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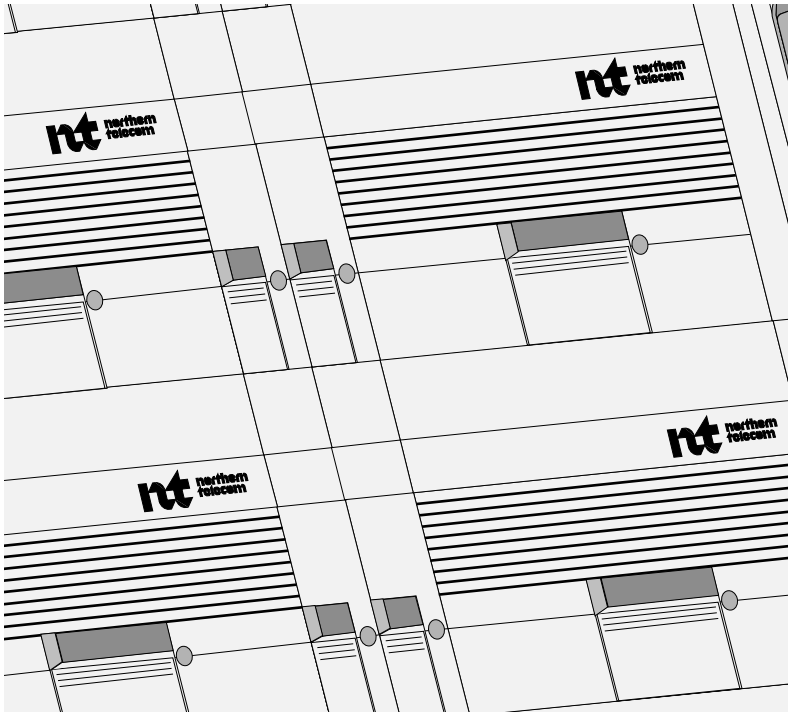
SONET Products

AccessNode

Nodal Connection Manager
Quick Reference Guide

Issue 1.0 October 1999



NORTEL NETWORKS™

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AccessNode

Nodal Connection Manager

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Contents

About this document

This quick reference guide summarizes the tasks you perform when you are using the Nodal Connection Manager user interface (UI) tool to provision connection services and facility assignments for Mix and Match, UE9000 TR08.

Who should use this guide

This guide is intended for personnel who are familiar with AccessNode equipment and its interfaces.

How this guide is organized

The procedures in this guide are grouped according to the tasks you must perform when commissioning the system. The tasks, and the procedures within each task, appear in the order in which they are to be performed.

Overview

Introduction

This document acts as a quick reference guide to the AccessNode Nodal Connection Manager user interface (UI) tool. The procedures in this guide contain information required to perform each action, but without the level of detail found in the AccessNode library volume. If a procedure within a task appears in a different document, the document name and number (such as *Setting Up Your System: Single-Ended*, 323-3001-245, in *Commissioning and Testing*, Volume 3A) is included for reference.

When to use this tool

The Nodal Connection Manager UI should be used only when the customer needs nonstandard or nondefault STS cross-connects between circuit packs, or when the customer wants to provision facilities for more than 672 lines. Standard configurations are best provisioned using the standard UIs, which perform the default provisioning more easily. Refer to Table 1 for the standard or default configurations.

Table 1
Standard or default configurations

Configuration	Standard or default cross-connect provisioning
DS1-fed	DS1 G1/G2 to TIC port 1 DS1 G4 to TIC port 2 DS1 G5/G6 to TIC port 3
Single-ended	OC-3 G1 port 1 to TIC port 1 OC-3 G1 port 2 to TIC port 2 OC-3 G1 port 3 to DS1 G1/G2

Product summary

The Nodal Connection Manager UI tool allows you to provision STS-level cross-connects, as well as VT-level facility assignments, on non-ring AccessNode platforms. The AccessNode configurations supported by this tool include:

- DS1-fed AccessNode (DFA)
- single-ended AccessNode
- point-to-point AccessNode

Read “Description” on page 3 for a more detailed description of the Nodal Connection Manager UI tool.

References

Before performing any of the procedures in this guide, you should be familiar with the following documents:

- “Provisioning and Deprovisioning a Facility” chapter in *Provisioning and Operations Procedures*, 323-3001-310, in *Operations, Administration, and Provisioning*, Volume 4B
- The setup guide for the type of system used (located in *Commissioning and Testing*, Volume 3A):
  - *Setting Up Your System: DFA*, 323-3001-235
  - *Setting Up Your System: Point-to-Point*, 323-3001-240
  - *Setting Up Your System: Single-Ended*, 323-3001-245
- *OPC User Interface Description*, 323-3001-301, in *Operations, Administration, and Provisioning*, Volume 4A
- *Network Element User Interface Description*, 323-3001-300, in *Operations, Administration, and Provisioning*, Volume 4A

Description

Introduction

This chapter describes the Nodal Connection Manager UI tool and provides an overview of how it provisions STS-level cross-connects and VT-level facility assignments.

General

The Nodal Connection Manager uses a text-based user interface that accepts TL1 commands and provides TL1 responses. The command set is limited to commands necessary for provisioning STS-level cross-connects and VT-level facility assignments with several supporting commands to retrieve information.

The purpose of the Nodal Connection Manager UI tool is twofold:

- to set up connections between the switch and remote equipment
- to provision a particular DS1 facility with a specific protocol (TR-08, GR-303, Tandem, or VCLM)

This tool allows you to bypass the restrictions currently imposed by the standard connection services and facility assignment provisioning UIs (for example, provisioning accessibility to TIC port 1 facilities only).

Provisioning support

The Nodal Connection Manager UI tool provides the following types of provisioning support:

- Mix and Match configurations
- extended TR-08 program
- GR-303
- VCLM

The Nodal Connection Manager creates STS-1 cross-connections at the STS level (not the VT1.5 level) between one of the following on a particular node:

- tributary circuit packs and transport interface card (TIC) STS ports (TIC to DS1)
- transport circuit packs and TIC STS ports (OC-12 or OC-3 to TIC)
- transport circuit packs and tributary circuit packs (OC-12 or OC-3 to DS1)

Once the cross-connect is created, the Nodal Connection Manager can be used to provision TIC facilities according to type. In addition, several RTRV types of commands allow you to check information such as the network element (NE) name and number, equipment provisioning, and DS1 host assignments.

Compatibility

The Nodal Connection Manager UI tool works with any non-ring node, including nodes that support CDS, Universal Edge 9000, and AccessNode Express. In addition, the Nodal Connection Manager is compatible with the existing Connection Manager and Facility Assignment Manager.

The tool provides access to the operations controller (OPC) and network element (NE) STS-level cross-connect data and VT facility assignment data. Any changes made by using the Nodal Connection Manager will be reflected in the OPC and NE databases, so the standard UIs will see any changes made to the data that these UIs monitor.

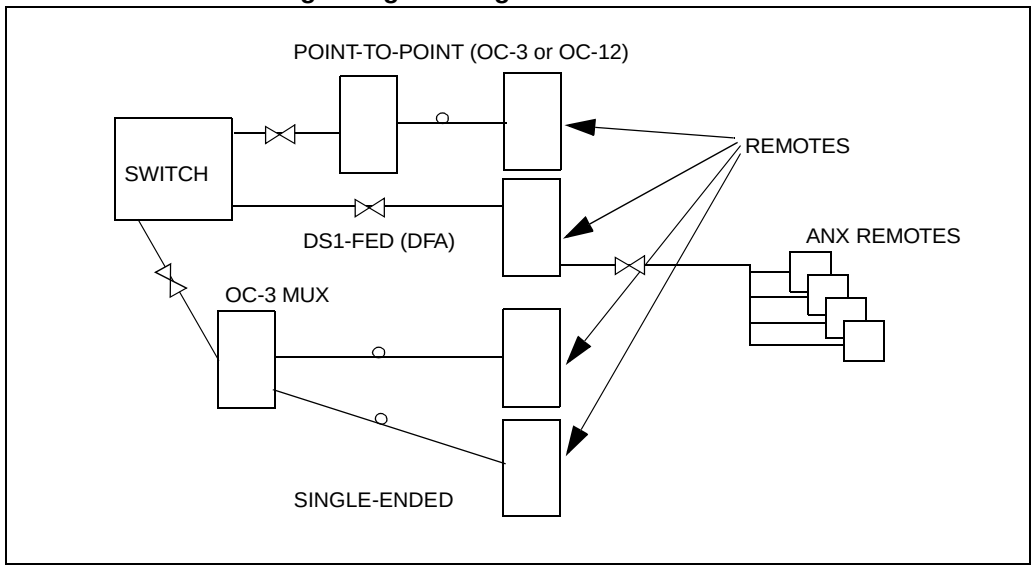
The Nodal Connection Manager provides access to VT facility assignment data, which is in addition to the data provided by the standard facility assignment dialog in the Connection Manager. Also, the Nodal Connection Manager allows additional flexibility in changing STS-level cross-connect provisioning, which the Connection Manager does not provide for DFA or SEAN systems.

Configurations

The Nodal Connection Manager UI targets the following non-ring AccessNode configurations (see Figure 1):

- DS1-fed AccessNode (DFA), including HDT/ANX
- single-ended (SEAN)
- point-to-point

Figure 1
Nodal Connection Manager target configurations



STS cross-connects overview

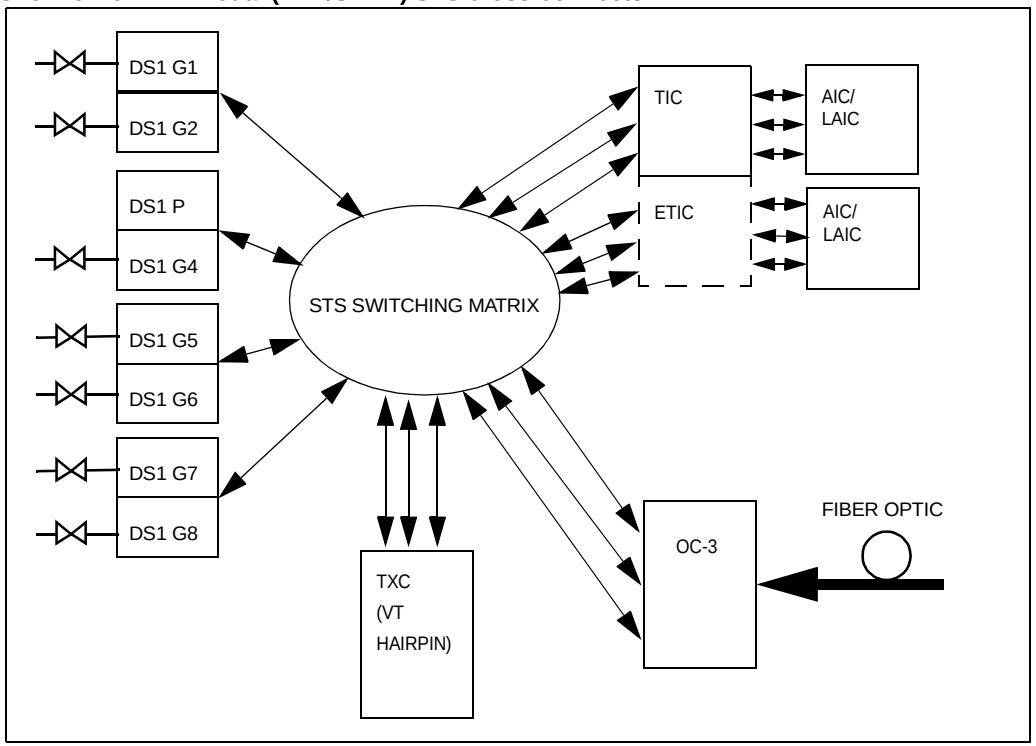
The AccessNode provides the ability to direct STS bandwidth between the various circuit packs in the AccessNode common equipment shelf (CES). Each tributary slot in the CES is capable of connecting either half of an STS (14 virtual tributaries [VTs]) or three full STSs (28 VTs per STS for a total of 84 VTs) depending on the type of circuit pack plugged into the slot (see Figure 2 on page 7).

If an odd-numbered slot contains a circuit pack that transports half of an STS, then the adjacent even-numbered slot on the right-hand side will transport the second half of an STS.

When creating STS cross-connects, you must consider the amount of bandwidth provided by each circuit pack. Circuit packs that are capable of interfacing with multiple STSs — such as the OC-3 optical fiber circuit pack (three STSs) or the TIC circuit pack (three STSs or six STSs, depending on the release of the pack) — have several STS ports.

The STS-level cross-connection for multiple STS packs is *to the port on* the circuit pack rather than just to the circuit pack. In the case of the DS1 mapper circuit pack, each pack provides one-half of an STS. Therefore, you would pair together DS1 mapper circuit packs for STS-level cross-connects.

Figure 2
Overview of ABM nodal (DFA/SEAN) STS cross-connects



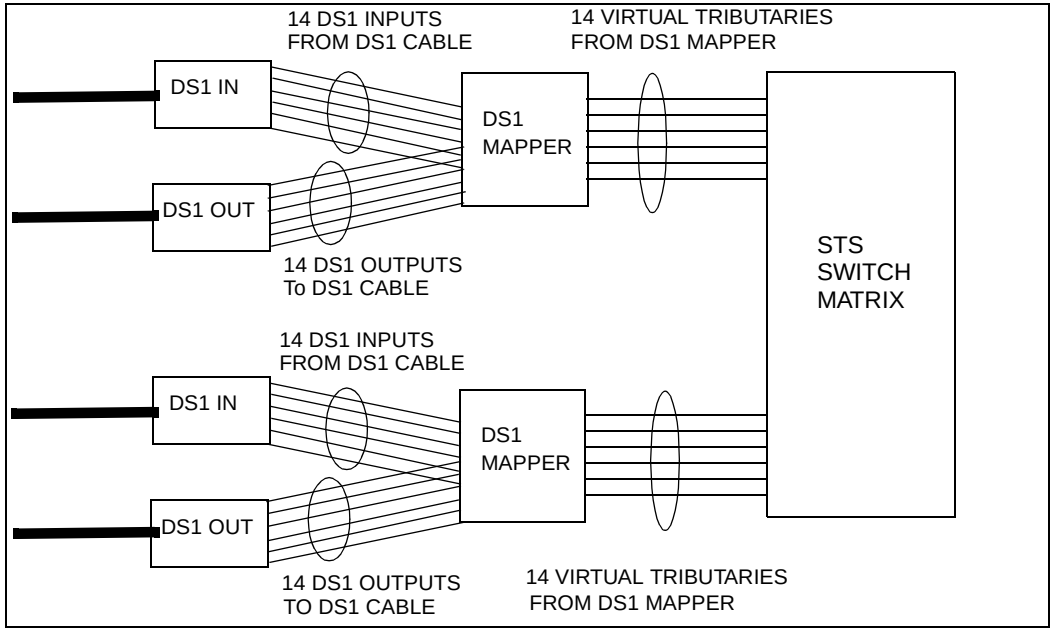
DS1 mapper cards and tributary cross-connects

Note: The following discussion addresses only how the DS1 mapper card is used with tributary cross-connects, which is the most widely used configuration.

DS1 mapper circuit packs provide the interface between the AccessNode shelf and DS1 traffic. Figure 3 shows the major components of this interface. It also indicates how the DS1 mapper circuit pack connects the DS1 I/O circuit packs in the I/O shelf (where DS1 cables connect to the AccessNode) with other circuit packs in the CES.

The STS switch matrix combines the half-STS generated by each DS1 mapper circuit pack into a single, full STS. The switch matrix creates STS cross-connects to connect DS1 mapper STSs with another circuit pack, such as a TIC or an optical feeder circuit pack (OC-12 or OC-3). The DS1 mapper transforms DS1 signals from DS1 I/O circuit packs into VTs, and from VTs back into DS1 signals.

Figure 3
Overview of DS1 cross-connects



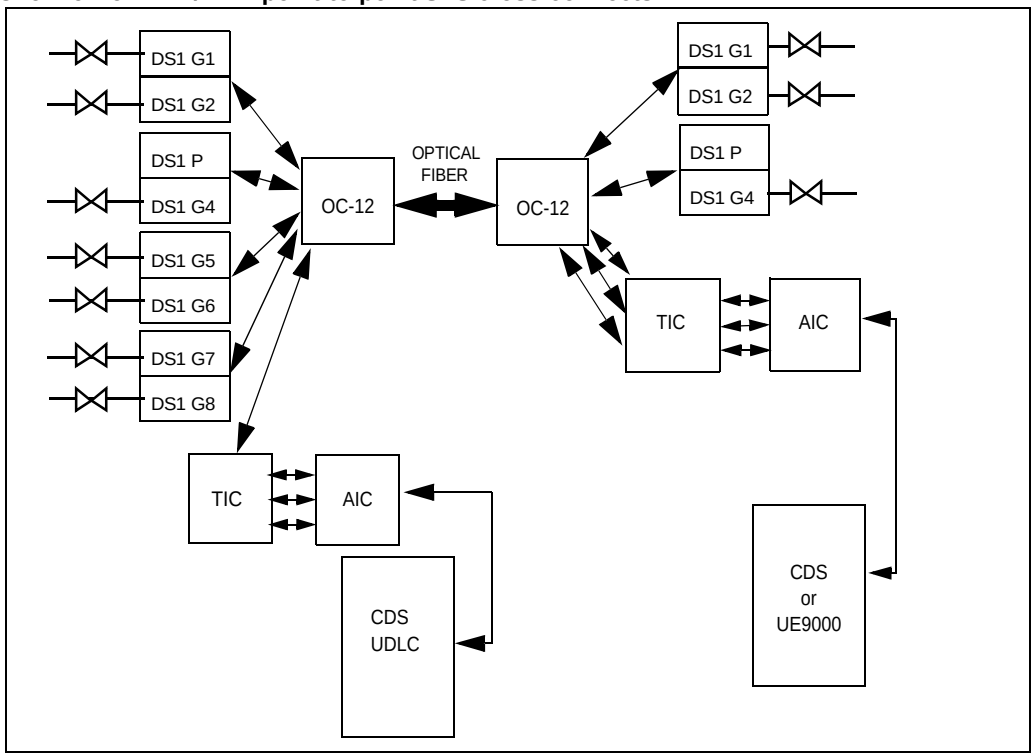
DS1 mapper circuit packs accommodate 14 VTs, or half of an STS. In order to provide a full STS, you must use two DS1 mapper circuit packs in an odd/even pair of slots. The default configuration for an ABM shelf is to put DS1 mapper circuit packs into slots 1, 2, and 3 (DS1 G1, DS1 G2, and DS1 Protection), and to put DS1 I/O circuit packs and protection bridge cards in the appropriate I/O shelf slots.

When an odd/even DS1 mapper pair contains a protection mapper (G3 of the G3/G4 mapper pair in the ABM shelf), a full STS from the mapper pair is not available. If there is a DS1 mapper fault, and a protection mapper is present, a “protection switch” occurs. In other words, instead of traveling through the faulted DS1 mapper, the DS1 signals and VT traffic are diverted through the protection mapper. The protection mapper is kept free of normal traffic so that it is available for the protection switch.

Point-to-point STS cross-connects

An AccessNode point-to-point configuration combines the specific nodal functionality of a DFA or single-ended configuration with the complexity of connecting the two NEs together (see Figure 4 on page 10). STS cross-connects on a point-to-point system have two STS end points (DS1 mapper pair or TIC port), each on different nodes that connect via an STS channel in the optical transport cards (OC-12 or OC-3), which are installed in the NEs.

Figure 4
Overview of ABM/ABM point-to-point STS cross-connects



Transport interface card variations

The TIC is available in several different releases that have different capabilities. The following generic types are available:

- Standard three-port TIC — accommodates all of the default services available from the standard UIs
- Asynchronous TIC (ATIC; three-port TR-08 TIC) — provides the same capability as the standard three-port TIC, plus it supports TR-08 links on all three TIC ports (rather than just the first TIC port) when used with the appropriate AccessNode software release
- Enhanced TIC (ETIC; six-port TIC with Mix and Match capability) — provides the same capability as the standard three-port TIC, plus when converting to a Mix and Match system, it will support a set of LAIC circuit packs for the AccessNode Express add-on.

The different capabilities of each type of TIC affect how you provision and manage the facilities on the circuit pack. For a system with the **standard three-port TIC**, you would use the standard UIs. The Nodal Connection Manager is not necessary for provisioning a standard three-port TIC system.

For a system with **other types of TIC circuit packs**, you could also use the standard UIs. However, because the extended capabilities of these other TICs will not be available through the standard UI, provisioning with the Nodal Connection Manager is necessary to take advantage of the extra TR-08 links and to upgrade an existing system to a Mix and Match system.

The Nodal Connection Manager can provision the TR-08 facilities on ports 2 and 3 of the ATIC. It also provisions integrated digital loop carrier (IDLC) facilities on port 4 of the new six-port ETIC for a Mix and Match system.

In addition, the Nodal Connection Manager provisions STS-level cross-connects on a shelf. This is especially necessary for those systems that skip the G4 DS1 mapper (STS cross-connects between G1/G2, G5/G6, and G7/G8) to obtain three full STSs of bandwidth, instead of the two-and-one-half STSs in the default connection provisioning.

> ***Note:*** The DS1 mapper in slot 3 of an ABM shelf is a protection mapper. Hence, it is unavailable for carrying DS1 traffic.

Facility provisioning overview

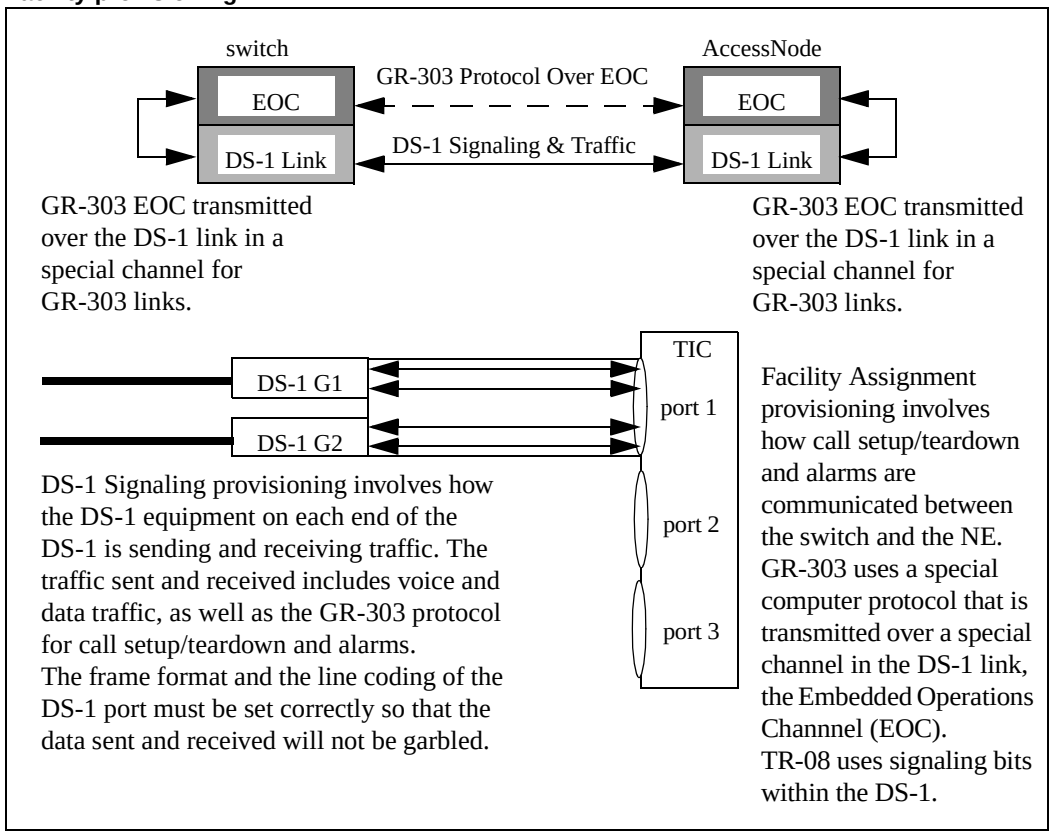
Introduction

In the provisioning process, you will enter TL1 commands using a text-based user interface (UI) that you invoke from the command line of an OPC terminal session. The TL1 commands provided allow the provisioning of STS-1 connections, as well as the provisioning of facility assignments. This chapter provides an overview of the following types of facility provisioning (see Figure 5 on page 14):

- TR-08
- GR-303
- VLCM

For more information on specific commands see “Nodal Connection Manager Commands” on page 37.

Figure 5
Facility provisioning



TR-08 facility provisioning

TR-08 facility provisioning must observe rules regarding the use of the two attributes used in TR-08 provisioning: LINK and SYSTEMID. Refer to “Rules and limitations” on page 33.

LINK

The LINK attribute may have a value of A, B, C, or D. Because the A link carries both messaging and traffic, it must be provisioned on specific TIC VTs only. These specific TIC VTs are designed to handle both messaging and traffic. TIC VTs 1, 5, 9, 13, 17, 21, and 25 are all designed to handle A-link messaging. See Table 2 on page 16.

SYSTEMID

The SYSTEMID attribute contains a numeric value from 1 to 21, which specifies the TR-08 system number. Each TR-08 system can contain up to four links. The A link for each system number handles the control messaging for all links grouped within that system number. See Table 2 on page 16.

Systems 1 through 7 are dedicated to TIC port 1 only. This restriction allows the standard provisioning UIs to work with the same TR-08 facilities as the Nodal Connection Manager. The other system numbers, 8 through 21, are dedicated to TIC ports other than TIC port 1. Again, this restriction allows the standard provisioning UIs to work with the same TR-08 facilities as the Nodal Connection Manager because the standard provisioning UIs allow TR-08 systems 1 through 7 only.

As a general rule, you should provision TIC port 2 with systems 8 through 14, and TIC port 3 with systems 15 through 21.

In addition to provisioning the facilities of the TIC VTs using the Nodal Connection Manager, you must also provision the DS1 facilities on the NE with the correct frame format using the NE Human Machine Interface (HMI).

Table 2
TR-08 provisioning

Port No.	VT No.	System ID	ED-VT1 Command Information
1	1-4	1	1-CE1-S1TIC-1-[1,2,3,4]:t::TYPE=TR08,SYSTEMID=1,LINK=[A,B,C,D]
	5-8	2	1-CE1-S1TIC-1-[5,6,7,8]:t::TYPE=TR08,SYSTEMID=2,LINK=[A,B,C,D]
	9-12	3	1-CE1-S1TIC-1-[9,10,11,12]:t::TYPE=TR08,SYSTEMID=3,LINK=[A,B,C,D]
	13-16	4	1-CE1-S1TIC-1-[13,14,15,16]:t::TYPE=TR08,SYSTEMID=4,LINK=[A,B,C,D]
	17-20	5	1-CE1-S1TIC-1-[17,18,19,20]:t::TYPE=TR08,SYSTEMID=5,LINK=[A,B,C,D]
	21-24	6	1-CE1-S1TIC-1-[21,22,23,24]:t::TYPE=TR08,SYSTEMID=6,LINK=[A,B,C,D]
	25-28	7	1-CE1-S1TIC-1-[25,26,27,28]:t::TYPE=TR08,SYSTEMID=7,LINK=[A,B,C,D]
2	1-4	8	1-CE1-S1TIC-2-[1,2,3,4]:t::TYPE=TR08,SYSTEMID=8,LINK=[A,B,C,D]
	5-8	9	1-CE1-S1TIC-2-[1,2,3,4]:t::TYPE=TR08,SYSTEMID=9,LINK=[A,B,C,D]
	9-12	10	1-CE1-S1TIC-2-[1,2,3,4]:t::TYPE=TR08,SYSTEMID=10,LINK=[A,B,C,D]
	13-16	11	1-CE1-S1TIC-2-[1,2,3,4]:t::TYPE=TR08,SYSTEMID=11,LINK=[A,B,C,D]
	17-20	12	1-CE1-S1TIC-2-[1,2,3,4]:t::TYPE=TR08,SYSTEMID=12,LINK=[A,B,C,D]
	21-24	13	1-CE1-S1TIC-2-[1,2,3,4]:t::TYPE=TR08,SYSTEMID=13,LINK=[A,B,C,D]
	25-28	14	1-CE1-S1TIC-2-[1,2,3,4]:t::TYPE=TR08,SYSTEMID=14,LINK=[A,B,C,D]
3	1-4	15	1-CE1-S1TIC-3-[1,2,3,4]:t::TYPE=TR08,SYSTEMID=15,LINK=[A,B,C,D]
	5-8	16	1-CE1-S1TIC-3-[1,2,3,4]:t::TYPE=TR08,SYSTEMID=16,LINK=[A,B,C,D]
	9-12	17	1-CE1-S1TIC-3-[1,2,3,4]:t::TYPE=TR08,SYSTEMID=17,LINK=[A,B,C,D]
	13-16	18	1-CE1-S1TIC-3-[1,2,3,4]:t::TYPE=TR08,SYSTEMID=18,LINK=[A,B,C,D]
	17-20	19	1-CE1-S1TIC-3-[1,2,3,4]:t::TYPE=TR08,SYSTEMID=19,LINK=[A,B,C,D]
	21-24	20	1-CE1-S1TIC-3-[1,2,3,4]:t::TYPE=TR08,SYSTEMID=20,LINK=[A,B,C,D]
	25-28	21	1-CE1-S1TIC-3-[1,2,3,4]:t::TYPE=TR08,SYSTEMID=21,LINK=[A,B,C,D]
Note: VT numbers map to LINK letters. For example, VTs 1, 5, 9, 13, 17, 21, and 25 correspond to LINK=A; VTs 2, 6, 10, 14, 18, 22, and 26 correspond to LINK=B; and so on through LINK=D.			

GR-303 facility provisioning

GR-303 is a switch-to-network element (NE) communications protocol (see Figure 5 on page 14) that allows an AccessNode to perform call setup and call teardown either on demand or when the call is actually initiated by a subscriber. On-demand call setup/teardown allows the bandwidth of the DS-1 links to be used more efficiently because one DS-1 link may support more than 24 lines (subscriber loops). This is because the bandwidth or capacity of the DS-1 link is used only as required to satisfy immediate call requests (concentration). Other protocols, such as TR-08, use the DS-1 bandwidth at the time the service is provisioned, which requires more DS-1 links for a given number of subscribers.

There are two versions of the GR-303 protocol supported by AccessNode:

- a proprietary version (GR303DMS) used only by the Nortel DMS switch
- an industry-standard version (GR303MVI) used by the Nortel DMS switch, as well as the GR-303 compatible switches of other vendors

Provisioning GR-303 links requires provisioning on the switch, as well as on the AccessNode. The switch and AccessNode provisioning must complement each other. If the switch provisioning differs from the AccessNode provisioning, the subscriber will not get a dialtone.

To provision GR-303 links on an AccessNode, you must first define the GR-303 switch host using the Host Provisioning Manager UI. The information required includes the following:

- the switch CLLI
- the Integrated Digital Terminal (IDT) identifier
- the type of GR-303 protocol used by the switch for the specific IDT (GR-303DMS or GR-303 MVI)

Next, to actually provision the GR-303 links, you must provision

- the DS-1 port to support the DS-1 signalling
- the TIC port facilities to which the DS-1 is-cross connected to support the GR-303 protocol

Provision the DS-1 signaling from the NE Human Machine Interface (HMI) using the NELogin Manager from the OPC or by connecting a VT-100 terminal or terminal emulator to the modem port on the LCAP. The DS-1 signaling provisioning requires setting the line coding and the frame format of the DS-1 mapper port to which the DS-1 link from the switch is connected.

Provision the TIC facility by assigning the appropriate GR-303 type (GR303DMS or GR303MVI), along with the identification number (HOSTID) of the switch and the Remote Digital Terminal (RDT) DS-1 link number (RDT). The RDT number is assigned sequentially beginning with one (1). The first two DS-1 links of a host group are used for communication between the switch and the NE using the GR-303 protocol to perform call setup/teardown. They are also used for transporting telephone conversations between the subscriber CPE and the switch.

You can use the RTRV-HOST TL1 command in the Nodal Connection Manager to retrieve the host provisioning information before using the ED-VT1 TL1 command to provision a GR-303 facility. The RTRV-HOST command will respond with switch provisioning information using the same parameters as those required for the ED-VT1 command. In addition to the host provisioning information, you will need to know the RDT link number for the facility being provisioned.

VLCM facility provisioning

Virtual line concentrating module (VLCM) provisioning requires making link and line assignments. Two signaling link types are available. They cannot be mixed. You should choose one of the following:

- VLCMSIGNALRMM — for DMS access (connecting to a DMS-10-NA).
- VLCMSIGNAL — to connect to an APC-100 switch in Japan

With VLCMSIGNALRMM, you can provision up to four VLCMs. With VLCMSIGNAL, you can provision up to six. Assign the VLCMs using one of the configurations described in Table 3 on page 19.

> ***Note:*** The system defaults to configuration 1 or 4, depending on the country code setting (either North America or Japan).

A new command interpreter (CI), VLCMPROV, will be added in the future as a sub-CI to the VLCMCI. It will allow you to change the configuration to 2, 3, 1, or 4, depending on the country code setting. It will not allow you to change to a configuration for which lines are already provisioned in the affected range.

Table 3
VLCM link and line assignments

Config. No.	Link Assignments	Line Assignments					
		VLCM 1	VLCM 2	VLCM 3	VLCM 4	VLCM5	VLCM6
1	VLCMs 1–4 on AIC A/B	1–640	641–1280	1281–1920	1921–2560	NA	NA
2	VLCMs 1–3 on AIC A/B; VLCM 4 on AIC C/D	1–640	641–1280	1281–1920	2689–3328	NA	NA
3	VLCMs 1–2 on AIC A/B; VLCMs 3–4 on AIC C/D	1–640	641–1280	2689–3328	3329–3968	NA	NA
4	VLCMs 1–4 on AIC A/B; VLCMs 5–6 on AIC C/D	1–640	641–1280	1281–1920	1921–2560	2689–3328	3329–3968

Connection services provisioning overview

Introduction

The Nodal Connection Manager supports changing the default STS-level cross-connect provisioning of point-to-point, DFA, and SEAN systems (see Figure 6 on page 23). The Nodal Connection Manager is needed to modify the default cross-connects when converting a DFA to a Mix-and-Match configuration, as well as when implementing extended TR-08 for Universal Edge 9000 with DFA and SEAN systems.

The Nodal Connection Manager handles STS-level connections only. No provisions exist for VT1.5-level provisioning in the Nodal Connection Manager. The connections are designed to connect a particular STS1 between two tributaries (for example, between DS1 G1,G2 and TIC port 2), or between a particular tributary and a transport circuit pack (for example, between OC-12 G1 port 2 and TIC port 2). Because connections occur at the STS1 level, DS1 connections involve two DS1 mapper circuit packs per STS1 (see Figure 7 on page 25).

> ***Note:*** For details about equipping the ABM and TBM shelves, refer to the setup document for your system (323-3001-230 for VTBM, 323-5001-235 for DFA, 323-5001-240 for point-to-point, 323-3001-245 for single-ended) in *Commissioning and Testing*, Volume 3A.

The standard transport interface card (TIC) has three ports currently available. Port 1 carries the traffic from the CDSs, AccessNode Express remotes, or Universal Edge 9000 shelves in an AccessNode bay configuration. The new enhanced TIC (ETIC) has six ports available with the introduction of the Mix

and Match program. It handles additional AccessNode Express remotes using ETIC port 4 with the addition of loopback AIC (LAIC) circuit packs in slots 12 and 15 of the common equipment shelf (CES).

The DS1 mapper circuit packs are assignable to ports on the TIC or ETIC in pairs. For instance, the mapper pair G1/G2 may be cross-connected to TIC port 1. Since G3 is the protection mapper in an ABM shelf, the mapper pair G3/G4 actually consists of only G4. Because each DS1 mapper provides 14 DS1 circuits, two mapper cards provide a full STS-1 of 28 DS1 circuits.

The DS1 mapper pairs are mapped on the TIC port as follows:

- lower numbered mapper — mapped to the first set of 14 DS1 circuits of a TIC/ETIC port (VTs 1 through 14)
- upper numbered mapper — mapped to the second set of 14 DS1 circuits of a TIC/ETIC port (VTs 15 through 28)

The ABM shelf also supports DS3 mapper circuit packs, OC-3 optical circuit packs, and OC-12 circuit packs. The OC-12 circuit packs may be used only as transport packs in slots 9 and 10 (G1 and G2 for the OC-12, respectively). The OC-3 circuit pack can be used as either a transport circuit pack in slots 9 (G1) and 10 (G2), or as a tributary pack in slots 3 (G1S), 5 (G2S), and 7 (G3).

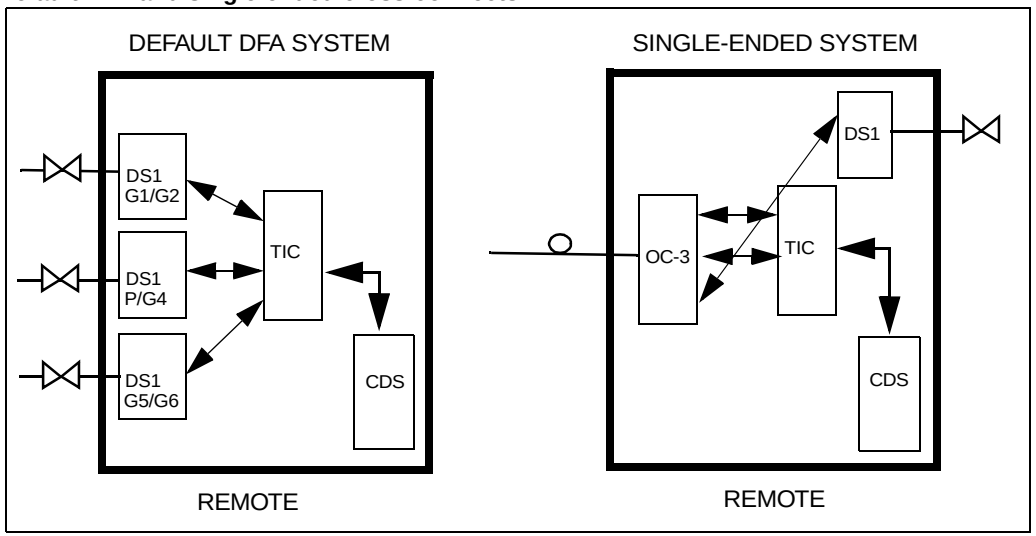
> ***Note:*** G1 and G2 will label the OC-3 when used as transport cards, and G1S and G2S will label the OC-3 when used as tributary circuit packs.

Following are some equivalents for reference:

Circuit pack	**Contents**
OC-12	12 STS-1 channels
OC-3	3 STS-1 channels
DS3	3 STS-1 channels
STS-1	3 STS-1 channels
TIC	3 STS-1 ports
DS1	half of an STS-1

Each STS-1 contains 28 VT1.5 or DS1 facilities.

Figure 6
Default DFA and single-ended cross-connects



Depending on the topology, STS-managed connections can be set up for 3 to 12 working channels (time slots), as shown below.

Topology	**Number of working channels**
OC-3 point-to-point	3
OC-12 point-to-point	12
DFA	(depends on the quantity of DS1 mappers)
OC-3 single-ended	3

For connections to carry traffic, you also must provision the appropriate tributary circuit pack equipment and facilities at each NE using the NE HMI either before or after you set up the connections.

Note: See Procedure 8 on page 92.

Table 4 shows the alarms generated for tributary circuit pack facilities. The alarms that can be generated depend upon the provisioning and connection status of the tributary. Tributaries are composed of tributary facilities and tributary equipment (circuit packs).

Table 4
Tributary facility alarms

If the tributary facility is	And connections are	These alarms are generated
provisioned	not set up	STS unequipped alarms
provisioned	set up	if not yet carrying traffic, loss of signal (LOS) and alarm indication signal (AIS) alarms
not provisioned	set up	no alarms

Point-to-point systems

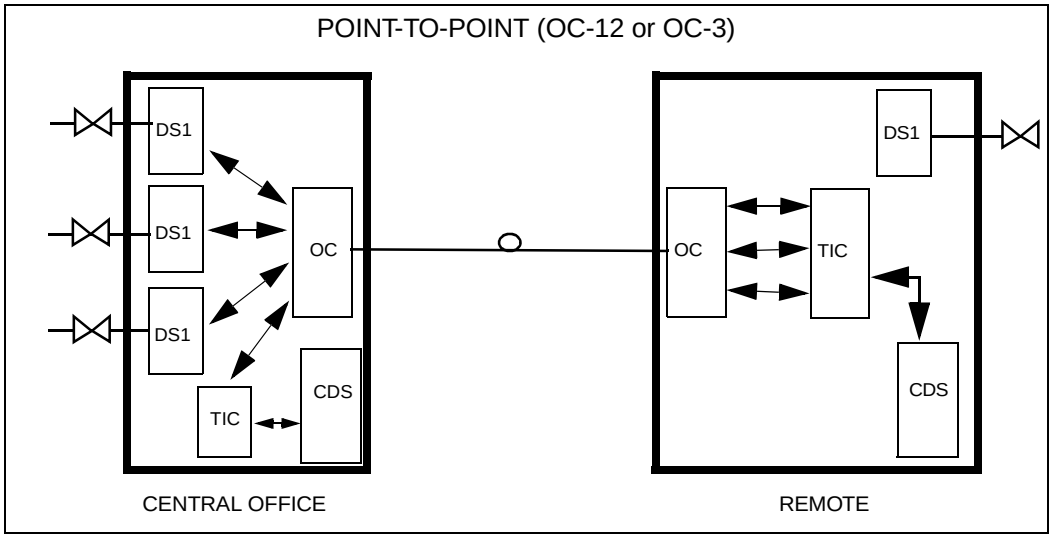
The following information pertains to point-to-point systems (see Figure 7 on page 25):

- You can set up only STS-managed STS-1 connections.
- You can use only the following tributary combinations for end-to-end connections:

Fiber central office terminal (FCOT)	Remote fiber terminal (RFT)
DS1 mapper pair	DS1 mapper pair, OC-3 channel, or TIC port
DS3 mapper port	DS3 mapper port or OC-3 channel
OC-3 channel	OC-3 channel, DS3 mapper port, DS1 mapper pair, or TIC port
TIC port 2 (access bandwidth manager (ABM) only)	TIC port 2 (provides UDLC traffic)

- You cannot terminate connections on the same node (that is, no hairpinning).

Figure 7
Point-to-point cross-connects



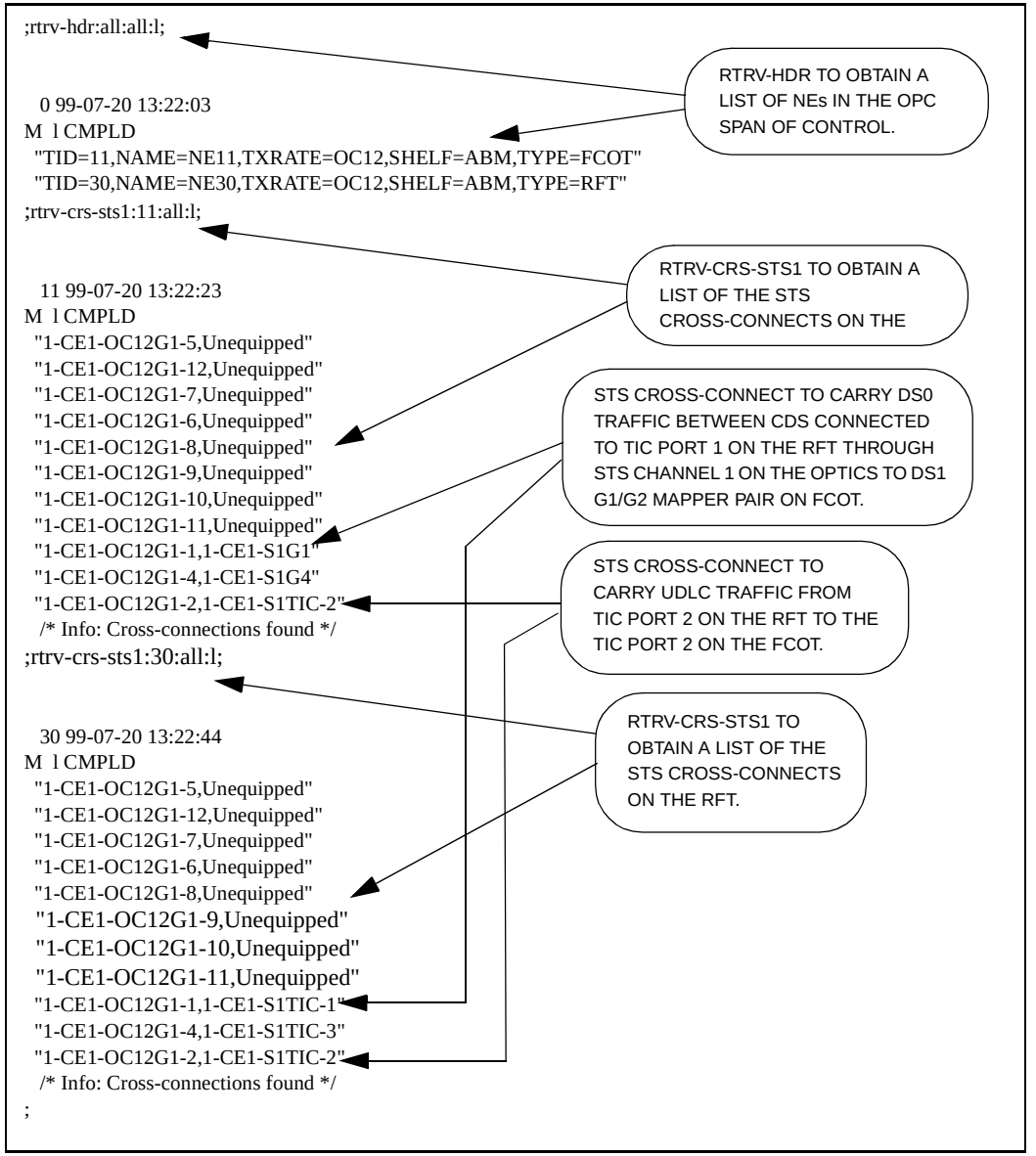
The Nodal Connection Manager retrieves STS cross-connect information on a per-node basis rather than on a system basis. To determine which tributary cards on the FCOT are connected to which tributary cards on the RFT of a point-to-point system, you must perform the following tasks in order (see Figure 8 on page 26):

1 Look at the STS cross-connects returned by an RTRV-CRS-STS1 command to each end (FCOT and RFT) of the point-to-point system.

2 Map out the STS channel over which the tributary traffic is being transported.

3 Match the tributary circuit packs by determining which STS channel the circuit packs share.

Figure 8
Identifying shared STS channels



DS1/DS3 mappers

The following information pertains to DS1/DS3 mappers for point-to-point systems:

- You can map an STS-1 between
  - any odd/even pair of DS1 mappers at the FCOT and RFT
  - any DS3 port on any DS3 mapper at the FCOT and any DS3 mapper at the RFT
  - any pair of DS1 mappers at the FCOT and STS port 1 of the TIC at the RFT; these DS1 interfaces are used for integrated and tandem services
  - any pair of DS1 mappers at the FCOT and STS port 2 or port 3 of the Asynchronous TIC for extended TR-08

  Note: If the DS1 mapper is next to the protection mapper, the STS-1 is only half-used and supports only 14 DS1s.

- You can map an STS-1 to the mappers. You should map the protection mapper at the FCOT to the mappers that include the protection mapper at the RFT. A pair of mappers *without* a protection mapper will lose the bandwidth from one of its mappers if it is mapped to a pair *with* a protection mapper.

Transport interface card

TIC port 1 at the FCOT is unavailable. This is because TIC port 1 is used for integrated and Tandem services that terminate on DS1 mappers at the FCOT.

TIC port 1 at the RFT can connect only to a DS1/OC-3/STS-1 port at the FCOT because port 1 is used for integrated and Tandem services that terminate at the RFT on the TIC and on DS1/OC-3/STS-1 tributaries at the FCOT.

Connect TIC port 2 at the FCOT only to TIC port 2 at the RFT. Port 2 handles universal digital loop carrier (UDLC) services that terminate on the TIC at both the FCOT and the RFT. The Nodal Connect Manager supports UDLC only on point-to-point configurations.

Note: TIC ports 3 through 6 are unavailable in the current release.

The standard three-port TIC supports only the TR-08 message extraction from the first STS-1 that it receives. Therefore, mappers carrying TR-08 services must be mapped to TIC port 1. In addition, you can access TR-08 messages for the following TIC subports only: 1, 5, 9, 13, 17, 21, and 25.

If asynchronous TICs are installed in place of standard TICs, TR-08 message extraction is supported for all three STS-1s received. That is, all three TIC ports can support TR-08.

Table 5 shows the default map for an ABM shelf in an FCOT.

Table 5
Default map for an ABM shelf in an FCOT

CE Shelf Slot number	STS carrying			
	DS1s to/from a DS1/VT mapper in the slot	DS1s to/from a TIC in the slot	DS3s to/from a DS3/STS mapper in the slot	OC-3 tributaries
1	STS-1 #1 low			STS-1 #1 (applies only to first channel of OC-3 tributary)
2	STS-1 #1 high			
3			STS-1 #4, 7, and 8	
4	STS-1 #4 high			
5	STS-1 #5 low		STS-1 #5, 9, and 10	STS-1 #5, 9, and 10
6	STS-1 #5 high			
7	STS-1 #6 low		STS-1 #6, 11, and 12	
8	STS-1 #6 high			
11 and 14 port 2		STS-1 #2 (UDLC DS1s)		

Note 1: No default mapping exists for DS1s going to and from a DS1/VT mapper in slot 3 because only the protection mapper can be installed in that slot.

Note 2: The universal digital loop carrier (UDLC) traffic in STS-1 #2 is mapped to the TICs in the RFT. The UDLC traffic is mapped to port 2 in slot 11 and to port 2 in slot 14 because either of the two transport interface circuit packs can be the working unit.

Note 3: If the FCOT and RFT are equipped with feeder OC-3 interface circuit packs, only the following STS-1s are available: 1, 2, and 3. Therefore, the default maps do not support DS3s in such a subnetwork.

Note 4: The slots for OC-tributaries shown in Table 5 are the first of four slots. Each OC-3 tributary card occupies two slots. If optional protection exists, an OC-3 protection card occupies another two slots. For example, the "slot 1" OC-3 tributary occupies slots 1–2 if there is no protection card, or slots 1–2 and 3–4 if there is a protection card.

Table 6 shows the default map for a TBM shelf in an FCOT.

Table 6
Default map for a transport bandwidth manager shelf in an FCOT

CE Shelf Slot number	STS carrying		
	DS1s to/from a DS1/VT mapper in the slot	DS3s to/from a DS3/STS mapper in the slot	OC-3 tributaries
1			
2			
3	STS-1 #1 low		
4	STS-1 #1 high		
11	STS-1 #3 low	STS-1 #3 (applies only to first port of DS3 tributary)	STS-1 #3 (applies only to first channel of OC-3 tributary)
12	STS-1 #3 high		

—continued—

Table 6 (Continued)
Default map for a transport bandwidth manager shelf in an FCOT

CE Shelf Slot number	STS carrying		
	DS1s to/from a DS1/VT mapper in the slot	DS3s to/from a DS3/STS mapper in the slot	OC-3 tributaries
13			
14	STS-1 #4 high		
15	STS-1 #5 low	STS-1 #5, 9, and 10	STS-1 #5, 9, and 10
16	STS-1 #5 high		
17	STS-1 #6 low	STS-1 #6, 11, and 12	
18	STS-1 #6 high		
—end—			

Note 1: No default mapping exists for DS1s going to and from a DS1/VT mapper in slot 13 because only the protection mapper can be installed in that slot.

Note 2: The DS1s in STS #1 carry tandem traffic and integrated traffic. The assignment of the DS1s is flexible. All 28 DS1s in the STS can be tandem DS1s. Alternatively, up to 20 of the 28 DS1s in the STS can be GR-303 DMS/MVI DS1s. The limit of 20 is imposed by the SMA.

Note 3: If the FCOT and RFT are equipped with feeder OC-3 interface circuit packs, only the following STS-1s are available: 1, 2, and 3. Therefore, the default maps do not support DS3s in such a subnetwork. However, you can specify a nondefault map that does support DS3s.

Note 4: The slots for OC-tributaries, shown in Table 6, are the first of four slots. Each OC-3 tributary card occupies two slots. If there is optional protection, an OC-3 protection card occupies another two slots.

Table 7 on page 31 shows the default map for an ABM shelf in an RFT.

Table 7
Default map for an access bandwidth manager shelf in an RFT

CE Shelf Slot number	STS carrying			
	DS1s to/from a DS1/VT mapper in the slot	DS1s to/from a TIC in the slot	DS3s to/from a DS3/STS mapper in the slot	OC-3 tributaries
1	STS 3 low			STS 3 (applies only to first channel of OC-3 tributary)
2	STS 3 high			
3			STS 4, 7, and 8	
4	STS 4 high			
5	STS 5 low		STS 5, 9, and 10	STS 5, 9, and 10
6	STS 5 high			
7	STS 6 low		STS 6, 11, and 12	
8	STS 6 high			
11 and 14		STS 1 (GR-303 DMS/MVI, tandem and TR-08;) STS 2 (UDLC)		

Note 1: No default mapping exists for DS1s going to and from a DS1/VT mapper in slot 3 because only the protection mapper can be installed in that slot.

Note 2: The DS1s in STS-1 #1 carry tandem traffic, GR-303 traffic, and TR-08 traffic. The assignment of the DS1s is flexible. All 28 DS1s in the STS can be tandem DS1s or GR-303 DS1s. STS-1 #1 is mapped to a pair of DS1/VT mappers in the FCOT.

Note 3: The UDLC traffic on STS-1 #2 is mapped to the TICs in the FCOT. The UDLC traffic is mapped to port 2 in slot 11 and to port 2 in slot 14 because either of the two TICs can be the working unit.

Note 4: The slots for OC-tributaries, shown in Table 7, are the first of four slots. Each OC-3 tributary card occupies two slots. If there is optional protection, an OC-3 protection card occupies another two slots. For example, the “slot 1” OC-3 tributary occupies slots 1–2 if there is no protection card, or slots 1–2 and 3–4 if there is a protection card.

Note 5: An RFT in a single-ended system is fed by an OC-3 tributary. Only the following STS-1s are available: 1, 2, and 3. Therefore, the default map does not support DS3s in a single-ended system. You cannot specify a non-default map for an RFT in a single-ended system because you do not run the configuration manager when commissioning a single-ended RFT.

Note 6: If the FCOT and RFT in a basic fiber-fed system are equipped with OC-3 interface circuit packs, only the following STS-1s are available: 1, 2, and 3. Therefore, the default maps do not support DS3s in such a system. However, in a basic fiber-fed system, you can specify a non-default map that does allow DS3s.

Table 8 shows the default connections for DFA RFTs and CServers.

Table 8
DFA RFT and CServer Default Connections

Endpoint 1	Endpoint 2
DS1 mappers G1 and G2 (slots 1 and 2)	TIC port 1 (slot 11)
DS1 mapper G4 (slot 4)	TIC port 2 (slot 11)
DS1 mapper G5, G6 (slots 5 and 6)	TIC port 3 (slot 11)

Single-ended NEs do not support STS-1 connection services. As a result, the following guidelines apply to the default maps:

- All DS1 tandem, TR-08 DS1, and GR-303 traffic must be on STS-1 #1 of the incoming tributary.
- DS1 transport traffic can be only on STS-1 numbers 3, 4 (upper half only), 5, and 6.

Rules and limitations

Introduction

This chapter discusses the various engineering rules and limitations that apply to the Nodal Connection Manager UI tool.

Engineering rules

To integrate this text-based tool into the standard OPC provisioning tools, you must follow a set of engineering rules. These rules improve the usability of the overall system.

Table 9 lists the engineering rules for the Nodal Connection Manager.

Table 9
Engineering rules (ER) for the Nodal Connection Manager

ER1	**The text-based UI tool is designed for use with STS-1 managed, non-ring configurations of AccessNode only.** ***Note:*** This UI tool allows provisioning of NE nodes only. The tool allows the cross-connection of STS-1 cross-connects between a transport circuit pack and a tributary circuit pack (OC-3 to TIC) or between two tributary circuit packs (DS1 mapper pair to TIC). This tool does not support pass-through cross-connects between two transport circuit packs (VTBM OC-12 to OC-12).
ER2	Provision TR-08 systems 1 through 7 on TIC port 1 only.
ER3	Provision TR-08 systems beyond 7 on a TIC port other than port 1. Provision TR-08 systems 8 through 14 on TIC port 2. Provision TR-08 systems 15 through 21 on TIC port 3.
—continued—	

Table 9 (Continued)
Engineering rules (ER) for the Nodal Connection Manager

ER4	Perform a Connection Manager cross-connect audit after using the tool if a partial success occurs. ***Note:*** An event such as a loss of association with the NE may make a partial success of a cross-connect provisioning attempt. In such cases this tool will inform the user of the partial success and recommend that an audit be scheduled by using the Connection Manager tool after exiting the UI.
ER5	Before provisioning facilities on the VT1.5 subports, make sure STS-1 cross-connects exist on a TIC port.
ER6	Do not use other provisioning tools while using the text-based UI.
ER7	To exploit ETIC ports 4 through 6, you must first install an LAIC in the secondary AIC position (slots 12 and 15) of the common equipment shelf in a Mix-and-Match configuration.
ER8	Support of TR-08 varies depending on the type of TIC circuit pack used. The TIC supports TR-08 on TIC port 1 only. The ETIC supports TR-08 on TIC port 1 only. Only the ATIC (NT4K56CA) supports TR-08 on ports 2 and 3.
ER9	The equipment slot must be equipped with a circuit pack and a cross-connect created before facility assignment can be made on the equipment.
ER10	You cannot delete a cross-connect with assigned facilities.
ER11	DSX facilities may not mix signaling types. Once a signaling link for a system is set to either non-RMM or RMM signaling, all VLCM signaling links must use the same type of signaling.
ER12	When setting TR-08 facilities to UNASSIGNED, links other than link A (links B, C, and D) of the same TR-08 system must be set to UNASSIGNED before link A can be set to UNASSIGNED. This is because the TR-08 signaling for all links goes through link A. Therefore, link A must be the last link removed. The links should be UNASSIGNED in reverse order (D, C, B, A).
E13	When setting GR-303 facilities to UNASSIGNED, RDTs other than RDT1 must be set to UNASSIGNED. This is because the GR-303 communication travels over RDT1. The RDTs for a host should be UNASSIGNED in reverse order (4, 3, 2, 1).
—end—	

Inter-tool conflicts

The text-based UI tool modifies the same databases as the standard AccessNode provisioning tools. Therefore, when you are using the text-based UI tool, you should not use the other provisioning tools. This restriction eliminates the possibility of different tools modifying the same data in different ways and causing inter-tool conflicts.

To avoid inter-tool conflicts, do **NOT** use the following standard tools when using the Nodal Connection Manager UI:

- Connection Manager UI
- Provisioning Manager UI
- Various types of the Provisioning Manager UI
- Host Provisioning Manager UI
- Configuration Manager UI

Additional limitations

Below are some additional limitations that apply to the Nodal Connection Manager tool.

- The Nodal Connection Manager cannot be opened unless the system has been commissioned. For more information, see *Commissioning and Testing*, Volume 3.
- While the Nodal Connection Manager is open, you cannot open the Configuration Manager. This ensures that configuration data does not change while connections are being set up. Similarly, you cannot open the Nodal Connection Manager while the Configuration Manager is open.
- Editing the facility assignment of a VT connection terminating on a TIC port is allowed, but affects service. Editing of cross-connect provisioning is not allowed. You must delete and re-add the connection.
- Connection data is synchronized between operations controllers (OPCs) in one direction only: from the primary OPC to its backup. Therefore, if you change connections on an active backup OPC, you must repeat these changes on the primary OPC when the primary becomes active again.

CAUTION
Risk of traffic loss
Failure to repeat changes made on the backup OPC to the primary OPC results in loss of connection data and may eventually lead to loss of traffic.

- For connections to carry traffic, the appropriate tributary circuit pack facilities also must be installed and provisioned at each end of the connection. These tributary facilities can be provisioned either before or after the connections are set up, using the NE HMI.
- See Table 4, “Tributary facility alarms,” on page 24 for a summary of alarms and when they are generated.

Nodal Connection Manager Commands

Introduction

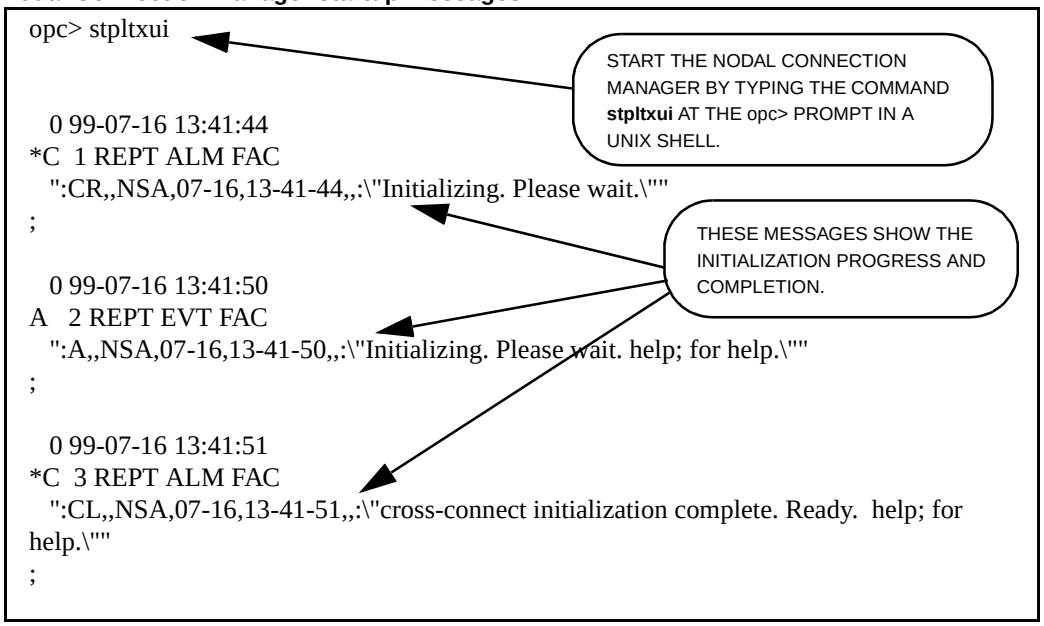
This chapter discusses the following types of commands that can be used with the Nodal Connection Manager:

- Startup
- Quit
- New facility TL1
- Cross-connect TL1
- Additional RTRV commands

Startup

To start the Nodal Connection Manager, type **stpltxui** at the opc> prompt in a UNIX shell, then press the <enter> key. The Nodal Connection Manager will start up and initialize with autonomous messages as shown in Figure 9 on page 38.

Figure 9
Nodal Connection Manager startup messages



Quit

Exit the Nodal Connection Manager by using the “quit;” or the “exit;” command as shown in Figure 10 on page 39. Notice that these commands are terminated by a semicolon (;), which is necessary.

> ***Note:*** All commands within the Nodal Connection Manager must have a terminating semicolon (;). If the semicolon is not provided, the UI will appear to hang. However, it is actually waiting for the command text to be completed before processing the command.

Figure 10
Quit Command

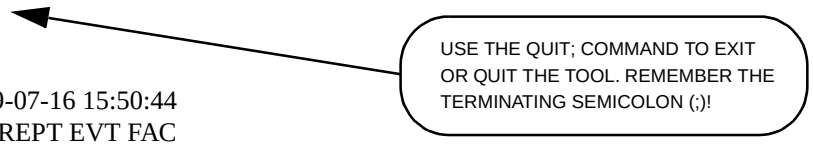
```
*C  1 REPT ALM FAC
   ":CR,,NSA,07-16,15-49-33,,:\"Initializing. Please wait.\""
;

   0 99-07-16 15:49:40
A   2 REPT EVT FAC
   ":A,,NSA,07-16,15-49-40,,:\"Initializing. Please wait.  help; for help.\""
;

   0 99-07-16 15:49:40
*C  3 REPT ALM FAC
   ":CL,,NSA,07-16,15-49-40,,:\"cross-connect initialization complete. Ready.  help; for
help.\""
;quit;


   0 99-07-16 15:50:44
A   4 REPT EVT FAC
   ":A,,NSA,07-16,15-50-44,,:\"Exiting tool.\""
;

   0 99-07-16 15:50:44
A   5 REPT EVT FAC
   ":A,,NSA,07-16,15-50-44,,:\"Tool Exiting.\""
;opc>
```



New facility TL1 commands

Two new facility provisioning TL1 commands are available:

- RTRV-VT1 — retrieve facility assignments
- ED-VT1 — change facility assignments

The NE creates the facilities as part of the automatic NE provisioning that takes place when a cross-connect to the TIC ports is created. Therefore, ENT-VT1 and DLT-VT1 are not supported, because they are not required.

The syntax for each of these commands is discussed in the following sections.

RTRV-VT1

The syntax of the RTRV-VT1 facility command is as follows:

RTRV-VT1:NEA:AID:CTAG;

where:

- NEA is the NE number of the target NE.
- AID is the administrative identifier (AID) of the target port. AID will be one of:
  - ALL for all TIC ports and TIC VT1.5s.
  - 1-CE1-S1TIC-[1..6]-[1..28] for a specific VT1.5 facility
  - 1-CE1-S1TIC-[1..6]-[1..28]&&1-CE1-S1TIC-[1..6]-[1..28] for a range of VT1.5 facilities

The RTRV-VT1 command responds with all of the OPC visible facility assignments. The TYPE= parameter may include OMC, ANX, or other types of facilities. An RTRV-VT1 response contains all of the attributes and attribute values possible for a facility assignment. Ignore those attributes not used for a specific facility type (see the descriptions in the following subsections).

The output received from the RTRV-VT1 command contains a list of zero or more facility assignments with the following format (the facility assignment line may have zero or more occurrences):

<cr> <lf> <lf>

^^^<sid>^<date>^<time> <cr> <lf>

M^^<ctag>^CMPLD <cr> <lf>

^^^”<aid>,TYPE=type,HOSTID=hostid,SYSID=systemid,LINK=link#
,RDT=rdt” <cr> <lf>

;

The RTRV-VT1 command issues a DENY response only when a problem exists with the AID or when some other error condition applies. A RTRV-VT1 against a facility that does not exist will return a CMPLD, but without the facility assignment information.

ED-VT1

The syntax of the ED-VT1 facility command is as follows:

ED-VT1:NEA:AID:CTAG::TYPE=t,HOSTID=h,SYSTEMID=s,LINK=l,R
DT=r;

where:

- NEA is the NE number of the target NE.
- AID is the AID of the target tributaries. AID will be one of:
  - 1-CE1-S1TIC-[1..6]-[1..28] for TIC and enhanced TIC (ETIC) cards
- Type will be one of:
  - TYPE=TR08 for TR-08 facilities
  - TYPE=TANDEM for Tandem facilities
  - TYPE=UNASSIGNED for unassigned facilities
  - TYPE=GR303DMS for DMS IDLC facilities
  - TYPE=GR303MVI for MVI IDLC facilities
  - TYPE=VLCM for DSX facilities without signaling
  - TYPE=VLCMSIGNAL for DSX facilities that use non-RMM signaling
  - TYPE=VLCMSIGNALRMM for DSX facilities that use RMM signaling

Note 1: The TYPE= parameter in a RTRV-VT1 command response may include OMC, ANX, or other types of facilities. You cannot use these other facility types with the ED-VT1 command. Ignore those attributes not used for a specific facility type (see the descriptions in the following subsections).

Note 2: Do not mix TYPE=VLCMSIGNAL facilities with TYPE=VLCMSIGNALRMM facilities on the same node. See "VLCM facility provisioning" on page 18 for details.

- HOSTID is the host ID number of the facility's host switch. This value is the host IG number from the Host Provisioning Manager. The host ID identifies the GR-303 switch host to which the VTn belongs. HOSTID is set to nonzero for GR-303 DMS and GR-303 MVI only. For all other services except UNASSIGNED, set HOSTID equal to zero. For UNASSIGNED, set HOSTID equal to 15. See "GR-303 facility provisioning" on page 17 for more detail on the HOSTID parameter.

  Note: You should specify this parameter for TYPE=GR303MVI or TYPE=GR303DMS only. For all other types it will default to the correct value if not specified. See "GR-303 facility provisioning" on page 17 for details.

- SYSTEMID is the TR-08 or DMSx system ID number of the facility (systemId). The system ID identifies the A-link group to which the VTn belongs. SYSTEMID is set to nonzero for TR-08 or DMSX (VLCM, VLCMSIGNAL, or VLCMSIGNALRMM) only. For all other services, set SYSTEMID equal to zero. See "TR-08 facility provisioning" on page 15 for more detail on the SYSTEMID parameter.

  Note: You should specify this parameter for TYPE=TR08, TYPE=VLCM, TYPE=VLCMSIGNAL, or TYPE=VLCMSIGNALRMM only. For all other types it will default to the correct value if not specified. See "TR-08 facility provisioning" on page 15 or "VLCM facility provisioning" on page 18, as appropriate, for details.

- LINK is the TR-08 or DMSx link number of the facility (systemLinkId). You must create the A link of a new A-link group before you create any other links with that system ID. LINK is set to non-NULL for TR-08 (A,

B, C, or D) and DSX (0, 1, 2, 3, 4, or 5) only. For all other services, set LINK to NULL. See “TR-08 facility provisioning” on page 15 for more detail on the LINK parameter.

Note: You should specify this parameter for TYPE=TR08, TYPE=VLCM, TYPE=VLCMSIGNAL, or TYPE=VLCMSIGNALRMM only. For all other types, LINK will default to the correct value, if not specified.

- RDT is the remote identifier for GR-303 facilities (TYPE=GR303DMS or GR303MVI) and contains the number representing the DS1 link to the host switch. RDT represents the RDT link number from the switch provisioning and is set to nonzero for GR-303 only. For all other services, set RDT equal to zero. See “GR-303 facility provisioning” on page 17 for more detail on the RDT parameter.

  Note: You should specify this parameter for TYPE=GR303MVI or TYPE=GR303DMS only. For all other types it will default to the correct value if not specified.

The output received from the ED-VT1 command will contain either CMPLD if successful, or DENY if not. A DENY response will contain a reason code and comment.

<cr> <lf> <lf>

^^^<sid>^<date>^<time> <cr> <lf>

M^^<ctag>^CMPLD <cr> <lf>

;

Error responses follow standard conventions for TL1 messages. The output received from the command has the following format (see “Error Descriptions” on page 99 for possible <error text> meanings):

<cr> <lf> <lf>

^^^<sid>^<date>^<time> <cr> <lf>

M^^<ctag>^DENY <cr> <lf>

^^^<errcode> <cr> <lf>

^^^/*<error text>*/ <cr> <lf>

;

Cross-connect TL1 commands

The following cross-connect TL1 commands are available:

- RTRV-CRS-STS1 — retrieve existing STS-level cross-connects
- DLT-CRS-STS1 — delete the specified STS-level cross-connect
- ENT-CRS-STS1 — create the specified STS-level cross-connect

RTRV-CRS-STS1

The syntax of the RTRV-CRS-STS1 cross-connect TL1 command is:

RTRV-CRS-STS1:NEA:AID:CTAG;

where:

- NEA is the NE number of the target NE.
- AID is the AID of the target tributaries. AID will be one of the following commands:
  - ALL for all existing cross-connects
  - 1-CE1-S1G[1,4,5,7] for DS1 mapper cards in an ABM shelf
  - 1-CE1-S1TIC-[1..6] for TICs and ETICs
  - 1-CE1-OC12G1-[1..12] for transport OC-12 circuit packs
  - 1-CE1-OC3G1-[1..3] for transport OC-3 circuit packs
  - 1-CE1-OC3G[1,2]S-[1..3] for tributary OC-3 circuit packs
  - 1-CE1-OC3G3-[1..3] for tributary OC-3 circuit packs

The output received from the RTRV-CRS-STS1 command contains a list of zero or more cross-connect assignments with the following format:

<cr> <lf> <lf>
^^^<sid>^<date>^<time> <cr> <lf>
M^^<ctag>^CMPLD <cr> <lf>
^^^”<aid>” <cr> <lf>
^^^/*<info text>*/ <cr> <lf>
;

The RTRV-CRS-STS1 command will issue a “DENY” response only when a problem exists with the AID or some other error condition applies. A RTRV-CRS-STS1 against a cross-connect that does not exist will return a “CMPLD” response, but without the cross-connect information.

DLT-CRS-STS1

The syntax of the DLT-CRS-STS1 cross-connect TL1 command is:

DLT-CRS-STS1:NEA:AID:CTAG;

where:

- NEA is the NE number of the target NE.
- AID is the AID of the target tributaries. AID will consist of a comma-separated pair from the following commands:
  - 1-CE1-S1G[1,4,5,7] for DS1 mapper cards in an ABM shelf
  - 1-CE1-S1TIC-[1..6] for TICs and ETICs
  - 1-CE1-OC12G1-[1..12] for transport OC-12 circuit packs
  - 1-CE1-OC3G1-[1..3] for transport OC-3 circuit packs
  - 1-CE1-OC3G[1,2]S-[1..3] for tributary OC-3 circuit packs
  - 1-CE1-OC3G3-[1..3] for tributary OC-3 circuit packs

When a DLT-CRS-STS1 command is used to delete an STS cross-connect on a point-to-point system, the AID specifies the cross-connect on the FCOT between the tributary circuit pack and the transport circuit pack. When the DLT-CRS-STS1 deletes the FCOT end point, the RFT end point is also deleted automatically.

ENT-CRS-STS1

The syntax of the ENT-CRS-STS1 cross-connect TL1 command is:

ENT-CRS-STS1:NEA:AID:CTAG;

where:

- NEA is the NE number of the target NE.
- AID is the AID of the target tributaries. AID will consist of a comma-separated pair from the following commands (with a required STS channel number for a point-to-point system):

– 1-CE1-S1G[1,4,5,7] for DS-1 mapper cards in an ABM shelf

– 1-CE1-S1TIC-[1..6] for TICs and ETICs

– 1-CE1-OC12G1-[1..12] for transport OC-12 circuit packs

– 1-CE1-OC3G1-[1..3] for transport OC-3 circuit packs

– 1-CE1-OC3G[1,2]S-[1..3] for tributary OC-3 circuit packs

– 1-CE1-OC3G3-[1..3] for tributary OC-3 circuit packs

For a point-to-point AccessNode configuration, the AID for an ENT-CRS-STS1 command contains the STS channel, as well as the two end points of the STS cross-connect. The STS channel indicates which STS within the fiber will be used to transport traffic between the two end points. The channel should be a number between 1 and the number of STS channels available *(3* for an OC-3 system and *12* for an OC-12 system). An example AID for a point-to-point system would appear as

1-CE1-S1G1,1-CE1-S1TIC-1,CH1,

which would connect the G1 mapper on the FCOT with TIC port 1 on the RFT, using STS channel 1 on the fiber.

Note: The Connection Manager UI can modify existing STS-level cross-connects for a point-to-point system and is much easier to use.

Additional commands

In addition to the previously discussed supported commands for connection services and facility assignment, the Nodal Connection Manager supports the following commands for user convenience:

- RTRV-EQPT:NEA:AID:CTAG — retrieve the tributary in a particular slot
- RTRV-HDR:NEA::CTAG — retrieve the basic NE information and status
- RTRV-HOST:NEA::CTAG — retrieve the DS1 host table for the specified NE

where:

- NEA is the NE number of the target NE.
- AID is the AID of the target tributaries. AID will be one of the following:
  – ALL for all tributary cards

– 1-CE1-S1G[1,4,5,7] for DS1 mapper cards in an ABM shelf
– 1-CE1-S1TIC-[1..6] for TICs and ETICs
– 1-CE1-OC12G1-[1..12] for transport OC-12 circuit packs
– 1-CE1-OC3G1-[1..3] for transport OC-3 circuit packs
– 1-CE1-OC3G[1,2]S-[1..3] for tributary OC-3 circuit packs
– 1-CE1-OC3G3-[1..3] for tributary OC-3 circuit packs

The responses follow standard conventions for TL1 messages.

The output received from the RTRV-EQPT command contains a list of the tributaries available for cross-connects.

The output received from the RTRV-HDR command contains a list of zero or more NE descriptions with the following format (the NE description line may have zero or more occurrences):

<cr> <lf> <lf>

^^^<sid>^<date>^<time> <cr> <lf>

M^^<ctag>^CMPLD <cr> <lf>

^^^"<aid>,TID=number,NAME=name,TXRATE=rate,SHELF=shelf,TYPE=type" <cr> <lf>

;

The output received from the RTRV-HOST command contains a list of zero or more GR-303 host assignments with the following format (the host assignment line may have zero or more occurrences):

<cr> <lf> <lf>

^^^<sid>^<date>^<time> <cr> <lf>

M^^<ctag>^CMPLD <cr> <lf>

^^^"<aid>,NAME=name,HOSTID=hostid,TYPE=type" <cr> <lf>

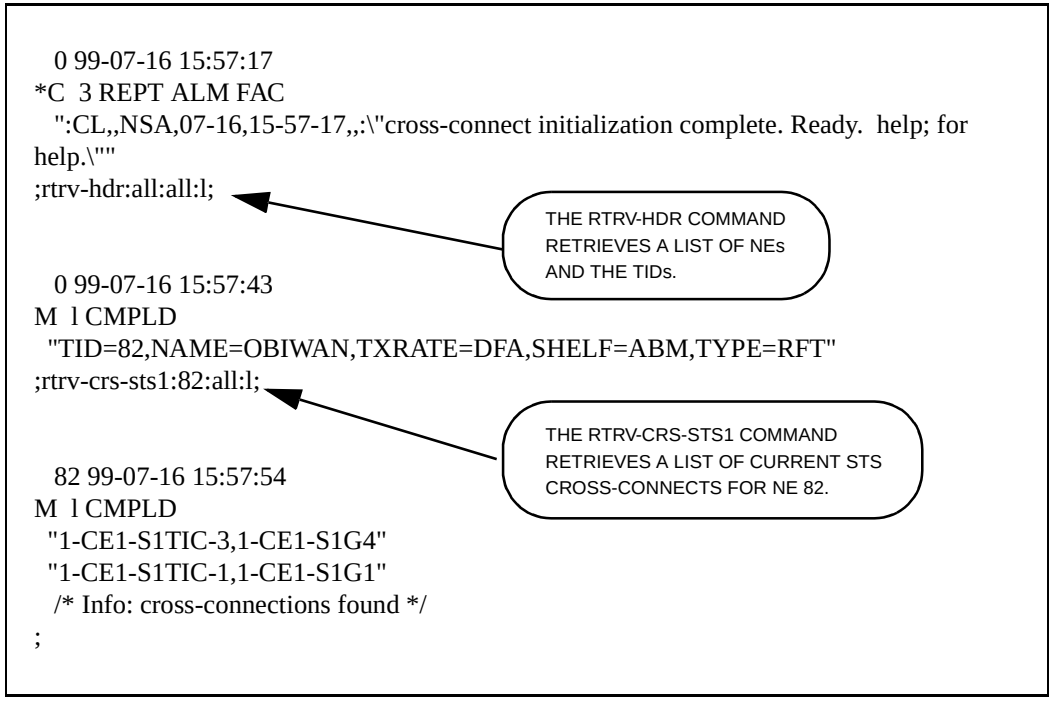
;

The output in the response described above is similar to that shown in the Host Manager UI dialog when performing an "Add Host" operation.

STS cross-connect commands

The STS cross-connect commands retrieve, create, or delete STS cross-connects. Figure 11 shows the use of the RTRV-HDR command to obtain a list of the NEs in the OPC span of control. Next, a RTRV-CRS-STS1 command was entered to obtain a list of the existing cross-connects on a particular NE. Notice that the TID field contains the NE's number rather than its name.

Figure 11
STS cross-connect commands

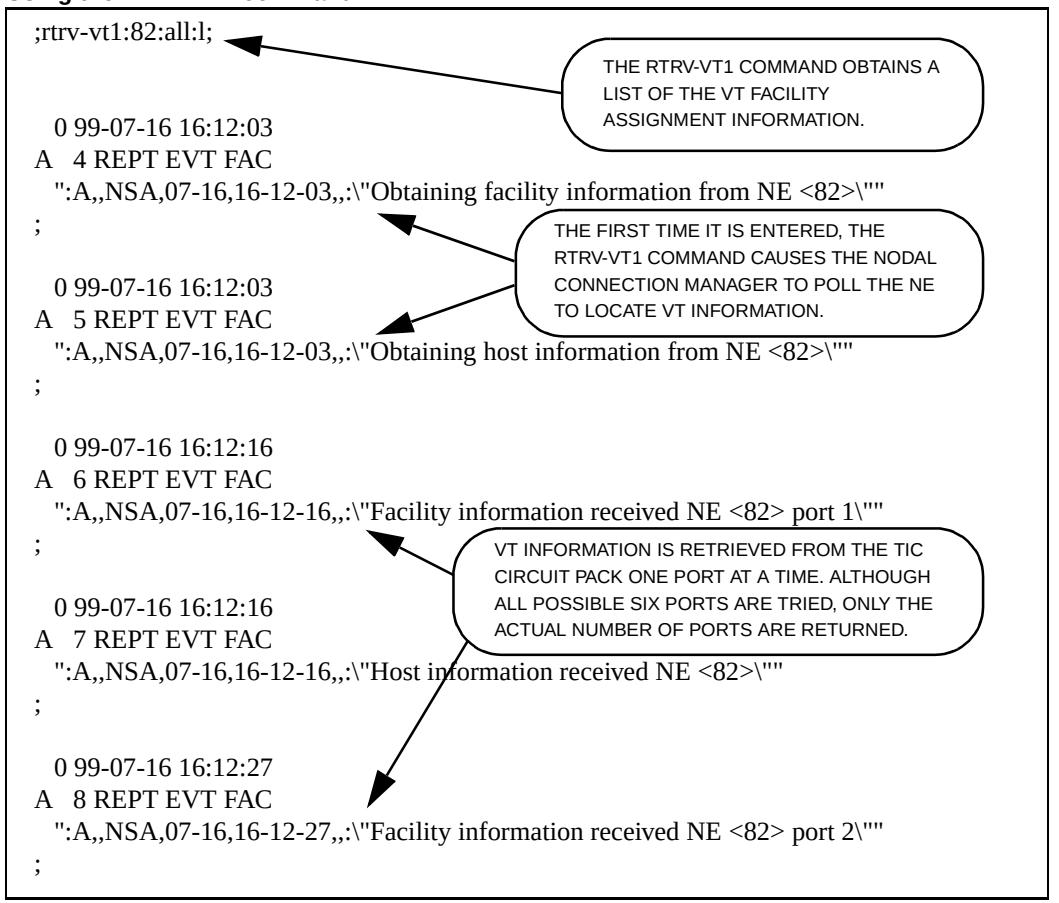


VT1 facility commands

VT1 facility commands retrieve or edit the VT facilities on the TIC. The example in Figure 12 on page 50 shows the use of the RTRV-VT1 command to obtain a list of all VT1 facilities on a particular NE. Notice that the TID field contains the NE's number rather than its name. Also notice that the AID block contains the AID of all ALL to retrieve all of the facility assignments.

If a particular TIC port or range of TIC ports is wanted, use the TIC AID range format specifying the TIC port and subport. Once the information is retrieved from a particular NE, it is stored in memory so that later RTRV-VT1 commands use the local copy of the data rather than polling the NE again. If NE association drops, the local copy is invalidated and the next RTRV-VT1 command will poll the NE to locate the VT1 facility data for the latest version of the information.

Figure 12
Using the RTRV-VT1 command



Provisioning procedures

Introduction

This chapter describes procedures for provisioning various typical system configurations using the Nodal Connection Manager UI tool.

Section contents

This chapter contains procedures for the following tasks:

Prerequisites

To perform the procedures in this chapter, you need:

- a VT-100-compatible terminal or laptop computer with a VT-100 emulation package
- an OPC user ID and password to access the OPC tools, including a UNIX shell
- the NE user ID and password for the admin security level for each NE to be commissioned

Procedure 1
Creating Mix and Match DFA default cross-connects

Use this procedure as part of provisioning a system for Mix and Match in which the three-port standard TIC is replaced with the new six-port ETIC and LAIC circuit packs are installed in slots 12 and 15 of the shelf.

The Mix and Match feature allows you to add a pair of LAIC circuit packs to add AccessNode Express systems connected to a DS1-fed AccessNode (DFA) system that is equipped with copper distribution shelf (CDS) equipment.

> ***Note:*** For more information on reconfiguring an existing DFA to a Mix and Match DFA, see the *Mix and Match DFA Reconfiguration Quick Reference Guide*.

For detailed information about using the OPC UI and accessing the OPC tools, refer to *OPC User Interface Description*, 323-3001-301, in *Operations, Administration, and Provisioning*, Volume 4A.

For detailed information about using the NE UI, refer to *Network Element User Interface Description*, 323-3001-300, in *Operations, Administration, and Provisioning*, Volume 4A.

The cross-connects that can be provisioned on a DFA system are STS-1 cross-connects between the DS1 mapper circuit packs and the TIC. These defaults are connected DS1 circuit packs in ascending order with TIC ports in ascending order. The AIDs used should be as follows:

- 1-CE1-S1TIC-1,1-CE1-S1G1
- 1-CE1-S1TIC-2,1-CE1-S1G4
- 1-CE1-S1TIC-3,1-CE1-S1G5

  Note: This procedure can be used to preprovision a Mix and Match DFA cross-connect even if the DS1 mapper circuit packs are not installed. If DS1 mapper circuit packs are not plugged into a pair of slots, the administrative identifier (AID) shown by a RTRV-CRS-STS1 will show “Unequipped” for the DS1 mapper rather than its group number.

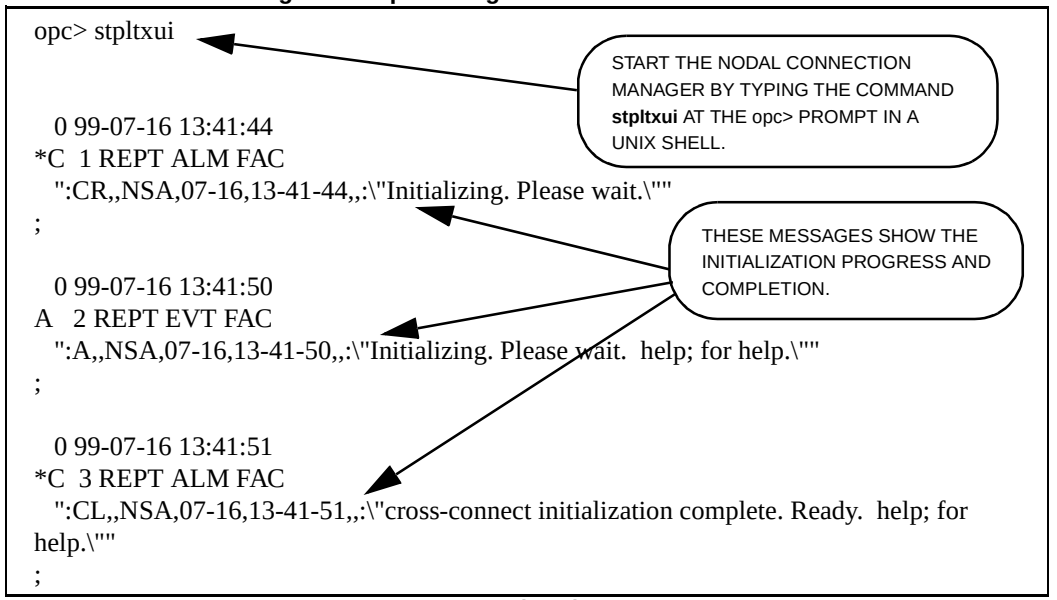
—continued—

Procedure 1 (continued)
Creating Mix and Match DFA default cross-connects

Action

Step	Action
1	Start the Nodal Connection Manager by typing **stpltxui** at the OPC prompt in a UNIX shell window.
2	Press the <return> key, then wait for the program to initialize. Progress of initialization is shown by a set of autonomous messages as shown in Figure 13.

Figure 13
Nodal Connection Manager startup messages



—continued—

Procedure 1 (continued)
Creating Mix and Match DFA default cross-connects

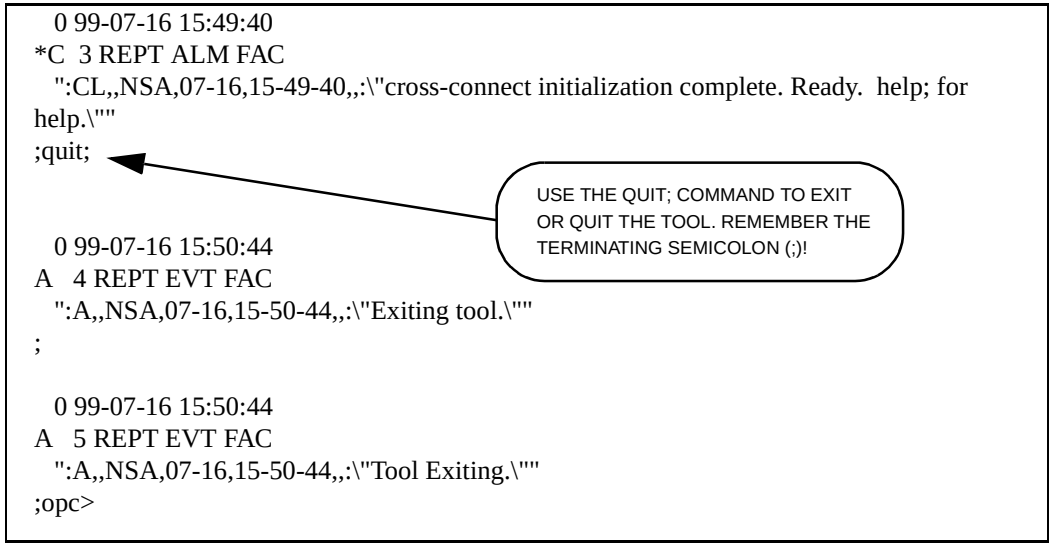
Step	Action
3	Use the RTRV-CRS-STS1 command to retrieve the existing cross-connects for the NE (refer to Figure 8 on page 26 for an example). The cross-connects displayed will be the default cross-connects as created by the Connection Manager tool as in: RTRV-CRS-STS1:ne:ALL:t;
4	Use the ENT-CRS-STS1 command to create a new cross-connect for the NE. This cross-connect could be between the DS1 mapper circuit pack in G7/G8 and the fourth port on the TIC circuit pack. Specify the TIC first and then the DS1 mapper as in: ENT-CRS-STS1:ne:1-CE1-S1TIC-4,1-CE1-S1G7:t;
5	Use the RTRV-CRS-STS1 command to retrieve the cross-connects and check the changes: RTRV-CRS-STS1:ne:ALL:t;
6	Use the quit command (quit followed by a semicolon ";") to exit the Nodal Connection Manager as shown in Figure 14 on page 56.

—continued—

Procedure 1 (continued)
Creating Mix and Match DFA default cross-connects

Step	Action

Figure 14
Quit Command



7 If a message displays concerning auditing the connections, see the "Auditing connections" procedure in *S/DMS Network Manager Connection Management*, 323-4001-057, for the procedure to audit connections.

—end—

Procedure 2
Deleting cross-connects on DFA

Use this procedure to delete an existing cross-connect on a DFA system.

For detailed information about using the OPC UI and accessing the OPC tools, refer to *OPC User Interface Description*, 323-3001-301, in *Operations, Administration, and Provisioning*, Volume 4A.

For detailed information about using the NE UI, refer to *Network Element User Interface Description*, 323-3001-300, in *Operations, Administration, and Provisioning*, Volume 4A.

CAUTION
Risk of traffic loss
If traffic exists on a cross-connect that is being deleted, the traffic will be dropped when the cross-connect is deleted.

Use the RTRV-VT1 command to check that all facilities on the TIC end of the STS cross-connect are of TYPE=UNASSIGNED.

Action

Step	Action
1	Start the Nodal Connection Manager by typing **stpltxui** at the OPC prompt in a UNIX shell window.
2	Press the <return> key and wait for the program to initialize. A set of autonomous messages appears to show progress of the initialization (refer to Figure 13 on page 54).
3	Use the RTRV-CRS-STS1 command to retrieve existing cross-connects for the NE (refer to Figure 8 on page 26): RTRV-CRS-STS1:ne:ALL:t;
4	Make sure the cross-connect exists. If not, proceed to step 8.
5	Locate the TIC port involved in the cross-connect you want to delete.

—continued—

Procedure 2 (continued)
Deleting cross-connects on DFA

Step	Action
6	Use the RTRV-VT1 command with ranging to check that the VT facilities for the TIC port are of TYPE=UNASSIGNED. If any are not TYPE=UNASSIGNED, use the ED-VT1 command to set the facility to TYPE=UNASSIGNED. ED-VT1:NEA:AID:CTAG::TYPE=UNASSIGNED; If the ED-VT1 command is DENIED, check to see if any DS0-level cross-connects are using the facility.
7	When you are satisfied that no traffic exists on the STS cross-connect by setting all of the facilities to TYPE=UNASSIGNED, use the DLT-CRS-STS1 command to delete: DLT-CRS-STS1:NEA:AID:CTAG; ***Note:*** Specify the DS1 mapper first, then the ETIC port.
8	Use the **quit;** command (quit followed by the semicolon ";") to exit the Nodal Connection Manager (refer to Figure 14 on page 56).
9	If a message displays concerning auditing the connections, see the "Auditing connections" procedure in *S/DMS Network Manager Connection Management*, 323-4001-057, for the procedure to audit connections.

—end—

Procedure 3
Creating GR-303 facility assignment for Mix and Match on DFA

Use this procedure to create a GR-303 facility on a specific facility on a DFA. Normally, this procedure would be used only for TIC port 4 on the new six-port extended TIC to support the installation of a Mix and Match enhancement to an existing system.

For detailed information about using the OPC UI and accessing the OPC tools, refer to *OPC User Interface Description*, 323-3001-301, in *Operations, Administration, and Provisioning*, Volume 4A.

For detailed information about using the NE UI, refer to *Network Element User Interface Description*, 323-3001-300, in *Operations, Administration, and Provisioning*, Volume 4A.

Requirements

The user must know the following information before executing this procedure:

- the DS1 mapper to which the physical DS1 line is attached
- the host name and the RDT link number of the DS1

CAUTION
RDT on Facility must match RDTLink in switch
The RDT number assigned to the facility must match the RDTLink number assigned to the port (SMA port for a DMS) to which it is physically connected.

Table RDTINV on the host contains the RDTLink number to the port pairings. This number is the next available logical line number for the host.

—continued—

Procedure 3 (continued)
Creating GR-303 facility assignment for Mix and Match on DFA

CAUTION
Minimum of two GR-303 links required
The first two GR-303 links (RDTs) created for a specific host carry both the communication messaging for call setup/teardown as well as traffic. Other GR-303 links (RDTs) created carry only traffic.

A minimum of two GR-303 links must be created to a switch host for proper communication functioning. When changing GR-303 facilities to UNASSIGNED, edit the traffic-only links before editing the messaging/traffic links (RDT=1 and RDT=2).

CAUTION
Maximum of 31 GR-303 links per host
Each host provisioned through the Host Provisioning Manager UI may have no more than 31 RDTs.

—continued—

Procedure 3 (continued)
Creating GR-303 facility assignment for Mix and Match on DFA

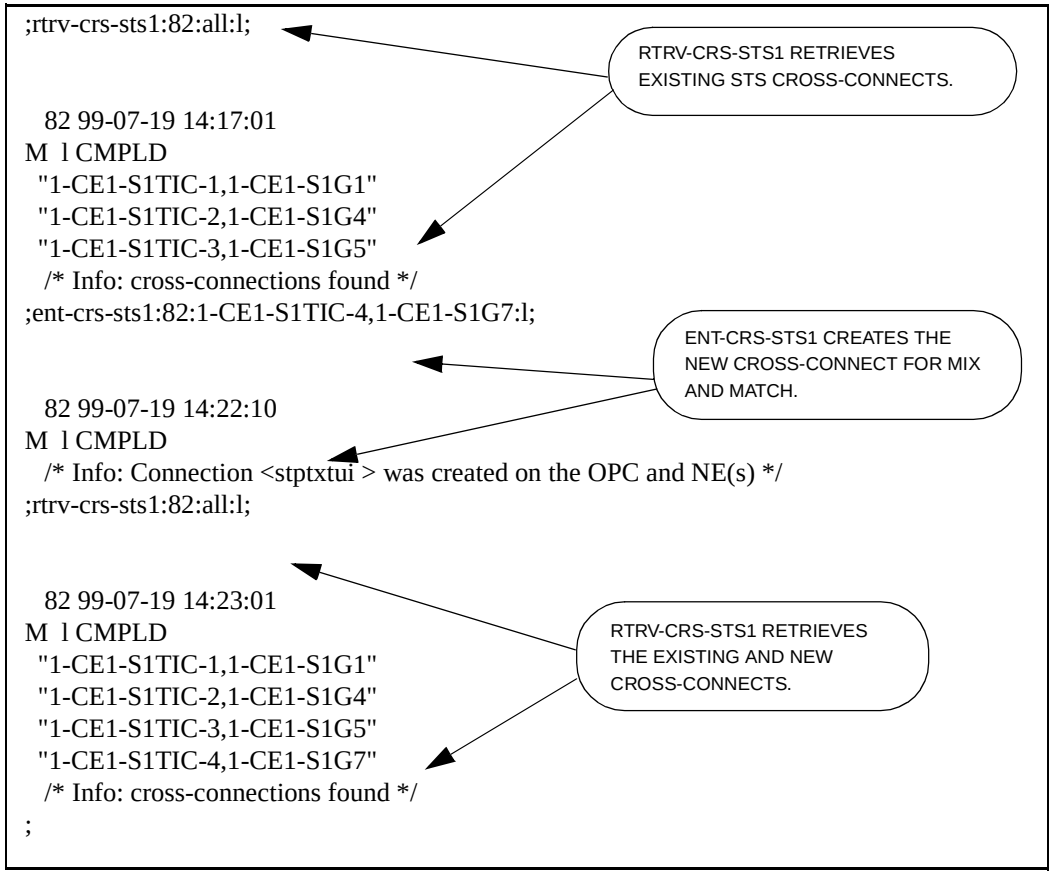
Action

Step	Action
1	Start the Nodal Connection Manager by typing **stpltxui** at the OPC prompt in a UNIX shell window.
2	Wait for the program to initialize. A set of autonomous messages appears to show progress of the initialization (refer to Figure 13 on page 54).
3	Use the RTRV-CRS-STS1 command to retrieve the cross-connect information (refer to Figure 8 on page 26): RTRV-CRS-STS1:ne:ALL:t;
4	Check that a cross-connect exists between the DS1 mapper circuit pack and the TIC port on which the new GR-303 facility will be provisioned.
5	For a Mix and Match system, a cross-connect should exist between TIC port 4 and a DS1 mapper pair, such as 1-CE1-S1TIC-4,1-CE1-S1G7. If the appropriate cross-connect is not in place, create it using the ENT-CRS-STS1 command: ENT-CRS-STS1:ne:1-CE1-S1TIC-4,1-CE1-S1G7:t; ***Note:*** Specify the DS1 mapper first, then the ETIC port.
6	Use the RTRV-VT1 command to retrieve all of the existing VT facility assignments for the NE: RTRV-VT1:NEA:AID:CTAG;
7	Use the RTRV-HOST command to retrieve the current host provisioning as set by the Host Provisioning UI: RTRV-HOST:NEA::CTAG; ***Note:*** If there are no hosts provisioned, you must first use the Host Provisioning Manager UI to set up your GR-303 host, then retry this procedure.
8	Use the ED-VT1 command to set the required TIC facilities to GR-303: ED-VT1:NEA:AID:CTAG::TYPE=t,HOSTID=h,RDT=r; The examples on the following pages show the creation of the STS cross-connect and the editing of the VT facilities on TIC port 4 to support GR-303 on VTs 1 and 2.

—continued—

Procedure 3 (continued)
Creating GR-303 facility assignment for Mix and Match on DFA

Step	Action



—continued—

Procedure 3 (continued)
Creating GR-303 facility assignment for Mix and Match on DFA

```
;rtrv-vt1:82:1-ce1-s1tic-4-1&&1-ce1-s1tic-4-8:l;


   82 99-07-19 14:24:48
M  l CMPLD
   "1-CE1-S1TIC-4-1,TYPE=UNASSIGNED,HOSTID=15,RDT=0,LINK=NULL,SYSTEMID=0"
   "1-CE1-S1TIC-4-2,TYPE=UNASSIGNED,HOSTID=15,RDT=0,LINK=NULL,SYSTEMID=0"
   "1-CE1-S1TIC-4-3,TYPE=UNASSIGNED,HOSTID=15,RDT=0,LINK=NULL,SYSTEMID=0"
   "1-CE1-S1TIC-4-4,TYPE=UNASSIGNED,HOSTID=15,RDT=0,LINK=NULL,SYSTEMID=0"
   "1-CE1-S1TIC-4-5,TYPE=UNASSIGNED,HOSTID=15,RDT=0,LINK=NULL,SYSTEMID=0"
   "1-CE1-S1TIC-4-6,TYPE=UNASSIGNED,HOSTID=15,RDT=0,LINK=NULL,SYSTEMID=0"
   "1-CE1-S1TIC-4-7,TYPE=UNASSIGNED,HOSTID=15,RDT=0,LINK=NULL,SYSTEMID=0"
   "1-CE1-S1TIC-4-8,TYPE=UNASSIGNED,HOSTID=15,RDT=0,LINK=NULL,SYSTEMID=0"
   /* Info: vtn found. */
;
;rtrv-host:82:all:l;


   82 99-07-19 14:27:35
M  l CMPLD
   "HOST=WWPA,HOSTID=1,TYPE=GR303DMS"
   "HOST=WWPB,HOSTID=2,TYPE=GR303MVI"
   /* Info: hostinfo found. */
;ed-vt1:82:1-CE1-S1TIC-4-1:l::TYPE=GR303MVI,HOSTID=2,RDT=1;


   82 99-07-19 14:27:55
M  l CMPLD
   /* Info: Facility was edited on the OPC and NE */
;ed-vt1:82:1-CE1-S1TIC-4-2:l::TYPE=GR303MVI,HOSTID=2,RDT=2;


   82 99-07-19 14:28:14
M  l CMPLD
   /* Info: Facility was edited on the OPC and NE */
;
```

USE AID RANGING TO RETRIEVE ONLY A PORTION OF THE VTs. A PREVIOUS RTRV-VT1 HAS BEEN USED SO THE RESPONSE IS IMMEDIATE.

USE RTRV-HOST COMMAND TO DETERMINE THE HOSTID ASSOCIATED WITH EACH HOST. RESPONSE ALSO SHOWS THE TYPE OF HOST.

USE THE ED-VT1 COMMAND TO MODIFY THE FACILITIES FROM **UNASSIGNED** TO **GR303MVI**. NOTICE EACH FACILITY HAS ITS OWN RDT. **RDT MUST MATCH SWITCH PROVISIONING.**

—continued—

Procedure 3 (continued)
Creating GR-303 facility assignment for Mix and Match on DFA

Step	Action

9 Use the quit command (quit followed by a semicolon ";") to exit the Nodal Connection Manager (refer to Figure 14 on page 56).

10 If a message displays concerning auditing the connections, see the "Auditing connections" procedure in *S/DMS Network Manager Connection Management*, 323-4001-057, for the procedure to audit connections.

11 An NE must have two links assigned to it before it can communicate with the switch. Links one and two are used for messaging and traffic. Links three and higher are used for traffic only.

After you assign the first two links, press **Ctrl_T** 0 to log into the NE on which you just assigned the links. The Main Session Manager command menu appears.

12 Use the down arrow to move to NE Login Mgr. The Network Element login Manager appears.

13 Select the NE you assigned the links for, then log into the NE HMI.

14 Enter **FA COMM; PORTS EOC**↵. The Facility Comm EOC screen appears.

15 Look on the screen to see if the first two links were created.

If the links	Then
were created	go to step 16
were not created	contact your Nortel Networks technical representative.

16 Log out of the Network Element Status screen by entering: **logout**↵

—end—

Procedure 4
Creating TR-08 facilities for extended TR-08 on DFA

Use this procedure as a part of changing the STS cross-connect provisioning on a DS1-fed AccessNode system for extended TR-08. Extended TR-08 uses a Universal Edge 9000 shelf with the new three-port TIC to provide three STSs (21 TR-08 systems) worth of TR-08 traffic rather than the previous limitation of a single STS with three-port standard TIC.

For detailed information about using the OPC UI and accessing the OPC tools, refer to *OPC User Interface Description*, 323-3001-301, in *Operations, Administration, and Provisioning*, Volume 4A.

For detailed information about using the NE UI, refer to *Network Element User Interface Description*, 323-3001-300, in *Operations, Administration, and Provisioning*, Volume 4A.

The default set of cross-connects that can be provisioned on a DFA system are STS-1 cross-connects between the DS1 mapper circuit packs and the TIC. These defaults are connected DS1 circuit packs in ascending order with TIC ports in ascending order. The AIDs used for a default connection should be as follows:

- 1-CE1-S1TIC-1,1-CE1-S1G1
- 1-CE1-S1TIC-2,1-CE1-S1G4
- 1-CE1-S1TIC-3,1-CE1-S1G5

The set of cross-connects that can be provisioned on a DFA system for extended TR-08 are connected DS1 circuit packs in ascending order with TIC ports in ascending order. The AIDs used for the extended TR-08 connection should be as follows:

- 1-CE1-S1TIC-1,1-CE1-S1G1
- 1-CE1-S1TIC-2,1-CE1-S1G5
- 1-CE1-S1TIC-3,1-CE1-S1G7

—continued—

Procedure 4 (continued)
Creating TR-08 facilities for extended TR-08 on DFA

CAUTION
Risk of traffic loss
If traffic exists on a cross-connect that is being deleted, the traffic will be dropped when the cross-connect is deleted.

Use the RTRV-VT1 command to check that all facilities on the TIC end of the STS cross-connect are of TYPE=UNASSIGNED.

This procedure requires that the STS cross-connect between 1-CE1-S1TIC-2 and 1-CE1-S1G4 be deleted. The reason for deleting this STS cross-connect is to move the STS cross-connect from DS1 G4 to DS1 G5, allowing the use of a full STS (DS1 G5/G6) rather than half of an STS. (G4 only as the lower half of the STS is unused because slot 3 contains the protection mapper.)

Before deleting the cross-connect, you must make sure that no DS0 cross-connects are being transported by the STS cross-connect. If DS0 cross-connects exist, traffic on those DS0 cross-connects will be dropped when you delete the STS cross-connect.

TR-08 facilities specify the LINK and SYSTEMID attributes in addition to the TYPE attribute. You must observe the rules concerning the LINK and SYSTEMID attributes for provisioning to be successful. See “Rules and limitations” on page 33 and “TR-08 facility provisioning” on page 15 for more information.

In addition to provisioning TR-08 facilities using the Nodal Connection Manager, you must provision the DS1 facilities with the correct line coding and frame format for TR-08.

—continued—

Procedure 4 (continued)
Creating TR-08 facilities for extended TR-08 on DFA

Action

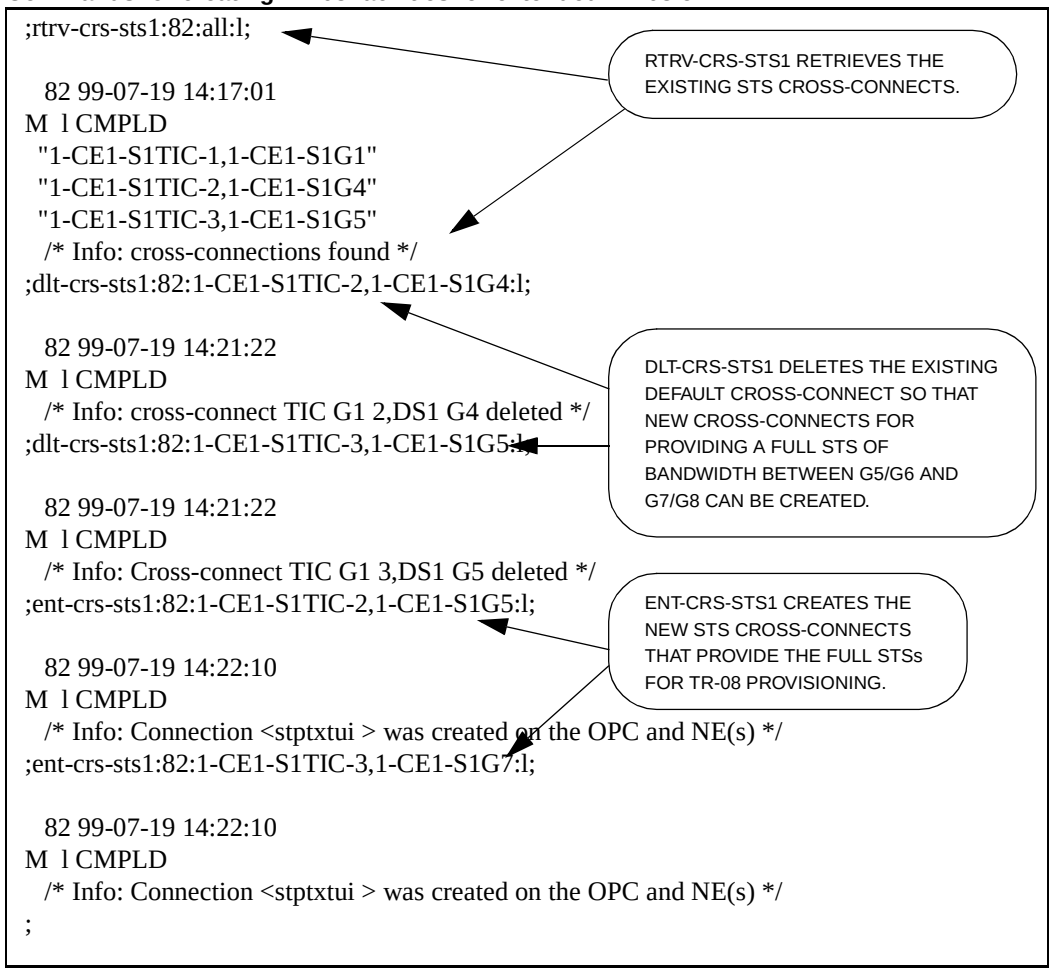
Step	Action
1	Start the Nodal Connection Manager by typing **stpltxui** at the OPC prompt in a UNIX shell window.
2	Wait for the program to initialize. Progress of initialization is shown by a set of autonomous messages that appear (refer to Figure 13 on page 54).
3	Use the RTRV-VT1 command to retrieve the facility assignments: RTRV-VT1:NEA:AID:CTAG;
4	Use the RTRV-CRS-STS1 command to retrieve the cross-connect information (see Figure 15 on page 68 for an example): RTRV-CRS-STS1:ne:ALL:t;
5	Check that a cross-connect exists between the DS1 mapper circuit pack and the TIC port on which the new TR-08 facilities will be provisioned.
6	If an STS cross-connect exists between DS1 G4 and TIC port 2, and/or DS1 G5 and TIC port 3, existing STS cross-connects need to be deleted.
7	Use the RTRV-VT1 command with ranging to check that the VT facilities for the TIC port are of TYPE=UNASSIGNED. If any are not TYPE=UNASSIGNED, use the ED-VT1 command to set the facility to TYPE=UNASSIGNED. ED-VT1:NEA:AID:CTAG::TYPE=UNASSIGNED; If the ED-VT1 command is DENIED, check to see if any DS0-level cross-connects are using the facility.
8	Use the DLT-CRS-STS1 command to delete existing cross-connects to TIC ports 2 and 3 (see Figure 15 on page 68 for an example): DLT-CRS-STS1:NEA:AID:CTAG;
9	Use the ENT-CRS-STS1 command to create new STS cross-connects between TIC port 2 and DS1 G5 as well as between TIC port 3 and DS1 G7 (see Figure 15 on page 68 for an example): ENT-CRS-STS1:ne:1-CE1-S1TIC-2,1-CE1-S1G5:t; ENT-CRS-STS1:ne:1-CE1-S1TIC-3,1-CE1-S1G7:t;

—continued—

Procedure 4 (continued)
Creating TR-08 facilities for extended TR-08 on DFA

Step	Action

Figure 15
Commands for creating TR-08 facilities for extended TR-08 on DFA



—continued—

Procedure 4 (continued)
Creating TR-08 facilities for extended TR-08 on DFA

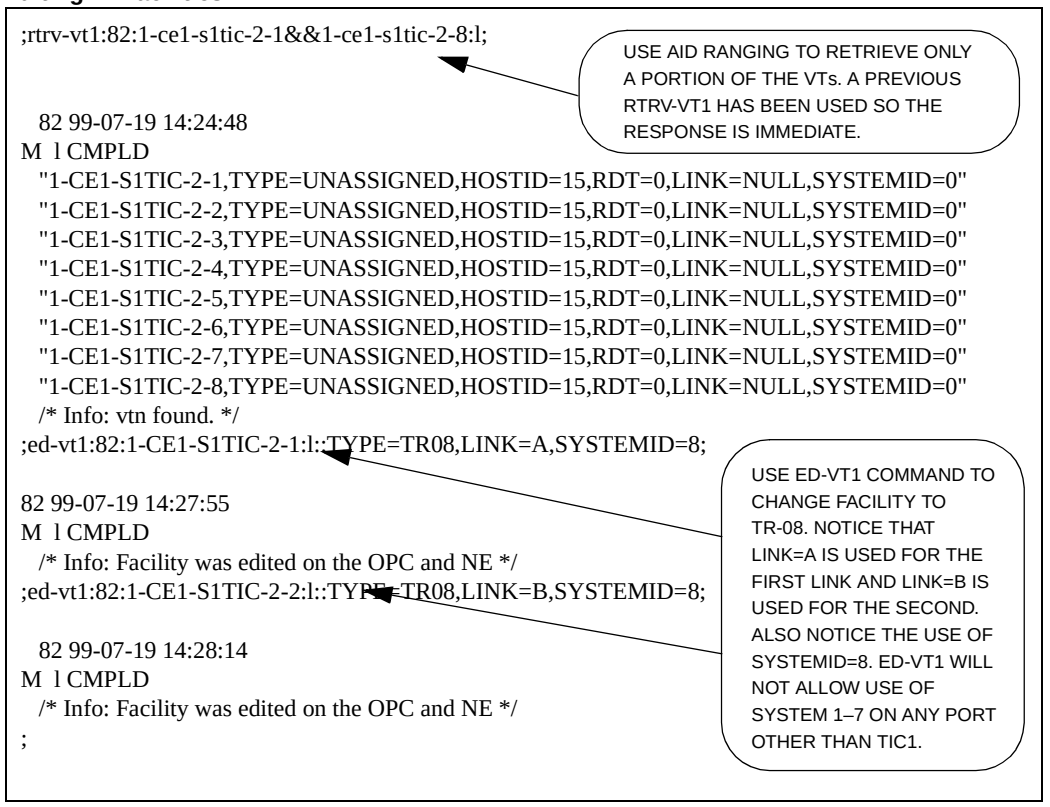
Step	Action
10	Use the ED-VT1 command to set the facilities to TR-08: ED-VT1:NEA:AID:CTAG::TYPE=t,SYSTEMID=s,LINK=l; The example shown in Figure 16 on page 70 shows editing of the VT facilities on TIC port 2 to support TR-08 on VTs 1 and 2. You will need to enter the ED-VT1 command for each of the facilities to be changed to TR-08, incrementing the TIC port number along with the SYSTEMID and LINK. See Table 2 on page 16.
11	Use the quit command (quit followed by a semicolon ";") to exit the Nodal Connection Manager (see Figure 10 on page 39 for an example).
12	If a message displays concerning auditing the connections, see the "Auditing connections" procedure in *S/DMS Network Manager Connection Management*, 323-4001-057, for the procedure to audit connections.

—continued—

Procedure 4 (continued)
Creating TR-08 facilities for extended TR-08 on DFA

Step	Action

Figure 16
Editing VT facilities



—end—

Procedure 5
Creating TR-08 facilities for extended TR-08 on single-ended AccessNode

Use this procedure as a part of changing the STS cross-connect provisioning on a single-ended AccessNode system for extended TR-08. Extended TR-08 uses a Universal Edge 9000 shelf with the new three–TR-08–port TIC to provide three STSs (21 TR-08 systems) of TR-08 traffic, rather than the previous limitation of a single STS with a three-port standard TIC.

On a single-ended system, you can modify the default set of STS-1 cross-connects between the OC-3 optical circuit pack and the TIC to allow a full three STS' worth of TR-08 traffic.

AIDs used for a default connection should be as follows:

- 1-CE1-OC3G1-1,1-CE1-S1TIC-1
- 1-CE1-OC3G1-2,1-CE1-S1TIC-2
- 1-CE1-OC3G1-3,1-CE1-S1G1

AIDs used for extended TR-08 connections should be as follows:

- 1-CE1-OC3G1-1,1-CE1-S1TIC-1
- 1-CE1-OC3G1-2,1-CE1-S1TIC-2
- 1-CE1-OC3G1-3,1-CE1-S1TIC-3

CAUTION
Risk of traffic loss
If traffic exists on a cross-connect that is being deleted, the traffic will be dropped when the cross-connect is deleted.

Use the RTRV-VT1 command to check that all facilities on the TIC end of the STS cross-connect are TYPE=UNASSIGNED.

—continued—

Procedure 5 (continued)
Creating TR-08 facilities for extended TR-08 on single-ended AccessNode

TR-08 facilities specify the LINK and SYSTEMID attributes in addition to the TYPE attribute. You must observe the rules concerning the LINK and SYSTEMID attributes for provisioning to be successful (refer to “Rules and limitations” on page 33).

In addition to provisioning the TR-08 facilities using the Nodal Connection Manager, you must provision the DS1 facilities with the correct line coding and frame format for TR-08.

Action

Step	Action
1	Start the Nodal Connection Manager by typing **stpltxui** at the OPC prompt in a UNIX shell window.
2	Wait for the program to initialize. A set of autonomous messages appears to show progress of the initialization (see Figure 13 on page 54 for an example).
3	Use the RTRV-VT1 command to retrieve the facility information.
4	Use the RTRV-CRS-STS1 command to retrieve the cross-connect information (see Figure 17 on page 74): RTRV-CRS-STS1:ne:ALL:t;

—continued—

Procedure 5 (continued)
Creating TR-08 facilities for extended TR-08 on single-ended AccessNode

Step **Action**

5 Check that a cross-connect exists between OC3 port 3 and TIC port 3.

If	Then
a cross-connect already exists,	go to Step 9.
a cross-connect does not exist,	• delete the cross-connect between OC3 port 3 and DS1 G1; • replace it with the cross-connect between OC3 port 3 and TIC port 3. See Figure 17 on page 74; • go to step 6.
a message appears concerning a cross-connect only on the OPC and stating that an audit is required,	exit the Nodal Connection Manager UI tool, run the audit, then re-enter the tool.

6 Use the RTRV-VT1 command with ranging to check that the VT facilities for the TIC port are of TYPE=UNASSIGNED. If any are not TYPE=UNASSIGNED, use the ED-VT1 command to set the facility to TYPE=UNASSIGNED.

ED-VT1:NEA:AID:CTAG::TYPE=UNASSIGNED;

If an the ED-VT1 command is DENIED, check to see if any DS0-level cross-connects are using the facility.

7 Delete the existing cross-connect between the OC3 port 3 and DS1 G1:

DLT-CRS-STS1:NEA:1-CE1-OC3G1-3,1-CE1-S1G1:0;

8 Create a new cross-connect between the OC3 port 3 and TIC port 3:

ENT-CRS-STS1:NEA:1-CE1-OC3G1-3,1-CE1-S1TIC-3:0;

9 Use the ED-VT1 command to set the facility assignments of TIC port 2 and TIC port 3 to the proper TR-08 settings. You will need to set each subport (1-28) on each TIC port.

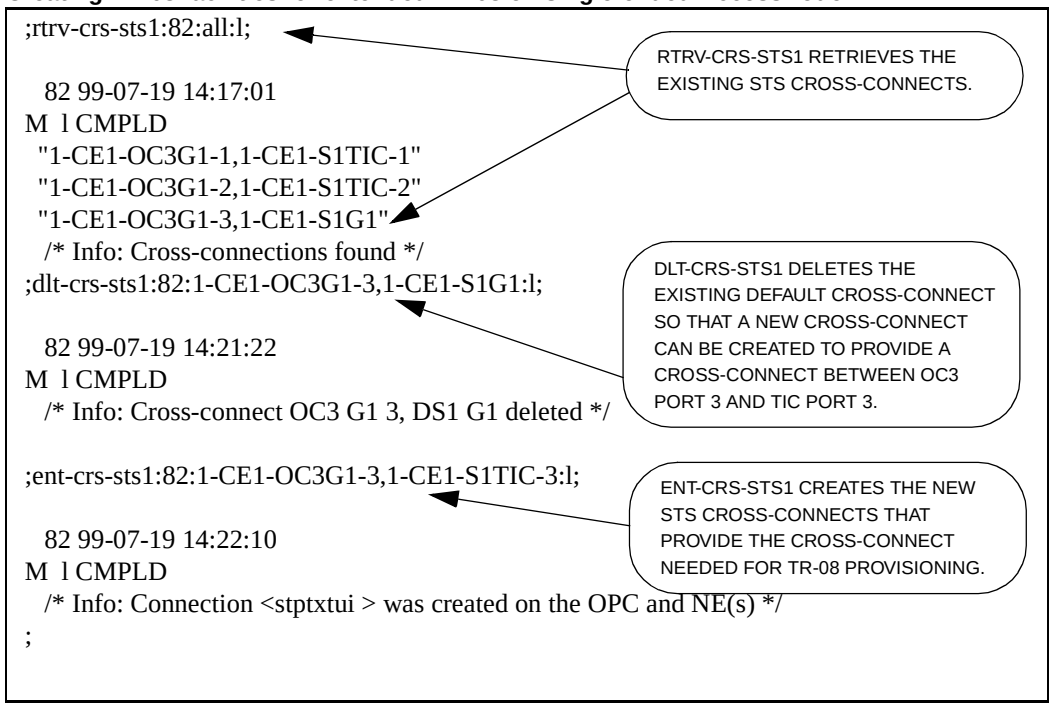
Note: TIC port 1 can be set by using the TR-08 Bulk Provisioning UI.

—continued—

Procedure 5 (continued)
Creating TR-08 facilities for extended TR-08 on single-ended AccessNode

Step	Action

Figure 17
Creating TR-08 facilities for extended TR-08 on single-ended AccessNode



—continued—

Procedure 5 (continued)
Creating TR-08 facilities for extended TR-08 on single-ended AccessNode

Step	Action

Figure 18
RTRV-VT1 and ED-VT1 command examples

```
;rtrv-vt1:82:1-ce1-s1tic-2-1&&1-ce1-s1tic-2-8:l;

   82 99-07-19 14:24:48
M  l CMPLD
   "1-CE1-S1TIC-2-1,TYPE=UNASSIGNED,HOSTID=15,RDT=0,LINK=NULL,SYSTEMID=0"
   "1-CE1-S1TIC-2-2,TYPE=UNASSIGNED,HOSTID=15,RDT=0,LINK=NULL,SYSTEMID=0"
   "1-CE1-S1TIC-2-3,TYPE=UNASSIGNED,HOSTID=15,RDT=0,LINK=NULL,SYSTEMID=0"
   "1-CE1-S1TIC-2-4,TYPE=UNASSIGNED,HOSTID=15,RDT=0,LINK=NULL,SYSTEMID=0"
   "1-CE1-S1TIC-2-5,TYPE=UNASSIGNED,HOSTID=15,RDT=0,LINK=NULL,SYSTEMID=0"
   "1-CE1-S1TIC-2-6,TYPE=UNASSIGNED,HOSTID=15,RDT=0,LINK=NULL,SYSTEMID=0"
   "1-CE1-S1TIC-2-7,TYPE=UNASSIGNED,HOSTID=15,RDT=0,LINK=NULL,SYSTEMID=0"
   "1-CE1-S1TIC-2-8,TYPE=UNASSIGNED,HOSTID=15,RDT=0,LINK=NULL,SYSTEMID=0"
   /* Info: vtn found. */
;ed-vt1:82:1-CE1-S1TIC-2-1:l::TYPE=TR08,LINK=A,SYSTEMID=8;

   82 99-07-19 14:27:55
M  l CMPLD
   /* Info: Facility was edited on the OPC and NE */
;ed-vt1:82:1-CE1-S1TIC-2-2:l::TYPE=TR08,LINK=B,SYSTEMID=8;

   82 99-07-19 14:28:14
M  l CMPLD
   /* Info: Facility was edited on the OPC and NE */
;
```

USE AID RANGING TO RETRIEVE ONLY A PORTION OF THE VTs. A PREVIOUS RTRV-VT1 HAS BEEN USED SO THE RESPONSE IS IMMEDIATE.

USE ED-VT1 COMMAND TO CHANGE FACILITY TO TR-08. NOTICE THAT LINK=A IS USED FOR THE FIRST LINK AND LINK=B IS USED FOR THE SECOND. ALSO NOTICE THE USE OF SYSTEMID=8. ED-VT1 WILL NOT ALLOW USE OF SYSTEM 1–7 ON ANY PORT OTHER THAN TIC1.

—continued—

Procedure 5 (continued)
Creating TR-08 facilities for extended TR-08 on single-ended AccessNode

Step	Action
10	Use the quit command (quit followed by a semicolon ";") to exit the Nodal Connection Manager (see Figure 10 on page 39 for an example).
11	If a message displays concerning auditing the connections, see the "Auditing connections" procedure in *S/DMS Network Manager Connection Management*, 323-4001-057, for the procedure to audit connections.

—end—

Procedure 6
Creating TR-08 facilities for extended TR-08 on a point-to-point system

Use this procedure as a part of changing the STS cross-connect provisioning on a point-to-point AccessNode system for extended TR-08. Extended TR-08 uses a Universal Edge 9000 shelf with the new three–TR-08–port TIC to provide three STSs (21 TR-08 systems) of TR-08 traffic rather than the previous limitation of a single STS with a three-port standard TIC.

On a point-to-point system, you can provision the following default set of cross-connects: STS-1 cross-connects between the DS1 mapper circuit packs on the FCOT and the TIC on the RFT through STS channels carried by optical circuit packs. These defaults are connected DS1 circuit packs in ascending order with TIC ports in ascending order.

AIDs used for a default connection on the FCOT should include the following STS connections between the transport card and the tributary circuit packs (DS1 mappers and TICs):

- 1-CE1-OC12G1-1,1-CE1-S1G1
- 1-CE1-OC12G1-2,1-CE1-TIC-2
- 1-CE1-OC12G1-4,1-CE1-S1G4

AIDs used for a default connection on the RFT should include the following STS connections between the transport card and the tributary circuit packs (DS1 mappers and TICs):

- 1-CE1-OC12G1-1,1-CE1-TIC-1
- 1-CE1-OC12G1-2,1-CE1-TIC-2
- 1-CE1-OC12G1-4,1-CE1-TIC-3

—continued—

Procedure 6 (continued)
Creating TR-08 facilities for extended TR-08 on a point-to-point system

AIDs used for the extended TR-08 connection should be as follows (using point-to-point AID format):

- 1-CE1-S1G1,1-CE1-S1TIC-1,CH1
- 1-CE1-S1G5,1-CE1-S1TIC-2,CH2
- 1-CE1-S1G7,1-CE1-S1TIC-3,CH4

CAUTION
Risk of traffic loss
If there is traffic on a cross-connect that is being deleted, the traffic will be dropped when the cross-connect is deleted.

Use the RTRV-VT1 command to check that all facilities on the TIC end of the STS cross-connect are of TYPE=UNASSIGNED.

This procedure requires that you delete the STS cross-connect between 1-CE1-S1TIC-2 on the RFT and 1-CE1-S1G4 on the FCOT. The reason for deleting this STS cross-connect is to move the STS cross-connect from DS1 G4 to DS1 G5 on the FCOT, allowing the use of a full STS (DS1 G5/G6) rather than half of an STS (G4 only because the lower half of the STS, VTs 1–14, is unused since slot 3 contains the protection mapper).

Before deleting it, you must ensure that no DS0 cross-connects are being transported by the STS cross-connect. If DS0 cross-connects exist, traffic on those DS0 cross-connects will be dropped when the STS cross-connect is deleted.

TR-08 facilities specify the LINK and SYSTEMID attributes in addition to the TYPE attribute. You must observe the rules concerning the LINK and SYSTEMID attributes must be observed for provisioning to be successful (refer to “Rules and limitations” on page 33).

—continued—

Procedure 6 (continued)
Creating TR-08 facilities for extended TR-08 on a point-to-point system

In addition to provisioning the TR-08 facilities using the Nodal Connection Manager, you must provision the DS1 facilities with the correct line coding and frame format for TR-08.

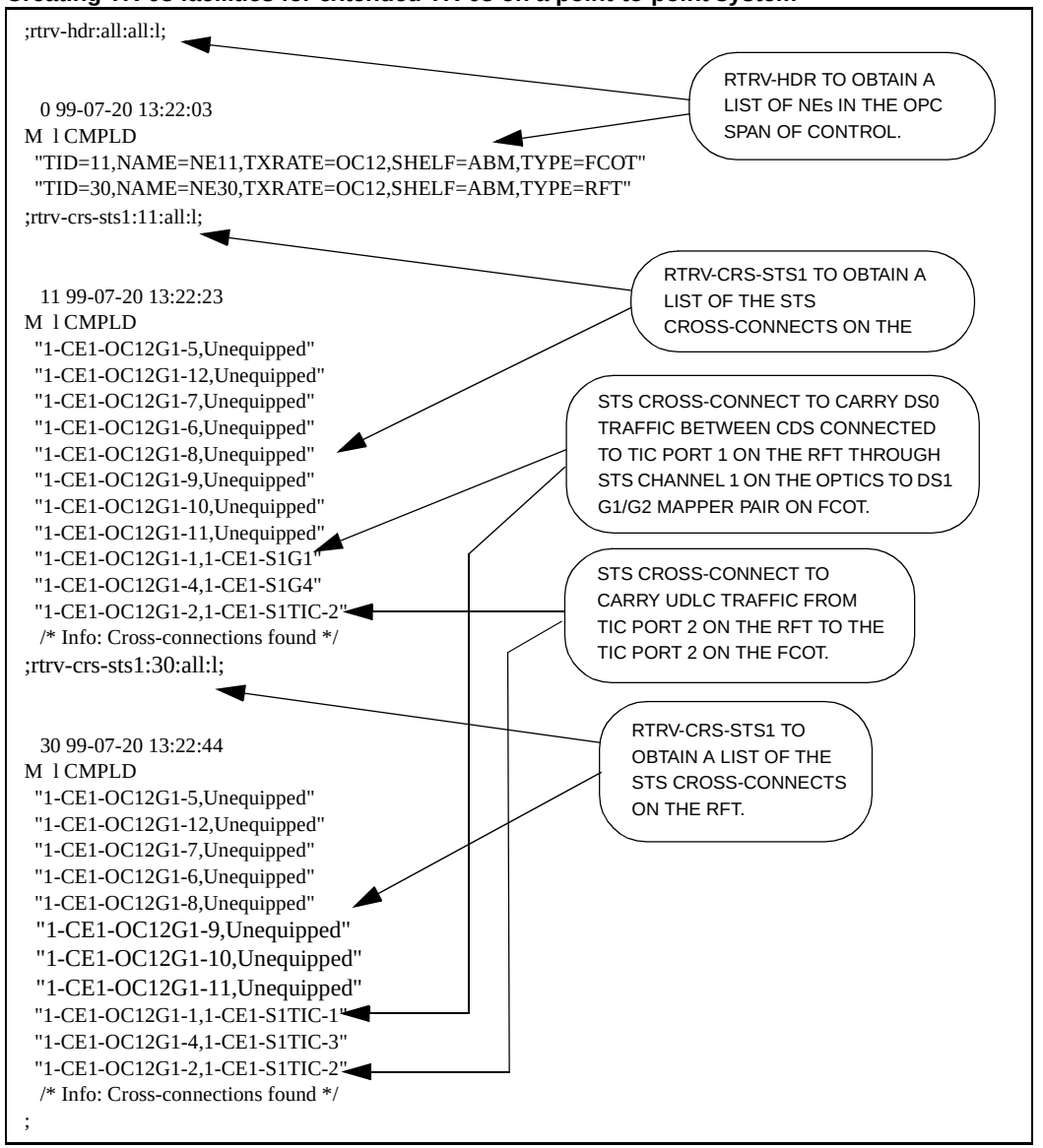
Action

Step	Action
1	Start the Nodal Connection Manager by typing **stpltxui** at the OPC prompt in a UNIX shell window.
2	Wait for the program to initialize. A set of autonomous messages appears to show progress of initialization (see Figure 13 on page 54).
3	Use the RTRV-HDR command to retrieve the list of NEs in the span of control of the OPC (see Figure 19 on page 80).
4	Use the RTRV-CRS-STS1 command to retrieve the cross-connect information. Check that a cross-connect exists between the DS1 mapper circuit pack and the TIC port on which the new TR-08 facilities will be provisioned. ***Note:*** You must check each NE involved in a point-to-point system to see how it is connected within the NE and over the fiber.
5	Use the RTRV-VT1 command with ranging to check that the VT facilities for the TIC port are of TYPE=UNASSIGNED. If any are not TYPE=UNASSIGNED, use the ED-VT1 command to set the facility to TYPE=UNASSIGNED. ED-VT1:NEA:AID:CTAG::TYPE=UNASSIGNED; If an the ED-VT1 command is DENIED, check to see if any DS0-level cross-connects are using the facility.
6	If an STS cross-connect exists between DS1 G4 on the FCOT and TIC port 2 on the RFT, and/or DS1 G5 on the FCOT and TIC port 3 on the RFT, the existing STS cross-connects need to be deleted. Use the DLT-CRS-STS1 command to delete them (see Figure 20 on page 81). In the DLT-CRS-STS1 command, specify the cross-connect on the FCOT side only. When you delete the cross-connect on the FCOT, the corresponding cross-connect on the RFT will be deleted automatically.

—continued—

Procedure 6 (continued)
Creating TR-08 facilities for extended TR-08 on a point-to-point system

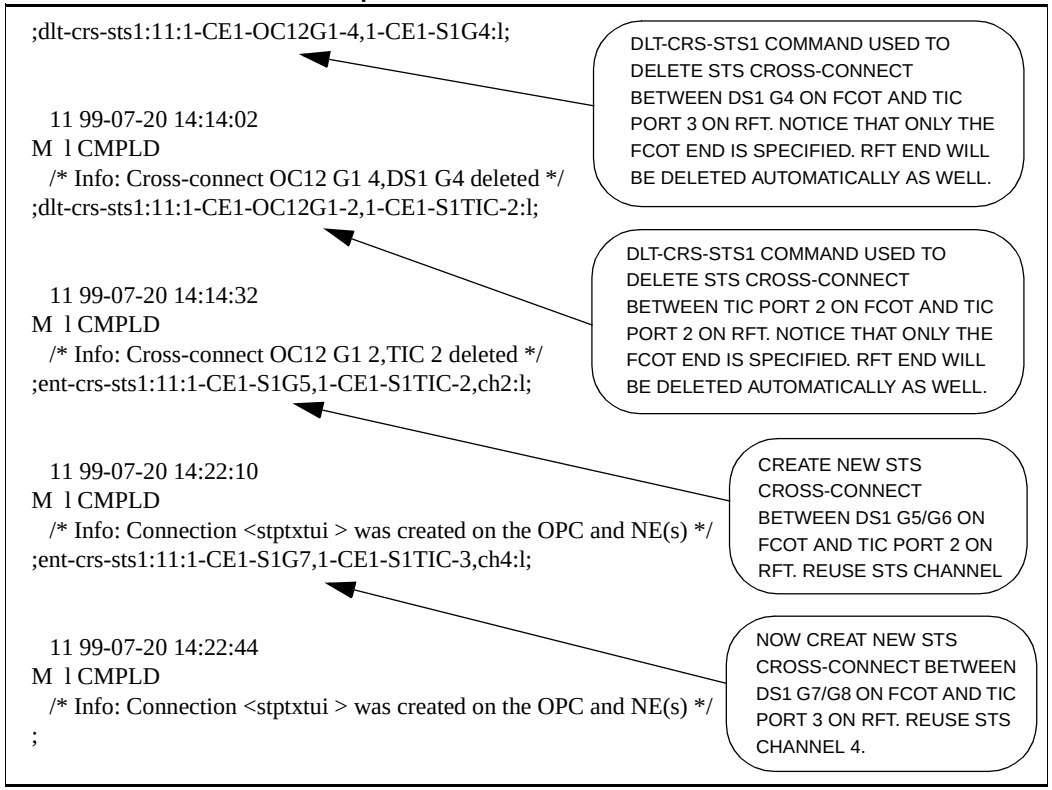
Figure 19
Creating TR-08 facilities for extended TR-08 on a point-to-point system



Procedure 6 (continued)
Creating TR-08 facilities for extended TR-08 on a point-to-point system

Step	Action

Figure 20
DLT-CRS-STS1 command examples



—continued—

Procedure 6 (continued)
Creating TR-08 facilities for extended TR-08 on a point-to-point system

Step	Action
7	Use the ENT-CRS-STS1 command to create new STS cross-connects between TIC port 2 on the RFT and DS-1 G5 on the FCOT as well as between TIC port 3 on the RFT and DS-1 G7 on the FCOT. The ENT-CRS-STS1 command uses the point-to-point AID format in which the tributary on the FCOT is specified with the tributary on the RFT along with an STS channel number. Specify the FCOT NE number in the command.
8	Use the RTRV-VT1 command with ranging to see the existing facility assignments.
9	Use the ED-VT1 command to set the facilities to TR-08. The example below shows editing of the VT facilities on TIC port 2 to support TR-08 on VTs 1 and 2 (see Figure 21 on page 83).

—continued—

Procedure 6 (continued)
Creating TR-08 facilities for extended TR-08 on a point-to-point system

Step	Action

Figure 21
ED-VT1 command example

```
;rtrv-vt1:30:1-ce1-s1tic-2-1&&1-ce1-s1tic-2-8:l;

   30 99-07-20 13:22:44
M  l CMPLD
"1-CE1-S1TIC-2-1,TYPE=UNASSIGNED,HOSTID=15,RDT=0,LINK=NULL,SYSTEMID=0"
  "1-CE1-S1TIC-2-2,TYPE=UNASSIGNED,HOSTID=15,RDT=0,LINK=NULL,SYSTEMID=0"
  "1-CE1-S1TIC-2-3,TYPE=UNASSIGNED,HOSTID=15,RDT=0,LINK=NULL,SYSTEMID=0"
  "1-CE1-S1TIC-2-4,TYPE=UNASSIGNED,HOSTID=15,RDT=0,LINK=NULL,SYSTEMID=0"
  "1-CE1-S1TIC-2-5,TYPE=UNASSIGNED,HOSTID=15,RDT=0,LINK=NULL,SYSTEMID=0"
  "1-CE1-S1TIC-2-6,TYPE=UNASSIGNED,HOSTID=15,RDT=0,LINK=NULL,SYSTEMID=0"
  "1-CE1-S1TIC-2-7,TYPE=UNASSIGNED,HOSTID=15,RDT=0,LINK=NULL,SYSTEMID=0"
  "1-CE1-S1TIC-2-8,TYPE=UNASSIGNED,HOSTID=15,RDT=0,LINK=NULL,SYSTEMID=0"
  /* Info: vtn found. */
;ed-vt1:30:1-CE1-S1TIC-2-1:l::TYPE=TR08,LINK=A,SYSTEMID=8;

   30 99-07-20 13:23:24
M  l CMPLD
/* Info: Facility was edited on the OPC and NE */
;ed-vt1:30:1-CE1-S1TIC-2-2:l::TYPE=TR08,LINK=B,SYSTEMID=8;

   30 99-07-20 13:23:44
M  l CMPLD
/* Info: Facility was edited on the OPC and NE */
;
```

AID RANGING RETRIEVES ONLY A PORTION OF THE VTs. A PREVIOUS RTRV-VT1 HAS BEEN USED SO THE RESPONSE IS IMMEDIATE.

ED-VT1 COMMAND CHANGES FACILITY TO TR-08. NOTICE THAT LINK=A IS USED FOR THE FIRST LINK AND LINK=B IS USED FOR THE SECOND. ALSO NOTICE THE USE OF SYSTEMID=8. ED-VT1 WILL NOT ALLOW THE USE OF SYSTEM 1–7 ON ANY PORT OTHER THAN TIC 1.

—continued—

Procedure 6 (continued)
Creating TR-08 facilities for extended TR-08 on a point-to-point system

Step	Action
10	Use the quit command (quit followed by a semicolon ";") to exit the Nodal Connection Manager (see Figure 10 on page 39 for an example).
11	If a message displays concerning auditing the connections, see the "Auditing connections" procedure in *S/DMS Network Manager Connection Management*, 323-4001-057, for the procedure to audit connections.

—end—

Procedure 7
Changing a facility operating state

Use this procedure to change the operating state of a DS1, DS3, STS-1, OC-3, OC-12, external synchronization interface (ESI) or VT1.5 (VT) facility. You can change the state to in-service (IS) or out-of-service (OOS). For VT1.5s, perform a state change on a single VT1.5 or on a range of VT1.5s.

Before you change the operating state of a DS1, DS3, STS-1, or OC-3/OC-12 facility to in-service, the corresponding circuit pack group must be in service. For details, see "Changing an equipment operating state," in *Provisioning and Operations Procedures*, 323-3001-310, in *Operations, Administration, and Provisioning*, Volume 4B.

> ***Note:*** To avoid the generation of "VT Rx AIS" and "VT Rx unequipped" alarms, take unused VT1.5s out of service, as described in this procedure.

—continued—

Procedure 7 (continued)
Changing a facility operating state

Action

Step	Action

1 From the Network Element Status screen, display the required facility screen by completing the instructions in the following table.

If changing an operating status for	Then enter
a DS1 facility	**fa ds1 <group #> <port #>**↵ where <group #> DS1 circuit pack group number * <port #> number of the DS1 port: **1** to **14**, or **all** The DS1 Facility screen appears.
a DS3 facility	fa ds3 <group #> <port #>↵ where <group #> DS3 circuit pack group number * <port #> number of the DS3 port: **1** to **3**, or **all** The DS3 Facility screen appears.
an STS-1 facility	**fa sts1 <group #> <port #>**↵ where <group #> STS-1 circuit pack group number * <port #> number of the STS-1 port: **1** to **3**, or **all** The STS1 Facility screen appears.
an OC-3 facility that is a feeder	**fa oc3 <group #>**↵ where <group> the number of the OC-3 circuit pack group: all, g1, or g2 * The OC-3 Facility screen appears.
an OC-3 facility that is an ABM tributary	**fa oc3 <group #>**↵ where <group> the number of the OC-3 circuit pack group: all, g1s, g2s, g3, g4 * The OC-3 Facility screen appears.
—continued—	

—continued—

Procedure 7 (continued)
Changing a facility operating state

Step **Action**

If changing an operating status for	**Then enter**
an OC-3 facility that is a TBM tributary	**fa oc3 <group #>**↵ where <group> the number of the OC-3 circuit pack group: all, g1s, g2s, g3, g4, g5, g6, g7, g8 * The OC-3 Facility screen appears.
a DS1 facility	**fa ds1 <group #> <port #>**↵ where <group #> DS1 circuit pack group number * <port #> number of the DS1 port: **1** to **14**, or **all** The DS1 Facility screen appears.
a DS3 facility	fa ds3 <group #> <port #>↵ where <group #> DS3 circuit pack group number * <port #> number of the DS3 port: **1** to **3**, or **all** The DS3 Facility screen appears.
an STS-1 facility	**fa sts1 <group #> <port #>**↵ where <group #> STS-1 circuit pack group number * <port #> number of the STS-1 port: **1** to **3**, or **all** The STS1 Facility screen appears.
an OC-3 facility that is a feeder	**fa oc3 <group #>**↵ where <group> the number of the OC-3 circuit pack group: all, g1, or g2 * The OC-3 Facility screen appears.
an OC-3 facility that is an ABM tributary	**fa oc3 <group #>**↵ where <group> the number of the OC-3 circuit pack group: all, g1s, g2s, g3, g4 * The OC-3 Facility screen appears.
—continued—	

—continued—

Procedure 7 (continued)
Changing a facility operating state

Step Action

If changing an operating status for	**Then enter**
an OC-3 facility that is a TBM tributary	**fa oc3 <group #>**↵ where <group> the number of the OC-3 circuit pack group: all, g1s, g2s, g3, g4, g5, g6, g7, g8 * The OC-3 Facility screen appears.
an OC-12 facility	**fa oc12 <group #>**↵ where <group #> OC-12 group number: **g1** or **g2** * *The OC-12 Facility screen appears*.
an ESI	**fa esi <type>**↵ where <type> type of ESI: **bitsa, bitsb, g1out**, or **g2out** The ESI Facility screen appears.
a VT1.5	fa tic <port #>↵ where <port #> number of the STS-1 corresponding to the VT1.5: **1** or **2** The TIC Facility screen appears.
* See "Group and slot associations for DS1, DS3, STS-1, OC-3, and OC12" in *Provisioning and Operations Procedures*, 323-3001-310, in *Operations, Administration, and Provisioning*, Volume 4.	
—end—	

—continued—

Procedure 7 (continued)
Changing a facility operating state

Step	Action
2	Change the operating state of the facility.

CAUTION
Risk of service loss
If you take VT1.5 #1 and #2 on STS-1 #1 out of service, you take down a CSC/EOC pair.
If you take VT1.5s on STS-1 #2 out of service, you will lose associated UDLC service.

CAUTION
Risk of service loss
If you take VT1.5s on STS-1 #1 out of service, you will lose associated GR-303 DMS or GR-303 MVI service.

CAUTION
Risk of service loss
If you take VT1.5 #1 and #2 on STS-1 #1 out of service, you take down a CSC/EOC pair.
If you take VT1.5s on STS-1 #2 out of service, you will lose associated UDLC service.

—continued—

Procedure 7 (continued)
Changing a facility operating state

Step Action

Determine the type of facility and complete the instructions in the following table:

If changing an operating status for	Then enter
a DS1, a DS3, a STS-1, an OC-3, an OC-12, or an ESI	**chgstate <state>**↵ where <state> in-service or out-of-service operating state: **is** or **oos** If you change state from in service to out of service, the system prompts for confirmation (**yes** or **no**). Confirm the change to OOS by entering **yes**. The facility screen will update with the new operating state in reverse video.
a single VT1.5	**vtselect <subport #>** ↵ where <subport> the number of the VTs: **1** to **28** **chgstate <state>** ↵ where <state> in-service or out-of-service operating state: **is** or **oos** If you change state from in service to out of service, the system warns of a possible loss of service and prompts for confirmation (**yes** or **no**). Confirm the change to OOS by entering **yes**. The facility screen will update with the new operating states in reverse video.
—continued—	

—continued—

Procedure 7 (continued)
Changing a facility operating state

Step Action

If changing an operating status for	**Then enter**
a range of VT1.5s	**chgstate <state> <first VT> <last VT>**↵ where <state> in-service or out-of-service operating state: **is** or **oos** <first VT> the number of the first VT in a range of VTs: **1** to **28** <last VT> the number of the last VT in a range of VTs: **1** to **28** If you change state from in-service to out-of-service, the system warns of a possible loss of service and prompts for confirmation (**yes** or **no**). Confirm the change to OOS by entering **yes**. The facility screen will update with the new operating states in reverse video.
—end—	

3 Return to the Network Element Status screen by entering:

quit↵

—end—

Procedure 8
Provisioning DS1 facility parameters

Before starting this procedure for a DFA system, you must do the following:

- Make sure the physical connections from the SMA to network element DS1 ports match the datafill of the facility assignment. For example, if the datafill maps G1 port 1 to SMA x link 10 and G2 port 1 to SMA x link 11, make sure the connections are in place. If the datafill and the connections do not match, no alarms will raise and the DS1 facility will appear to be in service (IS), but there will be maintenance failure and no dial tone on lines provisioned over the connections.
- Provision a host for GR-303 DS1s if you desire a GR-303 facility assignment.

For detailed information about using the OPC UI and accessing the OPC tools, refer to *OPC User Interface Description*, 323-3001-301, in *Operations, Administration, and Provisioning*, Volume 4A.

For detailed information about using the NE UI, refer to *Network Element User Interface Description*, 323-3001-300, in *Operations, Administration, and Provisioning*, Volume 4A.

—continued—

Procedure 8 (continued)
Provisioning DS1 facility parameters

Use this procedure to provision the parameters for a DS1 transmission facility. Table 10 lists the parameters for provisioning a DS1 facility for GR-303 digital multiplex switch (DMS), GR-303 multivendor interface (MVI), TR-08, and tandem DS1, and transport DS1. Use this table to find the command for each parameter based on your equipment.

Table 10
Provisioning DS1 parameters for GR-303 DMS/MVI, VLCM, TR-08, tandem, and transport DS1s

Parameter	GR-303 DMS/MVI or VLCM DS1s	TR-08 DS1s	Tandem DS1s	Transport DS1s
line coding	use b8zs	use amizcs	use amizcs or b8zs	use ami or b8zs
frame format	use extended superframe (extended)	if associated with span A, use dlc if associated with spans B, C, and D, use superframe	use superframe or extended superframe depending on the circuit order	use superframe or extended superframe
alarm encoding	use ones	use ones	use ones	use ones or zeros
synchronization mode	use bytesynchronous	use bytesynchronous	use bytesynchronous	use asynchronous

—continued—

Procedure 8 (continued)
Provisioning DS1 facility parameters

Table 11 lists the parameters for provisioning a DS1 facility.

Table 11
Parameters for DS1s

Parameter and menu command	Setting	Explanation	Default
facility identifier, **facid**		An alphanumeric string up to 38 characters.	no entry
line coding, **lcoding**	ami amizcs b8zs	Line coding is a binary format that allows regenerative repeaters to distinguish valid input from line noise. Alternate mark inversion (AMI) is a format whereby the binary value of 1, represented by a square wave (pulse), alternates between positive and negative polarity. A DS1 signal that uses AMI line coding and appears at a DS1 interface is required to meet specific ones density standards. These standards require that at least one pulse be transmitted within any 8-bit sequence. Since AMI does not provide any form of pulse density assurance, use the AMI line code with applications guaranteed to meet the standards. For example, voice applications meet ones density requirements because of the consistent bit patterns that represent speech. However, computer data applications are not always guaranteed to meet ones density requirements because computer data is highly variable in size and content. AMI zero code suppression (amizcs) accommodates the ones density requirements. AMI zero code suppression requires inserting (at the DS1 source) a “1” in bit 7 of any all-zeros DS0 byte. Bipolar 8-bit zero code substitution (b8zs) accommodates the ones density requirements. This substitution requires inserting two intentional bipolar violations (BPVs) to break up long string of zeros. Use b8zs for most applications, unless connected to network elements (NEs) that do not support that line code.	ami

—continued—

Procedure 8 (continued)
Provisioning DS1 facility parameters

Table 11 (continued)
Parameters for DS1s

Parameter and menu command	Setting	Explanation	Default
line build-out, **lbo**	short medium long	short: 0 to 46 m (0 to 150 ft) medium: 46 to 137 m (150 to 450 ft) long: 137 to 200 m (450 to 655 ft)	short
frame format, **framefmt**	superframe extended dlc null	Framing provides the orderly organization of the bits in the 1.544 Mb/s DS1 signal. A superframe contains 12 DS1 frames, with the 193rd bit in each frame used as a control bit. These control bits supply frame and signal management. The extended superframe (extended) contains 24 DS1 frames, with the 193rd bit in each frame used as a control bit. Of the 24 control bits,18 bits are reserved for the evaluation of circuit performance and 6 bits provide frame and signal management. The digital loop carrier (DLC) setting is used mainly with TR-08 DS1s associated with span A. The null setting ensures that no framing bits are added.	superframe
alarm encoding, **alarmenc**	ones zeros	When an all -ones signal is received, the facility output can be provisioned to send an all-ones or an all -zeros signal on the output port.	ones
synchroniza-tion mode, **synchr**	byte-synchronous asynchronous	In a synchronous systems, all clocks are locked onto a reference frequency; the elements of the system are synchronized to this external clock. Synchronous systems allow single-state multiplexing and demultiplexing. The result is direct payload visibility. A byte-synchronous setting maps a DS1 into the payload capacity of a VT1.5 SPS so that downstream SONET NEs can identify and access (DS0 visibility) the carried 24 DS0 channels. Asychronous systems require bit stuffing because the bit rates vary from equipment to equipment. Therefore, an asychronous setting has no direct payload visibility.	byte-synchronous
performance monitoring, **pmprov**	enable disable	Enables or disables DS1 facility performance monitoring	enabled
—end—			

Procedure 8 (continued)
Provisioning DS1 facility parameters

Requirements

Before using this procedure, use the facility records to get the values for each of the DS1 parameters listed in Table 10 on page 93.

Action

Step	Action

1 Log in to the FCOT TBM shelf.

2 From the Network Element Status screen, display the DS1 facility provisioning screen by entering:

fa ds1 <group> <port>↵

where

<group>	DS1 group number
<port>	number of the DS1 port: **1** to **14,** or **all**

3 Take the facility out of service by entering:

chgstate oos ↵

y ↵

The state of the facility changes to out of service (00S).

4 To change the parameters, display the Edit Facility screen by entering:

edit ↵

The Edit Facility screen appears.

—continued—

Procedure 8 (continued)
Provisioning DS1 facility parameters

Step	Action

5 Set or change any or all DS1 facility parameters listed in the following table.

Make any number of settings or changes before proceeding to step 6. If you are provisioning for the first time, then provision all facility parameters.

If provisioning	Then enter
DS1 facility identifier	facid<identifier>↵ where <identifier> an alphanumeric string up to 38 characters ***Note*:** Lowercase characters are translated to uppercase. If you want the facility ID to contain mixed case characters or nonalphanumeric characters, such as spaces, hyphens, or slash marks, begin the identifier string with a single quotation mark ('). The provisioned value appears in reverse video.
line coding	lcoding <type>↵ where <type> type of line coding: **b8zs**, **ami** or **amizcs** The provisioned vale appears in reverse video.
line build-out range	**lbo < range >**↵ where <range> the line build-out range: **short**, **medium**, or **long** The provisioned value appears in reverse video.
framing format	**framefmt <format>**↵ where <format> the framing format: **null**, **superframe**, **extended,** or **dlc** The provisioned value appears in reverse video.
—continued—	

—continued—

Procedure 8 (continued)
Provisioning DS1 facility parameters

Step Action

If provisioning	Then enter
alarm encoding	**alarmenc <encoding>**↵ where <encoding> type of alarm encoding: **ones** or **zeros** The provisioned value appears in reverse video.
synchronization mode	**synchr <mode>**↵ where <mode> synchronization mode: **bytesynchronous** or **asynchronous** The provisioned value appears in reverse video. ***Note:*** If you select the wrong type of synchronization for the installed card, the system responds with the following message: "`The Synchr command cannot be processed since the current hardware version does not support the requested synchronization mode.`"
performance monitoring	**pmprov <status>**↵ where <status> status of the DS1 facility performance monitoring: **enable** or **disable** The provisioned value appears in reverse video.
—end—	

6 Return the facility to in-service by entering:

chgstate is↵

The state changes to in-service (IS).

7 Repeat steps 1 through 6 for each DS1 facility (port) to be provisioned and for each DS1 group to be provisioned.

8 Return to the Network Element Status screen by entering:
fwpui↵

—end—

Error Descriptions

Errors encountered are reported within the comment block of the TL1 request response.

Messages may be either a response message to provide the user a message concerning the result of a command or an autonomous message issued to inform the user of some kind of change in the system. Most responses and autonomous messages have a comment line.

Response messages in general have the following format:

<cr> <lf> <lf>

^^^<sid>^<date>^<time> <cr> <lf>

M^^<ctag>^CMPLD <cr> <lf>

/* <comment string> */

;

If the response is to an RTRV command, a list of the information such as host provisioning information will appear after the line containing CMPLD.

<cr> <lf> <lf>

^^^<sid>^<date>^<time> <cr> <lf>

M^^<ctag>^CMPLD <cr> <lf>

^^^”<aid>,TID=number,NAME=name,TXRATE=rate,SHELF=shelf,TYPE=type” <cr> <lf>

^^^”<aid>,TID=number,NAME=name,TXRATE=rate,SHELF=shelf,TYPE=type” <cr> <lf>

/* <comment string> */

;

If the command encountered some kind of problem while being executed, the response will contain the DENY code rather than the CMPLD code.

<cr> <lf> <lf>

^^^<sid>^<date>^<time> <cr> <lf>

M^^<ctag>^DENY <code> <cr> <lf>

/* <comment string> */

;

Autonomous messages in general have the following format:

<cr> <lf> <lf>

^^^<sid>^<date>^<time> <cr> <lf>

<almcde>^<atag>^REPT^ALM^<sccm> <cr> <lf>

^^^":<ntfcncde>,<condtype>,<srveff>,<ocrdat>,<ocrtm>:<condde scr>" <cr> <lf>

;

The <almcde> of the message may contain either "A", "*C", "**", or "*" depending on the severity of the condition being reported. The severity ratings are:

A	—	information and not a warning
*C	—	a critical alarm such as initialization failure which will cause the tool to exit
**	—	a major alarm such as loss of association to an NE which will cause loss of functionality
*	—	a minor alarm

The <sid> will always be zero (0) and the <atag> will be a number generated as a sequence beginning with one (1). That is, the third autonomous message will have <atag> equal to 3.

<ntfcmcde> is the notification code and is one of critical (“CR”), major (“MJ”), or minor (“MN”). <condtype> is the type of alarm that is indicated. <srveff> reports whether the alarm indicates a service affecting (SA) or non-service affecting (NSA) condition. <conddescr> is a descriptive string pertaining to the condition.

For the purposes of this feature, all autonomous messages generated will be NSA. This feature monitors only those events that impact the ability of the tool to perform provisioning and none of those events are service affecting, Therefore <srveff> will always be NSA.

For the purposes of this feature, all autonomous messages generated will have a <condtype> of nothing

The notification code will represent the impact of the event on the tool’s ability to perform its function. Loss of association to an NE, for example, is a major (MJ) event. Loss of contact with an MSR is a critical event (CR).

Because environment related alarms or events normally concern such events as fan failure or high temperature and because the underlying equipment is not monitored, all events will have an <sccm> of facility (FAC).

Table 12
Comment Error Strings

Error String	Description
can't decode AID %s	The AID is not a proper AID. Recheck the AID.
can't decode tribA AID %s	The AID specified contained an error which caused the UI to be unable to determine the target equipment for the command. Review the AID and check its syntax. tribA is the first of the two comma separated AID pairs.
can't decode tribZ AID %s	The AID specified contained an error which caused the UI to be unable to determine the target equipment for the command. Review the AID and check its syntax. tribZ is the second of the two comma separated AID pairs.
—continued—	

Table 12 (Continued)
Comment Error Strings

Error String	Description
cch_register() failed (%s)	A failure occurred during the initialization of the UI. If this error or other initialization errors are printed, a serious error in the OPC software is indicated. The major cause of initialization errors is that the OPC is in an out-of-service state. Use the **drmstat** tool to check the status of the memory resident servers running on the OPC. Error messages may also be logged to the system log file /var/log/syslog indicating the status of the resident servers and why they are not in service.
CMISE request to STSom to Provision connection <%s> timed out	An internal OPC software problem. The usual cause is that the cross-connect object manager, a memory resident server on the OPC, is not in service and available. Use the **drmstat** tool to check the status of stsom.
Configuration for NE<%d> not found	The NE specified in the TID while in the internal cross-connect database has no information associated with it. This message indicates an abnormal condition.
Connection <%s> was created on the OPC and NE(s)	Informative comment signifying the operation was successful.
Cross-connect %s,%s deleted	Informative comment signifying the operation was successful.
Cross-Connect %s,%s not found	The NE indicated doesn't have a cross-connect with the specified AID. Check the AID to ensure that the cross-connect actually exists. The RTRV-CRS-STS1 with the ALL AID can be used to retrieve all cross-connects on an NE.
Invalid tribA	The AID indicated, while decoded correctly, specified a piece of equipment that was invalid. An example would be specifying an 1-CE1-OC3G1-1 (a transport OC-3 AID) on a DFA system.
—continued—	

Table 12 (Continued)
Comment Error Strings

Error String	Description
ipc_init() failed	A failure occurred during the initialization of the UI. If this error or other initialization errors are printed, a serious error in the OPC software is indicated. The major cause of initialization errors is that the OPC is in an out-of-service state. Use the **drmstat** tool to check the status of the memory resident servers running on the OPC. Error messages may also be logged to the system log file /var/log/syslog indicating the status of the resident servers and why they are not in-service.
mib_connect() failed (%s)	A failure occurred during the initialization of the UI. If this error or other initialization errors are printed, a serious error in the OPC software is indicated. The major cause of initialization errors is that the OPC is in an out-of-service state. Use the **drmstat** tool to check the status of the memory resident servers running on the OPC. Error messages may also be logged to the system log file /var/log/syslog indicating the status of the resident servers and why they are not in service.
NE<%d> not found	The NE specified in the TID is not in the OPC span of control. Check the NE number.
NE<%d> not found in STS cache	The NE specified in the TID is not in the internal cross-connect database. This message indicates an abnormal condition.
No Cross-Connects on NE %d	The NE specified in the TID, while in the internal cross-connect database, has no cross-connect information associated with it. This message indicates an abnormal condition.
No First Cross-Connect on NE %d	The NE specified in the TID, while in the internal cross-connect database, has no cross-connect information associated with it. This message indicates an abnormal condition.
—continued—	

Table 12 (Continued)
Comment Error Strings

Error String	Description
opc_create_confirm_table() failed (%s)	A failure occurred during the initialization of the UI. If this error or other initialization errors are printed, a serious error in the OPC software is indicated. The major cause of initialization errors is that the OPC is in an out-of-service state. Use the **drmstat** tool to check the status of the memory resident servers running on the OPC. Error messages may also be logged to the system log file /var/log/syslog indicating the status of the resident servers and why they are not in service.
Unexpected character(s): near %s	The command entered contains characters not expected to be part of the command. For instance, a malformed AID or extra command parameters can cause this error. Frequently the cause is not using the shift key when entering a colon (:), thereby entering a semicolon (:) instead. Use the **help;** command (the semicolon is required) to see a list of commands.
unknown command %s. type help; for help	The command entered is not a legal command. Type **help;** (the semicolon is required) and a help listing of the legal commands will be printed.
unknown NE %d	The NE specified in the TID is not in the OPC span of control. Check the NE number.
—end—	

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