.0. This field is used when the network element is acting in the Intermediate System role. Values: **10**-**1000** seconds. The initial value is **10** seconds.

Table 3-22. ENT-ULSDCC-L3 Input Parameters (Sheet 3 of 3)

Parameter Name	Description
	l3lc CLNP Lifetime Control parameter. This parameter is available starting with Release 3.2. The value of this parameter determines whether a received PDU should be forwarded or discarded. Values: **2 - 255** hops. The initial value is **255** hops.

OUTPUT FORMAT

If the network element fully complies with the request, the following completion message will be returned:

```
   sid date time
M  ctag COMPLD
;
```

OUTPUT PARAMETERS

Refer to the **RTRV-HDR** command **OUTPUT PARAMETERS** section. The output parameters listed there for the normal completion response also apply to the **ENT-ULSDCC-L3** command.

EXAMPLE INPUT/OUTPUT

If the **ENT-ULSDCC-L3** request is successful, the network element returns the following normal completion response:

```
ENT-ULSDCC-L3:LT-WBM:1-1-#-#-dccei-cp:123456:::l3org=000000;

   LT-WBM 98-01-01 08:00:00
M  123456 COMPLD
;
```

ERROR RESPONSES

Refer to the **RTRV-HDR** command **ERROR RESPONSES** section. The error responses listed there also apply to the **ENT-ULSDCC-L3** command.

RELATED TL1 MESSAGES

ENT-ULSDCC-L4

RTRV-ULSDCC-L3

RTRV-ULSDCC-L4

NAME

ENT-ULSDCC-L4: Enter Upper Layer Stack DCC Layer 4

The **ENT-ULSDCC-L4** command is available beginning in:

- Network Communication Controller, Release 1.0

LOGIN PRIVILEGE

User Privilege Code (UCFC/UCAL): S3

INPUT FORMAT

ENT-ULSDCC-L4:*tid*::*ctag*:::[*spec_block*];

DESCRIPTION

The **ENT-ULSDCC-L4** command is used to provision the user-settable parameters in Layer 4 of the OSI stack. User-settable Layer 4 parameters are used to enter TARP Manual Adjacencies and set TARP Loop Detection Buffer timers.There is a maximum of two provisionable manual adjacencies. Repeat the **ENT-ULSDCC-L4** command to provision the second TARP Manual Adjacency. Layer 4 parameters are also used to enable or disable TARP origination, propagation, and responder functions as well as the TARP/X.500 Gateway (T5GW) function. Other provisionable parameters associated with these functions are set in this command. All Layer 4 parameters that can be provisioned using the **ENT-ULSDCC-L4** command and that are needed for the operation of the system have initial values with the exception of the manual adjacencies. It is not necessary to provision any of the layer 4 parameters for the system to operate in a network.

The **ENT-ULSDCC-L4** command generates a **REPT DBCHG** message.

INPUT PARAMETERS

In the following parameter descriptions, “communications software reset” means a system reset on the NCC. The provisioned values do not take effect until after the reset.

Table 3-23. ENT-ULSDCC-L4 Input Parameters (Sheet 1 of 4)

Parameter Name	Description
tid	Target Identifier. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.
ctag	Correlation Tag. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.
	l4etof This parameter is used to enable or disable TARP Origination Functions only. This parameter is available starting in Release 1.0. Changing this parameter will result in a communications software reset. Values: ■ **ENABLE** ■ **DISABLE**. The initial value is **DISABLE**. Starting with Release 2.0, the initial value is **ENABLE**. ***l4etpf*** This parameter is used to enable or disable TARP Propagation Functions only. This parameter is available starting in Release 1.0. Changing this parameter will result in a communications software reset. Values: ■ **ENABLE** ■ **DISABLE**. The initial value is **DISABLE**. ***l4etrf*** This parameter is used to enable or disable TARP Responder Functions only. This parameter is available starting in Release 1.0. Changing this parameter will result in a communications software reset. Values: ■ **ENABLE** ■ **DISABLE**. The initial value is **ENABLE**.

Table 3-23. `ENT-ULSDCC-L4` Input Parameters (Sheet 2 of 4)

Parameter Name	Description
	l4tlif This parameter is available starting in Release 1.0. This parameter sets the TARP Lifetime field when the system, identified by the ***tid***, originates a TARP PDU. It specifies the maximum number of hops allowed for a TARP PDU. If this value is exceeded, the TARP PDU will not be forwarded. Values: **1 - 65535**. The initial value is **100** hops. ***l4t1tm*** This parameter sets the TARP Timer T1. This parameter is available starting in Release 2.0. T1 is the maximum time allowed for response to TARP **TYPE1** request PDU (search level 1 routing area). Values: **1**- **3600**. The initial value is **15** seconds. ***l4t2tm*** This parameter is available starting in Release 2.0. This parameter sets the TARP Timer T2. T2 is the maximum time allowed for response to TARP **TYPE2** request PDU (search outside of the level 1 area). Values: **1**- **3600.** The initial value is **25** seconds. ***l4t3tm*** This parameter is available starting in Release 2.0. This parameter sets the TARP Timer T3. T3 is the maximum time allowed for response to TARP **TYPE5** request PDU (requesting the TID when the NSAP address is known). Values: **1**- **3600**. The initial value is **40** seconds. ***l4t4tm*** This parameter is available starting in Release 2.0. This parameter sets the TARP Timer T4. Timer T4 starts when T2 expires. It is used for error recovery. Values: **1**- **3600**. The initial value is **20** seconds. ***l4etdc*** This parameter is available starting in Release 2.0. This parameter is used to enable or disable the TARP Data Cache. Values: ■ **ENABLE** ■ **DISABLE**. The initial value is **ENABLE**.

Table 3-23. ENT-ULSDCC-L4 Input Parameters (Sheet 3 of 4)

Parameter Name	Description
	l4etclp This parameter is available starting in Release 2.0. This parameter is used to enable or disable the TARP clipping function. It allows TARP PDUs to be dropped whenever the forwarding rate exceeds the maximum as determined by ***l4clim*** and ***l4cint***. Values: ■ **ENABLE** ■ **DISABLE**. The initial value is **DISABLE**. ***l4clim*** This parameter is available starting in Release 2.0. This parameter sets the TARP clipping limit. It specifies the maximum number of PDUs which can be forwarded in the interval ***l4cint*** seconds. Values: **10** - **2550** PDUs in 10 PDU increments. The initial value is 240 PDUs. ***l4cint*** This parameter is available starting in Release 2.0. This parameter sets the TARP clipping interval. Its value determines the time period in which the maximum number of PDUs, ***l4clim***, can be forwarded before activating the clipping function. Values: **1** - **255** seconds in 1 second increments. The initial value is **12** seconds. ***l4et5gw*** This parameter is available starting in Release 3.0. This parameter is used to enable or disable the TARP/X.500 gateway (T5GW) function. The TARP origination function, ***l4etof***, must be enabled to enable the gateway function. Values: ■ **ENABLE** ■ **DISABLE**. The initial value is **DISABLE**. ***l4tme*** This parameter is available starting in Release 3.0. This parameter sets the discovery timer, Timer E, which determines the frequency at which the T5GW invokes the discovery process. This timer is initiated when the T5GW is enabled or when the current timer expires. Values: **10** - **2550** minutes in 10-minute increments. The initial value is **20** minutes.

Table 3-23. `ENT-ULSDCC-L4` Input Parameters (Sheet 4 of 4)

Parameter Name	Description
	l4tmf This parameter is available starting in Release 3.0. This parameter sets the anti-flooding timer, Timer F, which is used to prevent flooding the network with **TYPE5** PDUs and their **TYPE3** responses during the T5GW discovery process. Values: **1.0** - **60.0** seconds in 0.5-second increments. The initial value is **1** second. ***l4add*** This parameter is available starting in Release 3.2. This parameter sets the transport selector field, T-SEL, in the TSAP-ID. This field has a range of 1-4 octets. The initial value is **0x5454**. ***l4wintm*** This parameter is available starting in Release 3.2. This parameter sets the maximum time to wait before retransmitting window information, W. Values: **1** - **255** seconds in 1-second increments. The initial value is **16** seconds. ***l4lack*** This parameter is available starting in Release 3.2. This parameter sets the local acknowledgment timer. Values: **1** - **255** seconds in 1-second increments. The initial value is **1** second. ***l4tpdu*** This parameter is available starting in Release 3.2. This parameter sets the largest value of the maximum transport PDU. Values: **128**, **256**, **512**, **1024** octets. The initial value is **1024** octets. These values are also allowed: **2048**, **4096**, **8192**. ***l4crdt*** This parameter is available starting in Release 3.2. This parameter sets the transport credit parameter, the maximum number of outstanding unacknowledged transport PDUs allowed. Values: **1** - **15** PDUs in increments of 1 PDU. The initial value is **5** PDUs.

OUTPUT FORMAT

If the network element fully complies with the request, the following normal completion response is returned:

```
   sid date time
M  ctag COMPLD
;
```

OUTPUT PARAMETERS

Refer to the **RTRV-HDR** command **OUTPUT PARAMETERS** section. The output parameters listed there for the normal completion response also apply to the **ENT-ULSDCC-L4** command.

EXAMPLE INPUT/OUTPUT

If the **ENT-ULSDCC-L4** request is successful, the network element returns the following normal completion response:

```
ENT-ULSDCC-L4:LT-WBM:1-1-#-#-dccei-cp:123456:::l4etpf=ENABLE;

   LT-WBM 98-01-01 08:00:00
M  123456 COMPLD
;
```

ERROR RESPONSES

Refer to the **RTRV-HDR** command **ERROR RESPONSES** section. The error responses listed there also apply to the **ENT-ULSDCC-L4** command.

RELATED TL1 MESSAGES

ENT-ULSDCC-L3

RTRV-ULSDCC-L3

RTRV-ULSDCC-L4

NAME

ENT-ULSDCC-L5: Enter Upper Layer Stack DCC Layer 5

The **ENT-ULSDCC-L5** command is available beginning in:

- Network Communication Controller, Release 3.2

LOGIN PRIVILEGE

User Privilege Code (UCFC/UCAL): S3

INPUT FORMAT

ENT-ULSDCC-L5:*tid*::*ctag*:::[*spec_block*];

DESCRIPTION

The **ENT-ULSDCC-L5** command is used to provision the user-settable parameters in Layer 5 of the OSI stack.

The **ENT-ULSDCC-L5** command generates a **REPT DBCHG** message.

INPUT PARAMETERS

In the following parameter descriptions, “communications software reset” means a system reset on the NCC. The provisioned values do not take effect until after the reset.

Table 3-24. ENT-ULSDCC-L3 Input Parameters

Parameter Name	Description	
tid	Target Identifier. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.	
ctag	Correlation Tag. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.	
spec_block	***l5sel***	Session selector. This parameter is available starting in Release 3.2. This parameter identifies the layer 5 selector for the SSAP of the system. Modifying this parameter causes a communications software reset. This field has a range of 1-4 octets. The initial value is **5353** hex.

OUTPUT FORMAT

If the network element fully complies with the request, the following completion message will be returned:

```
   sid date time
M  ctag COMPLD
;
```

OUTPUT PARAMETERS

Refer to the **RTRV-HDR** command **OUTPUT PARAMETERS** section. The output parameters listed there for the normal completion response also apply to the **ENT-ULSDCC-L5** command.

EXAMPLE INPUT/OUTPUT

If the **ENT-ULSDCC-L5** request is successful, the network element returns the following normal completion response:

```
ENT-ULSDCC-L5:LT-WBM:1-1-#-#-dccei-cp:123456:::L5SEL=53534852;

   LT-WBM 98-01-01 08:00:00
M  123456 COMPLD
;
```

Note: In this example, the session selector is a 4 octet value corresponding to the ASCII, “SSHR,” but a value from 1 to 4 octets is allowed (the initial value is a 2 octet value, 5353).

ERROR RESPONSES

Refer to the **RTRV-HDR** command **ERROR RESPONSES** section. The error responses listed there also apply to the **ENT-ULSDCC-L5** command.

RELATED TL1 MESSAGES

ENT-ULSDCC-L3

ENT-ULSDCC-L4

RTRV-ULSDCC-L3

RTRV-ULSDCC-L4

RTRV-ULSDCC-L5

NAME

ENT-USER-SECU: Enter User Security

The **ENT-USER-SECU** command is available beginning in:

- Network Communication Controller, Release 1.0

LOGIN PRIVILEGE

User Privilege Code (UCFC/UCAL): S5

INPUT FORMAT

Starting in Release 1.0, the syntax is:

ENT-USER-SECU:*tid*:*uid*:*ctag*::*pid*,,*upc*:[*spec_block*];

DESCRIPTION

The **ENT-USER-SECU** command is used by an administrator to enter a new user and security parameters associated with that user.

The network element will always have two preinstalled users with full privileges in all functional categories. These two users will be referred to as Administrators (or Superusers). The network element will not allow adding additional administrator type users. It will not be possible to remove either of the original administrator login IDs.

An existing login ID (***uid***) cannot be renamed. It must be deleted and re-entered.

The **ENT-USER-SECU** command generates a **REPT DBCHG** message.

INPUT PARAMETERS

Table 3-25. ENT-USER-SECU Input Parameters (Sheet 1 of 3)

Parameter Name	Description
tid	Target Identifier. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.
uid	Specifies the new user ID (***uid***) name. Refer to the **ACT-USER** command.

Table 3-25. `ENT-USER-SECU` Input Parameters (Sheet 2 of 3)

Parameter Name	Description
ctag	Correlation Tag. Refer to the **`RTRV-HDR`** command for the input parameter syntax and description of this parameter.
pid	Specifies the password ID for the ***uid***. Refer to the **`ACT-USER`** command.
upc	The following values specify the user privilege code UCFC/UCAL pair for NCC. Values: ■ **P**i, **M**i, **S**i, **D**i where "i" is an integer ranging from **1** to **5**. Note: '**D**i' is a Lucent-only category which can only be used with a special password. ***uid***s with **D**i as the value of ***upc*** will be unable to set up a successful TL1 session. Upon executing the **`ACT-USER`** command, this user would be dumped into a debug session where he/she will not be able to pass the additional security tests and execute commands.
spec_block	***screen*** Message screening specifies the type of notifications and/or responses that are received by the ***uid***. Any combination of these values may be specified using ampersand (&). Values: ■ **DSUPDATE** Notifications on Addition or Deletion of TIDs to the Directory - report changes to the directory. User will receive **`REPT DBCHG`** messages. ■ **DBCHG** Establish/Modify/Remove Notifications - report changes in creation of entities/report changes in user provisionable parameters/ report changes in deletion of entities. Reports database changes. User will receive **`REPT DBCHG`** messages. ■ **ALARMS** Alarm Notifications. User will receive, **`REPT ALM`** and **`REPT EVT`** messages. ■ **ALL** All Notifications Listed Above. If **ALL** is specified it is needless to specify other values. If **ALL** is one of the values specified the NE will disregard the other values.

Table 3-25. ENT-USER-SECU Input Parameters (Sheet 3 of 3)

Parameter Name	Description
	■ **OWN** Responses to the user's own commands (initial value).User will receive no other notifications. This value is available starting in Release 3.1.5. If **OWN** is specified, no other values should be specified. If **OWN** is specified together with other values, the value **OWN** will be disregarded. If this parameter is omitted, it indicates that the user receives responses to the ***uid***'s own commands. ***page*** Password Aging Interval. This parameter is available starting in Release 3.1.5. This parameter specifies the period in days after which the user has to change the password of their account. A value of **0** disables the password aging interval function. The initial value is **90** days. If the parameter is not specified, it retains its current value. Values: ■ **0**, **7**-**999 days**. ***tmout*** Inactivity Timeout Period. This parameter is available starting in Release 3.1.5. If there are no messages between the user and the NE over the Timeout Period, the session is logged off. A value of **0** disables the timeout function.The initial value is **30** minutes. If the parameter is not specified, it retains its current value. Values: ■ **0**-**999 minutes**.

OUTPUT FORMAT

If the **ENT-USER-SECU** request is successful, the network element returns the following normal completion response:

```
   sid date time
M  ctag COMPLD
;
```

OUTPUT PARAMETERS

The output parameters included in the normal completion response are specified in the **OUTPUT PARAMETERS** section for the **RTRV-HDR** command.

EXAMPLE INPUT/OUTPUT

The following is an NCC example of the **ENT-USER-SECU** command:

```
ENT-USER-SECU:TID123:eureka:123456::pass12+,,P3&M3:
SCREEN=DBCHG&DSUPDATE,TMOUT=360;

   TID123 00-05-01 08:20:07
M  123456 COMPLD
;
```

ERROR RESPONSES

Refer to the **RTRV-HDR** command **ERROR RESPONSES** section. The error responses listed there apply to the **ENT-USER-SECU** command.

RELATED TL1 MESSAGES

DLT-USER-SECU

ED-USER-SECU

RTRV-USER-SECU

NAME

ENT-X25-MAP: Enter X.25 map

The **ENT-X25-MAP** command is available beginning in:

- Network Communication Controller, Release 3.0

LOGIN PRIVILEGE

User Privilege Code (UFC/UCAL): S3

INPUT FORMAT

ENT-X25-MAP:*tid*::*ctag*:::*spec_block*;

DESCRIPTION

This command creates entries in the X.25 subnetwork application context ID map. This map lists the Operations Systems (OS) X.25 DTE calling address and maps them to operation systems (OS) application contexts. For the SVCs, it lists the data terminal equipment (DTE) calling addresses used by the various OS application contexts. This command allows an OS to specify a management association to a PF-2000 network element through the Network Communications Controller (NCC) over an X.25 link. This command only affects the PF-2000 TL1 interface.

The **ENT-X25-MAP** command generates a **REPT DBCHG** message.

INPUT PARAMETERS

Table 3-26. ENT-X25-MAP Input Parameters (Sheet 1 of 2)

Parameter Name	Description
tid	Target Identifier. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.
ctag	Correlation Tag. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.

Table 3-26. `ENT-X25-MAP` Input Parameters (Sheet 2 of 2)

Parameter Name	Description
spec_block	***snpa*** This parameter is available starting in Release 3.0. SNPA is the X.25 subnetwork point of attachment address for the OS. It is the SVC Data Terminal Equipment (DTE) calling address, which is 1 to 14 digits. Up to 20 SVCs (Logical Channel Numbers 4 through 23) can be mapped by executing this command multiple times. This is a required parameter. ***acid*** OS application context ID.This parameter is available starting in Release 3.0. This is a value of up to twenty-three alphanumeric characters, which is the application context ID to be assigned to the particular SNPA address. If this parameter is omitted, the current value is not changed. Values: ■ **TL1MAINTENANCE** ■ **TL1MEMORYADMINISTRATION** ■ **TL1TEST** ■ **TL1OTHER1**. The default acid value for all SVCs is TL1PEERCOMM. (The acid parameter cannot be assigned the TL1PEERCOMM by the user. When an acid is unassigned via the **`DLT-X25-MAP`** command, the system will assign the value TL1PEERCOMM to the ***snpa***). The same ACID can be mapped to more than one virtual circuit. TL1PEERCOMM is also used when the calling SNPA is not listed in the X.25 subnetwork application context ID map.

OUTPUT FORMAT

If the logout request completes successfully, the following normal completion response is returned:

```
   sid date time
M  ctag COMPLD
;
```

OUTPUT PARAMETERS

The output parameters *sid*, *date*, *time*, and *ctag* included in the normal completion response are specified in the **OUTPUT PARAMETERS** section for the **RTRV-HDR** command.

EXAMPLE INPUT/OUTPUT

The following example shows a successful command completion and login session termination:

```
ENT-X25-MAP:LT-WBM::123456:::acid=tl1memoryadministration,
snpa=12345678901234;

   LT-WBM 98-01-01 08:00:00
M  123456 COMPLD
;
```

ERROR RESPONSES

Refer to the **RTRV-HDR** command **ERROR RESPONSES** section. The error responses listed there apply to the **ENT-X25-MAP** command.

RELATED TL1 MESSAGES

DLT-X25-MAP

ED-NE

ENT-X25-MAP

RTRV-NE

RTRV-X25-MAP

NAME

INIT-DIB: Initialize Directory Information Base (DIB)

The **INIT-DIB** command is available beginning in:

- Network Communication Controller, Release 3.1.8

LOGIN PRIVILEGE

User Privilege Code (UCFC/UCAL): S5

INPUT FORMAT

INIT-DIB:*tid*::*ctag*;

DESCRIPTION

The **INIT-DIB** command is used to initialize the Directory Information Base (DIB) on the NCC. The user must be logged on to the NCC where the Directory System Agent (DSA) and the DIB reside. All entries in the DIB will be removed upon execution of this command, but the user-defined prefixes will not be removed.This command is available only to superuser logins.

The **INIT-DIB** command generates a **REPT DBCHG** message.

INPUT PARAMETERS

Table 3-27. INIT-DIB Input Parameters

Parameter Name	Description
tid	Target Identifier. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.
ctag	Correlation Tag. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.

OUTPUT FORMAT

If the network element fully complies with the **INIT-DIB** command, then the following normal completion response is returned:

```
   sid date time
M  ctag COMPLD
;
```

OUTPUT PARAMETERS

Refer to the **RTRV-HDR** command **OUTPUT PARAMETERS** section for a normal completion response. The output parameters listed there also apply to the **INIT-DIB** command.

EXAMPLE INPUT/OUTPUT

The following example initializes the DIB on the NCC named LT-NE1:

```
INIT-DIB:LT-NE1::123456;

   LT-NE1 00-04-01 09:22:00
M  123456 COMPLD
;
```

ERROR RESPONSES

Refer to the **RTRV-HDR** command **ERROR RESPONSES** section. The error responses listed there also apply to the **INIT-DIB** command.

If the user tries to initialize the DIB on an NCC with no DSA, the following error response is returned:

```
   sid date time
M  ctag DENY
   SROF
   /* Status, Requested Operation Failed, local DSA not enabled */
;
```

RELATED TL1 MESSAGES

RTRV-DIB

NAME

INIT-EQPT: Initialize Equipment

The **INIT-EQPT** command is available beginning in:

- Network Communication Controller, Release 1.0

LOGIN PRIVILEGE

User Privilege Code (UCFC/UCAL): M4

INPUT FORMAT

INIT-EQPT*:tid:aid:ctag;*

DESCRIPTION

The **INIT-EQPT** command can be used to initialize a specific circuit pack, or in some cases a set of packs. The initialization is equivalent to removing the circuit pack(s) and then reinserting. The command is denied if it would be service affecting.

The **INIT-EQPT** command generates a **REPT DBCHG** message. There are no unique state change notifications associated with the **INIT-EQPT** command. There are, however, all the state change notifications associated with the subsequent restart. For example, there will be two operational state change notifications for a reset controller (one transition to disabled, one transition back to enabled).

INPUT PARAMETERS

Table 3-28. INIT-EQPT Input Parameters (Sheet 1 of 2)

Parameter Name	Description
tid	Target Identifier. Refer to **RTRV-HDR** for the input parameter syntax and description of this parameter. For NCC, this command is valid only if the ***tid*** is of an NCC located in slot 1 or slot 2 of the shelf, and this command is used to reset other NCC residing in a different slot.
ctag	Correlation Tag. Refer to **RTRV-HDR** for the input parameter syntax and description of this parameter.

Table 3-28. `INIT-EQPT` Input Parameters (Sheet 2 of 2)

Parameter Name	Description
aid	Access Identifier. Identifies the circuit pack that is to be initialized. Values: shelf AID or complex AID or Circuit Pack AID. See Appendix A for details. See the AID table in OSEG Appendix A. For the NCC, the ***aid***:=(**1|**...|**9**). If ***aid*** selects itself, then command is denied. That is, the "special NCC" can reset other NCCs, but not itself. This command is valid only if the ***tid*** is of an NCC located in slot 1 or slot 2 of the shelf, and this command is used to reset other NCC residing in a different slot.

OUTPUT FORMAT

If the network element fully complies with the **`INIT-EQPT`** request, the following normal completion response is returned:

```
   sid date time
M  ctag COMPLD
;
```

OUTPUT PARAMETERS

The output parameters included in the normal completion response are specified in the **OUTPUT PARAMETERS** section for the **`RTRV-HDR`** command.

EXAMPLE INPUT/OUTPUT

The following shows an example of the **`INIT-EQPT`** command where the AID identifies the 7th circuit pack in bay 4, shelf 3:

```
INIT-EQPT:LT-WBM:4-3-#-#-7-cp:123456;

   LT-WBM 98-01-01 08:00:00
M  123456 COMPLD
;
```

ERROR RESPONSES

Refer to the **RTRV-HDR** command **ERROR RESPONSES** section. The error responses listed there also apply to the **INIT-EQPT** command.

RELATED TL1 MESSAGES

INIT-SYS

RTRV-NE

INIT-EQPT
Network Communications Controller R3.2

NAME

INIT-SYS: Initialize System

The **INIT-SYS** command is available beginning in:

- Network Communication Controller, Release 1.0

LOGIN PRIVILEGE

User Privilege Code (UCFC/UCAL): S4

INPUT FORMAT

INIT-SYS:*tid*::*ctag*;

DESCRIPTION

For the NCC, the **INIT-SYS** command resets the board that is addressed by the ***tid***. That is, it resets itself. This is contrasted with the NCC **INIT-EQPT** command which resets a board other than that identified by the ***tid***.

The **INIT-SYS** command generates a **REPT DBCHG** message. There are no unique state change notifications associated with the **INIT-SYS** command. There are, however, all the state change notifications associated with the subsequent restart. This includes multiple state change messages. For example, there will be 2 operational state change notifications for each reset controller (one transition to disabled, one transition back to enabled).

INPUT PARAMETERS

Table 3-29. INIT-SYS Input Parameters

Parameter Name	Description
	For the NCC, the **INIT-SYS** command resets the board that is addressed by the ***tid***. That is, it resets itself. This is contrasted with the NCC **INIT-EQPT** command which resets a board other than that identified by the ***tid***.
ctag	Correlation Tag. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.

OUTPUT FORMAT

If the network element fully complies with the **INIT-SYS** request, the following normal completion response is returned to indicate the initialization has been started:

```
   sid date time
M  ctag COMPLD
;
```

OUTPUT PARAMETERS

The output parameters included in the normal completion response are specified in the **OUTPUT PARAMETERS** section for the **RTRV-HDR** command.

EXAMPLE INPUT/OUTPUT

The following example shows the **INIT-SYS** command that initializes the system controllers, subrack controllers, and DCC controllers that are in the system:

```
INIT-SYS:LT-WBM::123456;

   LT-WBM 98-01-01 08:00:00
M  123456 COMPLD
;
```

ERROR RESPONSES

Refer to the **RTRV-HDR** command **ERROR RESPONSES** section. The error responses listed there also apply to **INIT-SYS** command.

RELATED TL1 MESSAGES

INIT-EQPT

NAME

PING: Ping IP Address

The **PING** command is available beginning in:

- Network Communication Controller, Release 3.1.8

LOGIN PRIVILEGE

User Privilege Code (UCFC/UCAL): M1

INPUT FORMAT

PING:*tid*::*ctag*::*iphost*;

DESCRIPTION

The **PING** command is used to send a low overhead query and response (a ping) to determine the reachability of the specified IP address from the NCC.

The **PING** command does not generate a **REPT DBCHG** message.

INPUT PARAMETERS

Table 3-30. PING Input Parameters

Parameter Name	Description
tid	Target Identifier. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.
ctag	Correlation Tag. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.
iphost	IP host. This is the address of the IP host whose reachability is being determined.

OUTPUT FORMAT

If the network element fully complies with the **PING** command, then the following normal completion response is returned:

```
   sid date time
M  ctag COMPLD
   "Pinging iphost with 32 bytes of data:"
   "pingoutput" <one or more lines>
;
```

OUTPUT PARAMETERS

Refer to the **RTRV-HDR** command **OUTPUT PARAMETERS** section for a normal completion response. The output parameters listed there also apply to the **PING** command.

Table 3-31. PING Output Parameters

Parameter Name	Description
pingoutput	Ping output line. There could be many such lines in the output, each indicating the success or failure of successive ping queries. Lines indicating success give the time taken (xx) and the time to live (yyy). Lines indicating failure give a reason for the failure. Values: ■ "Reply from iphost: bytes=32 time<*xx* ms TTL=*yyy*" ■ "Bad IP address" ■ "Request timed out".

EXAMPLE INPUT/OUTPUT

The following example performs a PING on 135.13.163.253 from the NCC named LT-NE1:

```
PING:LT-NE1::123456::135.13.163.253;

   LT-NE1 00-04-01 09:22:00
M  123456 COMPLD
   "Pinging 135.13.163.253 with 32 bytes of data:"
   "Reply from 135.13.163.253: bytes=32 time<10ms TTL=128"
   "Reply from 135.13.163.253: bytes=32 time<10ms TTL=128"
   "Reply from 135.13.163.253: bytes=32 time<10ms TTL=128"
   "Reply from 135.13.163.253: bytes=32 time<10ms TTL=128"
;
```

ERROR RESPONSES

Refer to the **RTRV-HDR** command **ERROR RESPONSES** section. The error responses listed there also apply to the **PING** command.

RELATED TL1 MESSAGES

RTRV-HDR

NAME

REPT ALM: Report Alarm

The **REPT ALM** autonomous message is available beginning in:

- Network Communication Controller, Release 1.0

DESCRIPTION

REPT ALM messages are generated autonomously by the network element to report an alarm that requires immediate attention by the craft at the OS. Each alarm message has an alarm severity associated with it.

General Discussion of Alarms

See **RTRV-ALM** for a general discussion of Alarms.

If an alarm has an alarm level of critical, major, or minor, then its occurrence will be reported in a **REPT ALM** message.

An alarm reported to the OS via the **REPT ALM** message has a corresponding **REPT ALM** clearance message that is generated when the alarm clears.

OUTPUT FORMAT

The general format of a **REPT ALM** autonomous message is as follows:

```
   sid date time
almcde  atag REPT ALM modifier
   "aid:condtype,condeff,ocrdat,ocrtm[:\"conddescr\"]"
   (1 or more lines of the above)
;
```

OUTPUT PARAMETERS

The output parameters included in the normal completion response are specified in the **OUTPUT PARAMETERS** section for the **RTRV-HDR** command.

Table 3-32. REPT ALM Output Parameters (Sheet 1 of 2)

Parameter Name	Description
almcde	Alarm Code. This parameter has one of the following values: ■ *C - Critical alarm ■ ** - Major alarm ■ * - Minor alarm ■ A - Automatic message (nonalarm). This is used only to report a cleared alarm. Note: Critical is not applicable to the NCC.
atag	Automatic Tag. The *atag* is used for message sequencing. The number is incremented by one for each autonomous message sent by the network element. The network element uses whole numbers from 000 through 999.
modifier	This parameter is a message modifier to the output. It has one of the following values: ■ COM — Common. An event that applies to the whole network element system, for example, a processing error. ■ EQPT — An equipment-related event
aid	Access Identifier. This is the address of the equipment component or facility, as identified by the modifier, for which an alarm is being reported. See the AID table in OSEG Appendix A.
ntfcncde	Notification Code. This is the alarm level and will have one of the following values: ■ CR - Critical alarm ■ MJ - Major alarm ■ MN - Minor alarm ■ CL - Cleared alarm. Note: CR is not applicable to the NCC.
condtype	Condition Type. This parameter is a cryptic description of the condition (*conddescr*), for example, *condtype* might be LOS and *conddescr* Communications, OC3 port, Loss Of Signal. See OSEG Appendix A for details.

Table 3-32. REPT ALM Output Parameters (Sheet 2 of 2)

Parameter Name	Description
srveff *srveff*	Service Effect. This indicates the effect of the reported alarm on service and has one of the following values: ■ SA - Service-affecting condition ■ NSA - Nonservice-affecting condition A message reporting the clearing of an alarm has the same *srveff* value as the one reporting the alarm. Note: SA is not applicable to the NCC.
ocrdat	Occurrence Date. This indicates the date of the alarm being reported and has the format MM-DD (month-day).
ocrtm	Occurrence Time. This indicates the time of the alarm being reported and has the format HH-MM-SS (hours-minutes-seconds).
conddescr	Description of the Condition. The general format is: category, entity, description, additional text. If there is no additional text, then the trailing comma may be omitted. See OSEG Appendix A for details. Example: Communications, OC3 port, Loss Of Signal.

EXAMPLE OUTPUT

For this example, the first NCC reports that the third NCC has failed:.

```
   LT-WBM 98-01-01 08:00:00
A  129 REPT ALM EQPT
  "NCC-3:CPFAIL,NSA,01-01,07-29-13:\"Circuit Pack Fail\""
;
```

RELATED TL1 MESSAGES

REPT EVT

RTRV-ALM

RTRV-HDR

NAME

REPT DBCHG: Report Database Change

The **REPT DBCHG** command is available beginning in:

- Network Communication Controller, Release 1.0

DESCRIPTION

The **REPT DBCHG** message reports any change in the system database. Changes can be caused by a TL1 user, a CMISE user, or by an internally-generated state change.

Changes in user provisionable attributes are reported as the equivalent TL1 command that would cause that change. Changes in non-user provisionable attributes are reported using only the AID and the BLOCK parameters.

Any time a command is entered that causes a system reset, a **REPT DBCHG** message is transmitted before the system resets.

Any time the system controller resets (including on power up), a **REPT DBCHG** message is transmitted after the controller has successfully recovered from the reset.

If a database change occurs as a result of a TL1 command in which an AID range is entered, the system will output separate **REPT DBCHG** messages for each affected AID.

If the database change occurs as a result of a TL1 command, a **REPT DBCHG** message will be transmitted to users provisioned to receive **REPT DBCHG** messages, including the user which issued the command. Therefore, a memory management OS must expect to receive database change messages for changes it caused.

OUTPUT FORMAT

The following output message is returned:

```
   sid date time
A  atag REPT DBCHG
   "TIME=chgtm,DATE=chgdat:ccb:[aid]:[com_block]:[spec_block]"
     ...
;
```

The output is formatted to look like the fields of a TL1 command, but it is not necessarily a command that can be input back to the system. For example, the *ccb* field could say RESET to signify a system reset, but RESET is not a valid TL1 command.

These are the notifications of additions or removals of directory entries. The parameter *ds_tid* contains the TID of the affected directory entry.

For an added NE:

```
   sid date time
A  atag REPT DBCHG
   "TIME=chgtm,DATE=chgdat:ENT-TADRMAP::ds_tid"
;
```

For a deleted NE:

```
   sid date time
A  atag REPT DBCHG
   "TIME=chgtm,DATE=chgdat:DLT-TADRMAP::ds_tid"
;
```

For multiple NEs added/removed:

```
   sid date time
A  atag REPT DBCHG
   "TIME=chgtm,DATE=chgdat:ENT-TADRMAP::ds_tid1"
   "TIME=chgtm,DATE=chgdat:ENT-TADRMAP::ds_tid2"
   "TIME=chgtm,DATE=chgdat:DLT-TADRMAP::ds_tid3"
   ...
   "TIME=chgtm,DATE=chgdat:ENT-TADRMAP::ds_tidN"
;
```

OUTPUT PARAMETERS

Refer to the **RTRV-HDR** command **OUTPUT PARAMETERS** section. The output parameters listed there for the normal completion response also apply to the **REPT DBCHG**. Additional parameters that specifically apply to this **REPT DBCHG** response are defined as follows:

Table 3-33. REPT DBCHG Output Parameters

Parameter Name	Description
atag	Automatic Tag. This is used for message sequencing. The number is incremented by one for each autonomous message, and the messages are transmitted to the user in that same order. Values: 000 through 999.
chgtm	Time When The Change Occurred. Value: HH-MM-SS.
chgdat	Date When The Change Occurred. Value: YY-MM-DD.
ccb	Command Code Block. Value: verb-modifier[-modifier]
aid	Access Identifier(s). One or more AIDs, separated by a comma. See the AID table in OSEG Appendix A. The *aid* block can also contain a 'uid' parameter; for example, the report a change made with **ENT-USER-SECU**. The *aid* can also be reported using && ranging; for example, 1-1-#-#-01-1-1&&-192.
com_block	Common Block. This is a position-defined field. If the database change is the result of a TL1 command which contains parameters in this block, the parameter values are included in this block in the same order as the corresponding TL1 command.
spec_block	Specific Block. This is a name-defined field. If the database change is the result of a TL1 command which contains parameters in this block, the parameter names and values are included in this block. Parameters within the specific block are positionally independent and are specified using a name-defined construct of: PARAMETER=value in a comma-separated list. The parameter names are the same as those for the corresponding TL1 command.

EXAMPLE OUTPUT

The following is an example of the **REPT DBCHG** command:

```
   LT-WBM 98-01-01 08:00:00
A  001 REPT DBCHG
   "TIME=07-59-59,DATE=98-01-01:ED-EQPT:1-1::ONCPI=2:"
;
```

RELATED TL1 MESSAGES

INIT-SYS

NAME

REPT EVT: Report Event

The **REPT EVT** autonomous message is available beginning in:

- Network Communication Controller, Release 1.0

DESCRIPTION

REPT EVT messages are generated autonomously to report alarms of level not alarmed.

General Discussion of Alarms

See the **RTRV-ALM** command for a general discussion of alarms.

If an alarm is provisioned as Not Alarmed (NA), then the occurrence of that alarm is reported in a **REPT EVT** message. **REPT EVT** messages also occur when any such standing alarms clear and are used to report transient conditions.

A standing condition is an alarm event that has a beginning and an end. When the event begins, the standing condition is declared via an autonomous message. When the event ends, an autonomous message is sent to indicate that the event cleared.

A transient condition only results in one autonomous message - a declaration that a specific transient condition occurred.

OUTPUT FORMAT

The general format of a **REPT EVT** autonomous message is as follows:

```
   sid date time
A  atag REPT EVT modifier
   "aid:condtype,condeff,ocrdat,ocrtm[:\"conddescr\"]"
;
```

OUTPUT PARAMETERS

The output parameters included in the normal completion response are specified in the **OUTPUT PARAMETERS** command section for the **RTRV-HDR** command.

Table 3-34. REPT EVT Output Parameters (Sheet 1 of 3)

Parameter Name	Description
atag	Automatic Tag. The *atag* is used for message sequencing. The number is incremented by one for each autonomous message sent by the network element. The network element uses whole numbers from 000 through 999.
modifier	This parameter is a message modifier to the output. It has one of the following values: ■ COM — Common. An event that applies to the whole network element system, for example, a processing error. ■ EQPT — An equipment-related event
aid	Access Identifier. See the AID table in OSEG Appendix A for details about a specific AID. For a non protection switching event, *aid* is the address of the equipment component or facility, as identified by the modifier, for which an alarm is being reported. For a protection switching event, *aid* is either the address of the currently active unit or of the previously active unit. Which one is used is a function of the type of switch and also the protection group type. For either lockout or the clearing of a lockout, the AID of the locked out entity is used. This rule is independent of the protection group type.

Table 3-34. REPT EVT Output Parameters (Sheet 2 of 3)

Parameter Name	Description
	For 1xNELEC, 1+1 Optical revertive, 1xNOPT, 2F, and 4F protection groups the AID selection is defined as follows: if the protection unit is active, the AID of the previously active unit is reported. If protection unit is not active, the AID of the currently active unit is reported. There are 4 case to consider: ■ W(orking) -> P(rotection) ■ P -> W ■ W -> W ■ P -> P. Using *protn* and *wkg* to represent the working and protection AID's, the AID's for there 4 cases are: ■ *wrk* ■ *wrk* ■ *wrk* ■ *protn*. For 1+1 Optical nonrevertive, the AID of the previously active unit is reported. For the 4 cases ■ W -> P ■ P -> W ■ W -> W ■ P -> P the corresponding AID's are: ■ *wrk* ■ *protn* ■ *wrk* ■ *protn*. For path protection groups (PATHDRI, CONSTITUENTPATH, etc.), the AID of the protection group is reported. For the timing reference protection group type, the AID of the currently active timing reference is used. For a clock mode protection switch, SYSTEM is used as the AID.
condeff	Condition Effect. This indicates the effect of the reported event on the network element and has the following value: ■ TC - Transient condition (default).

Table 3-34. REPT EVT Output Parameters (Sheet 3 of 3)

Parameter Name	Description
conddescr	Description Of The Condition. The general format is: category, entity, description, additional text. If there is no additional text, then the trailing comma may be omitted. See OSEG Appendix A for details. For some protection switching events, *conddescr* is: category, entity, description, additional text, protype where protype can be 1+1, 1xNOPT, 2F, 4F. Example: Communications, OC-3 port, Loss Of Signal Example: Environmental, Misc Discrete, door open
condtype	Condition Type. This is a cryptic description of the condition (*conddescr*), for example, *condtype* might be LOS and *conddescr* Communications, OC-3 port, Loss Of Signal. For TCAs, *conddescr* describes the monitored parameter, such as SES. See OSEG Appendix A for details.
ocrdat	Occurrence Date. This indicates the date of the alarm being reported and has the format MM-DD (month-day).
ocrtm	Occurrence Time. This indicates the time of the alarm being reported and has the format HH-MM-SS (hours-minutes-seconds).

EXAMPLE OUTPUT

All examples in this section contain autonomous messages from bay 1 shelf 1.

RELATED TL1 MESSAGES

REPT ALM

RTRV-ALM

RTRV-HDR

NAME

RTRV-ALM: Retrieve Alarm

The **RTRV-ALM** command is available beginning in:

- Network Communication Controller, Release 1.0

LOGIN PRIVILEGE

User Privilege Code (UCFC/UCAL): M1

INPUT FORMAT

RTRV-ALM[-*modifier*]:*tid*::*ctag*;

DESCRIPTION

RTRV-ALM command messages can be initiated by the user to retrieve all active alarms of level Major or Minor from a network element. Any alarm reported by an autonomous **REPT ALM** message which is active when a **RTRV-ALM** message is received, is included in the **RTRV-ALM** response message.

The alarms are reported one line per condition, similar to the autonomous messages conveyed by **REPT ALM**.

General Discussion of Alarms

This section describes alarms and the various TL1 commands that report alarms.

Alarms can have levels (notification codes) of critical, major, minor, not alarmed, or not reported (CR, MJ, MN, NA, NR). Environmental alarms are a subset of alarms. When a predefined environmental condition happens (such as a temperature being exceeded), then an environmental alarm is declared.

REPT ALM autonomous messages are used to report all alarms of level CR, MJ, MN except environmental alarms. There is a message when the alarm is declared and another when the alarm is cleared.

RTRV-ALM is an on-demand version of the autonomous **REPT ALM**. The on-demand commands only report alarms that are still set when the command is executed.

REPT EVT autonomous messages are used to report alarms of level NA, including environmental events. Nontransient status conditions result in two autonomous messages: one when the event is declared and another when it clears. Transients only result in one autonomous message. In addition to events reported via **REPT EVT** autonomous messages, there are other autonomous

messages for specific types of events. For example, **REPT DBCHG** autonomous messages report when provisioning changes are made. **REPT EVT** does not report events (for example, database changes) that are reported by other autonomous messages.

The **RTRV-ALM** command does not generate a **REPT DBCHG** message.

INPUT PARAMETERS

Table 3-35. RTRV-ALM Input Parameters

Parameter Name	Description
modifier	This parameter is a message modifier to the command and may have one of the following values: ■ **ALL** This requests all alarms. This is the default (equivalent to the value being omitted).
tid	Target Identifier. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.
aid	Access Identifier. This is the address of the entity for which the current conditions are requested. For initial releases, the ***aid*** may not be specified.
ctag	Correlation Tag. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.

OUTPUT FORMAT

The response to a valid **RTRV-ALM** request is as follows:

```
   sid date time
M  ctag COMPLD
   "aid,aidtype:ntfcncde,condtype,srveff,ocrdat,ocrtm[:\"conddescr\"]"
   (0 or more lines of the above)
;
```

Applicable output lines are ordered as follows:

1. Alarms are reported from greatest to least severity (CR, MJ, MN).

2. For conditions with the same alarm severity, by the value of occurrence date (ocrdat) and occurrence time (ocrtm), with the most recent listed first.

OUTPUT PARAMETERS

Refer to the **RTRV-HDR** command **OUTPUT PARAMETER**S section for a normal completion response. The output parameters listed there also apply to the **RTRV-ALM** command.

Table 3-36. RTRV-ALM Output Parameters (Sheet 1 of 2)

Parameter Name	Description
aid	Access Identifier. This is the address of the equipment component or facility site ID for which an alarm condition is being reported. For protection switch events (automatic, manual, force, and lockout) the address of the affected "service" or "from" entity is shown. See the AID table in OSEG Appendix A.
aidtype	Access Identifier Type. It may have one of the following values: ■ COM — Common. An event that applies to the whole network element system; for example, a processing error. ■ EQPT — An equipment-related event
condtype	Condition Type. This a cryptic description of the condition (*conddescr*), for example, *condtype* might be LOS and *conddescr* Communications, OC-3 port, Loss Of Signal. See OSEG Appendix A for details.
ntfcncde	Notification Code. This is the alarm level. Values: ■ CR — Critical alarm ■ MJ — Major alarm ■ MN — Minor alarm Note: CR is not applicable to the NCC.
srveff	Service Effect (or condition effect). This indicates the effect of the reported alarm/status condition on the network element. Values: ■ SA — Service-affecting alarm condition ■ NSA — Non-service-affecting alarm or status condition

Table 3-36. RTRV-ALM Output Parameters (Sheet 2 of 2)

Parameter Name	Description
srveff	Note: SA is not applicable to the NCC.
ocrdat	Occurrence Date. This indicates the date of the alarm being reported and has the format MM-DD (month-day).
ocrtm	Occurrence Time. This indicates the time of the alarm being reported and has the format HH-MM-SS (hours-minutes-seconds).
conddescr	Description Of The Condition. The general format is: category, entity, description, additional text. If there is no additional text, then the trailing comma may be omitted. See OSEG Appendix A for details. Example: Communications, OC-3 port, Loss Of Signal. Additional text will be limited to 24 ASCII characters.

EXAMPLE INPUT/OUTPUT

For this example, the first NCC reports that the third NCC has failed:

```
RTRV-ALM:LT-NCC:NCC-1:123456;

   LT-NCC 98-01-01 08:00:00
M  123456 COMPLD
   "NCC-3,EQPT:MJ,CPFAIL,NSA,12-29,14-29-35:\",, Circuit Pack Fail\""
;
```

ERROR RESPONSES

Refer to the **RTRV-HDR** command **ERROR RESPONSES** section. The error responses listed there also apply to the **RTRV-ALM** command.

RELATED TL1 MESSAGES

REPT ALM

REPT EVT

RTRV-HDR

NAME

RTRV-DIB: Retrieve Directory Information Base (DIB)

The **RTRV-DIB** command is available beginning in:

- Network Communication Controller, Release 3.1.8

LOGIN PRIVILEGE

User Privilege Code (UCFC/UCAL): S2

INPUT FORMAT

RTRV-DIB:*tid*::*ctag*;

DESCRIPTION

The **RTRV-DIB** command is used to retrieve the contents of the Directory Information Base (DIB) in the network. This command is useful for debugging and for determining the visibility of network elements.

The **RTRV-DIB** command does not generate a **REPT DBCHG** message.

INPUT PARAMETERS

Table 3-37. RTRV-DIB Input Parameters

Parameter Name	Description
tid	Target Identifier. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.
ctag	Correlation Tag. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.

OUTPUT FORMAT

If the network element fully complies with the **RTRV-DIB** command, then the following normal completion response is returned:

```
   sid date time
M  ctag COMPLD
   "tid,netype,net,[altaddr]"
   .
   .
   .
   "tid,netype,net,[altaddr]"
;
```

OUTPUT PARAMETERS

Refer to the **RTRV-HDR** command **OUTPUT PARAMETERS** section for a normal completion response. The output parameters listed there also apply to the **RTRV-DIB** command.

Table 3-38. RTRV-DIB Output Parameters (Sheet 1 of 2)

Parameter Name	Description
tid	TID associated with the NE entry in the DIB. Refer to the **RTRV-HDR** command for the syntax and description of this parameter.
netype	NE type associated with the NE entry in the DIB. Values: ■ NCC ■ BWM ■ 2.5G_10G ■ DDM ■ OTHER.
net	NE title associated with the NE entry in the DIB. This is a 20 octet string identical to the NSAP with the last octet set to 00. Refer to the **ENT-ULSDCC-L3** command for the syntax and description of NSAPs.

Table 3-38. RTRV-DIB Output Parameters (Sheet 2 of 2)

Parameter Name	Description
altaddr	Alternate address (currently IP address) associated with the NE entry in the DIB. Values: IP address consisting of four dot-separated decimal numbers ranging from 0 to 255.

EXAMPLE INPUT/OUTPUT

The following example retrieves the DIB in the network from an NCC named LT-NE1:

```
RTRV-DIB:LT-NE1::123456;

   LT-NE1 00-04-01 09:22:00
M  123456 COMPLD
   "DD/128,NCC,39840F8000000000000000000000609720CEDB00,135.13.162.192"
   "DD128,NCC,39840F8000000000000000000000609720CEDB00,135.13.162.192"
   "DD186,NCC,39840F8000000000000000000000060B0CDFAAB00,135.13.163.122"
   "DD224,DDM,39840F8000000000000000000000104BED445600,"
   "SBC,2.5G_10G,39840F8000000000000000000000080420F04D700,"
   "SBC2,NCC,39840F8000000000000000000000080420F021C00,135.13.163.253"
   "dd131,NCC,39840F8000000000000000000000060B085847600,135.13.162.195"
;
```

ERROR RESPONSES

Refer to the **RTRV-HDR** command **ERROR RESPONSES** section. The error responses listed there also apply to the **RTRV-DIB** command.

RELATED TL1 MESSAGES

INIT-DIB

NAME

RTRV-FTP: Retrieve FTP Server contents

The **RTRV-FTP** command is available beginning in:

- Network Communication Controller, Release 3.2

LOGIN PRIVILEGE

User Privilege Code (UCFC/UCAL): S4

INPUT FORMAT

RTRV-FTP:*tid*::*ctag*::*pathname*;

DESCRIPTION

The **RTRV-FTP** command is used to retrieve information about a specified file or directory in the NCC's FTP file server.

The **RTRV-FTP** command does not generate a **REPT DBCHG** message.

INPUT PARAMETERS

Table 3-39. RTRV-FTP Input Parameters

Parameter Name	Description
tid	Target Identifier. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.
ctag	Correlation Tag. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.
pathname	Path Name. This parameter is available starting in Release 3.2. This is the location in the FTP file server from where the contents are to be retrieved.The root of the file structure is a predefined directory on the NCC file server, usually "C:\\ftp" or "D:\\ftp". Value: a string of directory names followed by an optional file name with "\\" used as separator.

OUTPUT FORMAT

If the network element fully complies with the **RTRV-FTP** command, then the following normal completion response is returned:

```
   sid date time
M  ctag COMPLD
   "filedesc" <one or more lines>
   "spaceavail"
;
```

OUTPUT PARAMETERS

Refer to the **RTRV-HDR** command **OUTPUT PARAMETERS** section for a normal completion response. The output parameters listed there also apply to the **RTRV-FTP** command.

Table 3-40. RTRV-FTP Output Parameters

Parameter Name	Description
filedesc	File description line. This parameter is available starting in Release 3.2. There could be many such lines in the output, each describing a file or directory in the FTP server. Values: ■ a string with file name, file size in bytes, creation date/time (for file entries) ■ a string with directory name, keyword DIR, creation date/time (for directories).
spaceavail	Space available line. This parameter is available starting in Release 3.2. Value: “free space=xx, unavailable space=yy” where xx and yy are in bytes.

EXAMPLE INPUT/OUTPUT

The following example retrieves the contents of the root directory of the FTP server in an NCC named LT-NE1:

```
RTRV-FTP:LT-NE1::123456::"";

   LT-NE1 00-04-01 09:26:00
M  123456 COMPLD
   "readme.txt                171134         00-04-14 17:06:38"
   "ncc.sw_generic.pax.lz   16531295         00-04-13 16:53:13"
   "ncc3.2.0                    DIR          00-04-14 17:25:31"
   "quickDev                    DIR          00-04-14 17:25:31"
   "traces                      DIR          00-04-14 17:25:31"
   "free space=1663892480, unavailable space=503677952"
;
```

ERROR RESPONSES

Refer to the **RTRV-HDR** command **ERROR RESPONSES** section. The error responses listed there also apply to the **RTRV-FTP** command.

If an invalid ***pathname*** parameter is specified, then the following error response is returned:

```
   sid date time
M  ctag DENY
   IDNV
   /* Input, Data Not Valid, invalid pathname */
;
```

RELATED TL1 MESSAGES

CPY-FTP

DLT-FTP

ENT-FTP

NAME

RTRV-HDR: Retrieve Header

The **RTRV-HDR** TL1 command is available beginning in:

- Network Communication Controller, Release 1.0

LOGIN PRIVILEGE

User Privilege Code (UCFC/UCAL): Any

INPUT FORMAT

RTRV-HDR:*tid*::*ctag*;

DESCRIPTION

The **RTRV-HDR** command can be initiated by a user to request that the network element return a normal completion response.

In TL1 terminology, a ***parameter block*** always follows a colon ':'. Any trailing colons at the end of a command line may be omitted if they do not contain any parameters.

A parameter block can be either a block of position-defined parameters or it can be a ***spec_block*** (a block of name-defined parameters).

In a block of position-defined parameters, the parameter values are supplied at predefined positions within the parameter block. Two parameter values are separated by a comma. If the default value for a parameter is to be used, a null value is placed in the command line and the position of the parameter is maintained by keeping the comma. When default values are used for parameters at the end of the parameter block, it is not necessary to include all the trailing commas.

In all the TL1 command pages, for position-defined parameter blocks, simplified notation such as:
`[d],[e],[f],[g]`
is used to represent the following format:
`[d][,[e][,[f][,g]]]`
The following notation is also equivalent:
`[d],[e],[f][,g]`

In a specification block (*spec_block*), every parameter name is followed by an equal sign and the parameter value. The command line does not have to use all of the *spec_block* parameters. Also, *spec_block* parameters can appear in any order.

The word **NULL** is used for some of the parameter values in TL1 messages. For both input and output parameters, **NULL** means that the parameter is omitted.

TL1 messages use YY-MM-DD for the format of a date, meaning that the year only has two digits. This is consistent with Telcordia requirements. Internally, however, the system does use a 4-digit year. When the year appears in a response, the internal 4-digit year is truncated to two digits. When the year appears as an input parameter, for example in the **ED-DAT** command, years in the range 90-99 will represent 1990-1999, and years in the range 00-37 will represent 2000-2037.

Some string-valued parameters, like NENAME, allow any printable character within the double-quoted string (""). On output (**RTRV** and **REPT DBCHG**), the string is surrounded by escaped quotes \"\". Those parameters can contain any printable characters, including the TL1 parse characters (; : , "). Spaces and upper/lowercase are also preserved. Using two double-quotes "" will set the parameter to an empty string. But according to GR-831, within a quoted string, a double-quote character is escaped as \" and the backslash is escaped as \\. Within a backslash-quoted string (\"\"), the double-quote character is escaped as "" and the backslash is escaped as \\. Another caveat is that while that parameter can contain any printable character, in networks using a Telcordia OS, the TL1 parse characters (; : , ") should not be used. Particularly, the semicolon (;), less-than (<), and greater-than (>) characters must not be used in the string. (Reference: SR-1665 section 5.5.6.2)

The **RTRV-HDR** command does not generate a **REPT DBCHG** message.

INPUT PARAMETERS

Table 3-41. RTRV-HDR Input Parameters (Sheet 1 of 2)

Parameter Name	Description
tid	Target Identifier. This is the currently active name of the network element to which the command is addressed. The ***tid*** is a case insensitive character string of up to 20 characters. The allowed ASCII characters are letters “A” through “Z” and “a” through “z”, numbers “0” through “9”. The ***tid*** can contain segments separated by hypens (“-”), but each segment must begin with a letter.

Table 3-41. RTRV-HDR Input Parameters (Sheet 2 of 2)

Parameter Name	Description
ctag	Correlation Tag. This is included in the command by the TL1 user and is repeated by the network element in the response to allow the TL1 user to associate the command and response messages. Valid values for ***ctag*** include strings of up to 6 characters comprised of identifiers (alphanumerics beginning with a letter) or decimal numerals (a string of decimal digits with an optional non-trailing ".").

OUTPUT FORMAT

After receiving the **RTRV-HDR** command, the following normal completion response is returned:

```
IP^ctag<cr><lf>
<<cr><lf><lf>
^^^sid^date^time<cr><lf>
M^^ctag^COMPLD<cr><lf>
;
```

Where the following notation conventions apply:

Table 3-42. Notation Conventions

Notation	Description
<cr>	A carriage return in ASCII.
<lf>	A line feed in ASCII.
<>	The brackets are used to enclose one or more information items, e.g., <date>, <time>, <source identifier>, etc. The brackets are not transmitted.
^	The character ^ indicates a blank that must appear in the message.

For commands that generate output, if the output response is less than or equal to 4096 bytes, the response will be terminated by the *semicolon* (;) character.

If the output response is greater than 4096 bytes, the response lines will be partitioned into multiple responses. The continuation response will have another set of header lines with the same ***ctag***, along with additional output response lines. Each response will be terminated with the *greater than* (>) character, except the last one which will be terminated by the *semicolon* (;) character.

If an output response is partitioned into multiple responses, an IP acknowledgment will be sent between the continuation responses if the delay between continuation responses is greater than 2 seconds.

OUTPUT PARAMETERS

Table 3-43. RTRV-HDR Output Parameters

Parameter Name	Description
sid	Source Identifier. This is the currently active name of the network element to which the command is addressed.
date	Date output message is generated. This has the format YY-MM-DD (year-month-day).
time	Time output message is generated. This has the format HH:MM:SS (hours:minutes:seconds).
M	This indicates the output message is generated in response to a manual command.
ctag	Correlation Tag. This is included in the command by the TL1 user and is repeated by the network element in the response to allow the TL1 user to associate the command and response messages.
IP	In Progress. IP is sent in response to all commands with the exception of commands that result in error code output.
COMPLD	This is the completion code. It indicates that the command has been completed.

For commands that have an AID range as input, a COMPLD completion code means that the command was successful on all the AIDs within the range.

If a parameter has a current value, and a provisioning command attempts to reprovision the parameter with a value that is the same as its current value, the command will return a COMPLD completion code.

EXAMPLE INPUT/OUTPUT

The following is an example of the **RTRV-HDR** command:

```
RTRV-HDR:LT-WBM::123456;
IP 123456
<

   LT-WBM 98-01-01 08:00:00
M  123456 COMPLD
;
```

ERROR RESPONSES

The following error conditions are not unique to the **RTRV-HDR** command but may apply to any TL1 command.

There is no implied priority order of error checking suggested by this list of error responses.

The ***sid*** value in the error responses is that of the addressed network element. This is true even if a TL1-GNE sends an error message on behalf of an RNE.

When an error response is returned, there may not be an in-progress (**IP**) acknowledgment in the response.

If the TL1-GNE forwards a command to a remote network element and a communication failure occurs before the remote network element is able to respond, it is understood that no response may be returned.

The general format for simple error responses is as follows:

```
<cr><lf><lf>
   sid date time<cr><lf>
M  ctag^DENY<cr><lf>
   <error code><cr><lf>
   /*<error text>*/<cr><lf>
;
```

Where <error code> is a 4-character code and <error text> is a text string.

If there was an input failure because the command cannot be processed, the following error response is returned:

```
   sid date time
M  ctag DENY
   ICNV
   /* Input, Command Not Valid */
;
```

If a ***tid*** value is required but no ***tid*** value is included, the following error response is returned, using the *sid* of the system that detected the error:

```
   sid date time
M  ctag DENY
   ICNV
   /* Input, Command Not Valid, missing TID */
;
```

If the command is not recognized, the following error response is returned:

```
   sid date time
M  ctag DENY
   SCNF
   /* Status, Command Not Found, command not recognized */
;
```

If the command cannot be parsed due to a syntax or punctuation error, the following error response is returned. If the command cannot be parsed for at least 3 colons, and no more than the maximum number of colons allowed before the TL1 end-of-message semicolon, the following error response is returned:

```
   sid date time
M  ctag DENY
   IISP
   /* Input, Invalid Syntax or Punctuation */
;
```

If the command is longer than 488 characters, the following error response is returned:

```
   sid date time
M  ctag DENY
   IISP
   /* Input, Invalid Syntax or Punctuation, command too long */
;
```

If the X.25 interface of the TL1-GNE is provisioned for a packet size of 128 bytes, this requirement implies that the TL1-GNE will process the more-bit for input commands exceeding 128 characters including the white space characters.

If there is an input failure due to the parameter types, the following error response is returned:

```
   sid date time
M  ctag DENY
   INUP
   /* Input, Non-null Unimplemented Parameter */
;
```

If any one or more of the input parameter values are not valid, the following error response is returned:

```
   sid date time
M  ctag DENY
   IDNV
   /* Input, Data Not Valid */
;
```

If an input parameter value is not valid, the following error response is returned:

```
   sid date time
M  ctag DENY
   IDNV
   /* Input, Data Not Valid, invalid <parameter name> */
;
```

where <parameter name> is the name of the input parameter.

If there is an input failure due to an invalid entity, the following error response is returned:

```
   sid date time
M  ctag DENY
   IENE
   /* Input, Entity Not Exists */
;
```

If there is an input failure due to an invalid command qualifier, the following error response is returned:

```
   sid date time
M  ctag DENY
   IPNC
   /* Input, Parameter Not Consistent */
;
```

If there is an input failure due to an invalid instance of an entity, the following error response is returned:

```
   sid date time
M  ctag DENY
   SDNC
   /* Status, Data Not Consistent,invalid instance of entity */
;
```

If the command has a syntactically incorrect ***tid***, the following error response is returned, using the *sid* of the system that detected the error:

```
   sid date time
M  ctag DENY
   IITA
   /* Input, Invalid TArget identifier,incorrect syntax */
;
```

If a command contains an unknown ***tid*** value (a ***tid*** value that does not exist in the network), the following error response is returned, using the *sid* of the system that detected the error:

```
   sid date time
M  ctag DENY
   IITA
   /* Input, Invalid TID, Unknown TID */
;
```

If a command has a valid ***tid*** value but the addressed remote network element is temporarily unable to communicate with the TL1-GNE, the following error response is returned, using the *sid* of the addressed system:

```
   sid date time
M  ctag DENY
   IITA
   /* Input, Invalid TID,Communications Failure */
;
```

For commands that have ***aid*** input parameters in the aid block, if the ***aid*** is syntactically incorrect, the following error response is returned:

```
   sid date time
M  ctag DENY
   IIAC
   /* Input, Invalid ACcess identifier, incorrect syntax */
;
```

For commands that have ***aid*** input parameters in the aid block, if the ***aid*** is valid syntactically but has an unknown value, the following error response is returned:

```
   sid date time
M  ctag DENY
   IIAC
   /* Input, Invalid ACcess identifier, unknown AID */
;
```

If the ***ctag*** value is missing, the following error response is returned. Note that the ***ctag*** value is 0 in the error response:

```
   sid date time
M  0 DENY
   ICNV
   /* Input, Command Not Valid,missing CTAG */
;
```

If the ***ctag*** value is non-NULL but invalid, the following error response is returned. Note that the same invalid ***ctag*** value is used for the *ctag* field in the error response:

```
   sid date time
M  ctag DENY
   IICT
   /* Input, Invalid Correlation Tag (CTAG), incorrect syntax */
;
```

If an input parameter accepts a range but the given range is incorrect, the following error response is returned:

```
   sid date time
M  ctag DENY
   IDRG
   /* Input, Data, Range Error */
;
```

If the command failed due to an invalid file or directory name, the following error response is returned:

```
   sid date time
M  ctag DENY
   SDNC
   /* Status, Data Not Consistent, invalid file or directory */
;
```

If a command has more than one input parameter, but the combination of values is not valid, the following error response is returned:

```
   sid date time
M  ctag DENY
   IDNC
   /* Input, Data, Not Consistent */
;
```

If the command failed due to equipage that is missing, the following error response is returned:

```
   sid date time
M  ctag DENY
   ENEQ
   /* Equipage, Not EQuipped */
;
```

If the command failed due to insufficient file space, the following error response is returned:

```
   sid date time
M  ctag DENY
   ENEQ
   /* Equipage, Not EQuipped, insufficient file space */
;
```

If the command failed due to incorrect equipage, the following error response is returned:

```
   sid date time
M  ctag DENY
   EATN
   /* Equipage, not valid for Access Type, incorrect equipage */
;
```

If the command failed due to a TID mismatch in a retrieved file, the following error response is returned:

```
   sid date time
M  ctag DENY
   EATN
   /* Equipage, Not Valid for Access Type, retrieved file TID mismatch    */
;
```

If the command failed due to a product mismatch in the retrieved file, the following error response is returned:

```
   sid date time
M  ctag DENY
   SRAC
   /* Status, Requested Access Configuration is invalid, retrieved    file
NE mismatch */
;
```

If the command failed due to failed target hardware, the following error response is returned:

```
   sid date time
M  ctag DENY
   SSTP
   /* Status, Stopped, failed target hardware */
;
```

If the command is denied based on mode, state, or status, the following error response is returned:

```
   sid date time
M  ctag DENY
   SNVS
   /* Status, Not in Valid State */
;
```

If the command is denied based on the maintenance condition, the following error response is returned:

```
   sid date time
M  ctag DENY
   SNVS
   /* Status, Not in Valid State, maintenance condition */
;
```

If the command is denied based on restoration mode, the following error response is returned:

```
   sid date time
M  ctag DENY
   SNVS
   /* Status, Not in Valid State, restoration mode */
;
```

If a command cannot be aborted, the following error response is returned:

```
   sid date time
M  ctag DENY
   SCNA
   /* Status, Command Not Able to be aborted */
;
```

If an entity already exists, the following error response is returned:

```
   sid date time
M  ctag DENY
   IEAE
   /* Input, Entity Already Exists */
;
```

If a user issues a command before a session is initiated with **ACT-USER**, the following error response is returned:

```
   sid date time
M  ctag DENY
   PLNA
   /* Privilege, Login Not Active */
;
```

If a command requires a privilege higher than that of the user issuing the command, or for any other security-related problems, the following error response is returned:

```
   sid date time
M  ctag DENY
   PICC
   /* Privilege, Illegal Command Code */
;
```

If an attempt is made to modify a red-lined cross-connection, the following error response is returned:

```
   sid date time
M  ctag DENY
   ERLC
   /* Equipage, Red-Lined Circuit */
;
```

If a command is not allowed because the system has not completed initializing, the following error response is returned:

```
   sid date time
M  ctag DENY
   SNVS
   /* Status, Not in Valid State, system initializing */
;
```

If the system is experiencing temporary exhaustion of allocated resources, the following error response is returned:

```
   sid date time
M  ctag DENY
   SARB
   /* Status, All Resources Busy, system limit exceeded */
;
```

If a command attempts to exceed an internal limit, the following error response is returned:

```
   sid date time
M  ctag DENY
   SSRE
   /* Status, System Resources Exceeded, allowed limit exceeded */
;
```

If the command cannot be completed due to system difficulties other than hardware or equipment, the following error response is returned:

```
   sid date time
M  ctag DENY
   SROF
   /* Status, Requested Operation Failed */
;
```

If the command cannot be completed due to internal system processing problems, the following error response is returned:

```
   sid date time
M  ctag DENY
   SROF
   /* Status, Requested Operation Failed, processing failure */
;
```

If the command failed because the control hardware is failed, missing, or initializing, the following error response is returned:

```
   sid date time
M  ctag DENY
   SWFA
   /* Status, Working unit FAiled, control hardware failed, missing or
   initializing */
;
```

If the command failed due to an external communications failure, the following error response is returned:

```
   sid date time
M  ctag DENY
   SROF
   /* Status, Requested Operation Failed, external communications    failure
*/
;
```

If the command failed because the generic is not available, the following error response is returned:

```
   sid date time
M  ctag DENY
   ENSG
   /* Equipage, Not Software Generic, generic not available */
;
```

If a user or outside agent has aborted the command, the following error response is returned:

```
   sid date time
M  ctag DENY
   SABT
   /* Status, Aborted */
;
```

For provisioning commands (non-RTRV commands) that take an AID range as input, if the command succeeded on only a nonempty subset of the AIDs, the

following error response is returned for the AIDs that were not completed successfully. Note that the completion code is PRTL, not DENY.

```
   sid date time
M  ctag PRTL
   "aid"
   <error code>
   /* <error text> */
   "aid"
   <error code>
   /* <error text> */
   ...
   "aid"
   <error code>
   /* <error text> */
;
```

The error codes and error text fields are as defined in the other error responses above.

If the command failed on all the AIDs, the completion code will be DENY, and there will only be a single error code and error text in the response.

RELATED TL1 MESSAGES

All other TL1 commands refer to the **RTRV-HDR** command for common requirements.

NAME

RTRV-IP-MAP: Retrieve TCP/IP map

The **RTRV-IP-MAP** command is available beginning in:

- Network Communication Controller, Release 3.1.

LOGIN PRIVILEGE

User Privilege Code (UFC/UCAL): S1

INPUT FORMAT

RTRV-IP-MAP:*tid*::*ctag*;

DESCRIPTION

The **RTRV-IP-MAP** command retrieves the entries from the TCP/IP application context ID map. This map provides association information between OS application contexts and OS TCP/IP addresses or host names. The ***tl1tctipgw*** parameter in the **RTRV-NE** command indicates whether or not the mapping feature is enabled.

The **RTRV-IP-MAP** command does not generate a **REPT DBCHG** message.

INPUT PARAMETERS

Table 3-44. RTRV-IP-MAP Input Parameters

Parameter Name	Description
tid	Target Identifier. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.
ctag	Correlation Tag. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.

OUTPUT FORMAT

If the command completes successfully, the following normal completion response is returned:

```
   sid date time
M  ctag COMPLD
   "system::spec_block"
;
```

The output is sorted by *ip*.

OUTPUT PARAMETERS

Refer to the **RTRV-HDR** command **OUTPUT PARAMETERS** section for a normal completion response. The output parameters listed there also apply to the **RTRV-IP-MAP** command.

Table 3-45. RTRV-IP-MAP Output Parameters

Parameter Name	Description
spec_block	*ip* This parameter is available in Release 3.1. IP is the IP address or host name for the OS. *acid* This parameter is available in Release 3.1. ACID is a value of up to twenty-three alphanumeric characters, which is the Application Context ID to be assigned to a particular IP address or host name. Each OS has a value of ACID assigned. Values: ■ TL1MAINTENANCE ■ TL1MEMORYADMINISTRATION ■ TL1TEST ■ TL1OTHER1 ■ TL1PEERCOMM.

EXAMPLE INPUT/OUTPUT

The following example shows a successful command completion:

```
RTRV-IP-MAP:LT-WBM::123456;

   LT-WBM 98-01-01 08:00:00
M  123456 COMPLD
   "system::ip=198.78.46.8,acid=tl1memoryadministration"
;
```

The following example shows another successful command completion:

```
RTRV-IP-MAP:LT-WBM::123456;

   LT-WBM 98-01-01 08:00:00
M  123456 COMPLD
   "system::ip=os1,acid=tl1memoryadministration"
;
```

ERROR RESPONSES

Refer to the **ERROR RESPONSES** section of the **RTRV-HDR** command. The error responses listed there also apply to the **RTRV-IP-MAP** command.

RELATED TL1 MESSAGES

DLT-IP-MAP

ED-NE

ENT-IP-MAP

RTRV-NE

NAME

RTRV-LOG-ALM: Retrieve Log Alarm

The **RTRV-LOG-ALM** command is available beginning in:

- Network Communication Controller, Release 1.0

LOGIN PRIVILEGE

User Privilege Code (UCFC/UCAL): S2

INPUT FORMAT

RTRV-LOG-ALM:*tid*::*ctag*::[*startdate*,*starttime*];

DESCRIPTION

The **RTRV-LOG-ALM** command retrieves the alarm log. This log gives the user a history and time sequence of all of the most recent anomalous behavior detected by the system regarding equipment or facilities attached to the system.

The Alarm log shall hold 1024 entries.

The **RTRV-LOG-ALM** command does not generate a **REPT DBCHG** message.

INPUT PARAMETERS

Table 3-46. RTRV-LOG-ALM Input Parameters (Sheet 1 of 2)

Parameter Name	Description
tid	Target Identifier. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.
ctag	Correlation Tag. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.
startdate	The Date For The Starting Point Of The Report. The format is YY-MM-DD. If both ***startdate*** and ***starttime*** are omitted, the entire log is retrieved. Both ***startdate*** and ***starttime*** must be specified, or both must be omitted.

Table 3-46. RTRV-LOG-ALM Input Parameters (Sheet 2 of 2)

Parameter Name	Description
starttime	The Time For The Starting Point Of The Report. The format is HH-MM-SS. If both ***startdate*** and ***starttime*** are omitted, the entire log is retrieved. Both ***startdate*** and ***starttime*** must be specified, or both must be omitted.

OUTPUT FORMAT

If the **RTRV-LOG-ALM** request completes successfully, the following normal completion response is returned:

```
   sid date time
M  ctag COMPLD
   "aid,aidtype:[ntfcncde],condtype,[srveff],ocrdat,ocrtm,[condeff],
[monval],[thlev],[tmper][:\"conddescr\"]"
        ...
   "aid,aidtype:[ntfcncde],condtype,[srveff],ocrdat,ocrtm,[condeff],
[monval],[thlev],[tmper][:\"conddescr\"]"
;
```

OUTPUT PARAMETERS

Table 3-47. RTRV-LOG-ALM Output Parameters (Sheet 1 of 2)

Parameter Name	Description
aid	Access Identifier. See the **RTRV-ALM** command for the syntax and description of this parameter.
aidtype	Access Identifier Type. See the **RTRV-ALM** command for the syntax and description of this parameter.
ntfcncde	Notification Code. See the **REPT ALM** command for the syntax and description of this parameter.
condtype	Condition Type. See the **RTRV-ALM** command for the syntax and description of this parameter. See also the description of the *almtype* parameter in the **RTRV-ALM-ENV** command.

Table 3-47. RTRV-LOG-ALM Output Parameters (Sheet 2 of 2)

Parameter Name	Description
srveff	Service Effect. See the **RTRV-ALM** command for the syntax and description of this parameter.
ocrdat	Occurrence Date. See the **RTRV-ALM** command for the syntax and description of this parameter.
ocrtm	Occurrence Time. See the **RTRV-ALM** command for the syntax and description of this parameter.
condeff	Condition Effect. See the **REPT EVT** command for the syntax and description of this parameter.
conddescr	Condition Description. See the **RTRV-ALM** command for the syntax and description of this parameter. See also the description of the *almmsg* parameter in the **RTRV-ALM-ENV** command.

EXAMPLE INPUT/OUTPUT

The following is an example of the **RTRV-LOG-ALM** command:

```
RTRV-LOG-ALM:LT-WBM::123456:::;

   LT-WBM 98-01-01 08:00:00
M  123456 COMPLD
   "1-1-o13-w-13-1,OC12:CR,LOS,SA,01-01,07-29-13:\\'LOS (Loss Of
Signal)\""
;
```

ERROR RESPONSES

Refer to the **RTRV-HDR** command **ERROR RESPONSES** section. The error responses listed there also apply to the **RTRV-LOG-ALM** command.

RELATED TL1 MESSAGES

RTRV-ALM

RTRV-LOG-NTFCN

RTRV-LOG-USER

RTRV-LOG-SECU

NAME

RTRV-LOG-NTFCN: Retrieve Log Notification

The **RTRV-LOG-NTFCN** command is available beginning in:

- Network Communication Controller, Release 1.0

LOGIN PRIVILEGE

User Privilege Code (UCFC/UCAL): S2

INPUT FORMAT

RTRV-LOG-NTFCN:*tid*::*ctag*::[*startdate*,*starttime*];

DESCRIPTION

The **RTRV-LOG-NTFCN** command retrieves the notification log. This log allows the user to see the most recent activity that has caused updates to a management system database. This is useful in solving database audit problems. This information can also be used to resynchronize a management system with the NE after a Communications Outage between the two. The log contains updates caused by user actions and by system actions (state changes).

The notification log is a circular buffer that shall hold 1000 entries.

Changes in user-provisionable attributes are reported as the equivalent TL1 command that would cause that change.

Changes in non-user-provisionable attributes are reported using only the AID and the BLOCK parameters.

The **RTRV-LOG-NTFCN** command does not generate a **REPT DBCHG** message.

INPUT PARAMETERS

Table 3-48. RTRV-LOG-NTFCN Input Parameters (Sheet 1 of 2)

Parameter Name	Description
tid	Target Identifier. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.

Table 3-48. RTRV-LOG-NTFCN Input Parameters (Sheet 2 of 2)

Parameter Name	Description
ctag	Correlation Tag. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.
startdate	The date for the starting point of the report. The format is YY-MM-DD. If both ***startdate*** and ***starttime*** are omitted, the entire log is retrieved. Both ***startdate*** and ***starttime*** must be specified, or both must be omitted.
starttime	The time for the starting point of the report. The format is HH-MM-SS. If both ***startdate*** and ***starttime*** are omitted, the entire log is retrieved. Both ***startdate*** and ***starttime*** must be specified, or both must be omitted.

OUTPUT FORMAT

If the **RTRV-LOG-NTFCN** request completes successfully, the following normal completion response is returned:

```
   sid date time
M  ctag COMPLD
   "umb:[ccb]:[aid]:[com_block]:[spec_block]:[state_block]"
        ...
   "umb:[ccb]:[aid]:[com_block]:[spec_block]:[state_block]"
;
```

OUTPUT PARAMETERS

The output parameters included in the normal completion response are specified in the **OUTPUT PARAMETERS** section for the **RTRV-HDR** command.

Table 3-49. RTRV-LOG-NTFCN Output Parameters

Parameter Name	Description
umb	Update Management Block. The parameters within this block are positionally independent and are specified using a name-defined construct of parameter=value in a comma-separated list. The parameters are: ■ *DATE* The date of the notification in the form YY-MM-DD. ■ *TIME* The time of the notification in the form HH-MM-SS.
ccb	Command Code Block. The name of the TL1 command that would cause the change in the user-provisionable parameter.
aid	Access Identifier of the entity that was modified. See the AID table in OSEG Appendix A.
com_block	Common Block of the TL1 command that would cause the change in the user-provisionable parameter.
spec_block	Specific Block of the TL1 command that would cause the change in the user-provisionable parameter.
state_block	State Block of the TL1 command that would cause the change in the user-provisionable parameter.

EXAMPLE INPUT/OUTPUT

The following is an example of the **RTRV-LOG-NTFCN** command:

```
RTRV-LOG-NTFCN:LT-WBM::123456:::;

   LT-WBM 98-01-01 08:00:00
M  123456 COMPLD
   "DATE=98-01-01,TIME=07-59-59:ED-EQPT:1-1::ONCPI=2:"
;
```

ERROR RESPONSES

Refer to the **RTRV-HDR** command **ERROR RESPONSES** section. The error responses listed there also apply to the **RTRV-LOG-NTFCN** command.

RELATED TL1 MESSAGES

RTRV-LOG-ALM

RTRV-LOG-PROTNSW

RTRV-LOG-USER

RTRV-LOG-SECU

NAME

RTRV-LOG-SECU: Retrieve Log Security

The **RTRV-LOG-SECU** command is available beginning in:

- Network Communication Controller, Release 1.0

LOGIN PRIVILEGE

User Privilege Code (UCFC/UCAL): S5

INPUT FORMAT

RTRV-LOG-SECU:*tid*::*ctag*::[*startdate*,*starttime*];

DESCRIPTION

The **RTRV-LOG-SECU** command can be initiated by a user to retrieve the security information log activity from the total network element. This log gives the customer a history of login execution and attempts (successful and unsuccessful) in order to pinpoint responsibility for network element activity.The user security log is circular and can hold over 512 entries.

The following table lists the security-related commands that get logged into the security information log.

Table 3-50. Commands in Security Information Log (Sheet 1 of 2)

Security-Related Event	Status
ACT-USER	COMPLD or DENY
CANC-USER	COMPLD or DENY
CANC-USER-SECU	COMPLD or DENY
DLT-SECU-USER	COMPLD or DENY
ED-DAT	COMPLD or DENY
ED-NE-SECU	COMPLD or DENY
ED-PID	COMPLD or DENY
ED-USER-SECU	COMPLD or DENY
ENT-USER-SECU	COMPLD or DENY

Table 3-50. Commands in Security Information Log (Sheet 2 of 2)

Security-Related Event	Status
INIT-DIB	COMPLD or DENY
INIT-EQPT	COMPLD or DENY
INIT-SYS	COMPLD or DENY

The **RTRV-LOG-SECU** command does not generate a **REPT DBCHG** message.

INPUT PARAMETERS

Table 3-51. RTRV-LOG-SECU Input Parameters

Parameter Name	Description
tid	Target Identifier. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.
ctag	Correlation Tag. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.
startdate	The date for the starting point of the report. The format is YY-MM-DD. If both ***startdate*** and ***starttime*** are omitted, the entire log is retrieved. Both ***startdate*** and ***starttime*** must be specified, or both must be omitted.
starttime	The time for the starting point of the report. The format is HH-MM-SS. If both ***startdate*** and ***starttime*** are omitted, the entire log is retrieved. Both ***startdate*** and ***starttime*** must be specified, or both must be omitted.

OUTPUT FORMAT

After receiving the **RTRV-LOG-SECU** command, the following system response is returned:

```
   sid date time
M  ctag COMPLD
   "login_id:umb:action:ccb:[com_block]:[spec_block]:[state_block]:ccde"
        ...
   "login_id:umb:action:ccb:[com_block]:[spec_block]:[state_block]:ccde"
;
```

OUTPUT PARAMETERS

Refer to the **RTRV-HDR** command **OUTPUT PARAMETERS** section for a normal completion response. The parameters listed there also apply to the **RTRV-LOG-SECU** command.

Table 3-52. RTRV-LOG-SECU Output Parameters (Sheet 1 of 2)

Parameter Name	Description
login_id	Login ID. The login identification of the user. This is a character string of up to 10 characters.
umb	Update Management Block. The parameters within this block are positionally independent and are specified using a name-defined construct of parameter=value in a comma-separated list. The parameters are: DATE The date of the user action in the form YY-MM-DD. TIME The time of the user action in the form HH-MM-SS.

Table 3-52. RTRV-LOG-SECU Output Parameters (Sheet 2 of 2)

Parameter Name	Description
action	Action. This parameter indicates the reason for the log entry. Reasons for a logout entry: ■ inactivity timeout ■ forced logout ■ self logout Reason for login failure: ■ expired passwd ■ invalid uid ■ invalid passwd ■ locked out uid Other reasons: ■ NE security variable change
ccb	Command Code Block. The name of the command.
com_block	Common Block of the Command.
spec_block	Specific Block of the Command.
state_block	State Block of the Command.
ccde	Completion Code. Value: ■ COMPLD or the 4-character error code.

EXAMPLE INPUT/OUTPUT

The following example shows a successful command completion and login session termination:

```
RTRV-LOG-SECU:LT-WBM-789::123456;

   LT-WBM 98-01-01 08:00:00
M  123456 COMPLD
   "AIRMAIL:DATE=98-01-02,TIME=07-59-59:NE security variable change:
ED-NE-SECU::THRSHLD=30,INTRVL=60,AGE=90::COMPLD"
   "MVJOK:DATE=98-01-03,TIME=06-59-59:inactivity timeout:::::COMPLD"
   "WHIPPNY:DATE=98-01-04,TIME=09-59-59:invalid passwd:ACT-USER::::
IDNV"
;
```

ERROR RESPONSES

Refer to the **RTRV-HDR** command **ERROR RESPONSES** section. The error responses listed there also apply to the **RTRV-LOG-SECU** command.

RELATED TL1 MESSAGES

ACT-USER

RTRV-LOG-ALM

RTRV-LOG-NTFCN

RTRV-LOG-USER

NAME

RTRV-LOG-TADRMAP: Retrieve Log TID address Map (i.e., Retrieve directory TID update log).

The **RTRV-LOG-TADRMAP** command is available beginning in:

- Network Communication Controller, Release 3.1

LOGIN PRIVILEGE

User Privilege Code (UCFC/UCAL): S2

Beginning with Release 3.1.5, the UPC is:
User Privilege Code (UCFC/UCAL): S1

INPUT FORMAT

RTRV-LOG-TADRMAP:*tid*::*ctag*::[*startdate*,*starttime*];

DESCRIPTION

The **RTRV-LOG-TADRMAP** command retrieves the TID address Map log (i.e., retrieves directory TID update log). This log gives the user a history of updates (i.e., additions and deletions) of directory TID entries of the NCC. This log can be used by OSs to discover changes to the directory if notifications were not received for any reason. The TID address Map log (i.e., directory TID update log) is a circular buffer that shall hold at least 512 entries.

The **RTRV-LOG-TADRMAP** command does not generate a **REPT DBCHG** message.

INPUT PARAMETERS

Table 3-53. RTRV-LOG-TADRMAP Input Parameters (Sheet 1 of 2)

Parameter Name	Description
tid	Target Identifier. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.
ctag	Correlation Tag. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.

Table 3-53. RTRV-LOG-TADRMAP Input Parameters (Sheet 2 of 2)

Parameter Name	Description
startdate	The date for the starting point of the report. The format is YY-MM-DD. If both ***startdate*** and ***starttime*** are omitted, the entire log is retrieved. Both ***startdate*** and ***starttime*** must be specified, or both must be omitted.
starttime	The time for the starting point of the report. The format is HH-MM-SS. If both ***startdate*** and ***starttime*** are omitted, the entire log is retrieved. Both ***startdate*** and ***starttime*** must be specified, or both must be omitted.

OUTPUT FORMAT

If the **RTRV-LOG-TADRMAP** request completes successfully, the following normal completion response is returned:

```
   sid date time
M  ctag COMPLD
   "umb:ds_tid:type"
        ...
   "umb:ds_tid:type"
;
```

OUTPUT PARAMETERS

The output parameters included in the normal completion response are specified in the **OUTPUT PARAMETERS** section for the **RTRV-HDR** command.

Table 3-54. RTRV-LOG-TADRMAP Output Parameters

Parameter Name	Description
umb	Update Management Block. The parameters within this block are positionally independent and are specified using a name-defined construct of parameter=value in a comma-separated list. The parameters are: ■ *DATE* The date of the notification in the form YY-MM-DD. ■ *TIME* The time of the notification in the form HH-MM-SS.
ds_tid	Directory Service Target Identifier. The tid whose directory entry has been updated. Refer to the RTRV-HDR command for the input parameter syntax and description of this parameter.
type	Type of TID directory entry update. Values: ■ ENT-TADRMAP The TID directory entry has been added to the directory. ■ DLT-TADRMAP The TID directory entry has been deleted from the directory.

EXAMPLE INPUT/OUTPUT

The following is an example of the **RTRV-LOG-TADRMAP** command:

```
RTRV-LOG-TADRMAP:LT6-WBM::123456::;

   LT-WBM 99-05-05 08:00:00
M  123456 COMPLD
   "DATE=99-05-05,TIME=07-59-59:LT1-WBM:ENT-TADRMAP"
   "DATE=99-05-05,TIME=07-59-56:LT2-WBM:DLT-TADRMAP"
   "DATE=99-05-05,TIME=07-59-53:LT3-WBM:ENT-TADRMAP"
   "DATE=99-01-05,TIME=07-59-47:LT26-OLS400G:ENT-TADRMAP"
   "DATE=99-01-05,TIME=07-59-39:BOSTON-36A:DLT-TADRMAP"
;
```

ERROR RESPONSES

Refer to the **RTRV-HDR** command **ERROR RESPONSES** section. The error responses listed there also apply to the **RTRV-LOG-TADRMAP** command.

RELATED TL1 MESSAGES

RTRV-LOG-ALM

RTRV-LOG-NTFCN

RTRV-LOG-USER

RTRV-LOG-SECU

NAME

RTRV-LOG-USER: Retrieve Log User

The **RTRV-LOG-USER** command is available beginning in:

- Network Communication Controller, Release 1.0

LOGIN PRIVILEGE

User Privilege Code (UCFC/UCAL): S2

INPUT FORMAT

RTRV-LOG-USER:*tid*::*ctag*::[*startdate*],[*starttime*],
[*replytype*];

DESCRIPTION

The **RTRV-LOG-USER** command retrieves the user session log. For security purposes, the customer can read this log to obtain the source login for any user-initiated network activity. The reply is not stored in the user session log; only the success/denial code is stored; unsuccessful login attempts are place in the security log, not here.

The user session log is a circular buffer that shall hold at least 512 entries.

The **RTRV-LOG-USER** command does not generate a **REPT DBCHG** message.

INPUT PARAMETERS

Table 3-55. RTRV-LOG-USER Input Parameters (Sheet 1 of 2)

Parameter Name	Description
tid	Target Identifier. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.
ctag	Correlation Tag. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.
startdate	The date for the starting point of the report. The format is YY-MM-DD. If both ***startdate*** and ***starttime*** are omitted, the entire log is retrieved. Both ***startdate*** and ***starttime*** must be specified, or both must be omitted.

Table 3-55. RTRV-LOG-USER Input Parameters (Sheet 2 of 2)

Parameter Name	Description
starttime	The time for the starting point of the report. The format is HH-MM-SS. If both ***startdate*** and ***starttime*** are omitted, the entire log is retrieved. Both ***startdate*** and ***starttime*** must be specified, or both must be omitted.

OUTPUT FORMAT

If the **RTRV-LOG-USER** request completes successfully, the following normal completion response is returned:

```
   sid date time
M  ctag COMPLD
   "uid:umb:ccb:[aid]:[com_block]:[spec_block]:[state_block]:ccde"
        ...
   "uid:umb:ccb:[aid]:[com_block]:[spec_block]:[state_block]:ccde"
;
```

OUTPUT PARAMETERS

The output parameters included in the normal completion response are specified in the **OUTPUT PARAMETERS** section for the **RTRV-HDR** command.

Table 3-56. RTRV-LOG-USER Output Parameters (Sheet 1 of 2)

Parameter Name	Description
uid	User ID. Refer to the **ACT-USER** command for a description of this parameter.

Table 3-56. RTRV-LOG-USER Output Parameters (Sheet 2 of 2)

Parameter Name	Description
umb	Update Management Block. The parameters within this block are positionally independent and are specified using a name-defined construct of parameter=value in a comma-separated list. The parameters are: ■ *DATE* The date of the user action in the form YY-MM-DD. ■ *TIME* The time of the user action in the form HH-MM-SS.
ccb	Command Code Block. The name of the TL1 command.
com_block	Common Block Of The TL1 Command.
spec_block	Specific Block Of The TL1 Command.
state_block	State Block Of The TL1 Command.
ccde	Completion Code. Value: COMPLD or the 4-character TL1 error code.

EXAMPLE INPUT/OUTPUT

The following is an example of the **RTRV-LOG-USER** command:

```
RTRV-LOG-USER:LT-WBM::123456:::;

   LT-WBM 98-01-01 08:00:00
M  123456 COMPLD
   "DEVONNEMOORE:DATE=99-02-26,TIME=14-30-55:ED-EQPT:1-
1::ONCPI=2::COMPLD"
;
```

ERROR RESPONSES

Refer to the **RTRV-HDR** command **ERROR RESPONSES** section. The error responses listed there also apply to the **RTRV-LOG-USER** command.

RELATED TL1 MESSAGES

ACT-USER

RTRV-LOG-ALM

RTRV-LOG-NTFCN

RTRV-LOG-SECU

NAME

RTRV-MAP-NEIGHBOR: Retrieve Map Neighbor

The **RTRV-MAP-NEIGHBOR** command is available beginning in:

- Network Communication Controller, Release 3.2

LOGIN PRIVILEGE

User Privilege Code (UCFC/UCAL): S1

INPUT FORMAT

RTRV-MAP-NEIGHBOR*:tid*::*ctag*;

DESCRIPTION

The **RTRV-MAP-NEIGHBOR** command will retrieve a list of all immediate OSI LAN neighbors for the local NCC. The list of neighbors can include network elements, other NCCs, as well as end systems like the CIT.

The response will list all neighbors provisioned as Level 1 and/or Level 2 independent of the routing area. If there is a link failure between the local NCC and a neighbor, that neighbor will not appear in the response.

The **RTRV-MAP-NEIGHBOR** command does not generate a **REPT DBCHG** message.

INPUT PARAMETERS

Table 3-57. RTRV-MAP-NEIGHBOR Input Parameters

Parameter Name	Description
tid	Target Identifier. Refer to the **RTRV-HDR** command for the description of this parameter.
ctag	Correlation Tag. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.

OUTPUT FORMAT

The general output format for the NCC is as follows:

```
   sid date time
M  ctag COMPLD
   ":thru:spec_block"
   ...
   ":thru:spec_block"
;
```

OUTPUT PARAMETERS

Refer to the **RTRV-HDR** command **OUTPUT PARAMETERS** section. The requirements listed there also apply to the **RTRV-MAP-NEIGHBOR** command. The following additional output parameters apply to **RTRV-MAP-NEIGHBOR**.

Table 3-58. RTRV-MAP-NEIGHBOR Output Parameters

Parameter Name	Description
thru	The type of connectivity between the system and its neighbor. This parameter is omitted for the local system's entry in the output. Values: n LAN
spec_block	*localnet* Local NET. This is the Network Entity Title (NET) of the local NCC. The NET is a 20 octet string identical to the NSAP with the last octet set to 00 (hex). Refer to the **ENT-ULSDCC-L3** command for the syntax and description of NSAPs. *net* This field is the Network Entity Title (NET) of one OSI neighbor. The NET is a 20 octet string identical to the NSAP with the last octet set to 00 (hex). Refer to the **ENT-ULSDCC-L3** command for the syntax and description of NSAPs. *nename* The NE name may be shown for some neighbors. It is a TL1 string of up to 20 characters and 7-bit hex values of [20-7E] (i.e., printable (ASCII) characters found in the English language will be allowed).

EXAMPLE INPUT/OUTPUT

The following is an example of the **RTRV-MAP-NEIGHBOR** command:

```
RTRV-MAP-NEIGHBOR:LT-NCC::123456;

   LT-NCC 00-05-21 08:00:00
M  123456 COMPLD
   "::,localnet=39840f8000000000000000000000601d0c01bd00,nename=LT-NCC"
   ":LAN:,net=39840f8000000000000000000000080420f6c3200"
   ":LAN:,net=39840f8000000000000000000008006a1a012300"
   ":LAN:,net=39840f8000000000000000000010060b0a3216400"
   ":LAN:,net=39840f8000000000000000000108006a1beb4500"
   ":LAN:,net=39840f8000000000000000022110080420f181100"
;
```

ERROR RESPONSES

Refer to the **RTRV-HDR** command **ERROR RESPONSES** section. The requirements listed there also apply to the **RTRV-MAP-NEIGHBOR** command.

RELATED TL1 MESSAGES

ENT-ULSDCC-L3

RTRV-MAP-NETWORK

RTRV-MAP-NEIGHBOR
Network Communications Controller R3.2

NAME

RTRV-MAP-NETWORK: Retrieve Map Network

The **RTRV-MAP-NETWORK** command is available beginning in:

- Network Communication Controller, Release 3.2

LOGIN PRIVILEGE

User Privilege Code (UCFC/UCAL): S1

INPUT FORMAT

Starting in Release 3.2:

RTRV-MAP-NETWORK:*tid*::*ctag*::[*level2*];

DESCRIPTION

The **RTRV-MAP-NETWORK** command will retrieve a list of the OSI systems that are reachable via the LAN from the local NCC. This list can include network elements, other NCCs, as well as end systems like the CIT.

Unlike **RTRV-MAP-NEIGHBOR**, a network element is only listed once in the report. The local OSI system is also listed in the report.

If the local NCC is provisioned as a Level 1 IS, the report will list only the reachable systems (including the default Level 2 IS) in the local Level 1 area.

The **RTRV-MAP-NETWORK** command does not generate a **REPT DBCHG** message.

INPUT PARAMETERS

Table 3-59. RTRV-MAP-NETWORK Input Parameters (Sheet 1 of 2)

Parameter Name	Description
tid	Target Identifier. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.
ctag	Correlation Tag. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.

Table 3-59. RTRV-MAP-NETWORK Input Parameters (Sheet 2 of 2)

Parameter Name	Description
level2	IS router level. The valid value for the parameter ***level2*** is: n **N** (initial value) Local NE provisioned as a Level 2 IS. Report will list only the reachable NEs (including Level 2 ISs) in the local Level 1 area.

OUTPUT FORMAT

In response to a valid **RTRV-MAP-NETWORK** command, the following output report is returned to the user:

```
   sid date time
M  ctag COMPLD
   "spec_block"
    ...
    ...
   "spec_block"
;
```

The output is a list of NSAPs sorted by area. Within each area, local NSAPs are listed first.

OUTPUT PARAMETERS

Refer to the **RTRV-HDR** command **OUTPUT PARAMETERS** section. The requirements listed there also apply to the **RTRV-MAP-NETWORK** command.

Table 3-60. RTRV-MAP-NETWORK Output Parameters

Parameter Name	Description	
spec_block	*net*	This field is the Network Entity Title (NET) of one OSI neighbor. The NET is a 20 octet string identical to the NSAP with the last octet set to 00(hex). Refer to the **ENT-ULSDCC-L3** command for the syntax and description of NSAPs.
	tid	Target Identifier. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter. This parameter is only listed for NSAPs within the local NE.

EXAMPLE INPUT/OUTPUT

The following is an example of the **RTRV-MAP-NETWORK** command:

```
RTRV-MAP-NETWORK:LT-NCC::123456;

   LT-NCC 00-05-23 09:10:05
M  123456 COMPLD
   "tid=LT-NCC,net=39840f8000000000000000000000601d0c01bd00"
   "net=39840f8000000000000000000008006a1a002300"
   "net=39840f8000000000000000000008006a1a012300"
   "net=39840f8000000000000000000008006a1b964c00"
   "net=39840f8000000000000000000008006a1b964f00"
   "net=39840f8000000000000000000008006a1bcd7700"
;
```

ERROR RESPONSES

Refer to the **RTRV-HDR** command **ERROR RESPONSES** section. The error responses listed there also apply to the **RTRV-MAP-NETWORK** command.

RELATED TL1 MESSAGES

ENT-ULSDCC-L3

RTRV-MAP-NEIGHBOR

NAME

RTRV-NE: Retrieve network element

The **RTRV-NE** command is available beginning in:

- Network Communication Controller, Release 1.0

LOGIN PRIVILEGE

User Privilege Code (UCFC/UCAL):S1

INPUT FORMAT

RTRV-NE:*tid*::*ctag*;

DESCRIPTION

The **RTRV-NE** command retrieves the attributes associated with the network element at the system level but not associated with any particular facility or equipment unit.

The **RTRV-NE** command does not generate a **REPT DBCHG** message.

INPUT PARAMETERS

Table 3-61. RTRV-NE Input Parameters

Parameter Name	Description
tid	Target Identifier. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.
ctag	Correlation Tag. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.

OUTPUT FORMAT

If the **RTRV-NE** command completes successfully, then the following normal completion response is returned:

```
   sid date time
M  ctag COMPLD
   ":spec_block"
   .    .    .
   .    .    .
   .    .    .
   ":spec_block"
;
```

OUTPUT PARAMETERS

The output parameters included in the normal completion response are specified in the **OUTPUT PARAMETERS** section for the **RTRV-HDR** command.

Table 3-62. RTRV-NE Output Parameters (Sheet 1 of 4)

Parameter Name	Description
spec_block	*dsa* Directory System Agent. This parameter is available starting with Release 1.0. This parameter is the NCC directory service function, supporting queries for network element name-address resolution and queries for other network element data. Values: ■ ENABLE ■ DISABLE (initial value). *duara* This parameter is available starting in Release 3.2. Directory User Agent and Registration Agent. Values: ■ ENABLE (initial value) ■ DISABLE.

Table 3-62. RTRV-NE Output Parameters (Sheet 2 of 4)

Parameter Name	Description
	rm Registration Manager. This parameter is available starting with Release 1.0. This function helps new network elements in a Level 1 OSI area register themselves in the appropriate directory, which may be on this Network Communication Controller or may be on a remote Network Communication Controller. Values: ■ ENABLE ■ DISABLE (initial value). *tcpiptb* TCP/IP Transport Bridge. This parameter is available starting with Release 1.0. This function performs TCP/IP to OSI protocol conversion for management interfaces to network elements using RFC 1006. Values: ■ ENABLE ■ DISABLE (initial value). *shlfalmon* Shelf Alarm Monitor. This parameter is available starting with Release 1.0. When serving this function, the Network Communication Controller will monitor and report shelf alarm conditions (for example, power supply and fan failures) for equipment shared by all systems in the shelf. Values: ■ ENABLE ■ DISABLE (initial value). *dsun* Directory Services Update Notification. This parameter is available starting with Release 1.0. When serving this function, the Network Communication Controller will report the addition and removal of network element entries in the directory. Values: ■ ENABLE ■ DISABLE (initial value).

Table 3-62. RTRV-NE Output Parameters (Sheet 3 of 4)

Parameter Name	Description
	dsunf Directory Services Update Notification Frequency, in minutes. This parameter is available starting with Release 1.0. Determines the frequency of checking the directory to report addition and removal of network element entries. The *dsun* parameter must be set to ENABLE for this parameter to have an effect. Values: 1 (initial value) - 60. *slot* This parameter is available starting with Release 1.0. Slot Number of the Network Communication Controller within the shelf, counting from the left of the shelf. This value is hard-wired into the backplane for each slot. Values: 1-9 *tl1x25gw* This parameter is available starting with Release 3.0. It enables or disables the TL1X25GW application. Values: ■ ENABLE ■ DISABLE (initial value). *tl1tcpipgw* This parameter is available starting with Release 3.0. It enables or disables the TCP/IP Gateway application, which is a pure TCP/IP to OSI conversion. Values: ■ ENABLE (initial value) ■ DISABLE. *ftpserver* This parameter is available starting in Release 3.2. This parameter enables or disables the FTP server function. Values: ■ ENABLE ■ DISABLE (initial value).

Table 3-62. RTRV-NE Output Parameters (Sheet 4 of 4)

Parameter Name	Description
	eth1 This parameter is available starting in Release 3.2. It indicates the communication protocols supported on LAN Port 1 of the NCC. Values: ■ TCPIP ■ OSI ■ ALL (initial value) ■ NONE. *eth2* This parameter is available starting in Release 3.2. It indicates the communication protocols supported on LAN Port 2 of the NCC. Values: ■ TCPIP ■ OSI ■ ALL ■ NONE (initial value).

EXAMPLE INPUT/OUTPUT

The following is an NCC example of the **RTRV-NE** command:

```
RTRV-NE:TID123::123456;

   TID123 98-01-01 08:00:00
M  123456 COMPLD
   ":elapstm=24"
   ":dsa=DISABLE"
   ":duara=ENABLE"
   ":rm=DISABLE"
   ":tcpiptb=DISABLE"
   ":shlfalmon=DISABLE"
   ":dsun=DISABLE"
   ":dsunf=1"
   ":tl1x25gw=DISABLE"
   ":tl1tcpipgw-ENABLE"
   ":ftpserver=DISABLE"
   ":eth1=ALL"
   ":eth2=NONE"
;
```

ERROR RESPONSES

Refer to the **RTRV-HDR** command **ERROR RESPONSES** section. The error responses listed there also apply to the **RTRV-NE** command.

RELATED TL1 MESSAGES

ED-NE

NAME

RTRV-NE-SECU: Retrieve network element security

The **RTRV-NE-SECU** command is available beginning in:

- Network Communication Controller, Release 3.1

LOGIN PRIVILEGE

User Privilege Code (UCFC/UCAL): S2

INPUT FORMAT

RTRV-NE-SECU:*tid*::*ctag*;

DESCRIPTION

The **RTRV-NE-SECU** command can be initiated by a user to retrieve global security information in the network element. The current login sessions in the network element identified by the *uid* will also be retrieved using the **RTRV-NE-SECU** command.

The **RTRV-NE-SECU** command does not generate a **REPT DBCHG** message.

INPUT PARAMETERS

Table 3-63. RTRV-NE-SECU Input Parameters

Parameter Name	Description
tid	Target Identifier. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.
ctag	Correlation Tag. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.

OUTPUT FORMAT

There is one output line for each session. The first line contains user information for the user and session that issued the **RTRV-NE-SECU** command.

If the network element fully complies with the **RTRV-NE-SECU** request, the following normal system response is returned:

```
   sid date time
M  ctag COMPLD
   "uid::spec_block"
   "uid"
   .
   .
   "uid"
;
```

OUTPUT PARAMETERS

Table 3-64. RTRV-NE-SECU Output Parameters (Sheet 1 of 2)

Parameter Name	Description
uid	User ID of the user that initiated the **RTRV-NE-SECU** command. This parameter is available starting in Release 3.1.7. Listed below this *uid* are *uids* of all the other sessions. If the user from which the **RTRV-NE-SECU** command was issued is logged on via other sessions, the *uid* list will contain each other instance of the *uid*, but the additional listing is just like the listing of any other user, without the additional user information. Values: Refer to the **ACT-USER** command.
spec_block	*thrshld* Lockout Threshold. This parameter is available starting in Release 3.1. The maximum number of consecutive invalid login attempts that are allowed by a *uid*. If the count of invalid login attempts is equal to the threshold, the *uid* is locked out for *intrvl* period of time. If a login attempt is successful, the count of invalid login attempts by that *uid* is reset to zero. Values: 2-99 *intrvl* Lockout Period. This parameter is available starting in Release 3.1. The time during which login attempts using that *uid* will not be allowed. This occurs when the number of consecutive invalid login attempts by a *uid* reaches *thrshld*. When *intrvl* expires, login attempts will again be allowed from that *uid*. If this parameter is set to 0 (zero), the lockout feature is disabled. Values (in minutes): 0-99

Table 3-64. RTRV-NE-SECU Output Parameters (Sheet 2 of 2)

Parameter Name	Description
	usrage User ID Aging Period. This parameter is available starting in Release 3.1. If a *uid* has not been used during this time interval, it will be disabled. Value (in days): 0-999. The initial value is 10. A value of 0 disables user ID aging.

EXAMPLE INPUT/OUTPUT

The following example shows the successful completion of the **RTRV-NE-SECU** command by the network element:

```
RTRV-NE-SECU:LT-WBM-789::123456;

   LT-WBM-789 98-01-01 08:00:00
M  123456 COMPLD
   "kjlee::THRSHLD=3,INTRVL=1"
   "njsmith"
   "mvjok"
   "airmail"
;
```

ERROR RESPONSES

Refer to the **RTRV-HDR** command **ERROR RESPONSES** section. The error responses listed there apply to the **RTRV-NE-SECU** command.

RELATED TL1 MESSAGES

ACT-USER

ED-NE-SECU

NAME

RTRV-PRMTR-DATA: Retrieve Parameter Data

The **RTRV-PRMTR-DATA** command is available beginning in:

- Network Communication Controller, Release 1.0

LOGIN PRIVILEGE

User Privilege Code (UCFC/UCAL): S1

INPUT FORMAT

RTRV-PRMTR-DATA:*tid*::*ctag*::[*amount*];

DESCRIPTION

The **RTRV-PRMTR-DATA** command retrieves information about the databases that are in Non Volatile Memory. Not only is the database identified by its release number, other information such as its state is also given.

The NCC has two copies of the generic. One is usually the previous generic and the other, the current generic. The DOWNLOAD option of **CPY-MEM** is used to download new generics to previous NVM (that is, a location on the hard drive that can be conceptually identified as “previous NVM”). Installation via **APPLY** causes the contents of previous NVM to be installed. Following installation, a “pointer” is changed so that what is identified as current NVM contains the currently executing generic and previous NVM contains the previous generic.

The **BACKUP** option of **CPY-MEM** is used to copy the database that is in current NVM to a file store (remote or local). The **RESTORE** option copies a database from a file store and places it into previous NVM and then installs it as the working database.

INPUT PARAMETERS

Table 3-65. RTRV-PRMTR-DATA Input Parameters (Sheet 1 of 2)

Parameter Name	Description
tid	Target Identifier. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.

Table 3-65. RTRV-PRMTR-DATA Input Parameters (Sheet 2 of 2)

Parameter Name	Description
ctag	Correlation Tag. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.
amount	Amount Of Data To Return. If a value is omitted then the current (active) generic is returned. Value: ■ **ALL** Current, secondary Even though the network element contains a copy of the previous and current generics, it only contains one copy of the database - the current one.

OUTPUT FORMAT

If the network element fully complies with the **RTRV-PRMTR-DATA** command, then the following normal completion response is returned if the amount is specified to be ALL:

```
   sid date time
M  ctag COMPLD
   "nvm:spec_block"
       ...
       ...
   "nvm:spec_block"
;
```

An alternative format for the output is shown below. This format includes titles such as
"/* Current NVM Data */" which are informative, but not necessary.:

```
   sid date time
M  ctag COMPLD
   /* Current NVM Data */
   "NVM-A:Release=release"
   "NVM-A:BackupTime=backuptime,BackupTimeDs=backuptimeds"
   "NVM-A:State=state,StateDs=stateds"
   /* Secondary NVM Data */
   "NVM-C:Release=release"
   "NVM-C:BackupTime=backuptime,BackupTimeDs=backuptimeds"
   "NVM-C:State=state,StateDs=stateds"
;
```

OUTPUT PARAMETERS

Refer to the **RTRV-HDR** command **OUTPUT PARAMETERS** section for a normal completion response. The output parameters listed there also apply to the **RTRV-PRMTR-DATA** command. Additional parameters that specifically apply to this command are defined in the **RTRV-PRMTR-DATA** Output Parameters table.

Table 3-66. RTRV-PRMTR-DATA Output Parameters (Sheet 1 of 3)

Parameter Name	Description
nvm	Non Volatile Memory identifier Values: ■ NVM-A Current NVM Data ■ NVM-C Secondary NVM Data If *amount* is not equal to ALL, then only current NVM data is reported.
spec_block	*release* The release parameter represents the software release contained in the file. It has the form xx.yy.zz where xx.yy.zz reflects the actual release version number. Example: 01.02.03

Table 3-66. RTRV-PRMTR-DATA Output Parameters (Sheet 2 of 3)

Parameter Name	Description
	backuptime This parameter gives the time and date when the last backup to a remote file store (for example, CIT) finished. Omitted if never backed up. The format is YY-MM-DD HH-MM-SS. The network element will update *backuptime* just before file transfer starts, and then update the value of current NVM's *backuptime* when the backup finishes. This implies the value of *backuptime* contained in *backupfile* at the OS will represent a slightly earlier time than the value contained in current NVM's database. *Backuptime* will be updated whether or not the file transfer was successful. *backuptimeds* This parameter gives the time and date when the last backup of the NCC directory services database finished. See *backuptime* for details. *restoretime* This parameter reflects the time and date when the last restore from a remote file store finished. Omitted if never restored. The format is YY-MM-DD HH-MM-SS. Only database files at the current or previous NVMs will have values for *restoretime*. *Restoretime* will be updated whether or not the file transfer was successful. *backupfile* This parameter indicates the remote location where the backup is stored. Omitted if never backed up. *Backupfile* and *restorefile* formats are described later in this document. The network element will update *backupfile* before the file transfer starts. Thus, both the source (current NVM) and the destination (EMS or CIT) will have the same value for *backupfile.* Example: If current NVM is backed up to filex, then *backupfile* will have the value filex in current NVM and the remote file store. *Backupfile* will be updated whether or not the file transfer was successful.

Table 3-66. **RTRV-PRMTR-DATA** Output Parameters (Sheet 3 of 3)

Parameter Name	Description
	restorefile This parameter reflects the remote location from where the restore came. Omitted if never restored. *Backupfile* and *restorefile* formats are described later in this document. Only database files at the current or previous NVMs will have values for *restorefile*. *Restorefile* will be updated whether or not the file transfer was successful. *state* State of the database (see the table captioned "Values of the State Output Parameter"). *stateds* State of the NCC directory service database (see the Table entitled "Values of the State Output Parameter").

The *state* output parameter describes the state of the database. The following table gives the allowable values for *state*.

Table 3-67. Values of the *state* Output Parameter

State	NVM	Description
BACKUP	secondary	Ready to copy to current NVM.
CORRUPT	current secondary	Unavailable for invocation or execution. For example, corrupted check sum.
FAILED	current secondary	The NVM is failed or missing.
INITIAL	current	Nothing in NVM.
INITIAL	secondary	Nothing on NVM or The database that was shipped with the generic.
INPROGRESS	current	Backup or restore is in progress.
INPROGRESS	secondary	Backup, or restore is in progress.
RUNNING	current	The currently active generic.

The *normal* (as contrasted with CORRUPT or FAILED) database states of current NVM are: RUNNING and INPROGRESS. Most of the time its state is equal to RUNNING, signifying that it contains a copy of the database that is currently in use. When writing makes the NVM inaccessible, current NVM will have a database state of INPROGRESS.

The normal database states of secondary NVM are: BACKUP, INPROGRESS, and INITIAL. Most of the time, its *state* is equal to BACKUP, signifying that it contains a backup copy of the database. When reading/writing makes the NVM inaccessible, secondary NVM will have a database state of INPROGRESS. When the secondary NVM contains the generic's initial database, its state is equal to INITIAL.

The Network Communication Controller has two components to the database: the directory services database and the rest of the database. If the secondary memory has contained only one of these databases, the Release will be specified and the state of the absent database will be omitted. If secondary memory has not contained either of these databases, the output for that NVM will consist of Release = INITIAL.

For example, if only one database is present, the output would be as follows:

```
   "NVM-C:release=1.02.04,backuptime=98-01-14 09-00-00,
backuptimeds=,state=backup,stateds="
```

If neither database is present, the output would be as follows:

```
   "NVM-C:release=initial"
```

If an NVM is failed or missing, then **RTRV-PRMTR-DATA** will report only the state output variable for that NVM. *state* will have the value FAILED.

For example, if the secondary NVM is missing, then the output will be as follows:

```
   "NVM-C:state=failed"
;
```

When software is installed, the *backuptime*, *backuptimeds* will be omitted (initialized to a blank field) for NVM-A which indicates the active NVM data running with installed software.

EXAMPLE INPUT/OUTPUT

In this example for the **RTRV-PRMTR-DATA** command, current NVM contains a copy of the RUNNING database. The database was last backed up at 9:00 and directory services database was last backed up at 9:30:

```
RTRV-PRMTR-DATA:LT-WBM::123456;

   LT-WBM 98-01-14 09:45:28
M  123456 COMPLD
   "NVM-A:release=01.02.04,backuptime=98-01-14 09-00-00,backuptimeds
=98-01-14 09-30-00,state=running,stateds=running,tid=LT-WBM"
;
```

ERROR RESPONSES

Refer to the **RTRV-HDR** command **ERROR RESPONSES** section. The error responses listed there also apply to the **RTRV-PRMTR-DATA** command.

RELATED TL1 MESSAGES

APPLY

CPY-MEM

RTRV-PRMTR-SFTWR

NAME

RTRV-PRMTR-SFTWR: Retrieve Parameter Software

The **RTRV-PRMTR-SFTWR** command is available beginning in:

- Network Communication Controller, Release 1.0

LOGIN PRIVILEGE

User Privilege Code (UCFC/UCAL): S4

The User Privilege Code (UCFC/UCAL) has been reduced to: S1

INPUT FORMAT

RTRV-PRMTR-SFTWR:*tid::ctag::[amount];*

DESCRIPTION

The **RTRV-PRMTR-SFTWR** command retrieves information about the software generics that are in Non Volatile Memory. Not only is the generic identified by its release number, other information such as its state is also given.

RTRV-PRMTR-SFTWR can be used to determine what generic is currently executing. It can also be used to determine what generic was previously executing. If a generic was downloaded but not installed, then instead of indicating what was previously executing, the output describes the download.

The NCC has two copies of the generic. One is usually the previous generic and the other the current generic. The DOWNLOAD option of **CPY-MEM** is used to download new generics to previous NVM (that is, a location on the hard drive that can be conceptually identified as “previous NVM”). Installation via **APPLY** causes the contents of previous NVM to be installed. Following installation, a “pointer” is changed so that what is identified as current NVM contains the currently executing generic and previous NVM contains the previous generic.

The **BACKUP** option of **CPY-MEM** is used to copy the database that is in current NVM to a file store (remote or local). The **RESTORE** option copies a database from a file store and places it into previous NVM and then installs it as the working database.

The **RTRV-PRMTR-SFTWR** command does not generate a **REPT DBCHG** message.

INPUT PARAMETERS

Table 3-68. `RTRV-PRMTR-SFTWR` Input Parameters

Parameter Name	Description
tid	Target Identifier. Refer to the **`RTRV-HDR`** command for the input parameter syntax and description of this parameter.
ctag	Correlation Tag. Refer to the **`RTRV-HDR`** command for the input parameter syntax and description of this parameter.
amount	Amount Of Data To Return. If a value is omitted then the current (active) generic is returned. Values: ■ **ALL** Current, previous, secondary

OUTPUT FORMAT

If the network element fully complies with the **`RTRV-PRMTR-SFTWR`** command, then the following normal completion response is returned if the ***amount*** is specified to be **ALL**:

```
   sid date time
M  ctag COMPLD
   "nvm:spec_block"
       ...
       ...
   "nvm:spec_block"
;
```

An alternative format for the output is shown below. This format includes titles such as
"/* Current NVM Software */" which are informative, but not necessary.

```
   sid date time
M  ctag COMPLD
   /* Current NVM Software*/
   "NVM-A:Release=release"
   "NVM-A:Supplier=supplier,Type=type"
   "NVM-A:State=state"
   /* Previous NVM Software*/
   "NVM-B:Release=release"
   "NVM-B:Supplier=supplier,Type=type"
   "NVM-B:State=state"
   /* Secondary NVM Software*/
   "NVM-C:Release=release"
   "NVM-C:Supplier=supplier,Type=type"
   "NVM-C:State=state"
;
```

OUTPUT PARAMETERS

Refer to the **RTRV-HDR** command **OUTPUT PARAMETERS** section for a normal completion response. The output parameters listed there also apply to the **RTRV-PRMTR-SFTWR** command.

Table 3-69. RTRV-PRMTR-SFTWR Output Parameters (Sheet 1 of 2)

Parameter Name	Description
nvm	Non Volatile Memory identifier Values: ■ NVM-A Current NVM software ■ NVM-B Previous NVM software ■ NVM-C Secondary NVM software If ***amount*** is not equal to **ALL**, then only current NVM software is reported.
spec_block	*release* The release parameter represents the software release contained in the file. It has the form xx.yy.zz where xx.yy.zz reflects the actual release version number. Example: 01.02.03. *size* Program size in bytes.

Table 3-69. RTRV-PRMTR-SFTWR Output Parameters (Sheet 2 of 2)

Parameter Name	Description	
	supplier	Supplier of generic. Lucent.
	type	See the *systype* parameter in **ACT-USER** for the values of this parameter.
	delivered	Date and time when the download finished. The format is YY-MM-DD HH-MM-SS.
	installed	Date and time when the installation started. The format is YY-MM-DD HH-MM-SS.
	path	The source of the download.See below for the format of the *path* parameter.
	state	State of the program (see the following table entitled “Values of the *State* Output Parameter”).
	meta	Details about the file structure.

If an NVM has never contained a software generic, then the **RTRV-PRMTR-SFTWR** output for that NVM will consist of “State=INITIAL.”

For example:

```
"NVM-B:State=initial"
```

If an NVM is failed or missing, the **RTRV-PRMTR-SFTWR** output for that NVM will consist of “State=FAILED.”

For example, if the secondary NVM is missing, then the output will be:

```
"NVM-C:State=failed"
```

If an NVM is corrupt, the **RTRV-PRMTR-SFTWR** output for that NVM will consist of “State=CORRUPT.”

Even if some of the information in NVM is available (for example, the generic's ID), the output will consist only of a single line indicating that the NVM is corrupt.

A failed NVM might inadvertently be diagnosed as being corrupt, or vice versa.

The state output parameter describes the state of the generic. The following table gives the allowable values for *state*.

Table 3-70. Values of the *State* Output Parameter

State	NVM	Description
BACKUP	secondary	Ready to copy to current NVM.
CORRUPT	current previous secondary	Unavailable for invocation or execution, for example, corrupted check sum.
DOWNLOADED	previous	Ready for installation.
FAILED	current previous secondary	NVM is failed or missing.
INITIAL	current	Nothing in NVM.
INITIAL	previous	Nothing in previous partition of NVM.
INITIAL	secondary	Nothing in NVM or Generic that was distributed by Lucent.
INPROGRESS	current	Installation is in progress or software backup in progress.
INPROGRESS	previous	Download is in progress.
INPROGRESS	secondary	Local sw download/restore in progress or sw backup in progress.
PREVIOUS	previous	Previously executing generic. Available for installation.
RUNNING	current	Currently executing generic.

The *normal* (as contrasted with CORRUPT or FAILED) states of current NVM are: RUNNING and INPROGRESS. The state is usually equal to RUNNING, signifying that it contains a copy of the generic that is currently executing. For a brief period when an installation is in progress, current NVM will have a state of INPROGRESS. This state is brief because the installation process forces a reset

which terminates communications with the network element. When communications resume, current NVM will have a state of RUNNING.

The normal states of previous NVM are: INPROGRESS, DOWNLOADED, and PREVIOUS. INPROGRESS means that a download is in progress. When the download terminates successfully, the state transitions to DOWNLOADED. This state implies that a generic has been downloaded, but it has not been installed. When the generic is installed, the NVM pointer is adjusted, and the NVM partition then identified as previous NVM will have its state set to PREVIOUS.

The normal states of secondary NVM are: BACKUP, INPROGRESS, and INITIAL. Most of the time, the state is equal to BACKUP, signifying that it contains a backup copy of the generic. When a generic of state BACKUP is copied from secondary to primary NVM, the state on primary NVM is set equal to PREVIOUS. When reading/writing makes the NVM inaccessible, secondary NVM will have a software state of INPROGRESS. When the secondary NVM contains the generic's initial software, the state is equal to INITIAL.

EXAMPLE INPUT/OUTPUT

The following example shows a **RTRV-PRMTR-SFTWR** command.

```
RTRV-PRMTR-SFTWR:LT-WBM::123456::ALL;

   LT-WBM 98-01-14 09:35:28
M  123456 compld
   "NVM-A:release=01.02.04,supplier=Lucent,type=Network_Communicatio
n_Controller,state=running"
   "NVM-B:release=01.02.03,supplier=Lucent,type=Network_Communicatio
n_Controller,state=previous"
   "NVM-C:release=01.02.05,supplier=Lucent,type=Network_Communicatio
n_Controller,state=initial"
;
```

ERROR RESPONSES

Refer to the **RTRV-HDR** command **ERROR RESPONSES** section. The error responses listed there also apply to the **RTRV-PRMTR-SFTWR** command.

RELATED TL1 MESSAGES

APPLY

CPY-MEM

RTRV-PRMTR-DATA

NAME

RTRV-ULS: Retrieve Upper Layer Stack

The **RTRV-ULS** command is available beginning in:

- Network Communication Controller, Release 1.0

LOGIN PRIVILEGE

User Privilege Code (UCFC/UCAL): S1

INPUT FORMAT

RTRV-ULS:*tid*::*ctag*;

DESCRIPTION

The **RTRV-ULS** command is used to retrieve the parameters in the upper layer OSI. The parameters include fields of the Registration Manager (RM).

RM parameters consist of the Registration Manager enable/disable, the Directory System Agent (DSA) address, and the name prefix fields. The DSA address is the address of the directory in which network elements (NE) from a particular subnetwork are registered. The name prefix specifies where in the directory tree structure the NEs of this subnetwork are registered.

The **RTRV-ULS** command does not generate a **REPT DBCHG** message.

INPUT PARAMETERS

Table 3-71. RTRV-ULS Input Parameters

Parameter Name	Description
tid	Target Identifier. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.
ctag	Correlation Tag. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.

OUTPUT FORMAT

If the **RTRV-ULS** request is successful, the network element returns the following normal completion response:

```
   sid date time
M  ctag COMPLD
   "spec_block"
;
```

OUTPUT PARAMETERS

Refer to the **RTRV-HDR** command **OUTPUT PARAMETERS** section. The output parameters listed there for the normal completion response also apply to the **RTRV-ULS** command.

Table 3-72. RTRV-ULS Output Parameters (Sheet 1 of 3)

Parameter Name	Description
spec_block	The following are the *spec_block* parameters. *dsa_nsap* DSA NSAP Address. This parameter is available starting in Release 1.0. This parameter belongs to RM type. It displays the NSAP address of the DSA. Value: A string of 20-byte (40-digit hex) NSAP address. *dsaip* DSA IP Address. This parameter is available starting in Release 3.1.5. This parameter belongs to RM type. It displays the IP address of the DSA. Value: It is made up of four dot-separated decimal numbers ranging from 0 to 255. This parameter will be omitted if it has not been provisioned. *rm* Registration Manager. This parameter is available starting in Release 1.0. This function helps new network elements in a Level 1 OSI area register themselves in the appropriate directory, which may be on this system or may be on a remote system. Values: ■ ENABLE ■ DISABLE.

Table 3-72. RTRV-ULS Output Parameters (Sheet 2 of 3)

Parameter Name	Description
	np_co Name Prefix Country. This parameter is available starting in Release 1.0. This parameter belongs to RM type. This is the country field of the name prefix parameter. It indicates the highest level of the directory tree. Value: Consists of 2 alphanumeric characters. *np_org* Name Prefix Organization. This parameter is available starting in Release 1.0. This parameter belongs to RM type. This is the organization field of the name prefix parameter. Its level is just below country in the directory tree. Value: Consists of 1 to 64 alphanumeric characters. *np_orgu1* Name Prefix Organization Unit 1. This parameter is available starting in Release 1.0. This parameter belongs to RM type. This is the organization unit one of the name prefix parameter. Its level is just below organization in the directory tree. Value: Consists of 1 to 64 alphanumeric characters. *np_orgu2* Name Prefix Organization Unit 2. This parameter is available starting in Release 1.0. This parameter belongs to RM type. This is the organization unit two of the name prefix parameter. Its level is just below organization unit one in the directory tree. Value: Consists of 1 to 64 alphanumeric characters. *ip_ad* IP Address. This parameter is available starting in Release 1.0. This parameter belongs to IP type. This is the 32-bit IPv4 address of the NCC. Value: It is made up of four dot-separated decimal numbers ranging from 0 to 255. *ip_snm* IP Subnet Mask. This parameter is available starting in Release 1.0. This parameter belongs to IP type. This is the 32-bit IPv4 subnet mask of the NCC. Value: It is made up of four dot-separated decimal numbers ranging from 0 to 255. *ip_drad* IP Default Router Address. This parameter is available starting in Release 1.0. This parameter belongs to IP type. This is the 32-bit IPv4 default router address of the NCC. Value: It is made up of four dot-separated decimal numbers ranging from 0 to 255.

Table 3-72. RTRV-ULS Output Parameters (Sheet 3 of 3)

Parameter Name	Description
	domain NCC domain name. This parameter belongs to the IP type. This parameter is available starting in Release 3.1. The NCC can register itself with a Domain Name Server (DNS). The *domain* parameter, together with the NCC host name (*tid*), is used in the registration process. This is an optional parameter. Value: The domain consists of 1 to 40 characters. The characters are alphanumeric characters and periods. This parameter has no value until provisioned by the user. *dns_ad* Domain Name Server IP address. This parameter belongs to IP type. Beginning with Release 3.1, this is the IP address of the DNS with which the NCC can register itself and is an optional parameter. The DNS is used to translate OS host names entered with the **ENT-IP-MAP** command. Value: Either a single IP address or a list of IP addresses. Specifically, the DNS address is a 32-bit IPv4 address made up of four dot-separated decimal numbers ranging from 0 to 255, or a double quoted (“ ”) list of space-separated IP addresses. When the value is a list of addresses, the search order is left to right. This parameter has no value until provisioned by the user. *tsb_cport* Transport Service Bridge called port number. This parameter belongs to TSB type. This parameter is available beginning with Release 3.1.4. Value: an integer in the range 1 to 65535. The initial value is 1024. *tsb_lport* Transport Service Bridge listening port number. This parameter belongs to TSB type. This parameter is available beginning with Release 3.1.4. Value: an integer in the range 49152 to 65535. The initial value is 49152.

EXAMPLE INPUT/OUTPUT

The following example shows the successful completion of the **RTRV-ULS** command by the Network Communications Controller:

```
RTRV-ULS:LT-WBM::123456;

   LT-WBM 98-01-01 08:00:00
M  123456 COMPLD
   "dsa_nsap=39840F800000007AE000000000012345678901200"
   "np_co=us"
   "dsa_nsap=39840F800000007AE000000000012345678901200"
   "np_org=abcd1234"
   "np_orgu1=wxyz98765"
   "np_orgu2="
   "ip_ad=198.78.46.8"
   "ip_snm=255.255.255.128"
   "ip_drad=198.84.65.20"
;
```

ERROR RESPONSES

Refer to the **RTRV-HDR** command **ERROR RESPONSES** section. The error responses listed there also apply to the **RTRV-ULS** command.

RELATED TL1 MESSAGES

ENT-ULS

ENT-ULSDCC-L3

ENT-ULSDCC-L4

RTRV-ULSDCC-L3

RTRV-ULSDCC-L4

NAME

RTRV-ULSDCC-L3: Retrieve Upper Layer Stack DCC Layer 3

The **RTRV-ULSDCC-L3** command is available beginning in:

- Network Communication Controller, Release 1.0

LOGIN PRIVILEGE

User Privilege Code (UCFC/UCAL): S1

INPUT FORMAT

RTRV-ULSDCC-L3:*tid*::*ctag*;

DESCRIPTION

The **RTRV-ULSDCC-L3** command is used to retrieve the parameters in Layer 3 of the OSI stack. Layer 3 parameters include the fields of the Network Service Access Point (NSAP) address. The NSAP provides unique identification for each network element in a subnetwork.

The **RTRV-ULSDCC-L3** command does not generate a **REPT DBCHG** message.

INPUT PARAMETERS

Table 3-73. RTRV-ULSDCC-L3 Input Parameters

Parameter Name	Description
tid	Target Identifier. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.
ctag	Correlation Tag. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.

OUTPUT FORMAT

If the network element fully complies with the request, the following normal completion response is returned:

```
   sid date time
M  ctag COMPLD
   "spec_block"
;
```

OUTPUT PARAMETERS

Refer to the **RTRV-HDR** command **OUTPUT PARAMETERS** section. The output parameters listed there for the normal completion response also apply to the **RTRV-ULSDCC-L3** command.

The following parameters identify specific fields of the NSAP address for the target network element specified by the *tid* parameter: *l3idp (l3afi and l3idi), l3dfi, l3org, l3res, l3rd, l3area, l3sys,* and *l3sel*.

Table 3-74. RTRV-ULSDCC-L3 Output Parameters (Sheet 1 of 3)

Parameter Name	Description	
spec_block		
	l3idp	Initial Domain Part. This parameter is available starting in Release 1.0. This portion of the NSAP address consists of the first 3 octets (6-digit hex) of the address. For SONET systems, this field is set to 39840F hex to indicate that U.S. ANSI is the registration authority responsible for the allocation and assignment of NSAP addresses.
	l3dfi	DSP (Domain Specific Part) Format Identifier. This parameter is available starting in Release 1.0. This consists of the next octet (2-digit hex) of the NSAP address. The purpose of this octet is to specify the format for the rest of the address.The initial value of DFI is set to 80 hex.

Table 3-74. RTRV-ULSDCC-L3 Output Parameters (Sheet 2 of 3)

Parameter Name	Description	
	l3org	Organization Identifier. This parameter is available starting in Release 1.0. This field makes up the next 3 octets (6-digit hex) to provision into the NSAP address, the allocated Company Code. The initial value for this parameter is 000000 hex.
	l3res	NSAP Reserved. This parameter is available starting in Release 1.0. This field makes the next 2 octets (4-digit hex) that currently has not been assigned a specific purpose by the standards. Until the standard use of this field has been defined, users should not assign a value that is different from the initial value. The initial value for this parameter is 0000 hex.
	l3rd	NSAP Routing Domain. This parameter is available starting in Release 1.0. This NSAP field identifies a unique Routing Domain within an administrative domain. Standard use of this parameter has not been defined in the standards. Until the standard use of this field has been defined, users should not assign a value that is different from the initial value. This makes the next 2 octets (4-digit hex) field with the initial value of 0000 hex.
	l3area	NSAP Area Identifier. This parameter is available starting in Release 1.0. This field is used to identify NEs in the same area. Where multiple areas are defined, Level 2 IS needs to be provisioned to allow addressing across areas. This field consists of the next 2 octets (4-digit hex) of the NSAP address.
	l3sys	System Identifier. This parameter is available starting in Release 1.0. This field consists of the next 6 octets (12-digit hex) of the NSAP address. The purpose of this field is to guarantee that the NSAP address is globally unique.

Table 3-74. RTRV-ULSDCC-L3 Output Parameters (Sheet 3 of 3)

Parameter Name	Description
	l3sel NSAP Selector. This parameter is available starting in Release 1.0. This consists of the last octet (2-digit hex) of the address. Its purpose is to differentiate multiple NSAP addresses associated with the same End System. Its value is not fixed and changes according to its usage. It is set to AF hex when TARP is run over CLNP. It has a value of 1D hex when TP4 is run over CLNP. It may be set to 00 hex for other uses. When retrieved and displayed, it will always be shown as 00 hex. *l3lv2is* This parameter is available starting in Release 1.0. This parameter enables or disables the network element specified by the *tid* as a Level 2 IS, in addition to being a Level 1 IS. Values: ■ DISABLE ■ ENABLE. The initial value is DISABLE. *l3esct* End System Configuration Timer. This parameter is available starting in Release 1.0. This field is used when the network element is acting in the End System role. Values: 10 - 1000 seconds. The initial value is 10 seconds. *l3isct* Intermediate System Configuration Timer. This parameter is available starting in Release 1.0. This field is used when the network element is acting in the Intermediate System role. Values: 10 - 1000 seconds. The initial value is 10 seconds. *l3lc* CLNP Lifetime Control parameter. This parameter is available starting in Release 3.2. The value of this parameter determines whether a received PDU should be forwarded or discarded. Values: 2 - 255 hops. The initial value is 255 hops.

EXAMPLE INPUT/OUTPUT

The following example shows the successful completion of the **RTRV-ULSDCC-L3** command by the network element:

```
RTRV-ULSDCC-L3:LT-WBM:1-1-#-#-dccei-cp:123456;

   LT-WBM 98-01-01 08:00:00
M  123456 COMPLD
   "L3IDP=39840F"
   "L3DFI=80"
   "L3ORG=000000"
   "L3RES=0000"
   "L3RD=0000"
   "L3AREA=0000"
   "L3SYS=08006A112345"
   "L3SEL=00"
   "L3LV2IS=disable"
   "L3ISCT=10"
   "MA1IDP=39840F"
   "MA1DFI=80"
   "MA1ORG=000000"
   "MA1RES=0000"
   "MA1RD=0000"
   "MA1AREA=0000"
   "MA2IDP=39840F"
   "MA2DFI=80"
   "MA2ORG=000000"
   "MA2RES=0000"
   "MA2RD=0000"
   "MA2AREA=0000"
;
```

ERROR RESPONSES

Refer to the **RTRV-HDR** command **ERROR RESPONSES** section. The error responses listed there also apply to the **RTRV-ULSDCC-L3** command.

RELATED TL1 MESSAGES

ENT-ULSDCC-L3

ENT-ULSDCC-L4

RTRV-ULSDCC-L4

NAME

RTRV-ULSDCC-L4: Retrieve Upper Layer Stack DCC Layer 4

The **RTRV-ULSDCC-L4** command is available beginning in:

- Network Communication Controller, Release 1.0

LOGIN PRIVILEGE

User Privilege Code (UCFC/UCAL): S1

INPUT FORMAT

RTRV-ULSDCC-L4:*tid*::*ctag*;

DESCRIPTION

The **RTRV-ULSDCC-L4** command is used to retrieve the parameters in Layer 4 of the OSI stack, many of which are provisioned by the **ENT-ULSDCC-L4** command. Layer 4 parameters include some TARP and the TARP Manual Adjacencies parameters.

The **RTRV-ULSDCC-L4** command does not generate a **REPT DBCHG** message.

INPUT PARAMETERS

Table 3-75. RTRV-ULSDCC--L4 Input Parameters

Parameter Name	Description
tid	Target Identifier. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.
ctag	Correlation Tag. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.

OUTPUT FORMAT

If the network element fully complies with the request, the following normal completion response is returned:

```
   sid date time
M  ctag COMPLD
   "spec_block"
;
```

OUTPUT PARAMETERS

Refer to the **RTRV-HDR** command **OUTPUT PARAMETERS** section. The output parameters listed there for the normal completion response also apply to the **RTRV-ULSDCC-L4** command.

Table 3-76. RTRV-ULSDCC-L4 Output Parameters (Sheet 1 of 5)

Parameter Name	Description
spec_block	*l4etof* This parameter is available starting in Release 1.0. This parameter is used to enable or disable TARP Origination Functions. Values: ■ ENABLE ■ DISABLE. The initial value is DISABLE. Starting in Release 2.0, the initial value is ENABLE. *l4etpf* This parameter is available starting in Release 1.0. This parameter is used to enable or disable TARP Propagation Functions. Values: ■ ENABLE ■ DISABLE. The initial value is DISABLE.

Table 3-76. RTRV-ULSDCC-L4 Output Parameters (Sheet 2 of 5)

Parameter Name	Description
	l4etrf This parameter is available starting in Release 1.0. This parameter is used to enable or disable TARP Responder Functions. Values: ■ ENABLE ■ DISABLE. The initial value is ENABLE. *l4tlif* This parameter is available starting in Release 1.0. This parameter sets the TARP Lifetime field when the system originates a TARP PDU. It specifies the maximum number of hops allowed for a TARP PDU. If this value is exceeded, the TARP PDU will not be forwarded. Values: 1 - 65535. The initial value is 100 hops. *l4t1tm* This parameter is available starting in Release 2.0. This parameter sets the TARP Timer T1. T1 is the maximum time allowed for response to TARP TYPE1 request PDU (search level 1 routing area). Values: 1 - 3600. The initial value is 15 seconds. *l4t2tm* This parameter is available starting in Release 2.0. This parameter sets the TARP Timer T2. T2 is the maximum time allowed for response to TARP TYPE2 request PDU (search outside of the level 1 area). Values: 1 - 3600. The initial value is 25 seconds. *l4t3tm* This parameter is available starting in Release 2.0. This parameter sets the TARP Timer T3. T3 is the maximum time allowed for response to TARP TYPE5 request PDU (requesting the TID when the NSAP address is known). Values: 1- 3600. The initial value is 40 seconds.

Table 3-76. RTRV-ULSDCC-L4 Output Parameters (Sheet 3 of 5)

Parameter Name	Description
	l4t4tm This parameter is available starting in Release 2.0. This parameter sets the TARP Timer T4. Timer T4 starts when T2 expires. It is used for error recovery. Values: 1- 3600. The initial value is 20 seconds. *l4etdc* This parameter is available starting in Release 2.0. This parameter is used to enable or disable the TARP Data Cache. Values: ■ DISABLE ■ ENABLE. The initial value is ENABLE. Starting in Release 2.0, the initial value is ENABLE. *l4etclp* This parameter is available starting in Release 2.0. This parameter is used to enable or disable the TARP clipping function. It allows TARP PDUs to be dropped whenever the forwarding rate exceeds the maximum as determined by *l4clim* and *l4cint*. Values: ■ DISABLE ■ ENABLE. The initial value is DISABLE. *l4clim* This parameter is available starting in Release 2.0. This parameter sets the TARP clipping limit. It specifies the maximum number of PDUs which can be forwarded in the interval *l4cint* seconds. Values: 10 - 2550 PDUs in 10 PDU increments. The initial value is 240 PDUs. *l4cint* This parameter is available starting in Release 2.0. This parameter sets the TARP clipping interval. Its value determines the time period in which the maximum number of PDUs, *l4clim*, can be forwarded before activating the clipping function. Values: 1 - 255 seconds in 1 second increments. The initial value is 12 seconds.

Table 3-76. RTRV-ULSDCC-L4 Output Parameters (Sheet 4 of 5)

Parameter Name	Description
	l4tme This parameter is available starting in Release 3.0. This parameter sets the discovery timer, Timer E, which determines the frequency at which the T5GW invokes the discovery process. Values: 10 - 2550 minutes in 10-minute increments. The initial value is 20 minutes. *l4tmf* This parameter is available starting in Release 3.0. This parameter sets the anti-flooding timer, Timer F, which is used to prevent flooding the network with *type5* PDUs and their *type3* responses during the T5GW discovery process. Values: 1.0 - 60.0 seconds in 0.5-second increments. The initial value is 1 second. *l4add* This parameter is available starting in Release 3.2. This parameter sets the transport selector field, T-SEL, in the TSAP-ID. This field has a range of 1-4 octets. The initial value is 0x5454. *l4wintm* This parameter is available starting in Release 3.2. This parameter sets the maximum time to wait before retransmitting window information, W. Values: 1 - 255 seconds in 1 second increments. The initial value is 16 seconds. *l4lack* This parameter is available starting in Release 3.2. This parameter sets the local acknowledgment timer. Values: 1 - 255 seconds in 1 second increments. The initial value is 1 second. *l4tpdu* This parameter is available starting in Release 3.2. This parameter sets the largest value of the maximum transport PDU. Values: 128, 256, 512, 1024 octets. The initial value is 1024 octets. These values are also allowed: 2048, 4096, 8192.

Table 3-76. RTRV-ULSDCC-L4 Output Parameters (Sheet 5 of 5)

Parameter Name	Description
	l4crdt This parameter is available starting in Release 3.2. This parameter sets the transport credit parameter, the maximum number of outstanding unacknowledged transport PDUs allowed. Values: 1 - 15 PDUs in increments of 1 PDU. The initial value is 5 PDUs.

EXAMPLE INPUT/OUTPUT

The following example shows the successful completion of the **RTRV-ULSDCC-L4** command by the network element:

```
RTRV-ULSDCC-L4:LT-WBM:1-1-#-#-dccei-cp:123456;

   LT-WBM 98-01-01 08:00:00
M  123456 COMPLD
   "L4LFTM=5"
   "L4LETM=5"
   "L4ETPF=disable"
   "L4ETRF=enable"
   "L4AJNSAP=39840F8000000000000000000008006A11212300"
   "L4AJNSAP=39840F8000000000000000001998ABCD195600"
;
```

ERROR RESPONSES

Refer to the **RTRV-HDR** command **ERROR RESPONSES** section. The error responses listed there also apply to the **RTRV-ULSDCC-L4** command.

RELATED TL1 MESSAGES

ENT-ULSDCC-L3

ENT-ULSDCC-L4

RTRV-ULSDCC-L3

NAME

RTRV-ULSDCC-L5: Retrieve Upper Layer Stack DCC Layer 5

The **RTRV-ULSDCC-L5** command is available beginning in:

- Network Communication Controller, Release 3.2

LOGIN PRIVILEGE

User Privilege Code (UCFC/UCAL): S1

INPUT FORMAT

RTRV-ULSDCC-L5:*tid*::*ctag*;

DESCRIPTION

The **RTRV-ULSDCC-L5** command is used to retrieve the parameters in Layer 5 of the OSI stack which are provisioned by the **ENT-ULSDCC-L5** command.

The **RTRV-ULSDCC-L5** command does not generate a **REPT DBCHG** message.

INPUT PARAMETERS

Table 3-77. RTRV-ULSDCC-L5 Input Parameters

Parameter Name	Description
tid	Target Identifier. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.
ctag	Correlation Tag. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.

OUTPUT FORMAT

If the network element fully complies with the request, the following normal completion response is returned:

```
   sid date time
M  ctag COMPLD
   "spec_block"
;
```

OUTPUT PARAMETERS

Refer to the **RTRV-HDR** command **OUTPUT PARAMETERS** section. The output parameters listed there for the normal completion response also apply to the **RTRV-ULSDCC-L5** command.

Table 3-78. RTRV-ULSDCC-L5 Output Parameters

Parameter Name	Description	
spec_block	*l5sel*	Session selector. This parameter is available starting in Release 3.2. This parameter identifies the layer 5 selector for the SSAP of the system. This field has a range of 1-4 octets. The initial value is 5353 hex.

EXAMPLE INPUT/OUTPUT

The following example shows the successful completion of the **RTRV-ULSDCC-L5** command by the network element:

```
RTRV-ULSDCC-L5:LT-WBM:1-1-#-#-dccei-cp:123456;

   LT-WBM 98-01-01 08:00:00
M  123456 COMPLD
   "1-1-#-#-dccei-cp,1-1-t09-w-03:l5sel=5353"
;
```

ERROR RESPONSES

Refer to the **RTRV-HDR** command **ERROR RESPONSES** section. The error responses listed there also apply to the **RTRV-ULSDCC-L5** command.

RELATED TL1 MESSAGES

ENT-ULSDCC-L3

ENT-ULSDCC-L4

ENT-ULSDCC-L5

RTRV-ULSDCC-L3

RTRV-ULSDCC-L4

NAME

RTRV-USER: Retrieve User

The **RTRV-USER** command is available beginning in:

- Network Communication Controller, Release 3.2

LOGIN PRIVILEGE

Beginning with Release 3.2, the user privilege code is:
User Privilege Code (UCFC/UCAL): S2

INPUT FORMAT

RTRV-USER:*tid*::*ctag*;

DESCRIPTION

The **RTRV-USER** command retrieves a user's own security information.

The **RTRV-USER** command does not generate a **REPT DBCHG** message.

INPUT PARAMETERS

Table 3-79. RTRV-USER Input Parameters

Parameter Name	Description
tid	Target Identifier. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.
ctag	Correlation Tag. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.

OUTPUT FORMAT

The following normal completion response is returned:

```
   sid date time
M  ctag COMPLD
   "uid::spec_block"
;
```

OUTPUT PARAMETERS

Table 3-80. RTRV-USER Output Parameters (Sheet 1 of 2)

Parameter Name	Description
uid	User ID whose security parameters are to be retrieved. This parameter is available starting in Release 3.2. Values: Refer to the **ACT-USER** command.
spec_block	Note: 'Di' is a Lucent-only category which can only be used with a special password. *uids* with Di as the *upc* will be unable to set up a successful TL1 session. Upon executing the **ACT-USER** command, this user would be dumped into a debug session where he/she will not be able to pass the additional security tests and execute commands. *upc* Specifies the user privilege code UCFC/UCAL pair. This parameter is available starting in Release 1.0. Multiple UCFC/UCALs can be specified using single ampersands (&). Values: Pi, Mi, Si, Di where "i" is an integer ranging from 0 to 5, with i=0 implying that there is no authorization for the functional category. *screen* Message Screening. This parameter is available starting in Release 3.2. Specifies what output messages are associated with the *uid*. This parameter is omitted if the user has none of these values. Any combination of these values, except NA, may be specified using ampersand (&). Values:

Table 3-80. RTRV-USER Output Parameters (Sheet 2 of 2)

Parameter Name	Description
	The message screening values for NCC are: ■ DBCHG ■ ALARMS ■ DSUPDATE ■ ALL ■ OWN *page* Password Aging Interval. This parameter is available starting in Release 3.2. This parameter specifies the period in days after which the user has to change the password of his or her account. A value of 0 disables the password aging interval function. Values: ■ 0, 7-999 days. *tmout* Inactivity Timeout Period. This parameter is available starting in Release 3.2. If there are no messages between the user and the NE over the Timeout Period, the session is logged off. A value of 0 disables the timeout function. Values: ■ 0 to 999 minutes.

EXAMPLE INPUT/OUTPUT

The following is an NCC example of **RTRV-USER** command:

```
RTRV-USER:TID123::123456;

   TID123 00-05-21 11:38:26
M  123456 COMPLD
   "eureka::UPC=P3&M3&S3,PAGE=0,SCREEN=ALL,TMOUT=360"
;
```

ERROR RESPONSES

Refer to the **RTRV-HDR** command **ERROR RESPONSES** section. The error responses listed there also apply to the **RTRV-USER** command.

RELATED TL1 MESSAGES

RTRV-USER-SECU

NAME

RTRV-USER-SECU: Retrieve User Security

The **RTRV-USER-SECU** command is available beginning in:

- Network Communication Controller, Release 1.0

LOGIN PRIVILEGE

User Privilege Code (UCFC/UCAL): S2

INPUT FORMAT

RTRV-USER-SECU:*tid*:[*uid*]:*ctag*;

DESCRIPTION

The **RTRV-USER-SECU** command can be initiated by a user to retrieve user security information of one or all the users in the network element.

The **RTRV-USER-SECU** command does not generate a **REPT DBCHG** message.

INPUT PARAMETERS

Table 3-81. RTRV-USER-SECU Input Parameters

Parameter Name	Description
tid	Target Identifier. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.
uid	Specifies the user ID. This parameter is available starting in Release 1.0. Values: See the **ACT-USER** command for a description of this parameter. If this parameter is omitted, all ***uid***s are retrieved
ctag	Correlation Tag. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.

OUTPUT FORMAT

If the network element has logins to report, the following normal completion response is returned:

```
   sid date time
M  ctag COMPLD
   "uid::spec_block"
   .
   .
   "uid::spec_block"
;
```

OUTPUT PARAMETERS

Table 3-82. RTRV-USER-SECU Output Parameters (Sheet 1 of 2)

Parameter Name	Description
uid	User ID whose security parameters are to be retrieved. This parameter is available starting in Release 1.0. Values: Refer to the **ACT-USER** command.
	upc Specifies the user privilege code UCFC/UCAL pair for NCC. Values: Pi, Mi, Si, Di where "i" is an integer ranging from 1 to 5. Note: 'Di' is a Lucent-only category which can only be used with a special password. *uids* with Di as the *upc* will be unable to set up a successful TL1 session. Upon executing the **ACT-USER** command, this user would be dumped into a debug session where he/she will not be able to pass the additional security tests and execute commands. *screen* Message Screening. Specifies what output messages are associated with the *uid*. This parameter is omitted if the user has none of these values. Any combination of these values, except NA, may be specified using ampersand (&). The message screening values for NCC are: ■ DBCHG ■ ALARMS ■ DSUPDATE ■ ALL

Table 3-82. RTRV-USER-SECU Output Parameters (Sheet 2 of 2)

Parameter Name	Description
	■ OWN Starting with Release 3.1.5, the value OWN is displayed if the screen parameter has none of the other *screen* values. *page* Password Aging Interval. This parameter is available starting in Release 3.1.5. This parameter specifies the period in days after which the user has to change the password of their account. A value of 0 disables the password aging interval function. Values: ■ 0, 7-999 days. *tmout* Inactivity Timeout Period. This parameter is available starting in Release 3.1.5. If there are no messages between the user and the NE over the Timeout Period, the session is logged off. Expressed in minutes. A value of 0 disables the timeout function. Values: ■ 0-999 minutes. *alw_login* Allow Login. This parameter is available starting in Release 3.2. This parameter displays the enable/disable state of a User ID. Values: ■ YES User ID is enabled. ■ NO User ID is disabled.

EXAMPLE INPUT/OUTPUT

The following is an NCC example of the **RTRV-USER-SECU** command:

```
RTRV-USER-SECU:TID123::123456;

   TID123 00-05-21 11:30:20
M  123456 COMPLD
   "luc01::UPC=P5&M5&T5&S5&PM5&D5,PAGE=30,SCREEN=ALL,TMOUT=0,
   ALW_LOGIN=YES"
   "luc02::UPC=P5&M5&T5&S5&PM5&D5,PAGE=30,SCREEN=ALL,TMOUT=0,
   ALW_LOGIN=YES"
   "eureka::UPC=P3&M3&S3,PAGE=0,SCREEN=ALL,TMOUT=360,ALW_LOGIN=YES"
;
```

ERROR RESPONSES

Refer to the **RTRV-HDR** command **ERROR RESPONSES** section. The error responses listed there also apply to the **RTRV-USER-SECU** command.

RELATED TL1 MESSAGES

ENT-USER-SECU

ED-USER-SECU

DLT-USER-SECU

NAME

RTRV-X25-MAP: Retrieve X.25 map

The **RTRV-X25-MAP** command is available beginning in:

- Network Communication Controller, Release 3.0

LOGIN PRIVILEGE

User Privilege Code (UFC/UCAL): S1

INPUT FORMAT

RTRV-X25-MAP:*tid*::*ctag*;

DESCRIPTION

The **RTRV-X25-MAP** command displays the Operation Systems application context ID map information that is created by the **ENT-X25-MAP** command. This information provides association information between OS application contexts and X.25 channel assignments.

The **RTRV-X25-MAP** command does not generate a **REPT DBCHG** message.

INPUT PARAMETERS

Table 3-83. RTRV-X25-MAP Input Parameters

Parameter Name	Description
tid	Target Identifier. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.
ctag	Correlation Tag. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.

OUTPUT FORMAT

If the logout request completes successfully, the following normal completion response is returned:

```
   sid date time
M  ctag COMPLD
   "system::spec_block"
;
```

The output is sorted by *snpa*.

OUTPUT PARAMETERS

Refer to the **RTRV-HDR** command **OUTPUT PARAMETERS** section for a normal completion response. The output parameters listed there also apply to the **RTRV-X25-MAP** command.

Table 3-84. RTRV-X25-MAP Output Parameters

Parameter Name	Description
spec_block	*snpa* This parameter is available starting in Release 3.0. SNPA Address is the X.25 SubNetwork Point of Attachment address for the OS. It is the SVC Data Terminal Equipment (DTE) calling address, which is 1 to 14 digits. *acid* This parameter is available starting in Release 3.0. ACID is a value of up to twenty-three alphanumeric characters, which is the Application Context ID to be assigned to a particular SNPA Address. Each OS has a value of ACID assigned. Values: ■ TL1MAINTENANCE ■ TL1MEMORYADMINISTRATION ■ TL1TEST ■ TL1OTHER1 ■ TL1PEERCOMM.

EXAMPLE INPUT/OUTPUT

The following example shows a successful command completion and login session termination:

```
RTRV-X25-MAP:LT-WBM::123456;

   LT-WBM 98-01-01 08:00:00
M  123456 COMPLD
   "system::snpa=12345678901234,acid=tl1memoryadministration"
;
```

ERROR RESPONSES

Refer to the **RTRV-HDR** command **ERROR RESPONSES** section. The error responses listed there apply to the **RTRV-X25-MAP** command.

RELATED TL1 MESSAGES

DLT-X25-MAP

ED-NE

ENT-X25-MAP

RTRV-NE

NAME

SET-SID: Set Target/Source Identification

The **SET-SID** command is available beginning in:

- Network Communication Controller, Release 1.0

LOGIN PRIVILEGE

User Privilege Code (UCFC/UCAL): S3

INPUT FORMAT

SET-SID:*tid*::*ctag*::*newsid*;

DESCRIPTION

SET-SID can be used to change the Target/Source identification of the network element. The **SET-SID** command is denied if the system is not in maintenance condition. Maintenance condition applies only to NE. For NCC, the command can be run without restriction, but will result in a system reset.

The **SET-SID** command generates a **REPT DBCHG** message.

INPUT PARAMETERS

Table 3-85. SET-SID Input Parameters

Parameter Name	Description
tid	Target Identifier. Refer to **RTRV-HDR** for input parameters syntax and description of this parameter.
ctag	Correlation Tag. Refer to **RTRV-HDR** for the input parameter syntax and description of this parameter.
newsid	Target/Source Identification. This is the new name of the network element. Future commands must use this name instead of the current name. That is, ***newsid*** replaces ***tid***. For the NCC, changing this parameter will cause a system reset. Refer to **RTRV-HDR** for the input parameter syntax and description of this parameter.

OUTPUT FORMAT

If the network element fully complies with the **SET-SID** request, the normal completion response is returned as shown below:

```
   sid date time
M  ctag COMPLD
;
```

OUTPUT PARAMETERS

Refer to the **RTRV-HDR** command **OUTPUT PARAMETERS** section for a normal completion response. The output parameters listed there also apply to the **SET-SID** command.

EXAMPLE INPUT/OUTPUT

The following shows an example of the **SET-SID** command where the target/source identification of the network element was changed to **CHICAGO-2**:

```
SET-SID:LT-WBM::123456::CHICAGO-2;

   LT-WBM 98-01-01 08:00:00
M  123456 COMPLD
;
```

ERROR RESPONSES

Refer to the **RTRV-HDR** command **ERROR RESPONSES** section. The error responses listed there also apply to the **SET-SID** command.

RELATED TL1 MESSAGES

None.

NAME

SND-TARP-PDU: Send Tarp PDU

The **SND-TARP-PDU** command is available beginning in:

- Network Communication Controller, Release 3.2

LOGIN PRIVILEGE

User Privilege Code (UCFC/UCAL): S3

INPUT FORMAT

SND-TARP-PDU:*tid*::*ctag*:::*spec_block*;

DESCRIPTION

The **SND-TARP-PDU** command is used to manually generate TARP PDUs of types 1, 2, and 5. The **SND-TARP-PDU** command will send a Type 1 or Type 2 TARP PDU if the destination TID is specified or a Type 5 TARP PDU if the destination NSAP (NET) is specified. Either the destination TID or the destination NSAP must be specified, but not both. Since the **SND-TARP-PDU** command sends TARP PDUs, the ***l4etof*** parameter in the **ENT-ULSDCC-L4** command must be enabled.

In addition, the ***duara*** parameter in the **ED-NE** command must be disabled for the **SND-TARP-PDU** command to execute. Disabling this parameter will prevent the source TID from locating the TID/NET translation for the destination NE in the Directory Information Base of the SONET Directory Service. The **SND-TARP-PDU** command is required by Telcordia for laboratory testing and is not needed to install a new system.

The **SND-TARP-PDU** command does not generate a **REPT DBCHG** message.

INPUT PARAMETERS

Table 3-86. SND-TARP-PDU Input Parameters (Sheet 1 of 2)

Parameter Name	Description
tid	Target Identifier. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.

Table 3-86. SND-TARP-PDU Input Parameters (Sheet 2 of 2)

Parameter Name	Description
ctag	Correlation Tag. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.
spec_block	***desttid*** The TID of the destination NE. This parameter is available starting in Release 3.2. If the ***l4etof*** parameter specified by the **ENT-ULSDCC-L4** command is enabled and the ***duara*** parameter specified by the **ED-NE** command is disabled, a Type 1 PDU is sent to the destination TID. If there is no response, a Type 2 PDU is sent. If this parameter is specified, the ***destnet*** parameter must not be. ***destnet*** The NET of the destination NE. This parameter is available starting in Release 3.2. If the ***l4etof*** parameter specified by the **ENT-ULSDCC-L4** command is enabled and the ***duara*** parameter specified by the **ED-NE** command is disabled, a Type 5 PDU is sent. If this parameter is specified, the ***desttid*** parameter must not be.

OUTPUT FORMAT

If the command completes successfully, then the following completion response is returned with the expected data:

```
   sid date time
M  ctag COMPLD
   "spec_block"
;
```

If the command times out (after 2 seconds), then the following completion response is returned with no data:

```
   sid date time
M  ctag COMPLD
;
```

OUTPUT PARAMETERS

Refer to the **RTRV-HDR** command **OUTPUT PARAMETERS** section. The output parameters listed there for the normal completion response also apply to the **SND-TARP-PDU** command. Additional parameters that specifically apply to the **SND-TARP-PDU** command response are defined in the following table.

Table 3-87. SND-TARP-PDU Output Parameters

Parameter Name	Description	
spec_block	*tidreply*	This parameter is available starting in Release 3.2. This is the TID of the destination network element corresponding to the input parameter, *destnet*.
	netreply	This parameter is available starting in Release 3.2. This is the NET of the destination network element corresponding to the input parameter, *desttid.*

EXAMPLE INPUT/OUTPUT

The following example shows the successful completion of the **SND-TARP-PDU** command by the NE when the destination NSAP was specified in the command:

```
SND-TARP-PDU:LT-WBM:1-1-#-#-dccei-cp:123456:::desttid=boston;

   LT-WBM 98-01-01 08:00:00
M  123456 COMPLD
   "1-1-#-#-dccei-cp:netreply=39840F800000000000000000000000000000a300"
;
```

ERROR RESPONSES

Refer to the **RTRV-HDR** command **ERROR RESPONSES** section. The error responses listed there also apply to the **SND-TARP-PDU** command.

RELATED TL1 MESSAGES

ENT-ULSDCC-L4

RTRV-ULSDCC-L4

NAME

TEST-LED: Test LED

The **TEST-LED** command is available beginning in:

- Network Communication Controller, Release 1.0

LOGIN PRIVILEGE

User Privilege Code (UCFC/UCAL): M2

INPUT FORMAT

TEST-LED:*tid*:*aid*:*ctag*::[*repeat*];

TEST-LED:*tid*::*ctag*::[*repeat*];

DESCRIPTION

The **TEST-LED** command can be used to test the LEDs in the system's shelves and the LEDs in the User Panel.

The test effects a shelf's LEDs. During one cycle of the test, the LEDs are turned on 2 seconds, off 2 seconds, on 2 seconds, off 2 seconds, etc., for a total of 3 times. They are then restored to normal operation.

One cycle of the test takes 12 seconds.

The shelf's LEDs include the LEDs of all boards that are inserted in the shelf and also all LEDs (except the Power On LED) on the User Panel, if it exists.

The ***repeat*** input parameter, to be described later, allows the test to be repeated for a specified number of cycles.

The **TEST-LED** command does not generate a **REPT DBCHG** message.

INPUT PARAMETERS

Table 3-88. TEST-LED Input Parameters

Parameter Name	Description
tid	Target Identifier. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.
ctag	Correlation Tag. Refer to the **RTRV-HDR** command for the input parameter syntax and description of this parameter.
repeat	Number of times the test should repeat. It has the value: **1**-**15**. If this parameter be omitted is equivalent to setting ***repeat*** to 1.

OUTPUT FORMAT

If the network element fully complies with the **TEST-LED** command request, the following normal completion response is returned:

```
   sid date time
M  ctag COMPLD
;
```

COMPLD will be returned when the test is finished. This may take quite a while depending on the value of ***repeat***.

OUTPUT PARAMETERS

Refer to the **RTRV-HDR** command in the **OUTPUT PARAMETERS** section for a normal completion response. The output parameters listed there also apply to the **TEST-LED** command.

The output does not indicate PASS/FAIL; it is up to the observer to determine whether or not the test passed.

EXAMPLE INPUT/OUTPUT

The following example shows a **TEST-LED** command that requests to test LEDs twice for all circuit packs that are in bay 1 shelf 1. This test takes approximately 24 seconds to return COMPLD:

```
TEST-LED:LT-WBM:1-1:123456::2;

   LT-WBM 98-01-01 08:00:00
M  123456 COMPLD
;
```

ERROR RESPONSES

Refer to the **RTRV-HDR** command in the **ERROR RESPONSES** section. The error responses listed there also pertain to the **TEST-LED** command.

RELATED TL1 MESSAGES

TEST-ALM

NCC TL1 Parameter Tables

A

Contents

Appendix Overview

Introduction

Appendix A contains the following types of Network Communications Controller (NCC) parameters used by the TL1 commands/messages:

- External user access identifiers (AIDs) specified mainly as output parameters in alarms
- External user access identifiers (AIDs) specified as input parameters for performing remote resets
- Alarm and event condition type parameters
- Password character parameters

AID Overview

Introduction

This appendix specifies the AID (access identifier) parameter details for NCC TL1 commands/messages.

NCC AID Hierarchical Order

The following assumed hierarchy exists for circuit pack AIDs:

- Slot
- Circuit Pack (CP)

NOTE:
AIDs for -48 volt input, power supply, and fan are not represented by this hierarchy and are handled separately.

NCC AID General Format

The general format/structure for an AID, which consists of the following two fields separated by "-", is:

SLOT-CP

Global Notes on the NCC AIDs

NOTE 1: All slot numbers can either be a one- or two-character representation; the Appendix A External User AIDs table shows two-character slot number representations. For example, slot 1 is identified as "01".

NOTE 2: The Input AID column refers to AIDs that are input via the user and/or user interface. The Output AID column refers to AIDs that are sent from the NCC (operations controller).

NCC AIDs

NCC Shelf

Figure A-1 shows the slot/CP names for the NCC Shelf. For more information see Table A-1.

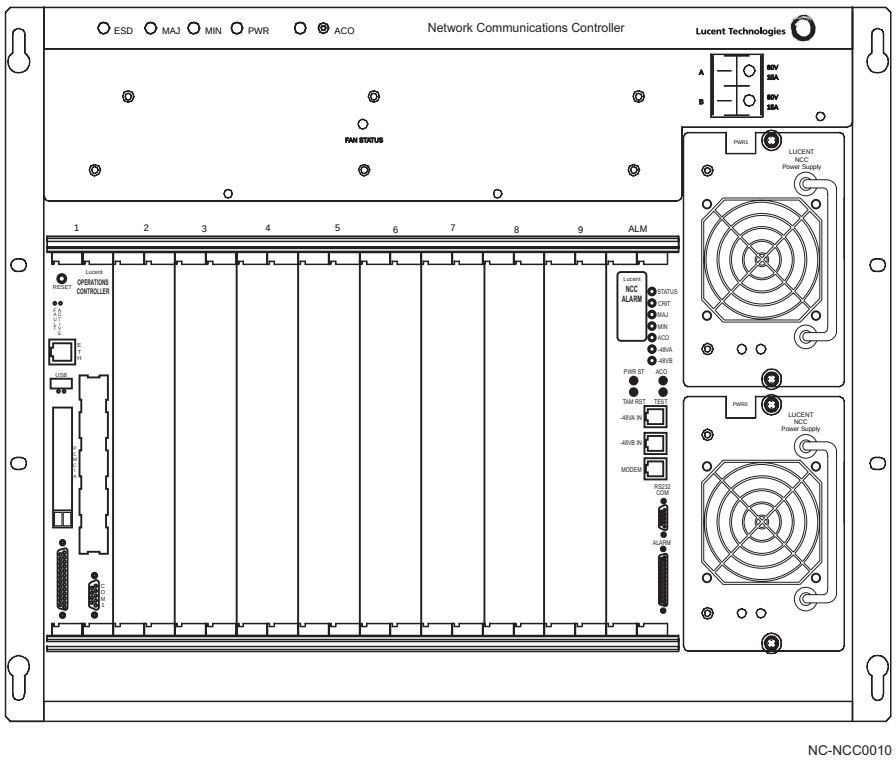


Figure A-1. Slot Names in the NCC Shelf

NCC AIDs, *continued*

NCC AID Parameter Details

The following table specifies NCC AID details for TL1 command/messages.

Table A-2. NCC **External User AID Parameters**

Entity	Input AID	Output AID
All slot/circuit packs in the NCC shelf	01-cp, 02-cp, 04-cp, 06-cp	01-cp, 02-cp, 04-cp, 06-cp alm-cp
Power Supply	Not Applicable.	pwr0, pwr1
NCC Shelf Fan	Not Applicable.	fan
-48 Volt input	Not Applicable.	system

NCC Alarms/Events Tables with Condition Type Parameters

Introduction

The following tables lists the condition type parameters associated with the NCC alarms and events.

NCC Alarms

Table A-3. NCC Alarms Table with Condition Types

modifier	condtype	conddescr
EQPT	EQPT	Equipment, Circuit Pack Failure, Internal Failure Equipment, Circuit Pack Failure, Internal Failure-X.25 Equipment, Circuit Pack Failure, Internal Failure-cleared
EQPT	INT	Equipment, Fan Failure or High Temperature Equipment, Fan Failure or High Temperature-cleared
EQPT	CNVT	Equipment, Power Converter Failure Equipment, Power Converter Failure-cleared
EQPT	PWR	Equipment, Power/Circuit Breaker Failure, Feeder A Equipment, Power/Circuit Breaker Failure, Feeder B Equipment, Power/Circuit Breaker Failure, Both feeders Equipment, Power/Circuit Breaker Failure-cleared

NCC Events Table

Table A-4. NCC Events Table with Condition Types

modifier	condtype	conddescr
COM	SFT	Processing Error, Software Error, fatal Processing Error, Software Error, non-fatal
COM	WKGMEM	Processing Error, Out of Hard Disk/Memory Error
COM	BKUPMEMO	Processing Error, Removable Disk Usage
COM	PROGFLT	Processing Error, File Error, {affected NVM/file/error type}

Password Character Parameter Tables

Password Requirements/ Restrictions

All passwords must begin with an alpha character. The maximum character-length for a password is 10 alphanumeric characters. The minimum character-length allowed for a password is six alphanumeric characters. The keyword, ALL in any combination of upper and lower case, is disallowed as a password.

Allowed Password Characters

The following table lists the characters allowed in a password.

Table A-5. Allowed Password Characters

ASCII Character	Description	Code (hex)
A .. Z	Upper case letters	41 .. 5A
a .. z	Lower case letters	61 .. 7A
0 .. 9	Digits	30 .. 39
‘	Apostrophe	27
-	Hyphen	2D
(	Left parenthesis	28
)	Right parenthesis	29
.	Period (full stop)	2E
/	Slash (Solidus)	2F
+	Plus sign	2B
!	Exclamation mark	21
*	Asterisk	2A
[	Left square bracket	5B
	Continued on next page	

Password Character Parameter Tables, *continued*

Allowed Password Characters, *continued*

Table A-5. Allowed Password Characters, *continued*

ASCII Character	Description	Code (hex)
]	Right square bracket	5D
^	Caret	5E
‘	Grave accent	60
{	Left curly brace	7B
|	Vertical bar	7C
}	Right curly brace	7D
<	Less than	3C
>	Greater than	3E
~	Tilde	7E

Password Character Parameter Tables, *continued*

Disallowed Password Characters

The following table lists the characters disallowed in a password.

Table A-6. Disallowed Password Characters

ASCII Character	Description	Code (hex)	Comments
	Space	20	not for passwords - AC
@	Commercial at	40	“
,	Comma	2C	Special TL1 meaning
:	Colon	3A	“
=	Equals sign	3D	‘
“	Quotation mark	22	“
;	Semicolon	3B	“
&	Ampersand	26	“
%	Percent sign	25	not in X.520 character set
#	Number sign	23	“
–	horizontal bar (underscore)	5F	“
?	Question mark	3F	Context-sensitive help in PF2K
,	Comma	2C	Special TL1 meaning
:	Colon	3A	“
=	Equals sign	3D	‘
			Continued on next page

Password Character Parameter Tables, *continued*

Disallowed Password Characters, *continued*

Table A-33. Disallowed Password Characters, *continued*

ASCII Character	Description	Code (hex)	Comments
“	Quotation mark	22	“
;	Semicolon	3B	“
&	Ampersand	26	“
%	Percent sign	25	not in X.520 character set
#	Number sign	23	“
_	horizontal bar (underscore)	5F	“
?	Question mark	3F	Context-sensitive help in PF2K

A

C

D

E

F

I

L

M

N

O

P

Q

R

S

T

U

V

X