Lucent Technologies
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X.50/X.57 Subrate Application
MML, Release 1.0.3 for DACS II
MML, Release 1.0.4 for DACS II ISX

User's Manual

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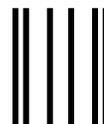
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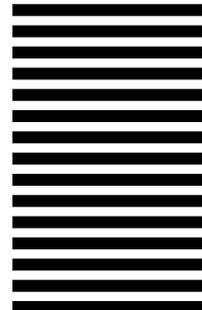
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About This Document

Purpose

This manual provides users with procedural information needed to support the daily operation and maintenance activities of the X.50/X.57 Subrate Application. This application can be used in conjunction with either of the following:

- The Digital Access and Cross-Connect System II (DACS II) Release 8.2.3 or higher

- The Digital Access and Cross-Connect System II - Integral Shelf Cross-Connect (DACS II ISX) Release 3.1.2 or higher

The X.50/X.57 Subrate application only supports the MML language, which is documented in this manual.

Intended Audiences

This manual is targeted for the individuals responsible for the provisioning, operation, and maintenance of the DACS II or DACS II ISX system's X.50/X.57 Subrate application.

How to Use This Document

There are three ways to access the information in this manual:

- Using the overall table of contents located in the front of the manual

- Using the index located in the back of the manual

- Using the tabs and the table of contents located in the front of each chapter

Prerequisites

Before you use the procedures in this manual, you should have completed one of the following training courses:

- DACS II 24 Channel (1.544 Mbit/s Interface) Operation and Maintenance course (TR3521)

- DACS II 30 Channel (2.048 Mbit/s Interface) Operation and Maintenance course (TR3621)

- DACS II ISX 24 Channel (1.544 Mbit/s Interface) Operation and Maintenance course (TR3526)

- DACS II ISX 30 Channel (2.048 Mbit/s Interface) Operation and Maintenance course (TR3527)

If you were not able to take a training course, you should carefully study the information described in this manual.

Contents

■ **Chapter 1 - Introduction**

This chapter provides an overview of the X.50/X.57 Subrate application. It describes the application features, hardware and software requirements, functional operation, and the use of the command and message set that is provided with the subrate application system software.

■ **Chapter 2 - Tutorial**

This chapter contains a basic introduction to the functionality of the X.50/X.57 Subrate application.

■ **Chapter 3 - Software and Hardware Installation**

This chapter includes procedures to install the application software and hardware.

■ **Chapter 4 - Provisioning**

This chapter contains the procedures to provision the Digital Signal Processing (DSP) Platform TG193 or TG193B circuit pack, including growing and restoring the DSP Platform circuit pack, establishing cross-connection paths, and querying X.50/X.57 Subrate cross-connections.

■ **Chapter 5 - Test Access**

This chapter contains the procedures to create, change, and query X.50/X.57 Subrate test access connections.

■ **Chapter 6 - Commands and Messages**

This chapter contains all of the commands and messages for the X.50/X.57 Subrate application.

■ **Chapter 7 - Command Denials**

This chapter lists the command denial codes and their meanings. This information is useful in determining problems with the X.50/X.57 Subrate application.

■ **Chapter 8 - Quick Reference Guide**

This chapter contains a list of all of the commands and parameters for the X.50/X.57 Subrate application.

Conventions Used

This manual uses a special font to help users differentiate computer input/output from descriptive/procedural text. The **`constant width bold font`** indicates message formats, keywords, letter representations of parameters, parameter values, and messages as they would appear on a DACS II terminal screen.

This manual contains admonishments in the form of a **Note** or a **Caution**.

Notes inform users of special considerations, situations, or items to remember. An example of a Note is shown below:

⟹ NOTE:

A channel must be established before any subrate cross-connections can be created.

Cautions indicate the presence of a hazard that will or can cause a frame alarm or property damage if hazard is not avoided. An example of a Caution is shown below:

⚠ CAUTION:

The UMC is inserted towards the direction that is terminated, potentially causing a loss of service.

Related Documentation

The following documents support the DACS II system:

- DACS II Installation Manual:
    - — IPH903 (DACS II CEF)
    - — IPH903I (DACS II ESBF)

    Audience: Customers planning to install the equipment
    Content: Customer installation instructions.

- DACS II Release 7.0 Product Description Manuals:
    - — 365-353-085 (24 Channel)
    - — 365-353-086 (30 Channel)

    Audience: Network planners, engineers, and others that need to know how the DACS II works and fits into the network
    Content: Features, applications, and description and other reference information.

■ DACS II Release 8.2.3 Operation and Maintenance Manuals:

— 365-353-221 (PDS)

— 365-353-231 (MML)

— 365-353-241 (PDS 2.048-Mb/s Interface)

— 365-353-251 (MML 2.048-Mb/s Interface)

Audience: End-user maintenance personnel

Contents: Procedures to operate and maintain the DACS II.

■ DACS II Release 8.2.3 Command and Message Manuals:

— 365-353-222 (PDS)

— 365-353-232 (MML)

— 365-353-242 (PDS 2.048-Mb/s Interface)

— 365-353-252 (MML 2.048-Mb/s Interface)

Audience: End-user maintenance personnel

Content: Description of each software input message and its response along with a description of each system output report.

■ DACS II Release 8.2.3 Quick Reference Guides:

— 365-353-223 (PDS)

— 365-353-233 (MML)

— 365-353-243 (PDS 2.048-Mb/s)

— 365-353-253 (MML 2.048-Mb/s)

Audience: End-user maintenance personnel

Content: Abbreviated list of system commands and parameters.

■ DACS II Release 8.2.3, Software Release Description:

— Comcode C108460080

Audience: End-user maintenance personnel

Content: Upgrade procedures for the new software release, status of problems fixed in previous releases, and operating issues for the specified software release.

The following documents support the DACS II ISX system:

- DACS II ISX Release 2.0 and 3.0 Installation Manual:

    — 365-359-080

    Audience: Customers planning to install the equipment
    Content: Customer installation instructions.

- DACS II ISX Expansion Shelf Installation Manual:

    — 365-059-079

    Audience: Customers planning to install the equipment
    Content: Customer installation instructions.

- DACS II ISX Release 3.0 Low Speed Interface Unit Installation Manual:

    — CC108121146

    Audience: Customers planning to install the equipment
    Content: Customer installation instructions.

- DACS II Customer Reference Manual:

    — 365-353-000

    Audience: Network planners, engineers, and others that need to know how the DACS II ISX works and fits into the network
    Content: Features, applications, and description and other reference information.

- DACS II ISX Release 3.1.2, Operation and Maintenance Manuals:

    — 365-359-100 (PDS)

    — 365-359-103 (MML)

    Audience: End-user maintenance personnel
    Contents: Procedures to operate and maintain the DACS II ISX.

- DACS II ISX Release 3.1.2, Command and Message Manuals:

    — 365-359-101 (PDS)

    — 365-359-104 (MML)

    Audience: End-user maintenance personnel
    Content: Description of each software input command and its corresponding output message response.

■ DACS II ISX Release 3.1.2, Quick Reference Guides:

— 365-359-102 (PDS)

— 365-359-105 (MML)

Audience: End-user maintenance personnel

Content: Abbreviated list of system commands and parameters.

■ DACS II ISX Release 3.0, LSIU Reference Guide:

— 365-359-078

Audience: End-user maintenance personnel

Contents: Procedures to install, operate, and maintain the Low Speed Interface Unit (LSIU).

■ DACS II ISX Release 3.1.2, Software Release Description:

— Comcode: C108328782

Audience: End-user maintenance personnel

Content: Upgrade procedures for the new software release, status of problems fixed in previous releases, and operating issues for the specified software release.

The following documents support both the DACS II and DACS II ISX systems:

■ DDS Subrate and MJU Application
Release 1.0.4 for DACS II
Release 1.0.5 for DACS II ISX
User's Manual

— 365-350-110 (PDS),

— 365-350-111 (MML)

Audience: End-user maintenance personnel

Content: Complete manual describing how to install and operate the DDS Subrate and MJU application on the DACS II or DACS II ISX. Commands and messages describing how to perform DDS subrate cross-connects, subrate test access, and subrate MJU operations are included.

■ Digital Multipoint Bridge (DMB) Release 1.0.2 for DACS II
  Digital Multipoint Bridge (DMB) Release 1.0.3 for DACS II ISX
  On DSP Platform, Application Manual

    — 365-353-144 (PDS)

    — 365-353-154 (MML)

Audience: End-user maintenance personnel

Content: Complete manual describing how to install and operate the DMB application on the DACS II or DACS II ISX. Commands and messages describing how to perform DMB cross-connects and DMB test access operations are included.

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Introduction

1

Contents

Introduction

1

Overview

The X.50/X.57 Subrate feature supports cross-connections and test access of subrate circuits operating at the following data rates: 1.2 kbit/s, 2.4 kbit/s, 4.8 kbit/s, and 9.6 kbit/s, and 19.2 kbit/s. 1.2 kbit/s circuits are supported in "stuffed mode" over 2.4 kbit/s channels. 19.2 kbit/s circuits are supported by two adjacent 9.6 kbit/s channels. DACS II and DACS II ISX support the following types of cross-connections:

- Cross-connections betweeen subrate circuits carried by X.50 multiplex channels

- Cross-connections between X.57 circuits and subrate circuits carried by X.50 multiplex channels.

The X.57 circuits carry a single subrate circuit on a 64 kbit/s channel.

Test access for X.50 and X.57 subrate circuits is also supported.

The procedures presented in this document apply to Release 1.0.3 (for DACS II) and Release 1.0.4 (for DACS II ISX) of the X.50/X.57 Subrate application. This application runs on DACS II Release 8.2.3 and DACS II ISX Release 3.1.2. The X.50/X.57 Subrate application supports the MML command and message language only.

The X.50/X.57 Subrate application requires the use of the Digital Signal Processing (DSP) Platform, which consists of both hardware and software. The hardware consists of the DSP application TG193B circuit pack. The software that runs on the DSP Platform is referred to as application software because it is treated by the DACS II or DACS II ISX as a separate application. The software can be installed at any time and is provided on separate PCMCIA memory cards.

The DSP application circuit pack occupies the same slot as a Dual Primary Card (TG192). It occupies two NPC numbers for each circuit pack, therefore, the NPC numbers for DSP application circuit packs are always odd.

This document contains procedures for installing the DSP Subrate application software, provisioning the TG193B circuit pack for the X.50/X.57 Subrate application, cross-connecting subrate circuits to each other, and creating test access at the subrate level, if so desired.

Getting Started

This section briefly describes the installation and provisioning processes for the X.50/X.57 Subrate application, as well as some key application capabilities. Included in each sub-section below are chapter and/or section references in the document to obtain additional procedural information.

The Installation Process

The software for the X.50/X.57 application is loaded on the generic DACS software. The X.50/X.57 software must be downloaded onto the DSP circuit packs to begin using the application. The following briefly describes the installation process:

⇒ **NOTE:**
   For DACS II, the memory card slots are referred to as PMEM and SMEM. For DACS II ISX, the memory card slots are referred to as MEMA and MEMB.

1. The SMEM/MEMB memory card is temporarily removed from the SMEM/MEMB memory card slot. The PCMCIA card containing the X.50/X.57 application is then inserted into the SMEM/MEMB memory card slot.

2. The X.50/X.57 application is then copied to the DACS' memory card in the primary memory card slot (PMEM/MEMA).

3. The PCMCIA card that contains the X.50/X.57 application is removed from the SMEM/MEMB memory card slot, and the DACS' secondary memory card is replaced and restored to service.

4. The application is then copied from the first memory card to the second memory card, ensuring that both memory cards have the same application information on them.

The detailed procedure for installing the application software onto the DACS II and DACS II ISX is provided in Chapter 3 in the section entitled, "Installing the Digital Signal Processing (DSP) Application Software."

The Provisioning Process

There are four steps that are required for provisioning the DSP circuit pack and the facility terminating NPCs for the X.50/X.57 application. Each step is reversible and must be done in sequence.

1. The first step in the provisioning process is to **grow** the DSP circuit pack(s). The X.50/X.57 application runs on one or more TG193B circuit packs. Growing a DSP circuit pack puts the circuit pack into the DACS equipment list. As with other circuit packs in DACS, the `CRTE-EQPT` command is used to install the desired number of DSP circuit packs on the system. Since the DSP circuit pack can be used for other applications, the `CRTE-EQPT` command is described in detail in the *DACS II* or *DACS II ISX Command and Message Manuals*.

    ⇒ **NOTE:**
    When a DSP card is provisioned, it can only be grown as an odd-numbered NPC (i.e., 001, 003, etc.). Once the DSP card is grown and restored, it occupies both the odd and its consecutive even NPC number slots. Growing an even-numbered NPC will result in denial.

    The DSP circuit pack need not be physically equipped before issuing the `CRTE-EQPT` command.

2. The next step is to **restore** the DSP circuit pack. Restoring a circuit pack places it into service. This is performed by using the DACS command `RST-EQPT`.

    For this step, the DSP circuit pack must be physically equipped before issuing the `RST-EQPT` command. The out-of-service diagnostics are performed first by the DSP circuit pack. Then, the X.50/X.57 Subrate application is downloaded into it. After downloading the application, the restore process performs an in-service diagnostic on the DSP circuit pack.

    The `RST-EQPT` command is described in detail in the *DACS II* and *DACS II ISX Command and Message Manuals*.

3. The third step is to **establish** the cross-connections between the appropriate facility terminating NPCs and the DSP circuit pack. Establishing these cross-connections is performed by using the application command `CRTE-CRS-TS`. Please note that channels on the DSP circuit pack must be cross-connected to channels on the appropriate facility terminating NPCs before cross-connections of subrate circuits can be made. These connections are illustrated in Figure 1-1.
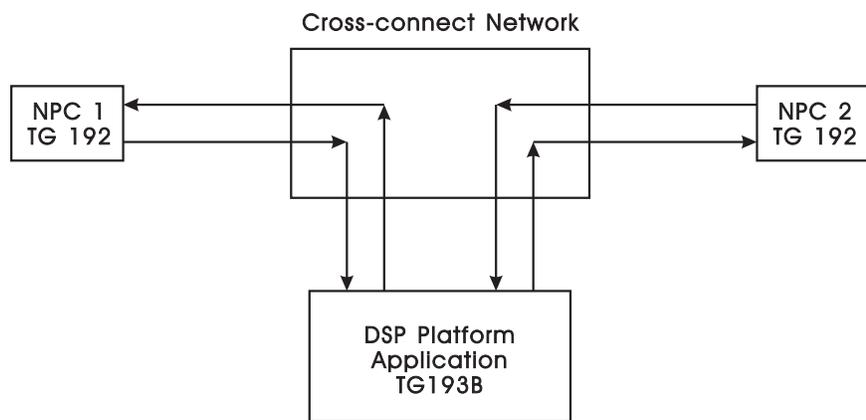
Figure 1-1. Connection Established Between NPC and DSP Circuit Pack

In the `CRTE-CRS-TS` command, the type of circuit is specified. It can be either an X.50 or an X.57 circuit. The rate of the X.57 circuit must also be specified.

⊳ **NOTE:**

The following channels cannot be cross-connected to the DSP circuit pack with this X.50/X.57 application:

■ NPC channels that carry clear unchannelized 2.048 Mbit/s circuits

■ Channels that are provisioned as test port channels

■ Channels 0 and 31 of an E1 facility (except for E1 facilities provisioned with Nonsignaling Associated (NSA), where channel 31 is allowed)

4. The final step in the provisioning process is to make the **subrate circuit cross-connections**. In contrast to regular cross-connections between 64 kbit/s circuits, the cross-connections between subrate circuits are done on the TG193B circuit pack, not on the DACS II or DACS II ISX cross-connection network. These cross-connections are performed by using the application command `CONN-CRS-TS`. Please note that the subrate cross-connections cannot be created until the DSP circuit pack is cross-connected to the appropriate facility terminating NPCs, as described in Step 3.

In this command, the data rate of the two circuits to be cross-connected must be specified. The two circuits are identified in the command as the FROM circuit and the TO circuit. Each of these two circuits is identified by the following:

- The number of the facility terminating NPC

- The channel number in that NPC

- The subrate circuit number in that channel

Subrate circuit numbers for an X.50 circuit are specified in the table below for 1.2, 2.4, 4.8, 9.6, 19.2 kbit/s circuits respectively. For X.57 circuits, the subrate circuit number is optional. If stated, it must be 1-1.

Table 1-1. Subrate Circuit Numbers for an X.50 Circuit

Rate in kbit/s	Possible Circuit Numbers
2.4 & 1.2	1-1 2-1 3-1 4-1 5-1 1-2 2-2 3-2 4-2 5-2 1-3 2-3 3-3 4-3 5-3 1-4 2-4 3-4 4-4 5-4
4.8	1-1 2-1 3-1 4-1 5-1 1-2 2-2 3-2 4-2 5-2
9.6	1-1 2-1 3-1 4-1 5-1
19.2	1-1 2-1 3-1 4-1 (two 9.6 slots each)

The procedures for provisioning the DSP circuit pack NPCs are described in Chapter 4.

Test Access and Termination Capability

The X.50/X.57 application also provides test access capability. This capability allows users the capability of placing an X.50/X.57 Subrate circuit into one of the following distinct modes:

1. **Monitor** - allows both directions of data transmission to be monitored without disturbing the data flow.

2. **Split** - creates completed two-way transmission between each side of the circuit under test and the two test access channels.

The procedures for creating X.50/X.57 test connections are described in Chapter 5.

The Utility Query Commands

There are query commands that request provisioning information on X.50/X.57 circuits, capacity information on each DSP NPC, and test access state information on the DSP NPC. The query commands associated with provisioning are located in Chapter 4. The query command associated with Test Access is located in Chapter 5.

X.50/X.57 Subrate Application Tutorial

2

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Contents

X.50/X.57 Subrate Application Tutorial

2

Overview

This tutorial was developed to provide users with background information on the following X.50/X.57 Subrate application features:

- Subrate Cross-connection

- Subrate Test Access

- Subrate Channel Codes (UMC, MUX, and SIG)

Benefits

The X.50/X.57 Subrate application provides the following benefits to customers:

- Capability to cross-connect subrate circuits carried within X.50 data streams between different X.50 circuits.

- Capability to cross-connect subrate circuits carried in X.50 circuits to X.57 circuits, allowing the collection and multiplexing of low speed data connections onto more efficient X.50 circuits.

- Capability to perform test access on subrate circuits carried in an X.50 circuit.

Subrate Cross-connection

Figure 2-1 shows the cross-connection architecture within the DACS that applies to this subrate application.
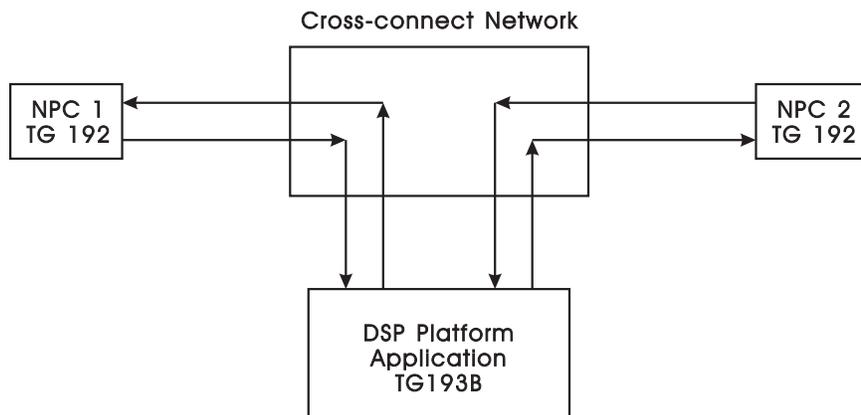
Figure 2-1. X.50/X.57 Cross-connection Architecture

Subrate data is received and transmitted by DACS II/DACS II ISX within regular DS0 channels embedded in E1 signals. Individual DS0 channels that carry subrate data are classified as either X.50 or X.57 channels.

X.50 Channels

An X.50 channel is a 64 kbit/s circuit that carries a number of multiplexed circuits of lower data rates. This channel is equivalent, but not identical, to the DS0B subrate circuit standard used in North America. When establishing an X.50 circuit, the facility terminating NPC and the channel number on that NPC must be specified.

8-Bit Envelope Structure

An envelope, as stated in the ITU X.50 recommendation, is a grouping of a fixed number of bits that stay together during transmission of the data. An Envelope Grouping contains multiple envelopes of bits that are transmitted as separate octets, but are logically viewed as a single group of information.

The X.50 recommendation uses the 8-bit envelope structure illustrated in Figure 2-2.
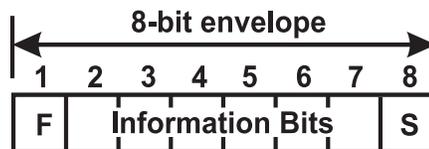
Figure 2-2. 8-Bit Envelope Structure

Each byte contains six information bits in bit positions 2 through 7. A framing bit "F" is in position 1, and a status bit "S" is in bit position 8.

The status bit "S" has a value of "1" if the information bits represent data. It has a value of "0" if the information bits represent control information. For the purpose of multiplexing subrate circuits, the value of the control bit is ignored.

The framing bit, however, is the key to the subrate multiplexing feature. The framing bit allows multiple subrate circuits to be multiplexed into a single X.50 channel.

For 8-bit envelopes, the application uses the 20-bit framing pattern described by the Division 3 Multiplexing Standard within X.50.

Division 3 Multiplexing Standard

The Division 3 Multiplexing Standard allows circuits with the bearer rates shown in Table 2-1 to be multiplexed.

Table 2-1. X.50 Repetition Values for Different Rates

Bearer Rate	12.8 kbit/s	6.4 kbit/s	3.2 kbit/s
Data Rate	9.6 kbit/s	4.8 kbit/s	2.4 kbit/s
Repetition Value	5	10	20

Each data rate is 75% of the bearer rate due to the 2 overhead bits (framing and status bits) in the 8-bit envelope.

In the case of the 12.8 kbit/s bearer rate, each 12.8 kbit/s channel will repeat every 5th 8-bit envelope in the envelope grouping.

The Division 3 Framing Pattern is used to separate a succesion of 8-bit envelope groupings. The framing pattern is a 20-bit pattern, illustrated in Figure 2-3. It appears in the first bit position of an envelope grouping.

A	1	1	0	1	0	0	1	0	0
0	0	1	0	1	0	1	1	1	0

Figure 2-3. 20-Bit Framing Pattern

When bit "A" is "1," there is no alarm that affects this circuit. When bit "A" is "0," there is either a Loss of Signal (LOS), a Loss Of Frame Alignment (LOF) for the external facility, or an Out-of-Frame (OOF) condition on the subrate level.

Subrate Circuit Numbers

Cross-connections on subrate circuits are made by the `CONN-CRS-TS` command. The two circuits are identified in the command as the FROM and TO circuit. Each circuit is identified by the number of the facility terminating NPC that a previous `CRTE-CRS-TS` command connected to the DSP application circuit pack, the channel number in that NPC, and the subrate circuit number in that channel. Subrate circuit numbers in X.50 circuits are stated by the phase number and the position number within the phase; the two numbers are separated by a dash. Table 2-2 lists all of the possible circuit numbers for the X.50.

Table 2-2. Subrate Circuit Numbers for X.50

Rate in kbit/s	Possible Circuit Numbers
2.4 & 1.2	1-1 2-1 3-1 4-1 5-1 1-2 2-2 3-2 4-2 5-2 1-3 2-3 3-3 4-3 5-3 1-4 2-4 3-4 4-4 5-4
4.8	1-1 2-1 3-1 4-1 5-1 1-2 2-2 3-2 4-2 5-2
9.6	1-1 2-1 3-1 4-1 5-1
19.2	1-1 2-1 3-1 4-1 (two 9.6 slots each)

X.57 Channels

An X.57 channel is an individual lower rate circuit (lower than 64 kbit/s) that is being transmitted on a 64 kbit/s facility. It is equivalent, but not identical, to the DS0A circuit standard used in North America. Cross-connections between X.57 circuits are done as regular DACS II or DACS II ISX cross-connections without the aid of a DSP application circuit pack. No subrate processing is necessary. When establishing an X.57 circuit, the facility terminating NPC, the channel number on that NPC, and the rate must be specified as 2.4, 4.8, or 9.6 kbit/s.

If an X.57 circuit is cross-connected to a subrate circuit within an X.50 circuit, the subrate circuit (within the X.57 circuit) number is not necessary, since it is always equal to 1-1.

Like the X.50 recommendation, the X.57 recommendation also transmits information in 8-bit envelopes with 6 data bits and 2 overhead bits (framing and status). For each rate, the 8-bit envelope is repeated as many times as is necessary to produce a 64 kbit/s signal. The repetition values are shown in Table 2-3.

Table 2-3. X.57 Repetition Values for Different Rates

Bearer Rate	3.2 kbit/s	6.4 kbit/s	12.8 kbit/s
Data Rate	2.4 kbit/s	4.8 kbit/s	9.6 kbit/s
Repetition Value	20	10	5

The demultiplexing direction can recover the original data signal by reading every nth 8-bit envelope in the 64 kbit/s channel, where "n" is the Repetition Value indicated in Table 2-3.

There is no framing pattern for X.57 channels. The framing bit on an incoming channel can be "0" or "1," and the framing bit of an outgoing channel is "0."

Demultiplexing and Multiplexing Subrate Circuits

X.50-to-X.50 Circuit Multiplexing

Figure 2-4 illustrates the cross-connections between various subrate circuits embedded within an incoming and outgoing X.50 circuit. Each 8-bit envelope contains the following:

- The Framing Bit, "F," containing the X.50 Division 3 Framing Bit Pattern in Column 1.

- Data bits in Columns 2 through 7.

- The Status Bit, "S," in Column 8.

The arrows in Figure 2-4 show the cross-connection taking place between several subrate circuits from the incoming X.50 circuit to the outgoing X.50 circuit. Bits 2 through 8 are cross-connected. Bit 1 is the framing bit and is not cross-connected.

The circuit designated as 911 (9.6 kbit/s) in the incoming X.50 is cross-connected to the circuit designated as 921 (9.6 kbit/s) in the outgoing X.50 circuit. 4.8 kbit/s circuits 441 in the incoming X.50 circuit is cross-connected to 4.8 kbit/s circuit 432 in the outgoing X.50 circuit. Finally, the 254 circuit (2.4 kbit/s) in the incoming X.50 circuit is cross-connected to circuit 251 (2.4 kbit/s) in the outgoing X.50 circuit.

X.50-to-X.57 Circuit Multiplexing

Figure 2-5 illustrates examples of cross-connections between 9.6 kbit/s X.50 circuits and X.57 circuits. In the X.57 circuits, the Framing Bits are all "0s, because no framing pattern is required for X.57.

In the example shown, each X.50 envelope is transferred (except for the Framing Bits) to the X.57 circuit and is repeated five times. If the X.50 envelope had a data rate of 4.8 kbit/s, each envelope would be repeated 10 times in an X.57 circuit, and so on.

In the opposite direction, every fifth envelope in a 9.6 kbit/s X.57 circuit would be multiplexed (except for the Framing Bits) into the X.50 circuit. If the X.57 envelope had a data rate of 4.8 kbit/s circuits, every tenth envelope in the X.57 circuit would be multiplexed to produce a 4.8 kbit/s X.50 circuit, and so on.
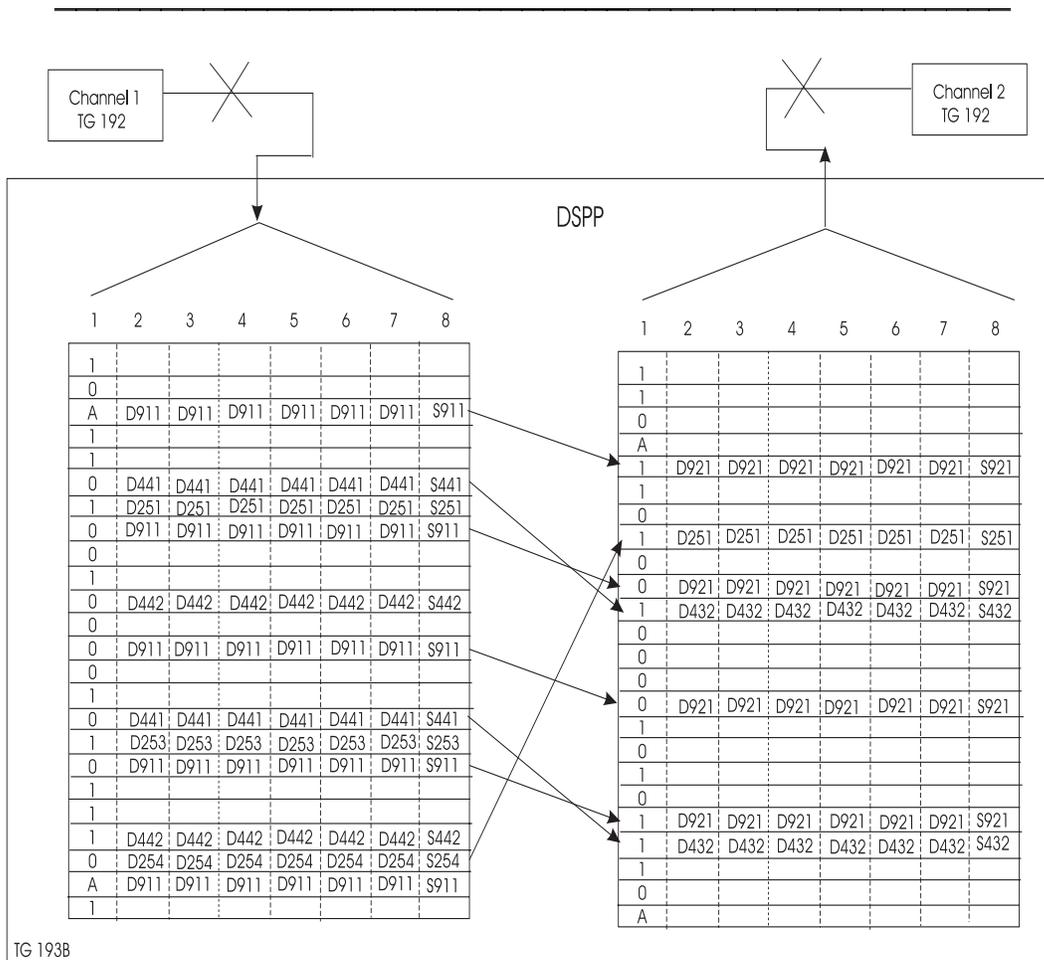
Figure 2-4. Demultiplexing and Multiplexing X.50 Circuits
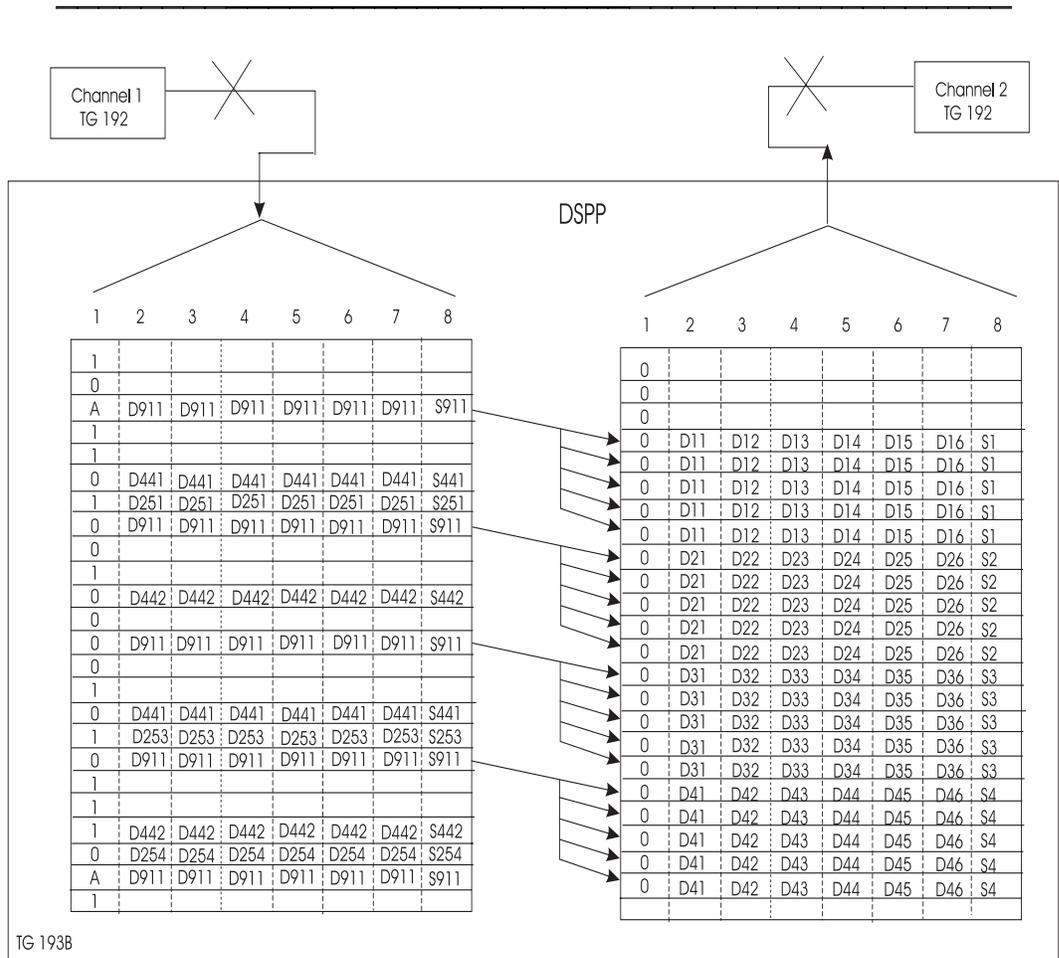
Figure 2-5. Demultiplexing and Multiplexing X.50 to X.57 Circuits

1.2 kbit/s Subrate Circuits

The X.50/X.57 Subrate application treats a 1.2 kbit/s subrate circuit as a 2.4 kbit/s circuit. Each 1.2 kbit/s envelope that is carried in a 2.4 kbit/s circuit within an X.50 multiplex is duplicated. If a 1.2 kbit/s circuit is carried in an X.57 circuit, the repetition value is 40.

19.2 kbit/s Subrate Circuits

In X.50 circuits, a 19.2 kbit/s circuit is supported by treating it as two adjacent 9.6 kbit/s circuits. The positioning of the two adjacent 9.6 kbit/s circuits is restricted by the phase structure of the X.50 multiplex. A 19.2 kbit/s circuit may occupy phase positions 1 and 2, 2 and 3, 3 and 4, and 4 and 5. The 19.2 kbit/s circuit may not occupy phase positions 5 and 1 because the circuit will straddle over from one set of envelopes to another set of envelopes.

19.2 kbit/s circuits are not supported by X.57 channels.

Subrate Test Access

Test access is performed by treating each data travel direction of the subrate circuit as a separate X.57 circuit.

Test access is supported for the 1.2, 2.4, 4.8, and 9.6 kbit/s data rates. 19.2 kbit/s connections are considered two separate 9.6 kbit/s connections. Therefore, test access is not supported for 19.2 kbit/s circuits.

Released Test Access Connections

If the DACS frame is reset or re-booted, or if the Main Controller (MC) is restored, then any test access connections that are in Monitor or Split mode will be released. All circuits will return to the normal or terminated state as if they have been explicitly released from test access. All test ports that were established to the application will be disestablished.

Additionally, if the craft connection (all types) that is used to operate a test access session is dropped for any reason, then all test access states on any circuits established via that link will be dropped and returned to their original normal or terminated state.

For more information on test access, refer to Chapter 5.

Subrate Channel Codes

Unassigned Multiplexer Code (UMC)

The UMC is an 8-bit pattern used to signal to the downstream end that a specific channel in a multiplexed X.50 circuit is unoccupied, or not cross-connected. The default bit pattern is F111 1111. This pattern can be changed using the **ED-PRMTR-TS:DEFAULT** command. If an X.57 circuit is not cross-connected to an X.50 circuit, the UMC is sent in the outbound direction of the X.57 circuit.

Multiplexer-out-of-Synchronization Code (MUX)

The MUX code is an 8-bit pattern used to signal to the downstream end that a loss of subrate multiplex framing (OOF) has occurred during the demultiplexing process. The default bit pattern (1111 1111) is inserted in each associated demultiplexed subrate circuit. This pattern can be changed using the **ED-PRMTR-TS:DEFAULT** command. The circuit processing in the multiplexed direction is performed normally.

Signaling Code (SIG)

The SIG code is a 4-bit pattern containing signaling bits A, B, C and D. This code is placed in Time Slot 16 and is used as a background signaling pattern for a subrate cross-connection when the transmission is normal. The default SIG code is 1111. This pattern can be changed using the **ED-PRMTR-TS:DEFAULT** command.

Software and Hardware Installation

3

Contents

Software and Hardware Installation

3

Software Installation Procedures

Software that runs on the Digital Signal Processing (DSP) Platform TG193B circuit pack is called application software. It is treated by DACS II and DACS II ISX as a separate and distinct application that interacts with the generic software through an interface similar to an operating system interface.

The procedures described in this section make use of the `INSTALL` command which is used to install the DSP application software onto the DACS II and DACS II ISX memory cards. In order to install the software, the system must first be in Maintenance Condition (MCOND). Once the software is installed onto the memory cards, the DSP application is then transferred into the Main Controller's memory when the system is taken out of MCOND and then placed "in-service".

The `INSTALL` command may be used for the following purposes:

- Listing DSP application releases previously installed

- Installing a new application release

- Upgrading an older release of a DSP application with a newer release of that application

- Removal of a DSP application release

Usage of the **INSTALL** command is limited to the Frame Administrator and users with restricted maintenance privileges.

The execution of the **INSTALL** command generates a menu for the user. Each function and its menu usage are described in the sections that follow.

Whenever the removal or inserting of memory cards is necessary, be sure to ground yourself using a wrist strap.

Listing Application Releases Resident on a DSP Distribution Card

This procedure is used to list the application releases that are on a DSP distribution memory card. The memory card is installed in the memory card slot SMEM/MEMB.

⇒ **NOTE:**
This procedure is intended to be used together with the application install, upgrade, or remove procedure. It is, therefore, a requirement to place the MC into Maintenance Condition. However, if the user desires to list the application releases that reside on the memory cards in PMEM/MEMA and SMEM/MEMB while the MC is in-service, the command **RTRV-MEMSTAT;** (I.51001) should be used.

Step	Procedure

1   Login as the Frame Administrator (USER DAX) or as a user that has Restricted Maintenance privileges.

2   Enter the following command to place the MC in the MCOND service state:

   RST-EQPT::MC::MCOND;

   Where:

   MC = Main Controller
   MCOND = Maintenance Condition

3   Enter the following command to remove SMEM/MEMB from service:

   RMV-EQPT::SMEM; (for DACS II)
   RMV-EQPT::MEMB; (for DACS II ISX)

4   Physically remove and replace the memory card in SMEM/MEMB with the DSP distribution card.

5   Enter the following command line to restore SMEM/MEMB to service:

   RST-EQPT::SMEM; (for DACS II)
   RST-EQPT::MEMB; (for DACS II ISX)

   ⇒ **NOTE:**
   The memory card in SMEM/MEMB is not over-written by the system because the system is in MCOND.

6   Enter the following command line:

   INSTALL;

Step	Procedure

Output similar to the following will be displayed:

```
******* DSP PLATFORM - LOAD INSTALLATION UTILITY ******

        1.   List DSPP Load Files
        2.   Install DSPP Load Files
        3.   Remove DSPP Load Files

Enter number of command [1-3], or Q to QUIT:
```

7 Enter **1;**

Output similar to the following will be displayed:

For DACS II:

```
DSP LOADS ON MEMORY CARDS:

============ LOADS ON PMEM: (DACS II CARD) ============
NAME            BYTES  TYPE    VERSION      DATE BUILT
------------ ------- ---- ------------ ----------------


===== LOADS ON SMEM: (DSP DISTRIBUTION CARD) ==========
NAME            BYTES  TYPE    VERSION      DATE BUILT
---------- ------- ---- ------------ ----------------
SD1load      XXXXXX   SD1     1.00.03   XX/XX/XX XX:XX:XX


------------------------------------------------------
```

For DACS II ISX:

```
DSP LOADS ON MEMORY CARDS:

============ LOADS ON MEMA: (ISX CARD) ================
NAME            BYTES  TYPE    VERSION      DATE BUILT
------------ ------- ---- ------------ ----------------


===== LOADS ON MEMB: (DSP DISTRIBUTION CARD) ==========
NAME            BYTES  TYPE    VERSION      DATE BUILT
---------- ------- ---- ------------ ----------------
SD1load      XXXXXX   SD1     1.00.04   XX/XX/XX XX:XX:XX


------------------------------------------------------
```

Step	Procedure

⇒ **NOTE:**
The output shown indicates that there is no DSP application installed on the memory card in slot PMEM/MEMA. The memory card in slot SMEM/MEMB is a DSP distribution card.

8   To exit the DSP Platform Load Installation Utility enter **Q;**

The following message will then be displayed:

INSTALL QUIT

9   Enter the following command to remove SMEM/MEMB from service:

RMV-EQPT::SMEM; (for DACS II)
RMV-EQPT::MEMB; (for DACS II ISX)

10   Physically remove and replace the DSP distribution card in SMEM/MEMB with the memory card that was previously removed in steps 2, 3, and 4.

11   Enter the following command line to restore SMEM/MEMB to service:

RST-EQPT::SMEM; (for DACS II)
RST-EQPT::MEMB; (for DACS II ISX)

⇒ **NOTE:**
The memory card in SMEM/MEMB is not over-written by the system because the system is in MCOND.

12   To restore the MC to the In Service state, enter the following command:

RST-EQPT::MC;

Where:

MC = Main Controller

If the command is denied because the memory card diagnostics failed, this may be an indication that the system could not determine which memory card to boot from. If this occurs, enter the following command line to examine the contents of the system memory devices:

RTRV-MEMSTAT;

Step	Procedure

Information will be displayed for the contents of MC RAM, PMEM/MEMA, and SMEM/MEMB. The following information will be displayed regarding the contents of each memory device that can be accessed:

- Software release of the system software

- Software release of the database

- Date and time stamp of the database

- Frame ID and Unique ID of the system.

Before the MC can be restored to the In Service state, any memory card discrepancies which may occur must be resolved. Do not reset the system if you have unresolved discrepancies. If the reason for the denial still cannot be determined, contact your Technical Support personnel.

Installing the Digital Signal Processing (DSP) Platform Application Software

This procedure is used to install a particular DSP Platform application software.

Step	Procedure

1 Make sure that the memory card that is restored in PMEM/MEMA contains a current copy of the system executables and system database.

2 Login as the Frame Administrator (USER DAX) or as a user that has Restricted Maintenance privileges.

3 Enter the following command to place the MC in the MCOND service state:

   RST-EQPT::MC::MCOND;

   Where:

   MC = Main Controller
   MCOND = Maintenance Condition

4 Enter the following command to remove SMEM/MEMB from service:

   RMV-EQPT::SMEM; (for DACS II)
   RMV-EQPT::MEMB; (for DACS II ISX)

5 Physically remove the memory card in the SMEM/MEMB slot from the system and place it in a safe place; it will be reinserted later in this procedure.

6 Replace the memory card that was in SMEM/MEMB with the memory card that contains the DSP Platform software application.

7 Enter the following command line to restore SMEM/MEMB to service:

   RST-EQPT::SMEM; (for DACS II)
   RST-EQPT::MEMB; (for DACS II ISX)

   ⇒ **NOTE:**
   The memory card in SMEM/MEMB is not over-written by the system because the system is in MCOND.

8 Enter the following command line to list the DSP Platform software executables:

   INSTALL;

Step	Procedure

Output similar to the following will be displayed:

```
******* DSP PLATFORM - LOAD INSTALLATION UTILITY *****

        1.   List DSPP Load Files
        2.   Install DSPP Load Files
        3.   Remove DSPP Load Files

Enter number of command [1-3], or Q to QUIT:
```

9 Enter **1;** to list the DSP Platform software executables.

10 Examine the output that is displayed. If the correct executables are shown
    in the output, proceed with the following steps. If the desired executables
    are not shown, you should not attempt to install the software at this time.
    To exit the INSTALL procedure, perform steps 14, 15, 16, 17, 18, 23,
    and 24.

11 Once the listing has been displayed, the following menu is displayed:

```
******* DSP PLATFORM - LOAD INSTALLATION UTILITY *****

        1.   List DSPP Load Files
        2.   Install DSPP Load Files
        3.   Remove DSPP Load Files

Enter number of command [1-3], or Q to QUIT:
```

12 Enter **2;** to install the DSP Platform software executables.

Output similar to the following will be displayed:

For DACS II:

```
Installing DSP load file: 4.01/SD1load, XXXXXX bytes from
SMEM to PMEM
Installing DSP load file: 4.01/SD4load, XXXXXX bytes from
SMEM to PMEM
Installation Complete, Number of files installed from
SMEM to PMEM: 2.
```

Step	Procedure

For DACS II ISX:

```
Installing DSP load file: 4.01/SD1load, XXXXXX bytes from
MEMB to MEMA
Installing DSP load file: 4.01/SD4load, XXXXXX bytes from
MEMB to MEMA
Installation Complete, Number of files installed from
MEMB to MEMA: 2.
```

13 In response to the INSTALL menu, which also is displayed, enter **1;**
to verify that the application software just installed was properly loaded on
the PMEM/MEMA memory card.

14 To exit the DSP Platform Load Installation Utility enter **Q;**

The following message will then be displayed:

INSTALL QUIT

15 Enter the following command to remove SMEM/MEMB from service:

RMV-EQPT::SMEM; (for DACS II)
RMV-EQPT::MEMB; (for DACS II ISX)

16 Physically remove the DSP distribution card that is in the SMEM/MEMB
slot from the system and store it in a safe place.

17 Replace the DSP distribution card that was in SMEM/MEMB with the
memory card initially removed from SMEM/MEMB in steps 4 and 5. This
card currently contains a copy of the system's generic system software
and database prior to issuing the **INSTALL** command.

18 Enter the following command line to restore SMEM/MEMB to service:

RST-EQPT::SMEM; (for DACS II)
RST-EQPT::MEMB; (for DACS II ISX)

⇛ **NOTE:**
The memory card in SMEM/MEMB is not over-written by the system
because the system is in MCOND.

Step	Procedure

19   Enter the following command line to ensure that the DSP application is also copied to SMEM/MEMB:

CPY-MEM::::PMEM,SMEM:PROG; (for DACS II)
CPY-MEM::::MEMA,MEMB:PROG; (for DACS II ISX)

When the **PROG** keyword is specified, only the system software executables are transferred. At this point, the databases on PMEM/MEMA and SMEM/MEMB should be the same.

CPY-MEM = Backup memory transfer
   PROG = Program.

20   Enter **INSTALL;**

Output similar to the following will be displayed:

```
********** DSP PLATFORM - LOAD INSTALLATION UTILITY **********

         1.   List DSPP Load Files
         2.   Install DSPP Load Files
         3.   Remove DSPP Load Files

Enter number of command [1-3], or Q to QUIT:
```

21   Enter **1;** to verify that the DSP software application is on both memory cards:

22   To exit the DSP Platform Load Installation Utility enter **Q;**

The following message will then be displayed:

INSTALL QUIT

23   To verify that the correct application software was loaded on both memory cards, enter

RTRV-MEMSTAT;

Output similar to the following will be displayed:

Step	Procedure

For DACS II:

```
    [<xy>] yy-mm-dd hh:mm:ss LINK-n[vv]
M   RTRV MEMSTAT:::[<ww>] COMPLD
    /* [O.51001] */
    /* Device:Program Release:Database Release,Date,Time:
        Frame ID:Unique ID */
    "WKG:gg.pp.r:dd.rr.v,yr-aa-bb,hr-mn-sc:fg:<uid>"
    "PMEM:gg.pp.r:dd.rr.v,yr-aa-bb,hr-mn-sc:fg:<uid>"
    "SMEM:gg.pp.r:dd.rr.v,yr-aa-bb,hr-mn-sc:fg:<uid>"
    /* Device:Application Type:Version:Date */
    "PMEM:SDx:gen.iss.rel:yr-aa-bb"
                .
                .
    ["PMEM:SDx:gen.iss.rel:yr-aa-bb"]
    "SMEM:SDx:gen.iss.rel:yr-aa-bb"
                .
                .
    ["SMEM:SDx:gen.iss.rel:yr-aa-bb"]
    /* Feature Package ID:Database Serial Number:Flash Card:
        Service State */
    "nnnnnnnn:oooooooooo:qqqqqqqqqqqqqqqqqqqqq:<state>"
    "nnnnnnnn:oooooooooo:qqqqqqqqqqqqqqqqqqqqq:<state>"
    "nnnnnnnn:oooooooooo:qqqqqqqqqqqqqqqqqqqqq:<state>"
;
```

Step	Procedure

For DACS II ISX:

```
    [<xy>] yy-mm-dd hh:mm:ss LINK-n[vv]
M   RTRV MEMSTAT:::[<ww>] COMPLD
    /* [O.51001] */
    /* Device:Program Release:Database Release,Date,Time:
       Frame ID:Unique ID */
    "WKG:gg.pp.r:dd.rr.v,yr-aa-bb,hr-mn-sc:fg:<uid>"
    "MEMA:gg.pp.r:dd.rr.v,yr-aa-bb,hr-mn-sc:fg:<uid>"
    "MEMB:gg.pp.r:dd.rr.v,yr-aa-bb,hr-mn-sc:fg:<uid>"
    /* Device:Application Type:Version:Date */
    "MEMA:SDx:gen.iss.rel:yr-aa-bb"
                    .
                    .
    ["MEMA:SDx:gen.iss.rel:yr-aa-bb"]
    "MEMB:SDx:gen.iss.rel:yr-aa-bb"
                .
                .
    ["MEMB:SDx:gen.iss.rel:yr-aa-bb"]
;
```

For a description of each field, refer to the **RTRV-MEMSTAT** command
(I.51001) in the *DACS II* or *DACS II ISX Command and Message Manual.*

Before the MC can be restored to the In Service state, any memory card
discrepancies which may occur must be resolved. Do not reset the system
if you have unresolved discrepancies.

24 To restore the MC to the In Service state, enter the following command:

RST-EQPT::MC;

Where:

MC = Main Controller

If the command is denied because the memory card diagnostics failed,
this may be an indication that the system could not determine which
memory card to boot from. If this occurs, enter **RTRV-MEMSTAT;** again to
examine the contents of the system memory devices. If the reason for the
denial still cannot be determined, contact your Technical Support
personnel.

Upgrading the Digital Signal Processing (DSP) Platform Application Software

This procedure is used to upgrade the DSP Platform application software that has been previously installed onto a memory card. This procedure can also be used to upgrade the load from Release 1.0.3 or 1.0.4. In this procedure, the memory card in PMEM/MEMA contains the latest copy of the generic system software executables, system database, and the current DSP applications. The memory card in slot SMEM/MEMB contains the DSP distribution card.

⚠ **CAUTION:**
Refer to the X.50/X.57 Software Release Description if upgrading to Release 1.0.4.

⚠ **CAUTION:**
This procedure can lead to a loss of service (see Step 17).

Step	Procedure

1   Make sure that the memory card that is equipped and restored in PMEM/MEMA contains a current copy of the generic system executables, system database, and DSP applications.

2   Login as the Frame Administrator (USER DAX) or as a user that has Restricted Maintenance privileges.

3   Enter the following command to place the MC in the MCOND service state:

   RST-EQPT::MC::MCOND;

   Where:

   MC = Main Controller
   MCOND = Maintenance Condition

4   Enter the following command to remove SMEM/MEMB from service:

   RMV-EQPT::SMEM; (for DACS II)
   RMV-EQPT::MEMB; (for DACS II ISX)

5   Physically remove the memory card in the SMEM/MEMB slot from the system and place it in a safe place; it will be reinserted later in this procedure.

6   Replace the memory card that was in SMEM/MEMB with the memory card that contains the new DSP Platform software application.

Step	Procedure

7 Enter the following command:

RST-EQPT::SMEM; (for DACS II)
RST-EQPT::MEMB; (for DACS II ISX)

⇒ **NOTE:**

The memory card in SMEM/MEMB is not over-written by the system because the system is in MCOND.

8 Enter the following command:

INSTALL;

Output similar to the following will be displayed:

******* DSP PLATFORM - LOAD INSTALLATION UTILITY *****

       1.   List DSPP Load Files
       2.   Install DSPP Load Files
       3.   Remove DSPP Load Files

Enter number of command [1-3], or Q to QUIT:

9 Enter **1;** to list the DSP Platform load files that reside on the memory cards in PMEM/MEMA and SMEM/MEMB.

Output similar to the following will be displayed:

For DACS II:

DSP LOADS ON MEMORY CARDS:

========== LOADS ON PMEM: (DACS II CARD) ============
NAME   BYTES   TYPE   VERSION   DATE BUILT
---------- ------ ---- ------------ -----------------
SD1load   XXXXXX SD1   1.00.03 XX/XX/XX XX:XX:XX

===== LOADS ON SMEM: (DACS II CARD) =================
NAME   BYTES   TYPE   VERSION   DATE BUILT
--------- ------ ------ ------------ -----------------
SD1load   XXXXXX SD1   1.00.03 XX/XX/XX XX:XX:XX

--

Step	Procedure

For DACS II ISX:

```
DSP LOADS ON MEMORY CARDS:


========== LOADS ON MEMA: (ISX CARD) ================
NAME        BYTES   TYPE    VERSION        DATE BUILT
----------  ------  ----  ------------  -----------------
SD1load     XXXXXX  SD1       1.00.04   XX/XX/XX XX:XX:XX


===== LOADS ON MEMB: (DSP DISTRIBUTION CARD) ========
NAME        BYTES   TYPE    VERSION        DATE BUILT
---------   ------  -----  ------------  -----------------
SD1load     XXXXXX  SD1       1.00.04   XX/XX/XX XX:XX:XX


-------------------------------------------------------
```

⇒ **NOTE:**
> The output indicates that the memory cards in slots PMEM/MEMA and SMEM/MEMB contain different versions of the same DSP application. The memory card in slot SMEM/MEMB is a DSP distribution card.

The load installation menu will also be displayed as shown:

```
******* DSP PLATFORM - LOAD INSTALLATION UTILITY *****

        1.  List DSPP Load Files
        2.  Install DSPP Load Files
        3.  Remove DSPP Load Files

Enter number of command [1-3], or Q to QUIT:
```

Step	Procedure

10 Enter **2;** to upgrade the DSP Platform software executables.

Output similar to the following will be displayed:

For DACS II:

```
WARNING: different SD1load file exists on target: PMEM


OLD (PMEM): SD1xx 1.0.3  XX/XX/XX XX:XX:XX
NEW (SMEM): SD1xx 1.0.3  XX/XX/XX XX:XX:XX
0 NPCs may be affected

Do you wish to continue overwrite of this file ? [Y/N]:
```

For DACS II ISX:

```
WARNING: different SD1load file exists on target: MEMA


OLD (MEMA): SD1xx 1.0.4  XX/XX/XX XX:XX:XX
NEW (MEMB): SD1xx 1.0.4  XX/XX/XX XX:XX:XX
0 NPCs may be affected

Do you wish to continue overwrite of this file ? [Y/N]:
```

11 Enter **Y;** to upgrade the DSP Platform software executables on the memory card in PMEM/MEMA.

Output similar to the following will be displayed:

For DACS II:

```
Installing DSP load file: 4.01/SD1load, XXXXXX bytes from
SMEM to PMEM

Installation Complete, Number of files installed from
SMEM to PMEM: 1.
```

For DACS II ISX:

```
Installing DSP load file: 4.01/SD1load, XXXXXX bytes from
MEMB to MEMA

Installation Complete, Number of files installed from
MEMB to MEMA: 1.
```

Step	Procedure

12   Quit the INSTALL menu by entering `Q;`

13   Enter the following command to remove SMEM/MEMB from service:

    `RMV-EQPT::SMEM;` (for DACS II)
    `RMV-EQPT::MEMB;` (for DACS II ISX)

14   Remove and replace the DSP distribution card in SMEM/MEMB with the memory card that was removed from the system in step 5.

15   Enter the following command line to restore SMEM/MEMB to service:

    `RST-EQPT::SMEM;` (for DACS II)
    `RST-EQPT::MEMB;` (for DACS II ISX)

> ⇛ **NOTE:**
> The memory card in SMEM/MEMB is not over-written by the system because the system is in MCOND.

16   Enter the following command line to ensure that the DSP application installed on PMEM/MEMA is also copied to SMEM/MEMB. When the `PROG` keyword is specified, only the system software executables are transferred (at this point, the databases on PMEM/MEMA and SMEM/MEMB should be the same).

    `CPY-MEM::::PMEM,SMEM:PROG;` (for DACS II)
    `CPY-MEM::::MEMA,MEMB:PROG;` (for DACS II ISX)

When the `PROG` keyword is specified, only the system software executables are transferred. At this point, the databases on PMEM/MEMA and SMEM/MEMB should be the same.

`PROG` = Program.

17   To restore the MC to the In Service state (with the memory cards that are in PMEM/MEMA and SMEM/MEMB), enter the following command:

    `RST-EQPT::MC;`

Where:

`MC` = Main Controller

When the `RST-EQPT::MC` command has been executed, the application software upgrade on the DSP Platform (TG193B) circuit pack is initiated.

> ⚠ **CAUTION:**
> *This may cause a service interruption.*

Step	Procedure

If the command is denied because the memory card diagnostics failed, this may be an indication that the system could not determine which memory card to boot from. If this occurs, enter the following command line to examine the contents of the system memory devices:

RTRV-MEMSTAT;

Output similar to the following will be displayed:

For DACS II:

```
   [<xy>] yy-mm-dd hh:mm:ss LINK-n[vv]
M  RTRV MEMSTAT:::[<ww>] COMPLD
   /* [O.51001] */
   /* Device:Program Release:Database Release,Date,Time:
      Frame ID:Unique ID */
   "WKG:gg.pp.r:dd.rr.v,yr-aa-bb,hr-mn-sc:fg:<uid>"
   "PMEM:gg.pp.r:dd.rr.v,yr-aa-bb,hr-mn-sc:fg:<uid>"
   "SMEM:gg.pp.r:dd.rr.v,yr-aa-bb,hr-mn-sc:fg:<uid>"
   /* Device:Application Type:Version:Date */
   "PMEM:SDx:gen.iss.rel:yr-aa-bb"
                 .
                 .
   ["PMEM:SDx:gen.iss.rel:yr-aa-bb"]
   "SMEM:SDx:gen.iss.rel:yr-aa-bb"
                 .
                 .
   ["SMEM:SDx:gen.iss.rel:yr-aa-bb"]
   /* Feature Package ID:Database Serial Number:Flash Card:
      Service State */
   "nnnnnnnn:ooooooooo:qqqqqqqqqqqqqqqqqqqq:<state>"
   "nnnnnnnn:ooooooooo:qqqqqqqqqqqqqqqqqqqq:<state>"
   "nnnnnnnn:ooooooooo:qqqqqqqqqqqqqqqqqqqq:<state>"
;
```

Step	Procedure

For DACS II ISX:

```
    [<xy>] yy-mm-dd hh:mm:ss LINK-n[vv]
M   RTRV MEMSTAT:::[<ww>] COMPLD
    /* [O.51001] */
    /* Device:Program Release:Database Release,Date,Time:
       Frame ID:Unique ID */
    "WKG:gg.pp.r:dd.rr.v,yr-aa-bb,hr-mn-sc:fg:<uid>"
    "MEMA:gg.pp.r:dd.rr.v,yr-aa-bb,hr-mn-sc:fg:<uid>"
    "MEMB:gg.pp.r:dd.rr.v,yr-aa-bb,hr-mn-sc:fg:<uid>"
    /* Device:Application Type:Version:Date */
    "MEMA:SDx:gen.iss.rel:yr-aa-bb"
                    .
                    .
    ["MEMA:SDx:gen.iss.rel:yr-aa-bb"]
    "MEMB:SDx:gen.iss.rel:yr-aa-bb"
                    .
                    .
    ["MEMB:SDx:gen.iss.rel:yr-aa-bb"]
;
```

For a description of each field, refer to the `RTRV-MEMSTAT` command
(I.51001) in the *DACS II* or *DACS II ISX Command and Message Manual.*

Before the MC can be restored to the In Service state, any memory card
discrepancies which may occur must be resolved. Do not reset the system
if you have unresolved discrepancies.

Listing Application Releases Previously Installed

This procedure is used to list the application releases that have previously been installed onto a memory card. Once a DSP application has been installed, the memory card that contains the system software and system database will also contain the DSP application. This procedure assumes that the memory cards that contain the DSP application reside in both PMEM/MEMA and SMEM/MEMB. In the sample output shown in this procedure, both PMEM/MEMA and SMEM/MEMB contain the same DSP application.

Step	Procedure

1   Enter the following command to examine the contents of the system memory devices:

   RTRV-MEMSTAT;

   Output similar to the following will be displayed:

   [O.51001]

   For DACS II:

```
   [<xy>] yy-mm-dd hh:mm:ss LINK-n[vv]
M  RTRV MEMSTAT:::[<ww>] COMPLD
   /* [O.51001] */
   /* Device:Program Release:Database Release,Date,Time:
      Frame ID:Unique ID */
   "WKG:gg.pp.r:dd.rr.v,yr-aa-bb,hr-mn-sc:fg:<uid>"
   "PMEM:gg.pp.r:dd.rr.v,yr-aa-bb,hr-mn-sc:fg:<uid>"
   "SMEM:gg.pp.r:dd.rr.v,yr-aa-bb,hr-mn-sc:fg:<uid>"
   /* Device:Application Type:Version:Date */
   "PMEM:SDx:gen.iss.rel:yr-aa-bb"
                   .
                   .
   ["PMEM:SDx:gen.iss.rel:yr-aa-bb"]
   "SMEM:SDx:gen.iss.rel:yr-aa-bb"
                   .
                   .
   ["SMEM:SDx:gen.iss.rel:yr-aa-bb"]
   /* Feature Package ID:Database Serial Number:Flash Card:
      Service State */
   "nnnnnnnn:oooooooooo:qqqqqqqqqqqqqqqqqqqq:<state>"
   "nnnnnnnn:oooooooooo:qqqqqqqqqqqqqqqqqqqq:<state>"
   "nnnnnnnn:oooooooooo:qqqqqqqqqqqqqqqqqqqq:<state>"
   ;
```

Step	Procedure

For DACS II ISX:

```
    [<xy>] yy-mm-dd hh:mm:ss LINK-n[vv]
M   RTRV MEMSTAT:::[<ww>] COMPLD
    /* [O.51001] */
    /* Device:Program Release:Database Release,Date,Time:
       Frame ID:Unique ID */
    "WKG:gg.pp.r:dd.rr.v,yr-aa-bb,hr-mn-sc:fg:<uid>"
    "MEMA:gg.pp.r:dd.rr.v,yr-aa-bb,hr-mn-sc:fg:<uid>"
    "MEMB:gg.pp.r:dd.rr.v,yr-aa-bb,hr-mn-sc:fg:<uid>"
    /* Device:Application Type:Version:Date */
    "MEMA:SDx:gen.iss.rel:yr-aa-bb"
                    .
                    .
    ["MEMA:SDx:gen.iss.rel:yr-aa-bb"]
    "MEMB:SDx:gen.iss.rel:yr-aa-bb"
                    .
                    .
    ["MEMB:SDx:gen.iss.rel:yr-aa-bb"]
;
```

For a description of each field, refer to the `RTRV-MEMSTAT` command (I.51001) in the *DACS II* or *DACS II ISX Command and Message Manual.*

⇒ **NOTE:**
The information on application releases is located in the latter section of the output.

Removing a DSP Platform Application Release
From a Memory Card

This procedure is used to remove DSP application software from a memory card. Please note that the DSP application software may be removed from a memory card that resides in either PMEM/MEMA or SMEM/MEMB. In this procedure, the DSP application software will first be removed from the memory card that is in PMEM/MEMA and then from the memory card that is in SMEM/MEMB. Both memory cards should always be kept in synchronization.

Step	Procedure

1 Make sure that the DSP Platform TG193B card(s) grown for the X.50/X.57 Subrate application are removed from service and degrown (using the **RMV-EQPT::NPC** and **DISC-EQPT::NPC before** removing the application.

2 Make sure that the memory card that is restored in PMEM/MEMA contains a current copy of the generic system executables, system database, and the DSP application.

3 Login as the Frame Administrator (USER DAX) or as a user that has Restricted Maintenance privileges.

4 Enter the following command to place the MC in the MCOND service state:

RST-EQPT::MC::MCOND;

Where:

> **MC** = Main Controller
MCOND = Maintenance Condition

5 Enter the following command line to display the DSP load installation utility menu:

INSTALL;

Output similar to the following will be displayed:

******* DSP PLATFORM - LOAD INSTALLATION UTILITY *****

> **1.   List DSPP Load Files**
> **2.   Install DSPP Load Files**
> **3.   Remove DSPP Load Files**

Enter number of command [1-3], or Q to QUIT:

Step	Procedure

6   Enter `1;` to list the DSP Platform load files that reside on the memory cards residing in PMEM/MEMA and SMEM/MEMB.

Output similar to the following will be displayed:

For DACS II:

```
DSP LOADS ON MEMORY CARDS:


========== LOADS ON PMEM: (DACS II CARD) ============
NAME        BYTES   TYPE    VERSION        DATE BUILT
---------  ------- ------  ------------  -----------------
SD1load    XXXXXX   SD1      1.00.03 XX/XX/XX XX:XX:XX


========== LOADS ON SMEM: (DACS II CARD) ============
NAME        BYTES   TYPE    VERSION        DATE BUILT
---------  ------- ----   ------------  -----------------
SD1load    XXXXXX   SD1      1.00.03 XX/XX/XX XX:XX:XX


------------------------------------------------------
```

For DACS II ISX:

```
DSP LOADS ON MEMORY CARDS:


========== LOADS ON MEMA: (ISX CARD) ===============
NAME        BYTES   TYPE    VERSION        DATE BUILT
---------  ------- ------  ------------  -----------------
SD1load    XXXXXX   SD1      1.00.04 XX/XX/XX XX:XX:XX

========== LOADS ON MEMB: (ISX CARD) ===============
NAME        BYTES   TYPE    VERSION        DATE BUILT
---------  ------- ----   ------------  -----------------
SD1load    XXXXXX   SD1      1.00.04 XX/XX/XX XX:XX:XX


------------------------------------------------------
```

⇒ **NOTE:**
In the sample output shown, the same DSP application has previously been installed on both memory cards in PMEM/MEMA and SMEM/MEMB.

Step	Procedure

The DSP load installation utility menu will again be displayed as shown below:

```
******* DSP PLATFORM - LOAD INSTALLATION UTILITY *****

        1.   List DSPP Load Files
        2.   Install DSPP Load Files
        3.   Remove DSPP Load Files

Enter number of command [1-3], or Q to QUIT:
```

7   Enter **3;**

Output similar to the following will be displayed:

For DACS II:

```
WARNING:   This function will REMOVE a DSP PLATFORM load
           from the DACS II flash card you specify.
Are you REALLY SURE you wish to proceed? [y/N]:
```

For DACS II ISX:

```
WARNING:   This function will REMOVE a DSP PLATFORM load
           from the ISX flash card you specify.
Are you REALLY SURE you wish to proceed? [y/N]:
```

8   Enter **Y;**

Output similar to the following will be displayed:

For DACS II:

```
Enter Device [A=PMEM, B=SMEM]:
```

For DACS II ISX:

```
Enter Device [A=MEMA, B=MEMB]:
```

9   Enter **A;**

Output similar to the following will be displayed:

Step	Procedure

For DACS II:

```
--------- REMOVE FILES: PMEM DEVICE ---------

      1.   Remove SD1load        (   XXXXXX bytes)
      Q.   QUIT

Enter File number to remove, or "Q" to QUIT:
```

For DACS II ISX:

```
--------- REMOVE FILES: MEMA DEVICE ---------

      1.   Remove SD1load        (   XXXXXX bytes)
      Q.   QUIT

Enter File number to remove, or "Q" to QUIT:
```

10   Enter **1;**

Output similar to the following will be displayed:

For DACS II:

```
WARNING:  This function will REMOVE a DSP PLATFORM load
          from the DACSII flash card you specify.

Are you REALLY SURE you wish to proceed? [y/N]:
```

For DACS II ISX:

```
WARNING:  This function will REMOVE a DSP PLATFORM load
          from the ISX flash card you specify.

Are you REALLY SURE you wish to proceed? [y/N]:
```

11   Enter **Y;**

Output similar to the following will be displayed:

For DACS II:

```
Enter Device [A=PMEM, B=SMEM]:
```

Step	Procedure

For DACS II ISX:

`Enter Device [A=MEMA, B=MEMB]:`

12 Enter **A;**

Output similar to the following will be displayed:

For DACS II:

`------------------ REMOVE FILES: PMEM DEVICE ------------------`

```
 1.   Remove SD1load              (   XXXXXX bytes)
 Q.   QUIT
```

Enter File number to remove, or "Q" to QUIT:

For DACS II ISX:

`------------------ REMOVE FILES: MEMA DEVICE ------------------`

```
 1.   Remove SD1load              (   XXXXXX bytes)
 Q.   QUIT
```

Enter File number to remove, or "Q" to QUIT:

13 Enter **1;**

Output similar to the following will be displayed:

For DACS II:

`WARNING:  This will remove SD1load on PMEM.`

`Are you REALLY sure? [y/N]:`

For DACS II ISX:

`WARNING:  This will remove SD1load on MEMA.`

`Are you REALLY sure? [y/N]:`

14 Enter **Y;**

Output similar to the following will be displayed:

For DACS II:

`File SD4load removed from PMEM.`

Step	Procedure

For DACS II ISX:

```
File SD4load removed from MEMB.
```

The DSP load utility menu will again be displayed as shown below:

```
******* DSP PLATFORM - LOAD INSTALLATION UTILITY *****

        1.   List DSPP Load Files
        2.   Install DSPP Load Files
        3.   Remove DSPP Load Files

Enter number of command [1-3], or Q to QUIT:
```

15　Repeat steps 7—14 for the memory card that resides in SMEM/MEMB. In step 12, enter **B;** for SMEM/MEMB.

16　Enter **1;** to list the DSP Platform load files on the memory cards residing in PMEM/MEMA and SMEM/MEMB

Output similar to the following will be displayed:

For DACS II:

```
DSP LOADS ON MEMORY CARDS:

========== LOADS ON PMEM: (DACS II CARD) ============
NAME        BYTES   TYPE    VERSION      DATE BUILT
---------- ------- ---- ------------- ---------------


========== LOADS ON SMEM: (DACS II CARD) ============
NAME        BYTES   TYPE    VERSION      DATE BUILT
---------- ------- ---- ------------- ---------------

----------------------------------------------------
```

Step	Procedure

For DACS II ISX:

```
DSP LOADS ON MEMORY CARDS:

========== LOADS ON MEMA: (ISX CARD) ===============
NAME         BYTES  TYPE    VERSION      DATE BUILT
----------  -------  ----  -------------  ---------------


========== LOADS ON MEMB: (ISX CARD) ===============
NAME         BYTES  TYPE    VERSION      DATE BUILT
----------  -------  ----  -------------  ---------------

----------------------------------------------------
```

⇒ **NOTE:**

The output shown indicates that there are no DSP applications installed on either memory card in slot PMEM/MEMA or SMEM/MEMB.

17 To exit the DSP Platform Load Installation Utility, enter **Q;**

The following message will then be displayed:

INSTALL QUIT

18 To restore the MC to the in-service state, enter the following command:

RST-EQPT::MC;

Where:

MC = Main Controller

If the command is denied because the memory card diagnostics failed, this may be an indication that the system could not determine which memory card to boot from. If this occurs, enter the following command line to examine the contents of the system memory devices:

RTRV-MEMSTAT;

Step	Procedure

Information will be displayed for the contents of MC RAM, PMEM/MEMA, and SMEM/MEMB. The following information will be displayed regarding the contents of each memory device that can be accessed:

- Software release of the system software

- Software release of the database

- Date and time stamp of the database

- Frame ID and Unique ID of the system.

Before the MC can be restored to the In Service state, any memory card discrepancies which may occur must be resolved. Do not reset the system if you have unresolved discrepancies.

Hardware Installation Procedure

Install the Digital Signal Processing (DSP) Platform Circuit Pack

This procedure describes how to install the Digital Signal Processing (DSP) Platform TG193B circuit pack.

Step	Procedure
1	Ground yourself to the shelf by using a wrist strap.
2	Install a TG193B circuit pack in the desired Network Processing Circuit (NPC) slot on the DACS II or DACS II ISX system.

Subrate Provisioning

4

Contents

Subrate Provisioning

4

Overview

This chapter outlines the procedures for performing each of the provisioning steps for the X.50/X.57 Subrate application.

In order to utilize the X.50/X.57 Subrate application to perform subrate cross-connections, you must provision the DSP circuit pack for use with the application. It is assumed that the facility terminating NPCs are already provisioned. There are four steps involved with the provisioning process. These steps are:

1. Growing the DSP TG193B circuit pack(s)

2. Restoring the DSP circuit pack(s)

3. Establishing the cross-connections between the appropriate facility terminating NPCs and the DSP circuit pack(s)

4. Performing the cross-connections between the subrate circuits

Each step is reversible and must be done in sequence. Therefore, the deprovisioning process should follow this order:

1. Disconnecting the subrate cross-connections

2. Disestablishing the cross-connections between the appropriate facility terminating NPCs and the DSP circuit pack(s)

3. Removing the DSP application circuit pack(s)

4. Degrowing the DSP application circuit pack(s)

Any attempt to perform these actions out of sequence will result in command denial.

One or more DSP circuit packs can be used with this application.

⇒ **NOTE:**
The subrate cross-connections cannot be performed until the DSP circuit pack is cross-connected to the appropriate channels on the facility terminating NPCs.

⇒ **NOTE:**
The following channels can not be cross-connected to the DSP circuit pack with this X.50/X.57 application:

- NPC channels that carry clear unchannelized 2.048 Mbit/s circuits

- Channels that are provisioned as test port channels

- Channels 0 and 31 of an E1 facility (except for E1 circuits provisioned as Nonsignaling Associated (NSA) when channel 31 is allowed)

Growing/Degrowing the DSP Circuit Pack for the X.50/X.57 Subrate Application

Grow the DSP Circuit Pack

Overview: This procedure describes how to grow the DSP TG193B circuit pack for the X.50/X.57 Subrate application. Growing a DSP circuit pack places the circuit pack on the DACS II/DACS II ISX equipment list.

⇒ NOTE:

The DSP circuit pack need not be physically plugged in before issuing the **CRTE-EQPT** command.

The X.50/X.57 Subrate application can run on one or more DSP TG193B circuit packs. Each DSP circuit pack used for the X.50/X.57 Subrate application must be grown in the same way.

The **CRTE-EQPT** command is described in detail in the *DACS II* and *DACS II ISX Command and Message Manuals*.

⇒ NOTE:

All of the procedures in this chapter use a generic NPC number variable. For additional information on NPC Numbering, refer to the *Introduction* section of Chapter 6.

Step	Procedure
1	Enter the following command line to grow the TG193B circuit pack for the application: **CRTE-EQPT::NPC-<p_npc>[&&[&]-<q_npc>]::SD111;** Where: **CRTE-EQPT** = Grow **NPC** = Network Processing Circuit **<p_npc>** = The NPC number that is either a single NPC or the first NPC of a range specification. The NPC number must be odd.

Step	Procedure
<q_npc> =	The optional NPC number that is the last NPC of a range specification. The NPC number must be odd.
SD111 =	Type identifier for the X.50/X.57 Subrate Application.

Degrow the DSP Circuit Pack

Overview: This procedure describes how to degrow the DSP Application TG193B circuit pack for the X.50/X.57 application. Degrowing a DSP application circuit pack removes the circuit pack from the DACS equipment list. This is the final step of the Provisioning process. Any attempt to degrow a circuit that is In-service will be denied. This command is described in detail in the *DACS II* and *DACS II ISX Command and Message Manual*.

Step	Procedure
1	Enter the following command line to degrow the TG193B circuit pack for the application:

`DISC-EQPT::NPC-<p_npc>[&&[&]-<q_npc>];`

Where:

`DISC-EQPT` = Degrow

`NPC` = Network Processing Circuit

`<p_npc>` = The NPC number that is either a single NPC or the first NPC of a range specification. The NPC number must be odd.

`<q_npc>` = The optional NPC number that is the last NPC of a range specification. The NPC number must be odd.

Restoring/Removing the DSP Application Circuit Pack for the X.50/X.57 Subrate Application

Restore the DSP Application Circuit Pack

Overview: This procedure restores a DSP circuit pack (TG193B) that has been installed in a Network Processing Circuit (NPC) slot. Restoring the DSP circuit pack places it into service.

⟹ **NOTE:**
Before restoring the DSP circuit pack, the following needs to be performed:

1. The DSP circuit pack must be physically equipped (placed in a NPC slot on the DACS II/DACS II ISX frame) before restoring the circuit pack. Refer to the "Hardware Installation Procedure" in Chapter 3.

2. The application software must be installed

The command used in this procedure can be used to restore a single NPC, or a range of NPCs. One output message is printed for each NPC requested and successfully restored.

When the command used in this procedure addresses a range of NPCs, the restoral of two or more consecutive NPCs in a range can be denied with a summary message.

When a restore command for a range of NPCs is denied for successive NPCs in the range for the same reason, the summary denial message identifies the relevant range of NPCs and the reason for denial. The generation of the remaining completion or denial responses resumes at the next NPC and continues to the end of the addressed range. Execution of this command may be stopped by entering the `ABT-CMD` command (abort).

The `RST-EQPT::NPC` command is described in detail in the *DACS II* and *DACS II ISX Operation and Maintenance Manuals*.

Step	Procedure

1   Enter the following command to restore an NPC to service:

`RST-EQPT::NPC-<p_npc>[&&[&]-<q_npc>];`

Where:

`RST-EQPT` = Restore

`NPC` = Network Processing Circuit

`<p_npc>` = The NPC number that is either a single NPC or the first NPC of a range specification. The NPC number must be odd.

`<q_npc>` = The optional NPC number that is the last NPC of a range specification. The NPC number must be odd.

Remove the DSP Application Circuit Pack

Overview: This procedure removes a DSP circuit pack (TG193B) that has been installed in a Network Processing Circuit (NPC) slot. Removing the DSP circuit pack places it out of service. This step must be performed before the circuit pack is degrown.

This command is described in detail in the *DACS II* and *DACS II ISX Operation and Maintenance Manual*.

Step	Procedure

1   Enter the following command to remove an NPC from service:

RMV-EQPT::NPC-<p_npc>[&&[&]-<q_npc>]:[INCL];

Where:

RMV-EQPT = Remove

NPC = Network Processing Circuit

<p_npc> = The NPC number that is either a single NPC or the first NPC of a range specification. The NPC number must be odd.

<q_npc> = The optional NPC number that is the last NPC of a range specification. The NPC number must be odd.

INCL = Inclusive

Establishing Subrate Channels

Establish Subrate Channel

Overview: This procedure is used to connect a channel (or a range of channels) in a facility terminating NPC to the X.50/X.57 Subrate application on the DSP platform. This procedure can also be used to connect the following:

- X.57 circuits on two X.50/X.57 Subrate application cards

- X.57 circuits on an X.50/X.57 Subrate card with DS0A circuits on a DDS Subrate application card that is based on the North American standard.

> ⇒ **NOTE:**
> A channel must be established before any subrate cross-connections can be created.

This procedure is used to establish the following types of channels:

- An X.50 channel capable of multiplexing 2.4, 4.8, 9.6, and 19.2 kbit/s circuits with 20 bit framing pattern following Division 3 of the standard and capable of multiplexing 1.2 kbit/s in stuffed mode as a 2.4 kbit/s circuit.

- An X.57 channel capable of carrying an individual 1.2, 2.4, 4.8, or 9.6 kbit/s circuit. A 1.2 kbit/s circuit will be treated as a 2.4 kbit/s circuit in all respects.

An X.50 channel is established by specifying an E1 facility, the channel number, and the field `x50`. An X.57 channel is established by specifying an E1 facility, channel number, and the `X57-rr field, where rr` can have the values 24, 48, or 96.

The signal rate of all channels in a subrate cross-connection must be compatible.

When a channel is established, it cannot already be established, cross-connected, or under test access. All channels within a specified range are established with the same parameters.

Application-to-Application Cross-connections

X.57 circuits may be connected from one X.50 Subrate application card to another X.50 Subrate application card or even to a DS0A circuit on a DDS Subrate application based on the North American standard. This is useful for two reasons:

1. Two X.57 circuits may be demultiplexed on two separate X.50 subrate application cards respectively and it may be desired to connect one of the subrate (X.57) circuits in the first X.50 channel with another subrate (X.57) circuit in the second X.50 channel.

2. If a DACS II or DACS II ISX performs a gateway function between circuits based on the International standard and circuits based on the North American standard, then it may be useful to connect X.57 circuits that have been demultipexed from an X.50 channel on an X.50 Subrate application card with a DS0A circuit that has been demultiplexed from a DS0B channel on a DDS Subrate and MJU application card based on the North American standard.

The establishment of such connections between applications uses the same command syntax used for the establishment of other channels, except that the target NPC number is the NPC number of the other application, and the channel number is a so-called pseudo channel number that is unique for a particular connection and identifies it. Pseudo channel numbers range between `001` and `999`.

The execution of such an establish command connecting one application to another must be matched by the execution of another establish command on the second application that refers to the NPC number of the first application and the same unique pseudo channel number as was used on the first application. DACS II or DACS II ISX will recognize the common channel number and will connect the two channels together. A real connection will only be made if the establish commands to both applications have been executed.

The command `RTRV-CRS-APPL` (I.51201) on DACS II and on DACS II ISX allows the user to find the pseudo channel numbers that are currently in use. To find a new number for a new application-to-application connection, the user simply picks a pseudo channel number not currently in use.

Actions taken when Channel is Established

The following actions are taken when a channel is established:

1. If the channel is an X.50 channel, the appropriate framing pattern is sent to the facility terminating NPCs.

2. The Unoccupied Multiplexer Channel (UMC) Code (default = F1111111, where F is the framing bit if X.50 channel) is sent to the facility terminating NPCs.

3. The established channel is marked as a "red" circuit, for which the `INCL` keyword must be used whenever the DSP circuit pack or facility terminating NPC is removed by the `RMV-EQPT` command.

   Also, the subrate establish channel has no effect on the customer controlled marking status of channels in DACS II (not DACS II ISX) that previously have been marked with the `CUS` keyword. The `CUS` marking is disabled while the channel is established to the subrate feature, but is enabled again once the channel is disestablished.

4. The Insertion Word (IW) for the channel on the facility terminating NPC is provisioned with the Multiplexer-out-of-Synch (MUX) code, default = 11111111. This pattern is sent if DACS II/DACS II ISX detects a failure on the DSP circuit pack that is connected to that channel.

Step	Procedure
1	Enter the following command line to establish a cross-connection between a channel (or a range of channels) on a facility terminating NPC to the DSP circuit pack:

```
EXC-DSPC::<p_npc>::CRTE-CRS-TS:<t_npc>-ddd[&&-eee]:\
{X50|X57-rr}:::[UMC-X-uu]:[MUX-X-yy][:SIG-X-a];
```

Where:

`EXC-DSPC` =	Execute on DSP application circuit pack.
`<p_npc>` =	NPC number of DSP application circuit pack.
`CRTE-CRS-TS` =	Establish cross-connected channel to subrate application.
`<t_npc>` =	Number of facility terminating NPC
`ddd` =	Channel number on facility terminating NPC
`eee` =	Channel number for end of range, if a range is specified.
`X50` =	Defines the channel as an X.50 subrate circuit.

Step	Procedure
	X57 = Defines the channel as an X.57 subrate circuit.
	rr = Rate of X.57 channel (24, 48, or 96), corresponding to 2.4, 4.8, and 9.6 kbit/s circuits respectively.
	UMC = Defines the Unoccupied Multiplexer Channel code.
	uu = The UMC code in 8-bit hex notation (default = X'FF).
	MUX = Defines the MUltipleXer out-of-synchronization code.
	yy = The MUX code in 8-bit hex notation (default = X'FF).
	SIG = Defines the SIGnaling bits.
	a = The SIG code in 4-bit hex notation (default = X'F).

Change Subrate Channel Defaults

Overview: This procedure is used to change the default bit patterns for the Unoccupied Multiplexer Channel (UMC), Multiplexer out of Synchronization (MUX), and the Signaling (SIG) codes.

The default bit patterns for the UMC and the MUX bit pattern are 8 bits of all "1"s. The UMC pattern is sent when a subrate circuit in a multiplex of an X.50 channel is not occupied. The MUX pattern is sent when a subrate out-of-frame condition exists. This command is used to change those defaults.

The SIG bit pattern specifies the "a,b,c,d" signaling bits that are sent from the subrate application to the NPC, which then in turn are used to set the signaling bits in CAS Time Slot 16. The default setting for the four signaling bits is all "1"s. This command is used to change that default.

When this command is executed, the defaults change as of that moment; there will be no retroactive changes to circuits that are already established. Also, the defaults can still be changed for individual circuits at the time new channels are established.

This command can be applied in three ways:

- If an individual DSP application circuit pack with the subrate application is addressed, the default change applies to only that circuit pack.

- If a range of DSP Application circuit packs is addressed, then it applies to that range.

- If the DSP Application circuit packs are addressed by type, then it applies to all DSP Application circuit packs of that type for an entire DACS II or DACS II ISX frame.

Step	Procedure

1   Enter the following command to change the default codes of the UMC, MUX, or the SIG codes:

```
EXC-DSPC::{<p_npc>|<p_npc>&&[&]-<q_npc>|SD111}::\
ED-PRMTR-TS:DEFAULT:[UMC-X-uu]:[MUX-X-yy][:SIG-X-a];
```

Where:

EXC-DSPC	= Execute on DSP application circuit pack.
<p_npc>	= NPC number of DSP application circuit pack.
<q_npc>	= End of range NPC number of the DSP application circuit packs.

Step	Procedure
SD111 =	Type field that addresses all DSP application circuit packs that run the application.
ED-PRMTR-TS:DEFAULT =	Change defaults for UMC, MUX, and SIG codes.
UMC =	Defines the Unoccupied Multiplexer Channel code.
uu =	The UMC code in 8-bit hex notation (default = X'FF).
MUX =	Defines the MUltipleXer out-of-synchronization code.
yy =	The MUX code in 8-bit hex notation (default = X'FF).
SIG =	Defines the SIGnaling bits.
a =	The SIG code in 4-bit hex notation (default = X'F).

Query Subrate Channel Defaults

Overview: This procedure is used to return the default bit patterns for the UMC, MUX, and SIG codes. The default bit patterns for the UMC and the MUX codes are 8 bits of all "1's", unless changed by the **ED-PRMTR-TS:DEFAULT** command. The default bit patterns for the SIG code is 4 bits of all "1's", unless changed by the **ED-PRMTR-TS:DEFAULT** command.

Step	Procedure

1   Enter the following command to change the default codes of the UMC, MUX, or the SIG codes:

```
EXC-DSPC:[<xy>]:{<p_npc>|<p_npc>&&[&]-<q_npc>|SD111}:[<ww>]:\
RTRV-PRMTR-TS:DEFAULT;
```

Where:

EXC-DSPC =	Execute on DSP application circuit pack.
<p_npc> =	NPC number of DSP application circuit pack.
<q_npc> =	End of range NPC number of the DSP application circuit packs.
SD111 =	Type field that addresses all DSP application circuit packs that run the application.
RTRV-PRMTR-TS:DEFAULT =	Query defaults for UMC, MUX, and SIG codes.

Disestablish Subrate Channel

Overview: This procedure is used to disestablish a channel (or a range of channels) in a facility terminating NPC from the subrate application residing on the DSP circuit pack. This command also disestablishes application-to-application connections.

The disestablish command additionally supports the following:

- Disestablishment of a range of X.50 and X.57 channels.

- Sending the UMC code (for an explanation of the UMC code see the channel establish command) towards the facility that is to be disestablished. The `DCC` keyword must be used for that purpose.

- Disestablishment of channels connected to another DSP Application. The channel number must be the pseudo channel number used when the connection was created. In order to completely remove the application-to-application connection, a disestablishment command must also be issued to the other application involved in the connection. See application command `CRTE-CRS-TS,X57` (I.91311) for information on how to establish application-to-application connections. Also see DACS II or DACS II ISX command `RTRV-CRS-APPL` (I.51201) for information on all pseudo channel numbers currently in use on the frame.

⇒ **NOTE:**
Disestablishment can only be done after all subrate cross-connections are disconnected.

Step	Procedure

1 Enter the following command line to disestablish a channel:

```
EXC-DSPC::<p_npc>::DLT-CRS-TS:<t_npc>-ddd[&&-eee]:\
[:DCC];
```

Where:

    `EXC-DSPC` = Execute on DSP application circuit pack.

    `<p_npc>` = NPC number of DSP application circuit pack.

    `DLT-CRS-TS` = Delete a channel from the subrate application.

    `<t_npc>` = Number of facility terminating NPC.

    `ddd` = Channel number on that NPC.

Step	Procedure

eee = Channel number for end of range, if one is specified.

DCC = Disconnect Code

DCC causes the Unoccupied Multiplexer Channel (UMC) control code to be inserted in the disestablished channel(s) towards the facility. If **DCC** is not specified, the disconnect code specified in the **CRTE-EQPT::NPC** command associated with the specified NPC is used.

Change Established Subrate Channel

Overview: This procedure moves an established subrate channel (X.50 or X.57) and all associated subrate cross-connections from an existing NPC and channel to a new NPC and channel. When the command is executed, the old channel is left disestablished and the new channel is established with exactly the same format (rate, X.50/X.57 format) as the old channel. In effect, this command combines the operations of the **DISC-CRS-TS**, **DLT-CRS-TS**, **CRTE-CRS-TS**, and the **CONN-CRS-TS** commands that would be necessary to make the same change.

The following restrictions apply prior to issuing this command:

- The new channel must not be established or used in any DACS II/DACS II ISX cross-connection unless it is already established with exactly the same format as the old channel.

- No prior subrate cross-connections can be present on the new channel.

- None of the old or new established channels nor any portion of the subrate circuits associated with them can be under test access.

- At least one channel of the DSP application card must be available.

Step	Procedure

1   Enter the following command to change a subrate channel and all associated subrate cross-connections from an existing NPC and channel to a new NPC and channel:

**EXC-DSPC::<p_npc>::ED-CRTE-TS:<f_npc>-ddd[&&-eee],\
<t_npc>-jjj[&&-kkk]:[:DCC];**

Where:

   EXC-DSPC = Execute on DSP application circuit pack.

   <p_npc> = NPC number of DSP application circuit pack.

   ED-CRTE-TS = Change (edit) channels containing subrate circuits.

   <f_npc> = Number of OLD facility terminating NPC

   ddd = Channel number on OLD facility terminating NPC

   eee = Channel number for end of OLD range

   <t_npc> = Number of NEW facility terminating NPC

   jjj = Channel number on NEW facility terminating NPC

Step	Procedure

kkk = Channel number for end of NEW range

DCC = Disconnect code

This optional keyword causes the UMC code to be inserted in the **OLD** channel(s) towards the facility terminating NPC **<f_npc>**. If keyword is not present, the disconnect code specified in the command used to provision NPC **<f_npc>** is used.

Cross-connecting Subrate Circuits

Cross-connect Subrate Circuits

Overview: This procedure is used to perform subrate cross-connections. In contrast to regular cross-connections between 64 kbit/s circuits, the cross-connections between subrate circuits are done on the TG193B circuit pack, not on the DACS II/DACS II ISX cross-connection network.

⇒ **NOTE:**
The subrate cross-connections cannot be performed until the DSP circuit pack is cross-connected to the appropriate facility terminating NPCs (see the *Establish Subrate Channel* procedure previously described).

The subrate circuit number fields are optional for X.57 terminations; if not specified, the default value is 1-1.

Step	Procedure

1 Enter the following command line to create a cross-connection for a subrate circuit:

```
EXC-DSPC::<p_npc>::CONN-CRS-TS:<f_npc>-ddd[-f-f],\
<t_npc>-jjj[-l-l]:RATE-rr[:NORM,NORM];
```

Where:

EXC-DSPC =	Execute on DSP application circuit pack.
<p_npc> =	NPC number of DSP application pack.
CONN-CRS-TS =	Cross-connect two subrate circuits to each other.
<f_npc>-ddd[-f-f] =	From termination

Where:

<f_npc>	Number of FROM facility terminating NPC
ddd	Channel number on that facility terminating NPC
f-f	Subrate circuit number in that channel

Step	Procedure

<t_npc>-jjj[-l-l] = To termination

Where:

<t_npc> Number of TO facility terminating NPC

jjj Channel number on that facility terminating NPC

l-l Subrate circuit number in that channel

The channels **<f_npc>-ddd** and **<t_npc>-jjj** must be established using a subrate establish command before they can be cross-connected.

RATE = Rate at which the FROM and TO subrate circuits are cross-connected.

rr = Circuit rate number (24, 48, or 96)

rr	rate in kb/s	supported by
24	2.4	X.50, X.57
48	4.8	X.50, X.57
96	9.6	X.50, X.57
19	19.2	X.50

A rate of 1.2 kbit/s is supported as a 2.4 kbit/s circuit in stuffed mode.

NORM,NORM = (Optional) Normal termination state.

Cross-connect Subrate Circuits in Terminated State

Overview: This procedure is used to create a terminated subrate cross-connection in both the FROM and TO directions. The UMC is inserted in both direrctions.

⇒ NOTE:

The subrate cross-connections cannot be performed until the DSP circuit pack is cross-connected to the appropriate facility terminating NPCs (see the *Establish Subrate Channel* procedure previously described).

The subrate circuit number fields are optional for X.57 terminations; if not specified, the default value is 1-1.

Step	Procedure

1 Enter the following command line to create a terminated cross-connection for a subrate circuit:

```
EXC-DSPC::<p_npc>::CONN-CRS-TS:<f_npc>-ddd[-f-f],\
<t_npc>-jjj[-l-l]:RATE-rr:TERM,TERM;
```

Where:

EXC-DSPC =	Execute on DSP application circuit pack.
<p_npc> =	NPC number of DSP application pack.
CONN-CRS-TS =	Cross-connect two subrate circuits to each other.
<f_npc>-ddd[-f-f] =	From termination

Where:

<f_npc>	Number of FROM facility terminating NPC
ddd	Channel number on that facility terminating NPC
f-f	Subrate circuit number in that channel

Step	Procedure
<t_npc>-jjj[-l-l] =	To termination
	Where:
	<t_npc> Number of TO facility terminating NPC
	jjj Channel number on that facility terminating NPC
	l-l Subrate circuit number in that channel
	The channels **<f_npc>-ddd** and **<t_npc>-jjj** must be established using a subrate establish command before they can be cross-connected.
RATE =	Rate at which the FROM and TO subrate circuits are cross-connected.
rr =	Circuit rate number (24, 48, or 96)

rr   rate in kb/s   supported by

24   2.4   X.50, X.57
48   4.8   X.50, X.57
96   9.6   X.50, X.57
19   19.2   X.50

A rate of 1.2 kbit/s is supported as a 2.4 kbit/s circuit in stuffed mode.

TERM,TERM =	Terminated state

Change Termination State of Subrate Circuits

Overview: This procedure is used to change the terminate and leave state of the cross-connection associated with a subrate circuit. The termination point is defined in terms of an external facility termination (that is, an NPC, channel, and subrate circuit number). If the termination point specified is under test or is not cross-connected, the command will be denied.

⚠ **CAUTION:**
The UMC is inserted towards the direction that is terminated, potentially causing a loss of service.

The command used in this procedure cannot be used to change the terminate and leave status of the entire X.50 channel (that is, all subrate circuits within the X.50 channel at once). Also, the command cannot be used to change the terminate and leave status of an external facility termination that is looped on itself.

The termination state resulting from the command depends on the state prior to the command as indicated by Table 4-1. In that table:

            R = Released State
            F = FROM State
            T = TO State
            B = BOTH States
       TERM = Activate Terminate and Leave State
         RLS = Release Terminate and Leave State

Table 4-1. Termination States

PRIOR STATE	REQUESTED CHANGE	NEW STATE	PRIOR STATE	REQUESTED CHANGE	NEW STATE
R	TERM F	F	R	RLS F	DNY
R	TERM T	T	R	RLS T	DNY
R	TERM B	B	R	RLS B	DNY
F	TERM F	DNY	F	RLS F	R
F	TERM T	B	F	RLS T	DNY
F	TERM B	B	F	RLS B	R
B	TERM F	DNY	B	RLS F	T
B	TERM T	DNY	B	RLS T	F
B	TERM B	DNY	B	RLS B	R
T	TERM T	DNY	T	RLS T	R
T	TERM F	B	T	RLS F	DNY
T	TERM B	B	T	RLS B	R

Step	Procedure

1   Enter the following command line to change the termination and leave state of a subrate cross-connection:

   `EXC-DSPC::<p_npc>::ED-PRMTR-TS:<t_npc>-ddd[-ff]:\`
   `{TERM|RLS}m;`

   Where:

   `EXC-DSPC` = Execute on DSP application circuit pack.

   `<p_npc>` = NPC number of DSP application circuit pack.

   `ED-PRMTR-TS` = Change the terminate and leave state as directed by the `TERM` and `RLS` parameters.

   `TERM` = Terminate

   `RLS` = Release

   The requested termination state change is indicated by the `TERM` or `RLS` keywords where `TERM` activates and `RLS` releases the terminate and leave state.

Step	**Procedure**

m = Requested termination state.

m	*Explanation*
F	FROM - Terminate or release the FROM side.
T	TO - Terminate or release the TO side.
B	BOTH - Terminate or release BOTH sides.

The TO direction is defined as facing towards the external facility termination indicated by the NPC, channel, and subrate circuit number.

<t_npc> = Number of TO facility terminating NPC.

ddd = Channel number on that facility terminating NPC.

f-f = Subrate circuit number.

Disconnect Subrate Circuits

Overview: This procedure disconnects the **FROM** and **TO** subrate circuits in both directions. The channels **<f_npc>-ddd** and **<t_npc>-jjj** must have been previously cross-connected using either the **CONN-CRS-TS,[NORM]** or the **CONN-CRS-TS,TERM** command before they can be disconnected.

The optional **RATE-rr** field defines the rate at which the FROM and TO circuits were cross-connected. If specified, it must be the same rate as originally appeared in either the **CONN-CRS-TS,[NORM]** or **CONN-CRS-TS,TERM** command.

Step	Procedure

1   Enter the following command lines to disconnect a subrate cross-connection:

```
EXC-DSPC::<p_npc>::DISC-CRS-TS:<f_npc>-ddd[-f-f],\
<t_npc>-jjj[-l-l][:RATE-rr];
```

Where:

EXC-DSPC =	Execute on DSP application circuit pack.
<p_npc> =	NPC number of DSP application circuit pack.
DISC-CRS-TS =	Disconnect subrate circuits previously cross-connected
<f_npc>-ddd[-f-f] =	From termination

Where:

<f_npc>	Number of FROM facility terminating NPC
ddd	Channel number on that facility terminating NPC
f-f	Subrate circuit number in that channel

<t_npc>-jjj[-l-l] = To termination

Where:

<t_npc>	Number of TO facility terminating NPC
jjj	Channel number on that facility terminating NPC
l-l	Subrate circuit number in that channel

Step	Procedure
	RATE = Rate at which the FROM and TO subrate circuits are cross-connected
	rr = Circuit rate (24, 48, 96, or 19) corresponding to 2.4, 4.8, 9.6, or 19.2 kbit/s respectively

Query Subrate Cross-connection Status

Overview: This procedure is used to request a report on the FROM channel connectivity for each subrate circuit in the established channel or range of established channels.

Only one subrate circuit will be reported for an X.57 channel.

The report also displays the following information:

■ The channel number of the subrate application circuit pack that the channel **<t_npc>-ddd** is established to.

■ The UMC, MUX, and SIG values for the channel.

Step	Procedure

1 Enter the following command line to retrieve subrate cross-connection information:

```
EXC-DSPC::{<p_npc>|<p_npc>&&[&]-<q_npc>|SD111}:\
RTRV-CRS-TS:<t_npc>-ddd[&&-eee];
```

Where:

EXC-DSPC =	Execute on DSP application circuit pack.
<p_npc> =	NPC number of DSP application circuit pack or beginning of range.
<q_npc> =	NPC number for end of range.
SD111 =	Type designation for DSP application circuit pack addressing all circuit packs running that application.
RTRV-CRS-TS =	Query for information on FROM circuits connected to a particular TO circuit.
<t_npc> =	NPC number of TO facility terminating NPC.
ddd =	Channel number on that facility terminating NPC.
eee =	Highest channel number for range of channel numbers.

Query Subrate Circuit Trace

Overview: This procedure is used to request a circuit trace report for the subrate circuit identified as the TO side. The circuit trace report displays the following information:

1. The NPC number, the channel number, and the subrate circuit number for the FROM side of the cross-connection (even if the TO side is temporarily connected to a test port channel).

2. The channel number of the subrate application circuit pack that the FROM circuit is connected to.

3. The channel number of the subrate application circuit pack that the TO circuit is connected to.

4. The rate of the circuit.

5. Whether the circuit is terminated and which side is terminated.

6. Whether the circuit is under test access and the state of the test access.

7. The identity of the test port for the TO circuit, if the TO circuit is in monitor or split mode.

If the circuit is not cross-connected, the command will still work, but answers for the FROM side will say NOT CROSS-CONNECTED and the rate will be answered as UNKNOWN, unless it is an X.57 circuit.

Step	Procedure

1   Enter the following command line to retrieve subrate circuit trace information:

```
EXC-DSPC::{<p_npc>|<p_npc>&&[&]-<q_npc>|SD111}::\
RTRV-EQPT-TS:<t_npc>-ddd[-f-f]:SRHDW;
```

Where:

EXC-DSPC = Execute on DSP application circuit pack.

<p_npc> = NPC number of DSP application circuit pack or beginning of range.

<q_npc> = NPC number for end of range.

SD111 = Type designation for DSP application circuit pack addressing all circuit packs running that application.

RTRV-EQPT-TS = Query for information.

Step	Procedure
\<t_npc\> =	NPC number of TO facility terminating NPC.
ddd =	Channel number on that facility terminating NPC.
eee =	Highest channel number for range of channel numbers.
f-f =	Subrate circuit number in that channel (Required parameter except for X.57 circuits)
SRHDW =	Retrieve information on individual subrate (customer) circuit.

Subrate Test Access

5

Contents

Subrate Test Access

5

Overview

The X.50/X.57 Subrate application supports cross-connections and test access of Digital Data Networks (DDNs) operating at the 1.2, 2.4, 4.8, and 9.6 kbit/s data rates.

Test access can perform four different functions:

- Monitor

  — Monitor mode is the only mode that can be requested when a test access connection is created. In Monitor mode, data transmission in the tested circuit is not interrupted.

- Split

  — Split mode creates a two-way transmission between each side of the circuit under test and the test access NPC. In Split mode, data transmission in the tested circuit is interrupted.

- Terminated

  — Terminated mode can be entered from the Monitor or Split modes. This allows the ability to place one or both directions of the circuit under test in the Terminated mode. When in Terminated mode, the Unoccupied Multiplexer Code (UMC) bit pattern is sent towards the external facility.

- Released

— Released mode returns the test port to idle, enabling the circuit to resume normal transmission operation. The circuit will remain in the Terminated state if it was in the Terminated state before test access.

Test access connections use regular DACS II or DACS II ISX test ports. A test port contains two channels called the lower test access channel and the upper test access channel.

Test ports may be provisioned on test port NPCs grown in the usual manner. The facility side of such a test port NPC must be connected to test equipment in the usual manner. If the test port is connected to a subrate circuit that is not cross-connected, then the test port is UNMAPPED. For an UNMAPPED test port, no signal is connected to its lower test access channel.

An entire X.50 channel is always considered MAPPED, even when no subrate cross-connection is associated with it. For that case, the upper test access channel faces the external facility and the lower test access channel faces the internal subrate multiplexer/de-multiplexer.

Creating Test Access Connections

Create Subrate Test Access - Monitor Mode

Overview: This procedure is used to create a test access connection in Monitor mode for a subrate circuit. Additionally, this procedure can be used to create test access for an entire X.50 channel that carries subrate circuits.

When creating a test access connection, the connection can only be created in Monitor mode. The mode can be changed after the creation by using the `CHG-TACC-TS` command described later in this chapter.

Step	Procedure

1   Enter the following command line to create a test access connection for a subrate circuit:

`EXC-DSPC::<p_npc>::CONN-TACC-TS:<t_npc>-ddd[-f-f]:\`
`kk:MON[:RATE-rr];`

Where:

`EXC-DSPC` = Execute on DSP Application circuit pack.

`<p_npc>` = NPC number of DSP Application circuit pack.

`CONN-TACC-TS` = Create test access connection.

`<t_npc>` = Number of TO facility terminating NPC.

`ddd` = Channel number on that facility terminating NPC.

`f-f` = Subrate circuit number in that channel.

The `<t_npc>-ddd[-f-f]` external facility termination is connected to the upper test access channel within the test port.

Variable `<t_npc>-ddd[-f-f]` specifies the NPC, channel, and subrate circuit numbers to be connected to the test port. If a multiplexed X.50 channel is tested, the subrate circuit number `f-f` is omitted. To test a single subrate circuit in an X.50 channel, the subrate circuit number field must be specified. When the tested channel is a nonmultiplexed (X.57) channel, the subrate circuit number is listed as `1-1`, or the user can omit the subrate circuit number and the system will default the value to 1-1.

Step	Procedure

        kk = Number of Test Port (01 through 96)

     MON = Monitor Mode

  RATE = Subrate circuit rate.

            This keyword is required when the specified
            termination is Unassigned.

       rr = Subrate circuit rate value (24, 48, or 96)

Change Subrate Test Access - Split or Monitor Mode

Overview: This procedure changes a test access connection previously started in Monitor mode to Split mode. Conversely, if the test access connection was in Split mode, this command can put it back into Monitor mode. Test access connections for subrate circuits as well as entire X.50 circuits can be put into Split mode or changed from Split mode to Monitor mode.

⚠️ **CAUTION:**
In Split mode, data transmission in the tested circuit is interrupted. Split test access to an X.50 channel carrying multiple subrate circuits can potentially cause loss of service to as many subrate circuits as are occupying that channel.

The test access NPC number and channel number that was used in a previous test access command creating the test access connection in Monitor mode must be specified.

Step	Procedure

1   Enter the following command line to change the Split/Monitor mode of a test access channel:

    `EXC-DSPC::<p_npc>::CHG-TACC-TS::kk:{SPLT|MON};`

    Where:

        `EXC-DSPC` = Execute on DSP Application circuit pack.

        `<p_npc>` = NPC number of DSP Application circuit pack.

   `CHG-TACC-TS` = Change mode of test access connection.

           `kk` = Number of Test Port (01 through 96)

        `SPLT` = Split Mode

        `MON` = Monitor Mode

Change Subrate Test Access Termination State

Overview: This procedure changes a circuit under test access from the Released to the Terminated (Terminate and Leave Active) state. Conversely, this procedure can also change a circuit under test access from the Terminated to the Released state.

⚠ CAUTION:

UMC is inserted towards the direction that is Terminated, potentially causing a loss of service.

⟹ NOTE:

Before using this command, the circuit must be connected to a test access channel and must be either in Monitor mode or in Split mode.

If a subrate circuit is not under test access, it can be Terminated or Released (if previously Terminated) by using the **ED-PRMTR-TS,TERM|RLS** command located in the section entitled *Change Terminated and Leave State* in Chapter 4.

This procedure can only be used on cross-connected subrate circuits. It cannot be used during test access to entire X.50 channels that carry multiple subrate circuits or to unmapped (established but not cross-connected) external facility terminations. It also cannot be used for subrate circuits that are looped on themselves.

The termination state resulting from the command depends on the state prior to the command as indicated by Table 5-1. In that table:

$$
\begin{aligned}
R &= \text{Released State} \\
F &= \text{FROM State} \\
T &= \text{TO State} \\
B &= \text{BOTH States} \\
TERM &= \text{Activate Terminate and Leave State} \\
RLS &= \text{Release Terminate and Leave State}
\end{aligned}
$$

Table 5-1. Termination States

PRIOR STATE	REQUESTED CHANGE	NEW STATE	PRIOR STATE	REQUESTED CHANGE	NEW STATE
R	TERM F	F	R	RLS F	DNY
R	TERM T	T	R	RLS T	DNY
R	TERM B	B	R	RLS B	DNY
F	TERM F	DNY	F	RLS F	R
F	TERM T	B	F	RLS T	DNY
F	TERM B	B	F	RLS B	R
B	TERM F	DNY	B	RLS F	T
B	TERM T	DNY	B	RLS T	F
B	TERM B	DNY	B	RLS B	R
T	TERM T	DNY	T	RLS T	R
T	TERM F	B	T	RLS F	DNY
T	TERM B	B	T	RLS B	R

Step	Procedure

1   Enter the following command line to change the termination state of a test access circuit:

   EXC-DSPC::<p_npc>::CHG-TL-TS::kk:{TERM|RLS}{F|T|B};

   Where:

   EXC-DSPC = Execute on DSP Application circuit pack.

   <p_npc> = NPC number of DSP Application circuit pack.

   CHG-TL-TS = Change termination state of test access connection.

   kk = Number of Test Port (01 through 96).

   TERM = Terminate and Leave active of the test point.

   RLS = Release test point from Terminate and Leave state.

   F = FROM direction - applies to either the **TERM or RLS** keyword preceding it.

Step	Procedure

T = TO direction - applies to either the **TERM or RLS** keyword preceding it.

B = BOTH directions - applies to either the **TERM or RLS** keyword preceding it.

Release a Subrate Circuit from Test Access

Overview: This procedure releases a subrate circuit from test access and restores the circuit to its original Terminated or Released mode of operation.

Step	Procedure

1   Enter the following command line to release a subrate circuit from test access:

    EXC-DSPC::<p_npc>::DISC-TACC-TS::kk;

    Where:

        EXC-DSPC = Execute on DSP Application circuit pack.

        <p_npc> = NPC number of DSP Application circuit pack.

    DISC-TACC-TS = Disconnect test access connection.

           kk = Number of Test Port (01 through 96).

Release Multiple Subrate Circuits from Test Access

Overview: This procedure releases multiple subrate circuits from test access and restores the circuits to their original Terminated or Released mode of operation.

Step	Procedure

1　Enter the following command line to release a subrate circuit from test access:

EXC-DSPC::<p_npc>::DISC-TACC-TS::{ALL|LINKS};

Where:

EXC-DSPC = Execute on DSP Application circuit pack.

<p_npc> = NPC number of DSP Application circuit pack.

DISC-TACC-TS = Disconnect test access connection.

ALL = All

This keyword causes the release of only those test access channels whose test access was last operated on by administrative link **n[vv]**, which is the link over which this command is transmitted also. If this command is issued over a different link, it will have no effect on this particular test access connection.

LINKS = Links

This keyword causes all test access channels for the addressed DSP Application circuit pack running the X.50 Subrate application to be released, regardless over which administrative link the test access connection had been initiated.

Query Test Port Status

Overview: This procedure is used to request a status report for any test ports established to a DSP circuit pack running the X.50/X.57 Subrate application. The report will indicate whether the established test port is in either Monitor or Split mode.

Step	Procedure

1 Enter the following command line to request a test port status report:

```
EXC-DSPC::{<p_npc>|<p_npc>&&[&]-<q_npc>|SD111}::\
RTRV-TACC-T1;
```

Where:

EXC-DSPC =	Execute on DSP Application circuit pack.
<p_npc> =	NPC number of a DSP Application circuit pack.
<p_npc>&&[&]-<q_npc> =	NPC numbers for a range of DSP Application circuit packs.
SD111 =	All X.50/X.57 Subrate application circuit packs in the frame.
RTRV-TACC-T1 =	Retrieve test port status.

Commands and Messages

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Commands and Messages

6

Introduction

Explanation Of Command

1. Common Material for all Commands

This chapter documents all commands and messages for the X.50/X.57 Subrate application for both DACS II and DACS II ISX. The reader of this Command and Message chapter should become familiar with this introduction before perusing any of the individual command explanations.

In an effort to reduce redundancy in the individual command descriptions, a common syntax has been adopted to represent the hierarchical and non-hierarchical numbering of NPCs[*]. An example of a subrate cross-connect command using that syntax is:

```
EXC-DSPC:[<xy>]:<p_npc>:[<ww>]:CONN-CRS-TS:<f_npc>-ddd[-f-f],\
<t_npc>-jjj[-l-l]:RATE-rr;
```

Please note that each npc is identified as a variable string of the form `<p_npc>,` `<f_npc>,` or `<t_npc>`. The exact notation is defined below in this introduction and depends on what NPC addressing scheme the user chooses when running on a DACS II. ON DACS II ISX only 3-digit sequential addressing is used.

In addition, other common notations and explanations are given here that have not been repeated in the individual command descriptions.

---

[*]   In previous DACS II documents the NPC numbering has been described in individual commands.

The following items are covered in this introduction:

1. NPC Numbering

2. Channel numbering within NPCs

3. Prefix Notation for all Application Commands

4. Syntax Errors

2. NPC Numbering

For those readers not familiar with the concept of Network Processing Circuits (NPCs) and how they are addressed, here is a short explanation.

In DACS II and DACS II ISX the circuit that terminates an E1 facility is called a Network Processing Circuit (NPC). Physically these NPCs are packaged two together on what is called a Dual-Primary Card. Dual-Primary Cards are provisioned in units that are called Facility Terminating Units (FTUs) or Integrated Facility Terminating Units (IFTUs) on DACS II and Network Processing Modules (NPMs) on DACS II ISX. The physical position of a Dual-Primary Card determines its number, and it is that NPC number that is used to address the NPC.

DSP Application circuit packs (TG193Bs), on which this application (the X.50/X.57 Subrate application) runs, are also physically plugged into the same kind of card slot that is used for the Dual-Primary Cards. Thus the application cards plug into an IFTU (or FTU) on DACS II or an NPM on DACS II ISX. DSP Application cards use only the odd NPC number that is tied to the slot into which they are plugged into; the even NPC number associated with the slot is not used.

On both DACS II and DACS II ISX each DSP application card supports 64 channels that may be cross-connected to facility terminating NPCs or to other DSP application cards. In order for this to be true in a DACS II that supports a gateway function between International and North American circuits, the DSP application card must be provisioned in a Facility Terminating Module (FTM) that is provisioned for International circuits (E1s) and not for North American circuits (DS1s).

While the X.50 subrate application is primarily an application that is used with circuits adhering to International standards, it is possible and allowed for X.50 circuits to be carried within circuits that adhere to the North American standard. This capability may be particularly useful for DACS IIs that support gateway functionality between International (E1) circuits and North American (DS1) circuits. It is for this reason that NPC and channel addressing will be addressed here for both the International and the North American standard.

The DACS II ISX and DACS II NPC addressing scheme are explained in detail in the text that follows.

2.1 NPC Numbering for DACS II ISX

Within the DACS II ISX frame all NPCs are addressed sequentially. Each of the four Network Processing Modules (NPMs) in a DACS II ISX frame holds up to 32 NPCs of type PA or DA. The assignment of NPC numbers is as follows:

Module 1	Module 2	Module 3	Module 4
NPC 001-032	NPC 033-064	NPC 065-096	NPC 097-128

If a DACS II ISX has Low Speed Interface Units (LSIUs) provisioned, then only Modules 1 and 2 are provisionable for ordinary PA or DA type NPCs. In place of Modules 3 and 4 up to 8 LSIUs may be provisioned. The LSIUs hold NPCs numbered between 65 and 128. The detailed NPC assignments by LSIU are:

LSIU 1	LSIU 2	LSIU 3	LSIU 4
NPC 065-072	NPC 073-080	NPC 081-088	NPC 089-096

LSIU 5	LSIU 6	LSIU 7	LSIU 8
NPC 097-104	NPC 105-112	NPC 113-120	NPC 121-128

2.2 NPC Numbering for DACS II

DACS II has two major ways of addressing NPCs. They are addressed either via a sequential or a hierarchical scheme. The sequential scheme divides further into a 3-digit and a 4-digit variant. The 3-digit sequential addressing scheme can only address NPCs if the DACS II is no larger than 6 units. For DACS II frames that are larger than 6 units, the 4-digit variant of the sequential addressing scheme must be used. The NPC addressing scheme is an attribute of the craft link over which the commands to DACS II are issued or an attribute of the user-id. (See the DACS II documentation for the commands that set and/or change the NPC addressing scheme for a craft link.)

2.2.1 Sequential 3-digit NPC Numbering for E1 Terminations

Below is the 3-digit sequential NPC numbering scheme for DACS II that may be used for units 1 through 6 for PA, PB, or PC type NPCs that terminate E1 circuits. DSP Application NPCs (SD types) may be provisioned in an FTM provisioned for PA, PB, or PC type NPCs. Only odd NPC numbers apply to DSP Application NPCs; the even NPC numbers following an odd application NPC number are not used and are skipped. The valid values are:

Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6
NPC	NPC	NPC	NPC	NPC	NPC
001-032	161-192	321-352	481-512	641-672	801-832
041-072	201-232	361-392	521-552	681-712	841-872
081-112	241-272	401-432	561-592	721-752	881-912
121-152	281-312	441-472	601-632	761-792	921-952

2.2.2 Sequential 4-digit NPC Numbering for E1 Terminations

Below is the 4-digit sequential NPC numbering scheme for DACS II for PA, PB, or PC type NPCs that terminate E1 circuits. NPCs in all units in a DACS II frame (1 through 16) may be addressed using 4-digit sequential NPC numbers. DSP Application NPCs (SD types) may be provisioned in an FTM provisioned for PA, PB, or PC type NPCs. Again, only odd NPC numbers apply to DSP Application NPCs; the even NPC numbers following an odd application NPC number are skipped. The valid values are:

Unit 1	Unit 2	Unit 3	Unit 4
NPC	NPC	NPC	NPC
0001-0032	0161-0192	0321-0352	0481-0512
0041-0072	0201-0232	0361-0392	0521-0552
0081-0112	0241-0272	0401-0432	0561-0592
0121-0152	0281-0312	0441-0472	0601-0632

Unit 5	Unit 6	Unit 7	Unit 8
NPC	NPC	NPC	NPC
0641-0672	0801-0832	0961-0992	1121-1152
0681-0712	0841-0872	1001-1032	1161-1192
0721-0752	0881-0912	1041-1072	1201-1232
0761-0792	0921-0952	1081-1112	1241-1272

Unit 9	Unit 10	Unit 11	Unit 12
NPC	**NPC**	**NPC**	**NPC**
1281-1312	1441-1472	1601-1632	1761-1792
1321-1352	1481-1512	1641-1672	1801-1832
1361-1392	1521-1552	1681-1712	1841-1872
1401-1432	1561-1592	1721-1752	1881-1912

Unit 13	Unit 14	Unit 15	Unit 16
NPC	**NPC**	**NPC**	**NPC**
1921-1952	2081-2112	2241-2272	2401-2432
1961-1992	2121-2152	2281-2312	2441-2472
2001-2032	2161-2192	2321-2352	2481-2512
2041-2072	2201-2232	2361-2392	2521-2552

2.2.3 Sequential 3-digit NPC Numbering for DS1 Terminations

Below is the 3-digit sequential NPC numbering scheme for DACS II that may be used for units 1 through 6 for DA and DE type NPCs. The valid values are:

Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6
NPC	**NPC**	**NPC**	**NPC**	**NPC**	**NPC**
001-160	161-320	321-480	481-640	641-800	801-960

2.2.4 Sequential 4-digit NPC Numbering for DS1 Terminations

Below is the 4-digit sequential NPC numbering scheme for DACS II frames for DA and DE type NPCs. The valid values are:

Unit 1	Unit 2	Unit 3	Unit 4
NPC	**NPC**	**NPC**	**NPC**
0001-0160	0161-0320	0321-0480	0481-0640

Unit 5	Unit 6	Unit 7	Unit 8
NPC	**NPC**	**NPC**	**NPC**
0641-0800	0801-0960	0961-1120	1121-1280

Unit 9	Unit 10	Unit 11	Unit 12
NPC	**NPC**	**NPC**	**NPC**
1281–1440	**1441–1600**	**1601–1760**	**1761–1920**

Unit 13	Unit 14	Unit 15	Unit 16
NPC	**NPC**	**NPC**	**NPC**
1921–2080	**2081–2240**	**2241–2400**	**2401–2560**

2.2.5 Sequential 3-digit NPC Numbering for E1s within Hybrid DS3 Terminations

Below is the 3-digit sequential NPC numbering scheme for E1s embedded within Hybrid DS3s that have unit numbers between 1 and 6. These NPCs are called TH type NPCs. The valid values are:

Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6
NPC	**NPC**	**NPC**	**NPC**	**NPC**	**NPC**
001–003	**161–163**	**321–323**	**481–483**	**641–643**	**801–803**
005–007	**165–167**	**325–327**	**485–487**	**645–647**	**805–807**
009–011	**169–171**	**329–331**	**489–491**	**649–651**	**809–811**
			.		
			.		
			.		
157–159	**317–319**	**477–479**	**637–639**	**797–799**	**957–959**
16A–16C	**32A–32C**	**48A–48C**	**64A–64C**	**80A–80C**	**96A–96C**
16E–16G	**32E–32G**	**48E–48G**	**64E–64G**	**80E–80G**	**96E–96G**

2.2.6 Sequential 4-digit NPC Numbering for E1s within Hybrid DS3 Terminations

Below is the 4-digit sequential NPC numbering scheme for E1s embedded within Hybrid DS3s that may be located in any unit of a DACS II frame. These NPC are called TH type NPCs. The valid values are:

Unit 1	Unit 2	Unit 3	Unit 4
NPC	**NPC**	**NPC**	**NPC**
0001-0003	0161-0163	0321-0323	0481-0483
0005-0007	0165-0167	0325-0327	0485-0487
0009-0011	0169-0171	0329-0331	0489-0491
	•	•	
	•	•	
	•	•	
0157-0159	0317-0319	0477-0479	0637-0639
016A-016C	032A-032C	048A-048C	064A-064C
016E-016G	032E-032G	048E-048G	064E-064G

Unit 5	Unit 6	Unit 7	Unit 8
NPC	**NPC**	**NPC**	**NPC**
0641-0643	0801-0803	0961-0963	1121-1123
0645-0647	0805-0807	0965-0967	1125-1127
0649-0651	0809-0811	0969-0971	1129-1131
	•	•	
	•	•	
	•	•	
0797-0799	0957-0959	1117-1119	1277-1279
080A-080C	096A-096C	112A-112C	128A-128C
080E-080G	096E-096G	112E-112G	128E-128G

Unit 9	Unit 10	Unit 11	Unit 12
NPC	**NPC**	**NPC**	**NPC**
1281-1283	1441-1443	1601-1603	1761-1763
1285-1287	1445-1447	1605-1607	1765-1767
1289-1291	1449-1451	1609-1611	1769-1771
	•	•	
	•	•	
	•	•	
1437-1439	1597-1599	1757-1759	1917-1919
144A-144C	160A-160C	176A-176C	192A-192C
144E-144G	160E-160G	176E-176G	192E-192G

Unit 13	Unit 14	Unit 15	Unit 16
NPC	NPC	NPC	NPC
1921-1923	2081-2083	2241-2243	2401-2403
1925-1927	2085-2087	2245-2247	2405-2407
1929-1931	2089-2091	2249-2251	2409-2411
	•		
	•		
	•		
2077-2079	2237-2239	2397-2399	2557-2559
208A-208C	224A-224C	240A-240C	256A-256C
208E-208G	224E-224G	240E-240G	256E-256G

2.2.7 Sequential 3-digit NPC Numbering for DS1s within DS3 or Hybrid DS3 Terminations

Below is the 3-digit sequential NPC numbering scheme for DS3s that have unit numbers between 1 and 6. This application may address TE type NPCs within a Hybrid DS3 or TA and TE type NPCs within a regular DS3. The valid values are:

Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6
NPC	NPC	NPC	NPC	NPC	NPC
001-160	161-320	321-480	481-640	641-800	801-960
16A-16H	32A-32H	48A-48H	64A-64H	80A-80H	96A-96H

2.2.8 Sequential 4-digit NPC Numbering for DS1s within DS3 or Hybrid DS3 Terminations

Below is the 4-digit sequential NPC numbering scheme for DS3s that may be located in any unit of a DACS II frame. This application may address TE type NPCs within a Hybrid DS3 or TA and TE type NPCs within a regular DS3. The valid values are:

Unit 1	Unit 2	Unit 3	Unit 4
NPC	NPC	NPC	NPC
0001-0160	0161-0320	0321-0480	0481-0640
016A-016H	032A-032H	048A-048H	064A-064H

Unit 5	Unit 6	Unit 7	Unit 8
NPC	NPC	NPC	NPC
0641-0800	0801-0960	0961-1120	1121-1280
080A-080H	096A-096H	112A-112H	128A-128H

Unit 9	Unit 10	Unit 11	Unit 12
NPC	**NPC**	**NPC**	**NPC**
1281-1440	**1441-1600**	**1601-1760**	**1761-1920**
144A-144H	**160A-160H**	**176A-176H**	**192A-192H**

Unit 13	Unit 14	Unit 15	Unit 16
NPC	**NPC**	**NPC**	**NPC**
1921-2080	**2081-2240**	**2241-2400**	**2401-2560**
208A-208H	**224A-224H**	**240A-240H**	**256A-256H**

2.2.9 Hierarchical Numbering for E1 Terminations

The hierarchical numbering scheme for E1 Termination NPCs is based on the fact that within each DACS II frame there are up to 16 units. Within each unit there are 4 modules numbered from the bottom to the top. In each module there are up to 32 NPCs numbered from 1 through 32. The hierarchical scheme simply specifies the unit number, the module number within that unit, and the NPC number within that module that one wants to address. DSP Platform NPCs may be addressed this way, but again even NPC numbers are illegal for those NPCs and are not used. Below is the hierarchical NPC numbering scheme for DACS II. This application may address PA, PB, or PC type facility terminating NPCs as well as DSP Application NPCs (which are of the SD type). The valid values are:

uv-m-np   - Hierarchical NPC number

>   uv   - Unit number
>   m   - Module number within the unit
>   np   - NPC number within the module

The range of values are listed below:

Unit	Module	NPC
01-16	1-4	01-32

2.2.10 Hierarchical Numbering for DS1 Terminations

The hierarchical numbering scheme for DS1 Termination NPCs (as explained above for E1 terminations) is based on the fact that within each DACS II frame there are up to 16 units. Within each unit there are 4 modules numbered from the bottom to the top. In each module there are up to 40 NPCs numbered from 1 through 40. The hierarchical scheme simply specifies the unit number, the module number within that unit, and the NPC number within that module that one wants to address. Below is the hierarchical NPC numbering scheme in DACS II for DA and DE type NPCs. The valid values are:

uv-m-np   - Hierarchical NPC number

        uv   - Unit number
        m   - Module number within the unit
        np   - NPC number within the module

The range of values are listed below:

Unit	Module	NPC
01-16	1-4	01-40

2.2.11 Hierarchical Numbering for E1s and DS1s within Hybrid DS3 Terminations

The hierarchical numbering scheme for E1s and DS1s embedded within Hybrid DS3 Terminations and DS1s embedded within regular DS3 terminations is based on the fact that there are up to 16 units in a DACS II frame. Within each unit there are 6 modules (DS3 terminations). In each module there are 28 DS1 NPCs (TE or TA type) numbered from 1 through 28, or 21 E1 NPCs (TH type and Hybrid DS3 only) numbered as follows:

 01,02,03, 05,06,07, 09,10,11, 13,14,15, 17,18,19, 21,22,23, 25,26,27.

The hierarchical scheme simply specifies the unit number, the module number within that unit, and the NPC number within that module that one wants to address. Below is the hierarchical NPC numbering scheme for DACS II for TH and TE and TA type NPCs. The valid values are:
uv-m-np   - Hierarchical NPC number

        uv   - Unit number
        m   - Module number within the unit
        np   - NPC number within the module

The range of values are listed below:

Unit	Module	NPC
01-16	1-6	01-28

Note that the valid TH NPC numbers
are: 01,02,03, 05,06,07, 09,10,11, 13,14,15, 17,18,19, 21,22,23, 25,26,27.

3. Channel numbering within NPCs

The channel numbers on NPCs that terminate E1 facilities, i.e., NPCs of type PA, PB, PC, or TH range from 1 through 30 for E1s provisioned with CAS (Channel Associated Signaling) and from 1 through 31 for E1s provisioned with NSA (Non Signaling Associated).

The channel numbers on NPCs that terminate DS1 facilities (i.e., NPCs of type DA, DE, TA, or TE) range from 001 through 024.

Channels of LSIU NPCs on DACS II ISX, which are of type LS, range from 0 through 31.

4. Prefix Notation for All Application Commands

All commands that are sent to and all messages that are received from the X.50/X.57 Subrate Application have a prefix for each command/message. The prefix system permits DACS II or DACS II ISX to send a command to an application without parsing and/or examining that command. Any return message from this application uses a prefix also, which is simply prepended to the return message from the application by DACS II or DACS II ISX. This prefix identifies the circuit pack from which the message was received. Similarly, an autonomous message from this application is prepended with a prefix that identifies the NPC number of the DSP Platform circuit pack on which the message was issued. This prefix is documented in command I.91011.

The prefix for transmitting a command to the application has the form:

```
EXC-DSPC:[<xy>]:{<p_npc>|<p_npc>&&[&]-<q_npc>|SD111}:[<ww>]:\
<application command>
```

where:

`<p_npc>`   - Specifies the NPC number of a single application circuit pack
                     being addressed

`<p_npc>&&[&]-<q_npc>` - Specifies a range of NPC numbers of circuit packs
                     running the application that are being addressed.
                     This range may include NPC numbers that are not running
                     the application, which are skipped by the command.
                     However, the first NPC number of the range must
                     point to a circuit pack that is running the application.
                     A third & is required if the npc numbers are expressed
                     in hierarchical form.

`SD111`   - Specifies the type field of the application. The type field for
                     the application addresses all circuit packs that are running
                     the application on the frame.

If an application command is issued to a range of NPCs or to all DSP Platform circuit packs that are running the application (SD111 keyword), then the command is first issued to the application circuit pack with the lowest NPC number within the range or the lowest NPC number within the frame (if the SD111 keyword is used). Each NPC then is given the command and responds to it one at a time until all addressed application NPCs have responded. The command may be aborted. If the command is aborted, the application NPC currently in progress will complete and no subsequent NPCs, if any, will be addressed.

Only a subset of input commands may be used with a range or SD111 in the prefix of the command. These commands are the `RTRV` commands and `ED-PRMTR-TS:DEFAULT`. All other commands must be sent to individual application circuit packs only.

The command response from the application always identifies the individual circuit pack that is responding and is of the form:

```
   <xy> yy-mm-dd hh:mm:ss LINK-n[vv]
M  EXC DSPC::<z_npc>:[<ww>]:\
<application_response for NPC <z_npc>>
```

where:

<z_npc>   - Specifies the NPC number of the application circuit pack that generated the response. Thus each response is always attributable to an individual application circuit pack

5. Syntax Errors

The **BADVERB** message is generated if the application encounters a bad verb or a syntax error while attempting to parse a command. If the application finds an incorrect command verb, it produces the output **BADVERB**. If the application finds a good command verb, but encounters a syntax error in the command beyond the command verb, then it will generate the usage pattern for that command verb. For additional information on the **BADVERB** message, refer to the **BADVERB** command (I.93601) in this chapter.

EXC,DSPC,BADVERB,CMD,USAGE

Subrate Application on DSP Platform, Bad Command Message

Explanation Of Command

This message is generated if the subrate application found a bad verb or a syntax error while attempting to parse a command.

The background for this message is as follows: The subrate application that found the bad verb or the syntax error did receive the command. In other words, the error in the command occurred after a correct command string **EXC-DSPC** and a correct application address. This means that the command parser in DACS II ISX or DACS II found the valid command string **EXC-DSPC** and an appropriate NPC number, range of NPC numbers, or type field in order to be able to send the command to the application.

If the application does not find a correct command verb, it produces the output **BADVERB**. If the subrate application does find a good command verb, but encounters a syntax error in the command beyond the command verb, then it will generate the usage pattern for that command verb.

Command

Any MML command received by the application that had a bad verb or a syntax error.

Completion Message

Not Applicable.

Denial Message

```
[O.91001]
    [<xy>] yy-mm-dd hh:mm:ss LINK-n[vv]
M EXC-DSPC::aaa:[<ww>]:{BADVERB|CMD} DENY
    /* O.91001 */
    /* <first 70 characters of input message as seen by application> */
    /* <remaining text of input message> */
    ["USAGE:"]
    ["<usage line>"]
          .
          .
    ["<usage line>"]
;
```

Autonomous Message

Not applicable.

Explanation Of Parameters

EXC-DSPC

        - Execute on DSP Platform circuit pack

aaa   - NPC number of DSP Platform circuit pack

BADVERB

        - The subrate application found a bad verb in the command string and terminated processing of the string.

CMD   - The subrate application found a syntax error in the command string.

USAGE:

        - The usage pattern for the command verb found follows.

The usage pattern need not be all commands that start with that verb. If the syntax error was found far enough downstream so that it is clear which command or subset of commands was the one intended, then only the usage pattern for that command or subset of commands should be generated.

For each command verb stated the usage pattern is as follows:

Verb: - **CHG**   (for command 91221, 91231)

Usage:

```
- CHG-TACC-TS::kk:{SPLT|MON};
- CHG-TL-TS::kk:{TERM|RLS}{F|T|B};
```

Verb: - **CONN**   (for commands 91331, 91341, 91211)

Usage:

```
- CONN-CRS-TS:abc-ddd[-f-f],ghi-jjj[-l-l]:RATE-rr[:NORM,NORM];
- CONN-CRS-TS:abc-ddd[-f-f],ghi-jjj[-l-l]:RATE-rr:TERM,TERM;
- CONN-TACC-TS:abc-ddd[-f-f]:kk:MON[:RATE-rr];
```

Verb: - **CRTE**   (for 91311)

Usage:

```
- CRTE-CRS-TS:abc-ddd[&&-eee]:{X50|X57-rr}:::\
      [UMC-X-uu]:[MUX-X-yy][:SIG-X-a];
```

Verb: - **DISC**   (for command 91351, 91241, 91251)

Usage:

```
- DISC-CRS-TS:abc-ddd[-f-f],ghi-jjj[-l-l][:RATE-rr];
- DISC-TACC-TS::{kk|ALL|LINKS};
```

Verb: - **DLT**   (for command 91321)

Usage:

```
- DLT-CRS-TS:abc-ddd[&&-eee]:[DCC][:INCL];
```

Verb: - **ED**   (for commands 91371, 91361, 91381)

Usage:

```
- ED-PRMTR-TS:DEFAULT:[UMC-X-uu]:[MUX-X-yy][:SIG-X-a];
- ED-CRTE-TS:abc-ddd[-eee],ghi-jjj[-kkk]:[:DCC];
- ED-PRMTR-TS:abc-ddd[-f-f]:{TERM|RLS}m;
```

Verb: - **RTRV**   (for commands 91111, 91121, 91131, 91141, 91151, 91191)

Usage:

```
- RTRV-PRMTR-TS:DEFAULT;
- RTRV-CRS-TS:abc-ddd[&&-eee];
- RTRV-EQPT-TS:abc-ddd[-f-f]:SRHDW;
- RTRV-PRMTR-EQPT:LOAD;
- RTRV-EVT-TS:[abc-ddd[&&-eee]]:SROOF;
- RTVR-TACC-T1;
```

EXC,DSPC,CHG,TACC,TS,SPLT,MON

SUBRATE CHANGE TEST ACCESS MODE

Explanation Of Command

This command takes a test access connection previously started in monitor mode and places it in split mode. Test access connections for subrate circuits as well as entire `x.50` channels carrying subrate circuits can be put into split mode. In split mode, data transmission in the tested circuit is interrupted. Once a test access connection is in split mode, it can be placed back into monitor mode with this command.

CAUTION: Split test access to an `x.50` channel carrying multiple subrate circuits can potentially cause loss of service to as many subrate customers as are occupying that channel.

The user must specify the test port number that was used in a previous test access command creating the test access connection in monitor mode.

Note on NPC and Channel Numbering

There exist two numbering schemes for NPC numbers in DACS II. NPCs can be numbered either sequentially or hierarchically. Also note that on DACS II, sequential NPC numbers may be stated in 3-digit or 4-digit form. The NPC numbering scheme for DACS II is explained in detail in the Introduction part of this chapter. The messages that follow refer to NPC numbers, but do not show any details on NPC numbering. As just stated, the reader is referred to the beginning of this chapter for this information. On DACS II ISX, only sequential NPC numbers in 3-digit form are used.

The numbering of channels is also described in the Introduction.

Note on Subrate Circuit Numbering

Individual subrate circuits within an `x.50` multiplex are referred to by subrate circuit number. The numbering convention for subrate circuits within an `x.50` circuits is shown in the following table.

Rate in kbit/s	Possible Circuit Numbers
2.4 & 1.2	1-1 2-1 3-1 4-1 5-1 1-2 2-2 3-2 4-2 5-2 1-3 2-3 3-3 4-3 5-3 1-4 2-4 3-4 4-4 5-4
4.8	1-1 2-1 3-1 4-1 5-1 1-2 2-2 3-2 4-2 5-2
9.6	1-1 2-1 3-1 4-1 5-1
19.2	1-1 2-1 3-1 4-1 (two 9.6 slots each)

For `x.57` circuits, the subrate circuit number need not be stated in the command (it is optional). If it is stated, it must be `1-1`.

Command

```
[I.91221]
EXC-DSPC:[<xy>]:<p_npc>:[<ww>]:CHG-TACC-TS::kk:{SPLT|MON};
```

Completion Message

For X.57 channels or subrate circuits multiplexed within X.50 channels:

```
[O.91221]
   [<xy>] yy-mm-dd hh:mm:ss LINK-n[vv]
M  EXC DSPC::<p_npc>:[<ww>]:CHG TACC TS::kk:{SPLT|MON} COMPLD
   /* [O.91221] */
   /* TO facility termination */
   "<t_npc>-ddd-f-f"
   /* PBA Status FROM,TO,TEST-ACCESS,TERM */
   "{F|0},{T|0},{P|0},{R|F|T|B}"
   "RATE-rr"
[  "{UNMAPPED|LOOPED}"]
;
```

For entire X.50 channels:

```
[O.91222]
   [<xy>] yy-mm-dd hh:mm:ss LINK-n[vv]
M  EXC DSPC::<p_npc>:[<ww>]:CHG TACC TS::kk:{SPLT|MON} COMPLD
   /* [O.91222] */
   /* TO facility termination */
   "<t_npc>-ddd"
   /* PBA Status FROM,TO,TEST-ACCESS,TERM */
   "0,{T|0},{P|0},R"
   "X50"
;
```

Denial Message

```
[O.91221.01]
   [<xy>] yy-mm-dd hh:mm:ss LINK-n[vv]
M  EXC DSPC::<p_npc>:[<ww>]:CHG TACC TS::kk:{SPLT|MON} DENY
   mmmm
   /* [O.91221.01] */
   /* <explanation of error> */
;
```

Autonomous Message

Not applicable.

Explanation Of Parameters

EXC-DSPC

      - Execute on DSP Application circuit pack

<p_npc>

      - NPC number of DSP Application circuit pack

      The command that follows the NPC number for the DSP Application is sent to the DSP Application with that number, which reads that command and acts on it.

CHG-TACC-TS

      - Change mode of test access connection

kk   - Number of test port, ranges between 01 and 96.

SPLT   - Split mode

MON   - Monitor mode

<t_npc>
                 - NPC number of TO facility termination

ddd   - Channel number of TO facility termination

f-f   - Subrate circuit number of TO facility termination

RATE   - Circuit rate

rr   - Circuit rate value (24, 48, 96)

rr indicates the customer rate of the circuit.

If the circuit is mapped, i.e., subrate cross-connected, the listed RATE is equal to the subrate cross-connect rate. For unmapped circuits, in which case the **UNMAPPED** keyword appears in the output, the listed rate depends on the type of circuit to be tested. If test access is to an X.57 established channel, the establish channel rate is listed. If the access is to an unconnected **X.50** customer circuit, the listed rate is the one used in the **CONN-TACC-TS:::MON** (I.91211) command.

F   - FROM facility in PBA

0   - FROM facility is not in PBA

T   - TO facility in PBA

0   - TO facility is not in PBA

P   - Test port Primary in PBA

0   - Test port Primary is not in PBA

TERM   - Terminate and leave status the test point

R   - RELEASED. Neither side is terminated

F   - FROM side of cross-connect is terminated

T   - TO side of cross-connect is terminated

B   - BOTH sides of cross-connect are terminated

UNMAPPED
  - Unmapped

UNMAPPED appears in the output message if the test access point specified is established to the subrate feature but not cross-connected. When the test access point is unmapped, no signal is connected to the odd test access channel.

LOOPED
  - Looped

Appears in the case of a cross-connected subrate circuit that is looped on itself.

mmmm Explanation of Error Classification

IDRG   Input, data out of range

Explanation of Error

INVALID TEST PORT NUMBER

SNVS   Status, not in valid state

Explanation of Error

TEST PORT IS ALREADY IN MONITOR MODE
TEST PORT IS ALREADY IN SPLIT MODE
TEST PORT IS NOT CONNECTED
THE SPECIFIED TEST ACCESS NPC MUST BE IN MONITOR MODE
        AT FIRST

SROF   Status, requested operation failed

Explanation of Error

A SPECIFIC TG193 REQUIRED FOR THIS COMMAND
SUBRATE APPLICATION FAILED

EXC,DSPC,CHG,TL,TS,TERM,RLS,F,T,B

CHANGE TERMINATION STATUS WHILE IN SUBRATE TEST ACCESS

Explanation Of Command

This command changes a circuit under test access from the released to the terminated (Terminate and Leave Active) state or from the terminated to the released state.

Before using this command, the circuit must be attached to a test port and must be either in monitor mode or in split mode. See the `CONN-TACC-TS` command (I.91211 and I.91221) on how to put subrate circuits into monitor or split mode.

If a subrate circuit is not under test access, it can be terminated or released (if previously terminated) by using the `ED-PRMTR-TS::{TERM|RLS}` command (I.91381).

This command can only be used on cross-connected subrate circuits. It cannot be used during test access to entire X.50 channels that carry multiple subrate circuits or to unmapped (established but not cross-connected) external facility terminations. It also cannot be used for subrate circuits that are looped on themselves.

Caution: UMC is inserted towards the direction that is terminated, potentially causing a loss of service.

The termination state resulting from the command depends on the state prior to the command as indicated by the following table. In that table

> R means Released State,
> F means FROM State,
> T means TO State,
> B means BOTH States,
> TERM means Terminate and Leave Activate,
> RLS means Terminate and Leave Release.

PRIOR STATE	REQUESTED CHANGE	NEW STATE	PRIOR STATE	REQUESTED CHANGE	NEW STATE
R	TERM F	F	R	RLS F	DNY
R	TERM T	T	R	RLS T	DNY
R	TERM B	B	R	RLS B	DNY
F	TERM F	DNY	F	RLS F	R
F	TERM T	B	F	RLS T	DNY
F	TERM B	B	F	RLS B	R
B	TERM F	DNY	B	RLS F	T
B	TERM T	DNY	B	RLS T	F
B	TERM B	DNY	B	RLS B	R
T	TERM T	DNY	T	RLS T	R
T	TERM F	B	T	RLS F	DNY
T	TERM B	B	T	RLS B	R

Note on NPC and Channel Numbering

There exist two numbering schemes for NPC numbers in DACS II. NPCs can be numbered either sequentially or hierarchically. Also note that on DACS II, sequential NPC numbers may be stated in 3-digit or 4-digit form. The NPC numbering scheme for DACS II is explained in detail in the Introduction part of this chapter. The messages that follow refer to NPC numbers, but do not show any details on NPC numbering. As just stated, the reader is referred to the beginning of this chapter for this information. On DACS II ISX, only sequential NPC numbers in 3-digit form are used.

The numbering of channels is also described in the Introduction.

Note on Subrate Circuit Numbering

Individual subrate circuits within an `x.50` multiplex are referred to by subrate circuit number. The numbering convention for subrate circuits within an `x.50` circuits is shown in the following table.

Rate in kbit/s	Possible Circuit Numbers
2.4 & 1.2	1-1 2-1 3-1 4-1 5-1 1-2 2-2 3-2 4-2 5-2 1-3 2-3 3-3 4-3 5-3 1-4 2-4 3-4 4-4 5-4
4.8	1-1 2-1 3-1 4-1 5-1 1-2 2-2 3-2 4-2 5-2
9.6	1-1 2-1 3-1 4-1 5-1
19.2	1-1 2-1 3-1 4-1 (two 9.6 slots each)

For **X.57** circuits, the subrate circuit number need not be stated in the command (it is optional). If it is stated, it must be **1-1**.

Command

[I.91231]
```
EXC-DSPC:[<xy>]:<p_npc>:[<ww>]:CHG-TL-TS::kk:{TERM|RLS}{F|T|B};
```

Completion Message

[O.91231]
```
   [<xy>] yy-mm-dd hh:mm:ss LINK-n[vv]
M  EXC DSPC::<p_npc>:[<ww>]:CHG TL TS::kk:{TERM|RLS}{F|T|B} COMPLD
   /* [O.91231] */
   /* TO facility termination */
   "<t_npc>-ddd-f-f"
   /* PBA Status FROM,TO,TEST-ACCESS,TERM */
   "{F|0},{T|0},{P|0},{R|F|T|B}"
   "RATE-rr"
;
```

Denial Message

[O.91231.01]
```
   [<xy>] yy-mm-dd hh:mm:ss LINK-n[vv]
M  EXC DSPC::<p_npc>:[<ww>]:CHG TL TS::kk:{TERM|RLS}{F|T|B} DENY
   mmmm
   /* [O.91231.01] */
   /* <explanation of error> */
;
```

Autonomous Message

Not applicable.

Explanation Of Parameters

EXC-DSPC
- Execute on DSP Application circuit pack

<p_npc>
- NPC number of DSP Application circuit pack

The command that follows the NPC number for the DSP Application is sent to the DSP Application with that number, which reads that command and acts on it.

kk   - Number of test port, ranges between 01 and 96.

CHG-TL-TS
- Change termination state of test access connection

RATE   - Circuit rate

rr   - Circuit rate value (24, 48, 96, or 19)

rr indicates the customer rate of the circuit. The listed RATE is equal to the subrate cross-connect rate.

PBA   - Primary Block Alarm

F   - FROM facility in PBA

0   - FROM facility is not in PBA

T   - TO facility in PBA

0   - TO facility is not in PBA

P   - Test port Primary in PBA

0   - Test port Primary is not in PBA

TERM   - Terminate and leave activate the test point

RLS   - Release test point from terminate and leave state

R   - RELEASED. Neither side is terminated

F   - FROM side of cross-connect is terminated

T   - TO side of cross-connect is terminated

B   - BOTH sides of cross-connect are terminated

<t_npc>
      - Facility terminating NPC that is associated with "TO" side of connection under test

ddd   - channel in that facility terminating NPC

f-f   - subrate (customer) circuit in that channel under test

mmmm Explanation of Error Classification

IDNV   Input, data not valid

      Explanation of Error

      TERM/RLS CANNOT BE SPECIFIED FOR AN UNMAPPED CIRCUIT

IDRG   Input, data out of range

      Explanation of Error

      INVALID TEST PORT NUMBER

SNVS   Status, not in valid state

      Explanation of Error

      TEST PORT IS NOT CONNECTED

SROF   Status, requested operation failed

      Explanation of Error

      A SPECIFIC TG193 REQUIRED FOR THIS COMMAND
      SUBRATE APPLICATION FAILED
      TERMINATE AND LEAVE IS ALREADY IN REQUESTED STATE
      THE CIRCUIT UNDER TEST IS A 64K CHANNEL
      THE CIRCUIT UNDER TEST IS LOOPED
      THE CIRCUIT UNDER TEST IS UNMAPPED

EXC,DSPC,CONN,CRS,TS,RATE,NORM

SUBRATE CROSS-CONNECTION

Explanation Of Command

This command cross-connects the FROM and TO subrate circuits defined by the `f-f` and `l-l` fields. The subrate circuit number fields are optional for X.57 terminations; if not specified, the default value is 1-1. The `NORM,NORM` field is also optional, and indicates that the cross-connection results in two-way transmission. A terminated cross-connection can also be specified by substituting `TERM,TERM` in this field (see command I.91341).

Note on NPC and Channel Numbering

There exist two numbering schemes for NPC numbers in DACS II. NPCs can be numbered either sequentially or hierarchically. Also note that on DACS II, sequential NPC numbers may be stated in 3-digit or 4-digit form. The NPC numbering scheme for DACS II is explained in detail in the Introduction part of this chapter. The messages that follow refer to NPC numbers, but do not show any details on NPC numbering. As just stated, the reader is referred to the beginning of this chapter for this information. On DACS II ISX, only sequential NPC numbers in 3-digit form are used.

The numbering of channels is also described in the Introduction.

Note on Subrate Circuit Numbering

Individual subrate circuits within an `x.50` multiplex are referred to by subrate circuit number. The numbering convention for subrate circuits within an `x.50` circuits is shown in the following table.

■=============================

Rate in kbit/s	Possible Circuit Numbers
2.4 & 1.2	1-1 2-1 3-1 4-1 5-1 1-2 2-2 3-2 4-2 5-2 1-3 2-3 3-3 4-3 5-3 1-4 2-4 3-4 4-4 5-4
4.8	1-1 2-1 3-1 4-1 5-1 1-2 2-2 3-2 4-2 5-2
9.6	1-1 2-1 3-1 4-1 5-1
19.2	1-1 2-1 3-1 4-1 (two 9.6 slots each)

For **x.57** circuits, the subrate circuit number need not be stated in the command (it is optional). If it is stated, it must be **1-1**.

Command

[I.91331]
EXC-DSPC:[<xy>]:<p_npc>:[<ww>]:CONN-CRS-TS:
<f_npc>-ddd[-f-f],<t_npc>-jjj[-l-l]:RATE-rr[:NORM,NORM];

Sample input command for a 4.8 kbit/s X.50 circuit is:

EXC-DSPC::029::CONN-CRS-TS:023-001-4-1,024-002-3-2:RATE-48;

Completion Message

[O.91331]
```
   [<xy>] yy-mm-dd hh:mm:ss LINK-n[vv]
M  EXC DSPC::<p_npc>:[<ww>]:CONN CRS TS:
   <f_npc>-ddd[-f-f],<t_npc>-jjj[-l-l]:RATE-rr[:NORM,NORM] COMPLD
[  /* [O.91331] */]
[  /* FROM customer circuit number */]
[  "1-1"]
[  /* TO customer circuit number */]
[  "1-1"]
;
```

Denial Message

```
[O.91331.01]
   [<xy>] yy-mm-dd hh:mm:ss LINK-n[vv]
M  EXC DSPC::<p_npc>:[<ww>]:CONN CRS TS:
   <f_npc>-ddd[-f-f],<t_npc>-jjj[-l-l]:RATE-rr[:NORM,NORM] DENY
   mmmm
   /* [O.91331.01] */
   /* <explanation of error condition code> */
[  /* FROM customer circuit number */]
[  "1-1"]
[  /* TO customer circuit number */]
[  "1-1"]
;
```

Autonomous Message

Not applicable.

Explanation Of Parameters

EXC-DSPC
>   - Execute on DSP Application circuit pack

<p_npc>
>   - NPC number of DSP Application circuit pack

CONN-CRS-TS
>   - Cross-connect two customer circuits to each other

<f_npc>-ddd[-f-f]
>   - From termination

<f_npc>	Number of "FROM" facility terminating NPC
ddd	Channel number on that facility terminating NPC
f-f	Subrate circuit number in that channel

<t_npc>-jjj[-l-l]
>   - To termination

<t_npc>	Number of "TO" facility terminating NPC
jjj	Channel number on that facility terminating NPC
l-l	Subrate circuit number in that channel

The channels **<t_npc>-ddd** and **<t_npc>-jjj** must be established using a subrate establish command before they can be cross-connected.

To loop a customer circuit back to itself, specify the same circuit for both the FROM and the TO side.

The subrate circuit numbers **f-f** and **l-l** must take on particular values for X.50 or X.57 circuits as explained above.

RATE   - Rate

Rate at which the FROM and TO subrate circuits are cross-connected

rr   - Circuit rate (24, 48, 96)

rr	rate in kb/s	supported by
24	2.4	X.50, X.57
48	4.8	X.50, X.57
96	9.6	X.50, X.57
19	19.2	X.50

A rate of 1.2 kbit/s is supported as a 2.4 kbit/s circuit in stuffed mode.

mmmm Explanation of Error Classification

ENEQ   Equipage, not equipped

Explanation of Error

NPC <t_npc> IS NOT EQUIPPED

IDNV   Input, data not valid

Explanation of Error

INVALID SUBRATE CIRCUIT NUMBERS FOR CONNECTION
SPECIFIED RATE DOES NOT MATCH EXISTING CIRCUIT RATE
SUBRATE CIRCUIT NUMBER MUST BE SPECIFIED FOR X50
        CHANNEL <f_npc>-ddd-f-f
THE SPECIFIED RATE IS NOT VALID

IDRG   Input, data out of range

Explanation of Error

INVALID CHANNEL NUMBER
INVALID CIRCUIT NUMBER
INVALID NPC NUMBER
INVALID RATE (S/B 24, 48, 96, 19)
SUBRATE CIRCUIT NUMBER f-f IS OUT OF RANGE FOR X50
        CHANNEL <f_npc>-ddd
SUBRATE CIRCUIT NUMBER f-f IS OUT OF RANGE FOR X57
        CHANNEL <f_npc>-ddd
THE NPC IS CURRENTLY INVOLVED IN A ROLL

SAAS   Status, already assigned

Explanation of Error

CIRCUIT <f_npc>-ddd-f-f IS ASSIGNED

SNIS   Status, not in-service

Explanation of Error

NPC <t_npc> IS OUT-OF-SERVICE

SNVS   Status, not in valid state

Explanation of Error

CHANNEL <f_npc>-ddd IS NOT SUBRATE ESTABLISHED TO THIS
        TG193
CHANNEL <t_npc>-ddd IS NOT ESTABLISHED TO SUBRATE
        APPLICATION
SPECIFIED CHANNELS ARE TWO X57 CIRCUITS

SROF   Status, requested operation failed

Explanation of Error

A SPECIFIC TG193 REQUIRED FOR THIS COMMAND
SUBRATE APPLICATION FAILED

EXC,DSPC,CONN,CRS,TS,RATE,TERM

SUBRATE TERMINATED CROSS-CONNECTION

Explanation Of Command

This command performs a terminated cross-connection of the FROM and TO subrate circuits in both directions. This means UMC is inserted in both directions. The subrate circuit number fields are optional for X.57 terminations; if not specified, the default value is 1-1. (Also see command I.91331.)

Note on NPC and Channel Numbering

There exist two numbering schemes for NPC numbers in DACS II. NPCs can be numbered either sequentially or hierarchically. Also note that on DACS II, sequential NPC numbers may be stated in 3-digit or 4-digit form. The NPC numbering scheme for DACS II is explained in detail in the Introduction part of this chapter. The messages that follow refer to NPC numbers, but do not show any details on NPC numbering. As just stated, the reader is referred to the beginning of this chapter for this information. On DACS II ISX, only sequential NPC numbers in 3-digit form are used.

The numbering of channels is also described in the Introduction.

Note on Subrate Circuit Numbering

Individual subrate circuits within an `X.50` multiplex are referred to by subrate circuit number. The numbering convention for subrate circuits within an `X.50` circuits is shown in the following table.

Rate in kbit/s	Possible Circuit Numbers
2.4 & 1.2	1-1 2-1 3-1 4-1 5-1 1-2 2-2 3-2 4-2 5-2 1-3 2-3 3-3 4-3 5-3 1-4 2-4 3-4 4-4 5-4
4.8	1-1 2-1 3-1 4-1 5-1 1-2 2-2 3-2 4-2 5-2
9.6	1-1 2-1 3-1 4-1 5-1
19.2	1-1 2-1 3-1 4-1 (two 9.6 slots each)

For **x.57** circuits, the subrate circuit number need not be stated in the command (it is optional). If it is stated, it must be **1-1**.

Command

[I.91341]
```
EXC-DSPC:[<xy>]:<p_npc>:[<ww>]:CONN-CRS-TS:\
<f_npc>-ddd[-f-f],<t_npc>-jjj[-l-l]:RATE-rr:TERM,TERM;
```

Sample input command for a 4.8 kbit/s X.50 circuit is:

```
EXC-DSPC::029::CONN-CRS-TS:023-001-4-1,024-002-3-2:\
RATE-48:TERM,TERM;
```

Completion Message

[O.91341]
```
   [<xy>] yy-mm-dd hh:mm:ss LINK-n[vv]
M  EXC DSPC::<p_npc>:[<ww>]:CONN CRS TS:
   <f_npc>-ddd[-f-f],<t_npc>-jjj[-l-l]:RATE-rr:TERM,TERM COMPLD
[  /* [O.91341] */]
[  /* FROM customer circuit number */]
[  "1-1"]
[  /* TO customer circuit number */]
[  "1-1"]
;
```

Denial Message

```
[O.91341.01]
   [<xy>] yy-mm-dd hh:mm:ss LINK-n[vv]
M  EXC DSPC::<p_npc>:[<ww>]:CONN CRS TS:
   <t_npc>-ddd[-f-f],<t_npc>-jjj[-l-l]:RATE-rr:TERM,TERM DENY
   mmmm
   /* [O.91341.01] */
   /* <explanation of error condition code> */
[  /* FROM customer circuit number */]
[  "1-1"]
[  /* TO customer circuit number */]
[  "1-1"]
;
```

Autonomous Message

Not applicable.

Explanation Of Parameters

EXC-DSPC

- Execute on DSP Application circuit pack

<p_npc>

- NPC number of DSP Application circuit pack

The command that follows the NPC number for the DSP Application is sent to the DSP Application with that number, which reads that command and acts on it.

CONN-CRS-TS

- Cross-connect two customer circuits to each other

<f_npc>

- Number of "FROM" facility terminating NPC

ddd - Channel number on that facility terminating NPC

f-f - Customer circuit number in that channel

<t_npc>

- Number of "TO" facility terminating NPC

jjj - Channel number on that facility terminating NPC

`l-l`   - Customer circuit number in that channel

The channels `<f_npc>-ddd` and `<t_npc>-jjj` must be established using an establish command before subrate circuits within them can be cross-connected.

To loop a customer circuit back to itself, specify the same circuit for both the FROM and the TO side.

The subrate circuit numbers `f-f` and `l-l` must take on particular values for X.50 or X.57 circuits as explained above.

`RATE`   - Rate

Rate at which the FROM and TO customers are cross-connected

`rr`   - Circuit rate (24, 48, 96)

rr	rate in kb/s	supported by
24	2.4	X.50, X.57
48	4.8	X.50, X.57
96	9.6	X.50, X.57
19	19.2	X.50

A rate of 1.2 kbit/s is supported as a 2.4 kbit/s circuit in stuffed mode.

`TERM`   - Terminate and leave cross-connection

mmmm Explanation of Error Classification

ENEQ Equipage, not equipped

Explanation of Error

NPC <t_npc> IS NOT EQUIPPED

IDNV   Input, data not valid

Explanation of Error

INVALID SUBRATE CIRCUIT NUMBERS FOR CONNECTION
SUBRATE CIRCUIT NUMBER MUST BE SPECIFIED FOR X50
        CHANNEL <f_npc>-ddd-f-f
THE SPECIFIED RATE IS NOT VALID

IDRG   Input, data out of range

Explanation of Error

INVALID CHANNEL NUMBER
INVALID CIRCUIT NUMBER
INVALID NPC NUMBER
INVALID RATE (S/B 24, 48, 96, 19)
SUBRATE CIRCUIT NUMBER f-f IS OUT OF RANGE FOR X50
        CHANNEL <f_npc>-ddd
SUBRATE CIRCUIT NUMBER f-f IS OUT OF RANGE FOR X57
        CHANNEL <f_npc>-ddd
THE NPC IS CURRENTLY INVOLVED IN A ROLL

SAAS   Status, already assigned

Explanation of Error

CIRCUIT <f_npc>-ddd-f-f IS ASSIGNED

SNIS   Status, not in-service

Explanation of Error

NPC <t_npc> IS OUT-OF-SERVICE

SNVS   Status, not in valid state

Explanation of Error

CHANNEL <f_npc>-ddd IS NOT SUBRATE ESTABLISHED TO THIS
        TG193
CHANNEL <t_npc>-ddd IS NOT ESTABLISHED TO SUBRATE
        APPLICATION
SPECIFIED CHANNELS ARE TWO X57 CIRCUITS

SROF   Status, requested operation failed

Explanation of Error

A SPECIFIC TG193 REQUIRED FOR THIS COMMAND
SUBRATE APPLICATION FAILED

EXC,DSPC,CONN,TACC,TS,MON,RATE

SUBRATE MONITOR TEST ACCESS

Explanation Of Command

This command requests the creation of a test port connection in monitor mode for a subrate circuit. In addition, this command can be used to create a test port connection for an entire X.50 channel that carries subrate circuits. In monitor mode, data transmission in the tested circuit is not interrupted.

Monitor mode is the only mode that can be requested, when a test port connection is created.

The test access connections created via this command use regular DACS II or DACS II ISX test ports. A test port contains two channels called the lower test access channel and the upper test access channel.

If the test port specified is connected to a subrate circuit that is not cross-connected, the output message will contain the keyword **UNMAPPED**. When the test port is unmapped, no signal is connected to the lower test access channel in the test port. An entire **X.50** channel is always considered mapped, even when no subrate cross-connection is associated with it. In this case, the upper test access channel faces the external facility and the lower test access channel faces the internal subrate multiplexer/de-multiplexer.

Note on NPC and Channel Numbering

There exist two numbering schemes for NPC numbers in DACS II. NPCs can be numbered either sequentially or hierarchically. Also note that on DACS II, sequential NPC numbers may be stated in 3-digit or 4-digit form. The NPC numbering scheme for DACS II is explained in detail in the Introduction part of this chapter. The messages that follow refer to NPC numbers, but do not show any details on NPC numbering. As just stated, the reader is referred to the beginning of this chapter for this information. On DACS II ISX, only sequential NPC numbers in 3-digit form are used.

The numbering of channels is also described in the Introduction.

Note on Subrate Circuit Numbering

Individual subrate circuits within an `x.50` multiplex are referred to by subrate circuit number. The numbering convention for subrate circuits within an `x.50` circuits is shown in the following table.

Rate in kbit/s	Possible Circuit Numbers
2.4 & 1.2	1-1 2-1 3-1 4-1 5-1 1-2 2-2 3-2 4-2 5-2 1-3 2-3 3-3 4-3 5-3 1-4 2-4 3-4 4-4 5-4
4.8	1-1 2-1 3-1 4-1 5-1 1-2 2-2 3-2 4-2 5-2
9.6	1-1 2-1 3-1 4-1 5-1
19.2	1-1 2-1 3-1 4-1 (two 9.6 slots each)

For `x.57` circuits, the subrate circuit number need not be stated in the command (it is optional). If it is stated, it must be `1-1`.

Command

[I.91211]
**EXC-DSPC:[<xy>]:<p_npc>:[<ww>]:\
CONN-TACC-TS:<t_npc>-ddd[-f-f]:kk:MON[:RATE-rr];**

Completion Message

For actual subrate circuits multiplexed within an X.50 circuit:
```
[O.91211]
    [<xy>] yy-mm-dd hh:mm:ss LINK-n[vv]
M   EXC DSPC::<p_npc>:[<ww>]:\
CONN TACC TS:<t_npc>-ddd[-f-f]:kk:MON[:RATE-rr] COMPLD
    /* [O.91211] */
    /* PBA Status FROM,TO,TEST-ACCESS,TERM */
    "{F|0},{T|0},{P|0},{R|F|T|B}"
    "RATE-rr"
[   "{UNMAPPED|LOOPED}"]
[   /* TO customer circuit number */]
[   "1-1"]
;
```

For 64 kbit/s circuits that are established as X.50 circuits:
```
[O.91212]
    [<xy>] yy-mm-dd hh:mm:ss LINK-n[vv]
M   EXC DSPC::<p_npc>:[<ww>]:CONN TACC TS:<t_npc>-ddd:kk:MON COMPLD
    /* [O.91212] */
    /* PBA Status FROM,TO,TEST-ACCESS,TERM */
    "0,{T|0},{P|0},R"
    "X50"
;
```

Denial Message

```
[O.91211.01]
    [<xy>] yy-mm-dd hh:mm:ss LINK-n[vv]
M   EXC DSPC::<p_npc>:[<ww>]:\
CONN TACC TS:<t_npc>-ddd[-f-f]:kk:MON[:RATE-rr] DENY
    mmmm
    /* [O.91211.01] */
    /* <explanation of error> */
;
```

Autonomous Message

Not applicable.

Explanation Of Parameters

EXC-DSPC
- Execute on DSP Application circuit pack

<p_npc>
- NPC number of DSP Application circuit pack

The command that follows the NPC number for the DSP Application is sent to the DSP Application with that number, which reads that command and acts on it.

CONN-TACC-TS
- Create test access connection

<t_npc>
- Number of "TO" facility terminating NPC

ddd - Channel number on that facility terminating NPC

f-f - Subrate circuit number in that channel

kk - Number of the test port. Ranges between 01 and 96.

The **<t_npc>-ddd[-f-f]** external facility termination is connected to the upper test access channel within the test port.

Variable **<t_npc>-ddd[-f-f]** specifies the NPC, channel, and subrate circuit numbers to be connected to the test port. If a multiplexed X.50 channel is tested, the subrate circuit number **f-f** is omitted. To test a single subrate circuit in an X.50 channel, the subrate circuit number field must be specified. When the tested channel is a nonmultiplexed (X.57) channel, the subrate circuit number is listed as **1-1**, or if the user prefers, the subrate circuit number can be omitted and the system will default the value to 1-1.

MON - Monitor mode

RATE - Circuit rate

rr   - Circuit rate value (24, 48, 96)

rr indicates the customer rate of the circuit.

For input: If the customer circuit is unmapped, i.e., not cross-connected, then the rate must be specified in the input command.

For output: If the circuit is mapped, i.e., subrate cross-connected, the listed RATE is equal to the subrate cross-connect rate. For unmapped circuits, in which case the **UNMAPPED** keyword appears in the output, the listed rate depends on the type of test access point. If test access is to an X.57 established channel, the establish channel rate is listed. If the access is to an unconnected X.50 customer circuit, the listed rate is the one used in the input command.

PBA   - Primary Block Alarm

F   - FROM facility in PBA

0   - FROM facility is not in PBA

T   - TO facility in PBA

0   - TO facility is not in PBA

P   - Test port Primary in PBA

0   - Test port Primary is not in PBA

X50   - X.50 subrate channel

X57   - X.57 subrate channel

TERM   - Terminate and leave status the test point

R   - RELEASED. Neither side is terminated

F   - FROM side of cross-connect is terminated

T   - TO side of cross-connect is terminated

B   - BOTH sides of cross-connect are terminated

UNMAPPED
            - Unmapped

UNMAPPED appears in the output message if the test access point specified is established to the subrate feature but not cross-connected. When the test access point is unmapped, no signal is connected to the lower test access channel.

LOOPED
>   - Looped

>   Appears in the case of a cross-connected customer circuit
>   that is looped on itself.

mmmm Explanation of Error Classification

ENEQ Equipage, not equipped

>   *Explanation of Error*

>   THE FROM SIDE NPC <f_npc> IS NOT EQUIPPED
>   THE SPECIFIED TEST PORT IS NOT EQUIPPED
>   THE TO SIDE NPC <t_npc> IS NOT EQUIPPED

IDMS Input, data missing

>   *Explanation of Error*

>   THE TO SIDE NPC IS NOT SPECIFIED

IDNV Input, data not valid

>   *Explanation of Error*

>   CANNOT SPECIFY SUBRATE FOR 64K TEST ACCESS
>   RATE MUST BE SPECIFIED FOR UNMAPPED SUBRATE CIRCUIT
>   THE SPECIFIED NPC <f_npc> IS NOT A VALID FACILITY
>   TERMINATING TYPE
>   THE SPECIFIED RATE IS NOT CONSISTENT WITH THE ACTUAL
>   CIRCUIT RATE
>   THE SPECIFIED RATE IS NOT VALID
>   THE SPECIFIED SUBRATE CIRCUIT NUMBER f-f IS NOT VALID

IDRG Input, data out of range

>   *Explanation of Error*

>   INVALID CHANNEL NUMBER
>   INVALID CIRCUIT NUMBER
>   INVALID NPC NUMBER
>   INVALID RATE (S/B 24, 48, 96, 19)
>   INVALID TEST PORT NUMBER
>   SUBRATE CIRCUIT NUMBER f-f IS OUT OF RANGE FOR X50
>   CHANNEL <f_npc>-ddd
>   THE NPC IS CURRENTLY INVOLVED IN A ROLL

SNIS Status, not in-service

>   *Explanation of Error*

>   THE FROM SIDE NPC <f_npc> IS OUT-OF-SERVICE
>   THE NPC FOR TEST PORT kk IS OUT-OF-SERVICE
>   THE TO SIDE NPC <t_npc> IS OUT-OF-SERVICE

SNVS   Status, not in valid state

Explanation of Error

TEST PORT IS ALREADY CONNECTED
THE SPECIFIED ACCESS POINT IS NOT ESTABLISHED TO THIS
        TG193
THE SPECIFIED ACCESS POINT IS UNDER TEST
THE SPECIFIED TEST ACCESS NPC IS UNDER TEST

SROF   Status, requested operation failed

Explanation of Error

A SPECIFIC TG193 REQUIRED FOR THIS COMMAND
SUBRATE APPLICATION FAILED
SUBRATE CIRCUIT RATE IS NOT VALID FOR TEST ACCESS
THE FROM SIDE NPC <f_npc> IS FAILED
THE NPC FOR TEST PORT kk IS FAILED
THE TO SIDE NPC <t_npc> IS FAILED

Possible error messages generated by application when running on DACS II

AIS invalid for cross-connection specified
Active CCN side not IS or failed or pested or hardware OOS
CCB not eqd, not IS, or failed or inactive side CCB not eqd or not IS
Cross-connect a non Mode I channel to DCLU
Cross-connect a non SLC channel to DCLU
ETSI not equipped, not in service, or failed
FC not eqd, not IS, or failed or inactive side FC not eqd or not IS
FMC cannot be cross-connected in this format
FTMI not equipped, not in service, or failed
Invalid keyword(s) combination specified
Invalid parameter combination
Line format types are incompatible
MUX or TRB invalid for cross-connection specified
NAM invalid for cross-connection specified
RT-DCLU cross-connect with different channel number
RT-DCLU cross-connect with different ids
Reqd FMT not eqd,not IS,or failed,or inact side FMT not eqd, or not IS
Required FLI not equipped, not in service, or failed
Required MIU not equipped, not in service, or failed
Required MXR not equipped, not in service, or failed
SC invalid for cross-connection specified
TSI not eqd, not IS, or failed or inactive side TSI not eqd or not IS
The parameter specified does not match with the NPC type
Trunk conditioning is invalid
Trunk type is not allowed in the circuit specified
UNIT not equipped, not in service, or failed
Unmatched channel range

Unmatched channel range involving SLC Mode III termination
Using the 24th channel of a T1DM NPC

Possible status messages generated by application when running on DACS II

Status message	Explanation
ASGN	Test port is assigned
BAD PSEUDO CHANNEL RANGE	DSPC pseudo channel out of range
BADCCB	CCB OOS or failed
BADCCN	CCN OOS or failed
BADCHAN	Bad channel number was specified
BADDSPI	DSPI OOS or failed
BADFC	FC OOS or failed
BADFLI	FLI OOS or failed
BADFMT	FMT (Formatter) OOS or failed
BADFTMI	FTMI OOS or failed
BADTSI	TSI OOS or failed
FAIL	Test port Group NPC failed
INERR	Input error
MCOND	An entity in the network is OOS or failed
NA	DACS CCN or UNIT involved cannot perform the cross-connect

NMON	Not Monitor, the testport is not currently in monitor mode
OOS	Test port Group NPC out of service
SG COND 02	Test port is dynamic
T_DCLU	Attempt to test a locally switched channel
UEQD	Test port kk is unequipped
UTST	Under Test

Possible error messages generated by application when running on ISX

Active SXC side not IS or failed or pested or hardware OOS
FMC cannot be cross-connected in this format
Invalid keyword(s) combination specified
Invalid parameter combination
SC invalid for cross-connection specified
The parameter specified does not match with the NPC type

Possible status messages generated by application when running on ISX

Status message	*Explanation*
ASGN	Test port is assigned
BAD CHAN	Bad channel number was specified
BAD PSEUDO CHANNEL RANGE	DSPC pseudo channel out of range
BADCCN	CCN OOS or failed
INERR	Input error
MCOND	An entity in the network is OOS or failed

NA	DACS CCN cannot perform the cross-connect
NMON	Not Monitor, the testport is not currently in monitor mode
SG COND 02	Test port is static
T_DCLU	Attempt to test a locally switched channel
UEQD	Test port kk is unequipped
UEQD	The test port is not equipped
UTST	Under Test

EXC,DSPC,CRTE,CRS,TS,X50,X57,UMC,MUX

SUBRATE ESTABLISH CHANNEL

Explanation Of Command

This command connects a channel (or a range of channels) in a facility terminating NPC to the X.50 subrate application on the DSP Application circuit pack. This command also supports connections between X.57 circuits on two application cards and it supports the connection of X.57 circuits on X.50 applications with DS0A circuits on DDS Subrate applications that are based on the North American standard. Application to application connections are described in greater detail below.

A channel must be established before any cross-connections can be made via the `CONN-CRS-TS` (I.91331) application command.

This command is used to establish the following types of channels:

1. An X.50 channel capable of multiplexing 2.4, 4.8, 9.6, and 19.2 kbit/s circuits with 20 bit framing pattern following Division 3 of the standard and capable of multiplexing 1.2 kbit/s in stuffed mode as a 2.4 kbit/s circuit.

2. An X.57 channel capable of carrying an individual 1.2, 2.4, 4.8, or 9.6 kbit/s circuit. A 1.2 kbit/s circuit will be treated as a 2.4 kbit/s circuit in all respects.

The X.50 application will deny this command if the user attempts to establish a subrate channel on channel 0 or 16 of an E1 facility provisioned with Channel Associated Signaling (CAS) or channel 0 on an E1 facility provisioned with Non Signaling Associated (NSA) mode. Also, the X.50 application will deny this command if the user attempts to establish a subrate channel on a clear 2 Mbit/s facility.

When a channel is established, it cannot already be established or cross-connected. All channels within a specified range are established with the same parameters.

X.50 Channels

A X.50 channel is established by specifying an E1 facility and channel and the field **X50**.

X.57 Channels

An X.57 channel is established by specifying an E1 facility and channel and **X57-rr**, where **rr** can have the values 24, 48, or 96.

Note: A cross-connection is allowed to any other subrate channel. The user must ensure that the signal rate is compatible with the intended cross-connection.

Connections between Applications

X.57 circuits may be connected from one X.50 Subrate application card to another X.50 Subrate application card or even to a DS0A circuit on a DDS Subrate application based on the North American standard. This is useful for a number of reasons:

1. Two X.57 circuits may be demultiplexed on two separate X.50 subrate application cards respectively and it is desired to connect one of the subrate (X.57) circuits in the first X.50 channel with another subrate (X.57) circuit in the second X.50 channel. An application connection between the two applications solves this problem.

2. If a DACS II or DACS II ISX performs a gateway function between circuits based on the International standard and circuits based on the North American standard, then it may be useful to connect X.57 circuits that have been demultipexed from an X.50 channel on an X.50 Subrate application card with a DS0A circuit that has been demultiplexed from a DS0B channel on a DDS Subrate application card based on the North American standard.

The establishment of such connections between applications uses the same command syntax used for the establishment of other channels, except that the target NPC number is the NPC number of the other application, and the channel number is a so-called pseudo channel number that is unique for a particular connection and identifies it. Pseudo channel numbers range between **001** and **999**.

The execution of such an establish command connecting one application to another must be matched by the execution of another establish command on the second application that refers to the NPC number of the first application and the same unique pseudo channel number as was used on the first application. DACS II or DACS II ISX will recognize the common channel number and will connect the two channels together. A real connection will only be made if the establish commands to both applications have been executed.

There is a command **RTVR-CRS-APPL** (I.51201) on DACS II and on DACS II ISX that allows the user to find the pseudo channel numbers that are currently in use. To find a new number for a new application-to-application connection, the user simply picks a pseudo channel number not currently in use.

Actions taken when Channel is Established

The following actions are taken when a channel is established:

1. If the channel is an X.50 channel, the appropriate framing pattern is sent towards the facility.

2. The `UMC` pattern (F1111111, where F is the framing bit if the channel is an X.50 channel) is sent towards the facility. Also see below on how to change the UMC pattern.

3. The established channel is marked as a "red" circuit, which results in the need to use the `INCL` keyword whenever the DSP Application circuit pack or the affected facility terminating NPC is removed by a RMV command. (Being able to remove these cards while circuits are still established is useful when a card that has a hardware failure needs to be replaced with a new card.)

    Also, the subrate establish channel command has no effect on the customer controlled marking status of channels in DACS II (not in DACS II ISX) that previously have been marked with the `CUS` keyword. The `CUS` marking is disabled while the channel is established to the subrate feature, but is enabled again once the channel is disestablished.

4. The Insertion Word (IW) for the channel on the facility terminating NPC is provisioned with the Multiplexer-out-of-Synch (`MUX`) pattern (11111111). This particular pattern is sent if DACS II or DACS II ISX detects a failure on the DSP Application circuit pack that is connected to that channel.

Modification of Default Signaling Bits

There are three different bit patterns that are sent downstream under certain conditions. The default values for those bit patterns may be modified. These bit patterns are the Unassigned Multiplexer Code (`UMC)`, the Multiplexer-out-of-Synch code `(MUX)`, and the signaling bits ABCD.

The `UMC` code defaults to all "1"s in the subrate application except for X.50, where the leading bit is replaced by the framing bit. The `UMC` bit pattern may be changed to an optional bit pattern by using the `UMC` keyword.

The MUX code also defaults to all "1"s in the subrate application except for X.50, where the leading bit is replaced by the framing bit. The MUX bit pattern may be changed to an optional bit pattern using the MUX keyword.

The four signaling bits (ABCD) default to all "1"s in the subrate application. This ensures that the outbound signaling bits in Time Slot 16 have "1"s in them and cannot be confused with the Time Slot 16 framing pattern, which is four consecutive zeros in the lower four bit positions of the Time Slot 16 octet. In dedicated circuits, which are normally used for subrate applications, the signaling bits have no major importance. If, however, the customer would like to change the signaling bit pattern, it can be done through the SIG keyword.

Note on NPC and Channel Numbering

There exist two numbering schemes for NPC numbers in DACS II. NPCs can be numbered either sequentially or hierarchically. Also note that on DACS II, sequential NPC numbers may be stated in 3-digit or 4-digit form. The NPC numbering scheme for DACS II is explained in detail in the Introduction part of this chapter. The messages that follow refer to NPC numbers, but do not show any details on NPC numbering. As just stated, the reader is referred to the beginning of this chapter for this information. On DACS II ISX, only sequential NPC numbers in 3-digit form are used.

The numbering of channels is also described in the Introduction.

Command

Input command to establish X.50 or X.57 channels:
[I.91311]
```
EXC-DSPC:[<xy>]:<p_npc>:[<ww>]:CRTE-CRS-TS:\
<t_npc>-ddd[&&-eee]:{X50|X57-rr}:::[UMC-X-uu]:\
[MUX-X-yy][:SIG-X-a];
```


Completion Message

Output message for X.50 and X.57 channels:

[O.91311]
```
    [<xy>] yy-mm-dd hh:mm:ss LINK-n[vv]
M   EXC DSPC::<p_npc>:[<ww>]:CRTE CRS TS:
    <t_npc>-ddd[&&-eee]:{X50|X57-rr}:::[UMC-X-uu]:\
[MUX-X-yy][:SIG-X-a] COMPLD
;
```

Denial Message

Denial message for X.50 and X.57 channels:

```
[O.91311.01]
    [<xy>] yy-mm-dd hh:mm:ss LINK-n[vv]
M   EXC DSPC::<p_npc>:[<ww>]:CRTE CRS TS:
    <t_npc>-ddd[&&-eee]:{X50|X57-rr}:::[UMC-X-uu]:\
[MUX-X-yy][:SIG-X-a] DENY
    mmmm
    /* [O.91311.01] */
    /* <explanation of error condition code> */
[   /* Channel number involved in the denial */]
[   /* qqq */]
;
```

Autonomous Message

Not applicable.

Explanation Of Parameters

EXC-DSPC
> - Execute on DSP Application circuit pack

<p_npc>
> - NPC number of DSP Application circuit pack
>
> The command that follows the NPC number for the DSP Application is sent to the DSP Application with that number, which reads that command and acts on it.

CRTE-CRS-TS
> - Establish cross-connected channel to subrate application

<t_npc>
> - Number of facility terminating NPC

ddd - Channel number on facility terminating NPC

eee - Channel number for end of range specified.

> If a denial pertains to a particular channel in a range, the channel number is given in the optional qqq field. The user should note that **none** of the preceding channels in a range are completed if a problem is found, and subsequent channels may or may not have additional problems.

X50 - Defines the channel as a subrate circuit that follows the X.50 standard

X57 - Defines the channel as a subrate circuit that follows the X.57 standard

rr - Rate of X.57 channel (24, 48, 96)

   24 designates a 2.4 kbit/s circuit,
   48 designates a 4.8 kbit/s circuit,
   96 designates a 9.6 kbit/s circuit.

qqq - Channel number involved in the denial (ddd through eee)

UMC - Defines the unassigned multiplexer channel code

uu - Unassigned multiplexer channel code in hex notation (8 bits)

   The default is X"FF".

MUX - Defines the multiplexer out of synchronization code

yy - Multiplexer out of synchronization code in hex notation (8 bits)

   The default is X"FF".

SIG - Defines the signaling bits

a - Signaling bits in hex notation (4 bits)

   The default signaling bits are X"F".
   The signaling bits are sent by the subrate application
   to the facility terminating NPC.

mmmm Explanation of Error Classification

ENEQ Equipage, not equipped

    Explanation of Error

    NPC <t_npc> IS NOT EQUIPPED

IDNV Input, data not valid

    Explanation of Error

    INVALID DATA RATE FOR CHANNEL CIRCUIT

IDRG   Input, data out of range

   Explanation of Error

   CHANNEL <t_npc> IS OUT OF RANGE FOR NPC TYPE SPECIFIED
   INVALID CHANNEL NUMBER
   INVALID CHANNEL RANGE NUMBER
   INVALID HEX NUMBER
   INVALID NPC NUMBER
   INVALID RATE (S/B 24, 48, 96, 19)
   THE NPC IS CURRENTLY INVOLVED IN A ROLL

SAAS   Status, already assigned

   Explanation of Error

   SPECIFIED CHANNEL IS ALREADY ASSIGNED

SARB   Status, all resource busy

   Explanation of Error

   CONNECTION EXCEEDS REMAINING DSPP CAPACITY

SNIS   Status, not in-service

   Explanation of Error

   NPC <t_npc> IS OUT-OF-SERVICE

SROF   Status, requested operation failed

   Explanation of Error

   A SPECIFIC TG193 REQUIRED FOR THIS COMMAND
   SUBRATE APPLICATION FAILED

Possible error messages generated by application when running on DACS II

   A loopback is active on the TO termination
   AIS invalid for cross-connection specified
   Active CCN side not IS or failed or pested or hardware OOS
   CCB not eqd, not IS, or failed or inactive side CCB not eqd or not IS
   Cross-connect a non Mode I channel to DCLU
   Cross-connect a non SLC channel to DCLU
   ETSI not equipped, not in service, or failed
   FC not eqd, not IS, or failed or inactive side FC not eqd or not IS
   FMC cannot be cross-connected in this format
   FTMI not equipped, not in service, or failed
   Invalid TO channel number
   Invalid TO channel number range
   Invalid channel 000 cross-connection specified
   Invalid channel 031 cross-connection specified
   Invalid keyword(s) combination specified
   Invalid parameter combination

Line format types are incompatible
MUX or TRB invalid for cross-connection specified
RT-DCLU cross-connect with different channel number
RT-DCLU cross-connect with different ids
Reqd FMT not eqd,not IS,or failed,or inact side FMT not eqd, or not IS
Required FLI not equipped, not in service, or failed
Required MIU not equipped, not in service, or failed
Required MXR not equipped, not in service, or failed
SC invalid for cross-connection specified
TO NPC is not provisioned as DGA
TSI not eqd, not IS, or failed or inactive side TSI not eqd or not IS
Termination is in process of being rolled
The parameter specified does not match with the NPC type
Trunk type is not allowed in the circuit specified
UNIT not equipped, not in service, or failed
Unmatched channel range
Unmatched channel range involving SLC Mode III termination
Using the 24th channel of a T1DM NPC

Possible status messages generated by application when running on DACS II

Status message	Explanation
BAD PSEUDO CHANNEL RANGE	DSPC pseudo channel out of range
T ASGN	Termination assigned
T INVLD	Invalid NPC type
T ROLL	Circuit is involved in a roll
T TG	NPC is grown as a test group
T TP	NPC is used for test access
T UEQD	Unequipped
T UTST	Under Test

Possible error messages generated by application when running on ISX

AIS invalid for cross-connection specified
Active SXC side not IS or failed or pested or hardware OOS
Can't connect within the same SDTYPE npc
FMC cannot be cross-connected in this format
Invalid TO channel number
Invalid channel 000 cross-connection specified
Invalid channel 031 cross-connection specified
Invalid keyword(s) combination specified
Invalid parameter combination
Invalid range for specified NPC type
MUX or TRB invalid for cross-connection specified
NPC containing channel 000 is invalid type
SC invalid for cross-connection specified
The parameter specified does not match with the NPC type
Unmatched channel range
Using the 24th channel of a T1DM NPC

Possible status messages generated by application when running on ISX

Status message	Explanation
BAD PSEUDO CHANNEL RANGE	DSPC pseudo channel out of range
T ASGN	Termination assigned
T INVLD	Invalid NPC type
T INVNFS	Invalid, Not Frame Word Setting
T TP	NPC is used for test access
T UEQD	Unequipped
T UTST	Under Test

The "T" in front of some of the status messages denotes the "TO" side.

EXC,DSPC,DISC,CRS,TS,RATE

SUBRATE DISCONNECTION

Explanation Of Command

This command disconnects the **FROM** and **TO** subrate circuits in both directions. The channels **<f_npc>-ddd** and **<t_npc>-jjj** must have been cross-connected (using the **CONN-CRS-TS,[NORM]** or **CONN-CRS-TS,TERM** commands) before they can be disconnected with **DISC-CRS-TS**.

The optional **RATE rr** field defines the rate at which the **FROM** and **TO** customers were cross-connected. If specified, it will be checked and must be the same rate as originally appeared in the **CONN-CRS-TS,[NORM]** or **CONN-CRS-TS,TERM** command.

Note on NPC and Channel Numbering

There exist two numbering schemes for NPC numbers in DACS II. NPCs can be numbered either sequentially or hierarchically. Also note that on DACS II, sequential NPC numbers may be stated in 3-digit or 4-digit form. The NPC numbering scheme for DACS II is explained in detail in the Introduction part of this chapter. The messages that follow refer to NPC numbers, but do not show any details on NPC numbering. As just stated, the reader is referred to the beginning of this chapter for this information. On DACS II ISX, only sequential NPC numbers in 3-digit form are used.

The numbering of channels is also described in the Introduction.

Note on Subrate Circuit Numbering

Individual subrate circuits within an `x.50` multiplex are referred to by subrate circuit number. The numbering convention for subrate circuits within an `x.50` circuits is shown in the following table.

Rate in kbit/s	Possible Circuit Numbers
2.4 & 1.2	1-1 2-1 3-1 4-1 5-1 1-2 2-2 3-2 4-2 5-2 1-3 2-3 3-3 4-3 5-3 1-4 2-4 3-4 4-4 5-4
4.8	1-1 2-1 3-1 4-1 5-1 1-2 2-2 3-2 4-2 5-2
9.6	1-1 2-1 3-1 4-1 5-1
19.2	1-1 2-1 3-1 4-1 (two 9.6 slots each)

For `x.57` circuits, the subrate circuit number need not be stated in the command (it is optional). If it is stated, it must be `1-1`.

Command

```
[I.91351]
EXC-DSPC:[<xy>]:<p_npc>:[<ww>]:\
DISC-CRS-TS:<f_npc>-ddd[-f-f],<t_npc>-jjj[-l-l][:RATE-rr];
```

Completion Message

```
[O.91351]
   [<xy>] yy-mm-dd hh:mm:ss LINK-n[vv]
M  EXC DSPC::<p_npc>:[<ww>]:DISC CRS TS:
   <f_npc>-ddd[-f-f],<t_npc>-jjj[-l-l][:RATE-rr] COMPLD
[  /* [O.91351] */]
[  "RATE-rr"]
[  "OOS"]
[  /* FROM customer circuit number */]
[  "1-1"]
[  /* TO customer circuit number */]
[  "1-1"]
;
```

Denial Message

```
[O.91351.01]
   [<xy>] yy-mm-dd hh:mm:ss LINK-n[vv]
M  EXC DSPC::<p_npc>:[<ww>]:DISC CRS TS:
   <f_npc>-ddd[-f-f],<t_npc>-jjj[-l-l][:RATE-rr] DENY
   mmmm
   /* [O.91351.01] */
   /* <explanation of error> */
[  /* FROM customer circuit number */]
[  "1-1"]
[  /* TO customer circuit number */]
[  "1-1"]
;
```

Autonomous Message

Not applicable.

Explanation Of Parameters

EXC-DSPC
> - Execute on DSP Application circuit pack

<p_npc>
> - NPC number of DSP Application circuit pack
>
> The command that follows the NPC number for the DSP Application is sent to the DSP Application with that number, which reads that command and acts on it.

DISC-CRS-TS
> - Disconnect two subrate circuits previously cross-connected

<f_npc>
> - Number of "FROM" facility terminating NPC

ddd   - Channel number on that facility terminating NPC

f-f   - Subrate circuit number in that channel

<t_npc>
> - Number of "TO" facility terminating NPC

jjj   - Channel number on that facility terminating NPC

l-l   - Subrate circuit number in that channel

rr   - Circuit rate (24, 48, 96, or 19)

oos   - Out of Service

This disconnect command will work if the facility terminating NPC pointed to by this command is out-of-service. The OOS keyword will appear in the output message if that is the case.

mmmm	**Explanation of Error Classification**
IDNV	Input, data not valid

Explanation of Error

CHANNELS ARE NOT CONNECTED TO EACH OTHER
CIRCUIT <f_npc>-ddd-f-f IS UNASSIGNED
SPECIFIED RATE DOES NOT MATCH EXISTING CIRCUIT RATE

IDRG   Input, data out of range

Explanation of Error

INVALID CHANNEL NUMBER
INVALID CIRCUIT NUMBER
INVALID NPC NUMBER
INVALID RATE (S/B 24, 48, 96, 19)
THE NPC IS CURRENTLY INVOLVED IN A ROLL

SNVS   Status, not in valid state

Explanation of Error

THE SPECIFIED CHANNEL <f_npc>-ddd IS A TEST PORT

SROF   Status, requested operation failed

Explanation of Error

A SPECIFIC TG193 REQUIRED FOR THIS COMMAND
SUBRATE APPLICATION FAILED

EXC,DSPC,DISC,TACC,TS

SUBRATE TEST ACCESS RELEASE

Explanation Of Command

This command releases a subrate circuit from test access and restores the circuit to normal.

This command does not affect the terminate and leave state of the released circuit. If the circuit is terminated either before or during test access, it will retain the termination state upon release.

Note on NPC and Channel Numbering

There exist two numbering schemes for NPC numbers in DACS II. NPCs can be numbered either sequentially or hierarchically. Also note that on DACS II, sequential NPC numbers may be stated in 3-digit or 4-digit form. The NPC numbering scheme for DACS II is explained in detail in the Introduction part of this chapter. The messages that follow refer to NPC numbers, but do not show any details on NPC numbering. As just stated, the reader is referred to the beginning of this chapter for this information. On DACS II ISX, only sequential NPC numbers in 3-digit form are used.

The numbering of channels is also described in the Introduction.

Note on Subrate Circuit Numbering

Individual subrate circuits within an **x.50** multiplex are referred to by subrate circuit number. The numbering convention for subrate circuits within an **x.50** circuits is shown in the following table.

Rate in kbit/s	Possible Circuit Numbers
2.4 & 1.2	1-1 2-1 3-1 4-1 5-1 1-2 2-2 3-2 4-2 5-2 1-3 2-3 3-3 4-3 5-3 1-4 2-4 3-4 4-4 5-4
4.8	1-1 2-1 3-1 4-1 5-1 1-2 2-2 3-2 4-2 5-2
9.6	1-1 2-1 3-1 4-1 5-1
19.2	1-1 2-1 3-1 4-1 (two 9.6 slots each)

For **x.57** circuits, the subrate circuit number need not be stated in the command (it is optional). If it is stated, it must be **1-1**.

Command

[I.91241]
```
EXC-DSPC:[<xy>]:<p_npc>:[<ww>]:DISC-TACC-TS::kk;
```

Completion Message

USAGE: For standard Subrate circuits:

[O.91241]
```
   [<xy>] yy-mm-dd hh:mm:ss LINK-n[vv]
M  EXC DSPC::<p_npc>:[<ww>]:DISC TACC TS::kk COMPLD
   /* [O.91241] */
   /* TO facility termination */
   "<t_npc>-ddd-f-f"
   "TERM{R|F|T|B}"
   "RATE-rr"
[  "{UNMAPPED|LOOPED}"]
[  "OOS"]
;
```

USAGE: For X.50 or X.57 circuits:

```
[O.91242]
   [<xy>] yy-mm-dd hh:mm:ss LINK-n[vv]
M  EXC DSPC::<p_npc>:[<ww>]:DISC TACC TS::kk COMPLD
   /* [O.91242] */
   /* TO facility termination */
   "<t_npc>-ddd"
   "TERMR"
   "X50"
[  "OOS"]
;
```

Denial Message

```
[O.91241.01]
   [<xy>] yy-mm-dd hh:mm:ss LINK-n[vv]
M  EXC DSPC::<p_npc>:[<ww>]:DISC TACC TS::kk DENY
   mmmm
   /* [O.91241.01] */
   /* <explanation of error> */
;
```

Autonomous Message

Not applicable.

Explanation Of Parameters

EXC-DSPC
> - Execute on DSP Application circuit pack

<p_npc>
> - NPC number of DSP Application circuit pack

> The command that follows the NPC number for the DSP Application is sent to the DSP Application with that number, which reads that command and acts on it.

DISC-TACC-TS
> - Disconnect test access connection

kk   - Number of test port, ranges between 01 and 96.

RATE - Circuit rate

rr   - Circuit rate value (24, 48, 96, or 19)

rr indicates the customer rate of the circuit. If the circuit is mapped, i.e., subrate cross-connected, the listed RATE is equal to the subrate cross-connect rate. For unmapped circuits, in which case the **UNMAPPED** keyword appears in the output, the listed rate depends on the type of test access point. If test access is to an X.57 established channel, the establish channel rate is listed. If the access is to an unconnected X.50 channel, the listed rate is the one entered for the **CONN-TACC-TS:::MON** (I.91211) command.

X50   - X.50 subrate channel containing multiple customer circuits

TERMR - Termination released

TERM - Terminate and leave status

R   - RELEASED. Neither side is terminated

F   - FROM side of cross-connect is terminated

T   - TO side of cross-connect is terminated

B   - BOTH sides of cross-connect are terminated

UNMAPPED
        - Unmapped

UNMAPPED appears in the output message if the circuit under test specified is established to the subrate feature but not cross-connected. When the test access point is unmapped, no signal is connected to the lower test access channel of the test port.

LOOPED
        - Looped

        Appears in the case of a cross-connected customer circuit
        that is looped on itself.

<t_npc>
        - Facility terminating NPC for circuit being released from test access

ddd   - Channel in that NPC

f-f   - Subrate (customer) circuit in that channel

oos   - facility for the circuit being released from test access is out-of-service

mmmm Explanation of Error Classification

IDRG   Input, data out of range

Explanation of Error

INVALID TEST PORT NUMBER

SNVS   Status, not in valid state

Explanation of Error

TEST PORT IS NOT CONNECTED

SROF   Status, requested operation failed

Explanation of Error

A SPECIFIC TG193 REQUIRED FOR THIS COMMAND
SUBRATE APPLICATION FAILED

Possible error messages generated by application when running on DACS II

Active CCN side not IS or failed or pested or hardware OOS
CCB not eqd, not IS, or failed or inactive side CCB not eqd or not IS
Cross-connect a non Mode I channel to DCLU
Cross-connect a non SLC channel to DCLU
DSPP not in service, or failed
ETSI not equipped, not in service, or failed
FC not eqd, not IS, or failed or inactive side FC not eqd or not IS
FTMI not equipped, not in service, or failed
Invalid keyword(s) combination specified
Invalid parameter combination
RT-DCLU cross-connect with different channel number
RT-DCLU cross-connect with different ids
Reqd FMT not eqd,not IS,or failed,or inact side FMT not eqd, or not IS
Required FLI not equipped, not in service, or failed
Required MIU not equipped, not in service, or failed
Required MXR not equipped, not in service, or failed
TSI not eqd, not IS, or failed or inactive side TSI not eqd or not IS
The parameter specified does not match with the NPC type
UNIT not equipped, not in service, or failed
Unmatched channel range
Unmatched channel range involving SLC Mode III termination

Possible status messages generated by application when running on DACS II

Status message	*Explanation*
BAD PSEUDO CHANNEL RANGE	DSPC pseudo channel out of range
BADNPC	Bad NPC number
FAIL	Test port Group NPC failed
MCOND	An entity in the network is OOS or failed
NA	DACS CCN or UNIT involved cannot perform the cross-connect
NUTST	Test port kk is presently idle
OOS	Test port Group NPC out of service
UEQD	The test port Group NPC or the test port is not equipped

Possible error messages generated by application when running on ISX

Active SXC side not IS or failed or pested or hardware OOS
Invalid keyword(s) combination specified
Invalid parameter combination
The parameter specified does not match with the NPC type
Unmatched channel range

Possible status messages generated by application when running on ISX

Status message	Explanation
BAD PSEUDO CHANNEL RANGE	DSPC pseudo channel out of range
MCOND	An entity in the network is OOS or failed
NA	DACS CCN cannot perform the cross-connect
NUTST	Test port kk is presently idle
UEQD	The test port is not equipped

EXC,DSPC,DISC,TACC,TS,ALL,LINKS

RELEASE ALL CIRCUITS FROM SUBRATE TEST ACCESS

Explanation Of Command

This command releases multiple subrate circuits from test access and restores these circuits to released or terminated state. Two keywords govern the scope of the release from test access.

If the **ALL** keyword is used, only those test access connections that were originally connected by the administrative link **n[vv]** over which this command is being issued will be released from test access.

If the **LINKS** keyword is used, all test access connections in effect on the addressed DSP Application circuit pack running the X.50 Subrate application are released*.

This application will also use this command autonomously with the ALL keyword, if a link that had active test access circuits created over it is dropped for any reason. See the autonomous message section.

This command does not affect the terminate and leave state of the released circuit. If the circuit is terminated either before or during test access, it will retain the termination state upon release from test access.

---

*   The choice of keywords appears reversed. It is retained in this application in order to match the choice of keywords in the older subrate feature of DACS II. The ALL keyword means all test ports for a particular link. The LINKS keyword means all test ports over all links.

Command

[I.91251]
EXC-DSPC:[<xy>]:<p_npc>:[<ww>]:DISC-TACC-TS::{ALL|LINKS};

Completion Message

[O.91251]
```
   [<xy>] yy-mm-dd hh:mm:ss LINK-n[vv]
M  EXC DSPC::<p_npc>:[<ww>]:DISC TACC TS::{ALL|LINKS} COMPLD
   /* [O.91251] */
;
```

[O.91252]
```
   [<xy>] yy-mm-dd hh:mm:ss LINK-n[vv]
M  EXC DSPC::<p_npc>:[<ww>]:DISC TACC TS::LINKS COMPLD
   /* [O.94252] */
   /* NO SUBRATE TEST ACCESS CHANNELS WERE ACTIVE */
;
```

[O.91253]
```
   [<xy>] yy-mm-dd hh:mm:ss LINK-n[vv]
M  EXC DSPC::<p_npc>:[<ww>]:DISC TACC TS::ALL COMPLD
   /* [O.94253] */
   /* NO SUBRATE TEST ACCESS CHANNELS WERE ACTIVE BY LINK */
;
```

[O.91254]
```
   [<xy>] yy-mm-dd hh:mm:ss LINK-n[vv]
M  EXC DSPC::<p_npc>:[<ww>]:DISC TACC TS::{ALL|LINKS} COMPLD
   /* [O.94254] */
   /* ONE OR MORE SUBRATE TEST ACCESS CHANNELS \
COULD NOT BE RELEASED */
;
```

Denial Message

Not applicable.

Autonomous Message

```
[O.91251]
   [<xy>] yy-mm-dd hh:mm:ss LINK-n[vv]
M  EXC DSPC::<p_npc>:[<ww>]:DISC TACC TS::ALL COMPLD
   /* [O.91251] */
;

[O.91254]
   [<xy>] yy-mm-dd hh:mm:ss LINK-n[vv]
M  EXC DSPC::<p_npc>:[<ww>]:DISC TACC TS::ALL COMPLD
   /* [O.94254] */
   /* ONE OR MORE SUBRATE TEST ACCESS CHANNELS \
COULD NOT BE RELEASED */
;
```

Explanation Of Parameters

DISC-TACC-TS
    - Disconnect test access connection

ALL   - All

This keyword causes the release of only those test access channels whose test access was last operated on by administrative link **n[vv]**, which is the link over which this command is transmitted also. In the unusual case, where (for example) a test access connection is placed in monitor mode by **link 1** first and is then placed in split mode by **link 2**, then the test access connection is only dropped if the "disconnect test access" command with the ALL keyword is issued over **link 2**, because that is the link the test access connection was last operated on. The same command over link 1 will have no effect on that particular test access connection.

LINKS - Links

This keyword causes all test access channels for the addressed DSP Application circuit pack running the X.50 Subrate application to be released, regardless over which administrative link the test access connection had been initiated.

mmmm Explanation of Error Classification

SROF   Status, requested operation failed

Explanation of Error

A SPECIFIC TG193 REQUIRED FOR THIS COMMAND
SUBRATE APPLICATION FAILED

EXC,DSPC,DLT,CRS,TS,DCC

SUBRATE DISESTABLISH CHANNEL

Explanation Of Command

This command disestablishes a channel (or a range of channels) in a facility terminating NPC from the X.50 subrate application residing on the DSP application circuit pack. This command also disestablishes application-to-application connections.

This application will deny the disestablish channel command if subrate circuits on the channel are still cross-connected.

The disestablish command supports the following:

1. Disestablishment of a range of X.50 or X.57 channels.

2. Sending the UMC code (for an explanation of the UMC code, see the channel establish command) towards the facility that is to be disconnected. The `DCC` keyword must be used for that purpose.

3. Disestablishment of channels connected to another DSP Application. The channel number must be the pseudo channel number used when the connection was created. In order to completely remove the application-to-application connection, a disestablishment command must also be issued to the other application involved in the connection. See application command `CRTE-CRS-TS,X57` (I.91311) for information on how to establish application-to-application connections. Also see DACS II or DACS II ISX command `RTVR-CRS-APPL` (I.51201) for information on all pseudo channel numbers currently in use on the frame.

Note on NPC and Channel Numbering

There exist two numbering schemes for NPC numbers in DACS II. NPCs can be numbered either sequentially or hierarchically. Also note that on DACS II, sequential NPC numbers may be stated in 3-digit or 4-digit form. The NPC numbering scheme for DACS II is explained in detail in the Introduction part of this chapter. The messages that follow refer to NPC numbers, but do not show any details on NPC numbering. As just stated, the reader is referred to the beginning of this chapter for this information. On DACS II ISX, only sequential NPC numbers in 3-digit form are used.

The numbering of channels is also described in the Introduction.

Command

Input command to disestablish X.50 or X.57 channels:

```
[I.91321]
EXC-DSPC:[<xy>]:<p_npc>:[<ww>]:\
DLT-CRS-TS:<t_npc>-ddd[&&-eee][:DCC];
```

Completion Message

Output message to disestablish X.50 or X.57 channels:

```
[O.91321]
   [<xy>] yy-mm-dd hh:mm:ss LINK-n[vv]
M  EXC DSPC::<p_npc>:[<ww>]:DLT CRS TS:<t_npc>-ddd[&&-eee][:DCC] COMPLD
[  /* [O.91321] */]
[  "OOS"]
;
```

Denial Message

Error message for disestablishing X.50 or X.57 channels:

```
[O.91321.01]
   [<xy>] yy-mm-dd hh:mm:ss LINK-n[vv]
M  EXC DSPC::<p_npc>:[<ww>]:DLT CRS TS:<t_npc>-ddd[&&-eee][:DCC] DENY
   mmmmm
   /* [O.91321.01] */
   /* <explanation of error condition code> */
[  /* Channel number involved in the denial */]
[  /* qqq */]
;
```

Autonomous Message

Not applicable.

Explanation Of Parameters

EXC-DSPC
> - Execute on DSP Application circuit pack

<p_npc>
> - NPC number of DSP Application circuit pack
>
> The command that follows the NPC number for the DSP Application is sent to the DSP Application with that number, which reads that command and acts on it.

DLT-CRS-TS
> - Delete a channel from the subrate application

<t_npc>
> - Number of facility terminating NPC

ddd - Channel number in that NPC

eee - Channel number for end of range specified

DCC - Disconnect Code

> Causes the Unassigned Multiplexer Channel (UMC) control code to be inserted in the disestablished channel(s) towards the facility. If DCC is not specified, the disconnect code specified in the growth NPC command associated with the specified NPC is used.

OOS   - Out of service

Channels connected to an out-of-service facility NPC may be disestablished with this command. Such disestablishments require no special keyword in the input command, but the output message will contain the OOS keyword to indicate that the facility is out-of-service. The user should note that the appropriate disconnect channel code may not be inserted in the disestablished channel until the facility is restored to service under these conditions.

qqq   - Channel number involved in the denial (ddd through eee)

The user should note that none of the preceding channels in the range are completed if a problem is found, and subsequent channels may or may not have additional problems.

mmmm Explanation of Error Classification

ENEQ Equipage, not equipped

Explanation of Error

NPC <t_npc> IS NOT EQUIPPED

IDRG   Input, data out of range

Explanation of Error

INVALID CHANNEL NUMBER
INVALID CHANNEL RANGE NUMBER
INVALID NPC NUMBER
THE NPC IS CURRENTLY INVOLVED IN A ROLL

SNVS   Status, not in valid state

Explanation of Error

CHANNEL <t_npc>-ddd IS NOT ESTABLISHED TO SUBRATE
        APPLICATION

SROF   Status, requested operation failed

Explanation of Error

A SPECIFIC TG193 REQUIRED FOR THIS COMMAND
ACTIVE SUBRATE CROSS-CONNECTS ARE PRESENT ON THE
        CHANNEL
CHANNEL OR A CIRCUIT IS UNDER TEST
SUBRATE APPLICATION FAILED
TEST ACCESS CHANNEL IS NOT IDLE
TEST PORT kk IS NOT ESTABLISHED

Possible error messages generated by application when running on DACS II

A loopback is active on the TO termination
Active CCN side not IS or failed or pested or hardware OOS
CCB not eqd, not IS, or failed or inactive side CCB not eqd or not IS
Cross-connect a non Mode I channel to DCLU
Cross-connect a non SLC channel to DCLU
DSPP not in service, or failed
ETSI not equipped, not in service, or failed
FC not eqd, not IS, or failed or inactive side FC not eqd or not IS
FTMI not equipped, not in service, or failed
Invalid TO channel number
Invalid TO channel number range
Invalid channel 000 cross-connection specified
Invalid channel 031 cross-connection specified
Invalid keyword(s) combination specified
Invalid parameter combination
Invalid range for specified TO NPC type
No NPC's out of service and OOS keyword used
RT-DCLU cross-connect with different channel number
RT-DCLU cross-connect with different ids
Reqd FMT not eqd,not IS,or failed,or inact side FMT not eqd, or not IS
Required FLI not equipped, not in service, or failed
Required MIU not equipped, not in service, or failed
Required MXR not equipped, not in service, or failed
TO NPC is not provisioned as DGA
TSI not eqd, not IS, or failed or inactive side TSI not eqd or not IS
Termination is in process of being rolled
The parameter specified does not match with the NPC type
UNIT not equipped, not in service, or failed
Unmatched channel range
Unmatched channel range involving SLC Mode III termination

Possible status messages generated by application when running on DACS II

Status message	*Explanation*
BAD PSEUDO CHANNEL RANGE	DSPC pseudo channel out of range
T INVLD	Invalid NPC type
T NOMTH	No Match
T ROLL	Circuit is involved in a roll
T TP	NPC is used for test access
T UASGN	unassign
T UEQD	Unequipped
T UNPASGN	Unassigned or Not Properly Assigned
T UTST	Under Test

Possible error messages generated by application when running on ISX

Active SXC side not IS or failed or pested or hardware OOS
Invalid TO channel number
Invalid channel 000 cross-connection specified
Invalid channel 031 cross-connection specified
Invalid keyword(s) combination specified
Invalid parameter combination
Invalid range for specified NPC type
Invalid range for specified TO NPC type
No NPC's out of service and OOS keyword used
No RDLD circuits and INCL keyword used
The parameter specified does not match with the NPC type
Trunk conditioning must match for range disconnect with DCC keyword
Unmatched channel range

Possible status messages generated by application when running on ISX

Status message	Explanation
BAD PSEUDO CHANNEL RANGE	DSPC pseudo channel out of range
T INVLD	Invalid NPC type
T NOMTH	No Match
T TP	NPC is used for test access
T UASGN	unassign
T UEQD	Unequipped
T UNPASGN	Unassigned or Not Properly Assigned
T UTST	Under Test

The "T" in front of some of the status messages denotes the "TO" side.

EXC,DSPC,ED,CRTE,TS,DCC

CHANGE SUBRATE ESTABLISHED CHANNEL

Explanation Of Command

This command moves a subrate established channel (**x.57** or **x.50**) and all associated subrate cross-connections from an existing NPC and channel to a **NEW** NPC and channel. Once the command executes, the **OLD** channel is left disestablished and the **NEW** channel is established with exactly the same format (that is, rate and **x.50/x.57** format) as the **OLD**. When present, any subrate circuits that used the **OLD** channel for one or more ends are also moved to the **NEW** channel. In effect, this command combines the operations of the **DISC-CRS-TS**, **DLT-CRS-TS**, **CRTE-CRS-TS**, and **CONN-CRS-TS** commands that would be necessary to do the same change.

Prior to this command, the **NEW** channel must not be established or used in any DACS cross-connection unless it is already established with exactly the same format as the **OLD** channel. However, in the latter case, no prior subrate cross-connections can be present on the **NEW** channel. Also, none of the **OLD** or **NEW** established channels nor any portion of the subrate circuits associated with them can be under test access at the time this command is issued. If no subrate cross-connections are present on the **OLD** channel and the **NEW** channel is already established in the same manner, the command will be denied. In this case, the **OLD** channel can simply be disestablished (**DLT-CRS-TS**) to achieve the same effect as the **ED-CRTE-TS** command would have achieved.

Once moved to the **NEW** channel, the established channel and all associated subrate cross-connections are left in the same terminate and leave state that existed with the **OLD** channel. For example, if one of the subrate circuits in a moved **X.50** channel was terminated in the **TO** direction before the change command, it remains terminated in the same direction after the command. If desired, changes to the terminate and leave state can be done before or after moving the channel by using the subrate change termination command (**ED-PRMTR-TS,{TERM|RLS}**, I.91381).

Use of the optional **DCC** keyword causes the unassigned multiplexer channel (UMC) code to be inserted in the **OLD** channel(s) towards the NPC facility **<t_npc>** when the command completes. If this keyword is not specified, the disconnection code specified in the **CRTE-EQPT,NPC** command associated with NPC **<t_npc>** is used.

OLD channels connected to an out-of-service facility NPC may also be moved with this command. Such changes require no special keyword in the input command, but the output message will contain the **OOS** keyword to indicate that the facility is out-of-service. The user should note that the appropriate disconnection channel code may not be inserted in the **OLD** facility channels until the facility is restored to service under these conditions. If the facility NPC associated with the **NEW** channels is out-of-service, the command will be denied.

This command has the limitation that there must be room to establish at least one circuit, in order for this command to work. If the number of established circuits is at its maximum, which is currently 55 circuits, then this command will be denied.

Note on NPC and Channel Numbering

There exist two numbering schemes for NPC numbers in DACS II. NPCs can be numbered either sequentially or hierarchically. Also note that on DACS II, sequential NPC numbers may be stated in 3-digit or 4-digit form. The NPC numbering scheme for DACS II is explained in detail in the Introduction part of this chapter. The messages that follow refer to NPC numbers, but do not show any details on NPC numbering. As just stated, the reader is referred to the beginning of this chapter for this information. On DACS II ISX, only sequential NPC numbers in 3-digit form are used.

The numbering of channels is also described in the Introduction.

Command

[I.91361]
```
EXC-DSPC:[<xy>]:<p_npc>:[<ww>]:ED-CRTE-TS:\
<f_npc>-ddd[&&-eee],<t_npc>-jjj[&&-kkk]:[:DCC];
```

Completion Message

```
[O.91361]
    [<xy>] yy-mm-dd hh:mm:ss LINK-n[vv]
M   EXC DSPC::<p_npc>:[<ww>]:ED CRTE TS:
    <f_npc>-ddd[&&-eee],<t_npc>-jjj[&&-kkk]:[:DCC] COMPLD
[   /* [O.91361] */]
[   "OOS"]
;
```

Denial Message

```
[O.91361.01]
    [<xy>] yy-mm-dd hh:mm:ss LINK-n[vv]
M   EXC DSPC::<p_npc>:[<ww>]:ED CRTE TS:
    <f_npc>-ddd[&&-eee],<t_npc>-jjj[&&-kkk]:[:DCC] DENY
    mmmm
    /* [O.91361.01] */
    /* <explanation of error condition code> */
[   /* OLD and NEW channel numbers involved in the denial */]
[   /* yyy,zzz */]
;
```

Autonomous Message

Not applicable.

Explanation Of Parameters

EXC-DSPC
> - Execute on DSP Application circuit pack

<p_npc>
> - NPC number of DSP Application circuit pack
>
> The command that follows the NPC number for the DSP Application is sent to the DSP Application with that number, which reads that command and acts on it.

ED-CRTE-TS
> - Change (edit) channels containing subrate circuits

<f_npc>
> - Number of "OLD" facility terminating NPC

ddd   - Channel number on that facility terminating NPC

eee   - Channel number for end of OLD range

<t_npc>
        - Number of "NEW" facility terminiating NPC

jjj   - Channel number on that facility terminating NPC

kkk   - Channel number for end of NEW range

DCC   - Disconnect code

The **DCC** keyword indicates that the unassigned multiplexer channel (UMC) code is inserted towards the OLD channel's facilities when the command completes. If this keyword is not present, the disconnect code specified in the command used to provision NPC <t_npc> is used.

OOS   - Out-of-service

The OOS keyword appears in the output whenever the established channel change has taken place with the OLD channel's facility terminating NPC out-of-service or failed. In this case, the user should note that the appropriate disconnect channel code may not be inserted in the disestablished channel until the facility is restored to service.

yyy   - OLD channel number involved in the denial

This channel number is issued when a range of channels was specified in the input command. yyy is the old channel number in the range associated with the error.

zzz   - NEW channel number involved in the denial

This channel number is issued when a range of channels was specified in the input command. zzz is the new channel number in the range associated with the error.

mmmm Explanation of Error Classification

IDRG   Input, data out of range

Explanation of Error

INVALID CHANNEL NUMBER
INVALID CHANNEL RANGE NUMBER
INVALID NPC NUMBER
THE NPC IS CURRENTLY INVOLVED IN A ROLL

SNIS   Status, not in-service

Explanation of Error

NEW NPC <t_npc> IS OUT-OF-SERVICE

SNVS   Status, not in valid state

Explanation of Error

NEW CHANNEL IS ESTABLISHED TO OTHER TG193
OLD CHANNEL IS NOT SUBRATE ESTABLISHED TO THIS TG193

SROF   Status, requested operation failed

Explanation of Error

A SPECIFIC TG193 REQUIRED FOR THIS COMMAND
NEW CHANNEL HAS ACTIVE CROSS-CONNECT
NEW CHANNEL IS ALREADY ESTABLISHED DIFFERENTLY THAN
        OLD
OLD AND NEW CHANNELS OVERLAP
OLD AND NEW RANGES ARE NOT THE SAME
SUBRATE APPLICATION FAILED

EXC,DSPC,ED,PRMTR,TS,DEFAULT,UMC,MUX

CHANGE SUBRATE DEFAULTS

Explanation Of Command

This command changes the default bit patterns for the UMC (Unassigned Multiplexer Channel) code, the MUX (Multiplexer out of Synchronization) code, and the SIG signaling code.

The default bit patterns for the UMC and the MUX bit pattern are 8 bits of all "1"s. The UMC pattern is sent when a subrate circuit in a multiplex of an X.50 channel is not occupied. The MUX pattern is sent when a subrate out-of-frame condition exists. This command is used to change those defaults.

The SIG bit pattern specifies the "a,b,c,d" signaling bits that are sent from the subrate application to the NPC, which then in turn are used to set the signaling bits in CAS Time Slot 16. The default setting for the four signaling bits is all "1"s. This command is used to change that default.

When this command is executed, the defaults change as of that moment; there will be no retroactive changes to circuits that are already established. Also, the defaults can still be changed for individual circuits at the time new channels are established.

This command can be applied in three ways. If an individual DSP Application circuit pack with the subrate application is addressed, the default change applies to only that circuit pack. If a range of DSP Application circuit packs is addressed, then it applies to that range. If the DSP Application circuit packs are addressed by type, then it applies to all DSP Application circuit packs of that type. It is this last form of the command that handles a truly global default change for an entire DACS II or DACS II ISX frame.

Note on NPC and Channel Numbering

There exist two numbering schemes for NPC numbers in DACS II. NPCs can be numbered either sequentially or hierarchically. Also note that on DACS II, sequential NPC numbers may be stated in 3-digit or 4-digit form. The NPC numbering scheme for DACS II is explained in detail in the Introduction part of this chapter. The messages that follow refer to NPC numbers, but do not show any details on NPC numbering. As just stated, the reader is referred to the beginning of this chapter for this information. On DACS II ISX, only sequential NPC numbers in 3-digit form are used.

The numbering of channels is also described in the Introduction.

Command

[I.91371]
```
EXC-DSPC:[<xy>]:{<p_npc>|<p_npc>&&[&]-<q_npc>|SD111}:[<ww>]:\
ED-PRMTR-TS:DEFAULT:[UMC-X-uu]:[MUX-X-yy][:SIG-X-a];
```

Completion Message

[O.91371]
```
   [<xy>] yy-mm-dd hh:mm:ss LINK-n[vv]
M  EXC DSPC::<z_npc>:[<ww>]:ED PRMTR TS:DEFAULT:
[UMC-X-uu]:[MUX-X-yy][:SIG-X-a] COMPLD
   /* [O.91371] */
;
```

Denial Message

[O.91371.01]
```
   [<xy>] yy-mm-dd hh:mm:ss LINK-n[vv]
M  EXC DSPC::<z_npc>:[<ww>]:ED PRMTR TS:DEFAULT:
[UMC-X-uu]:[MUX-X-yy][:SIG-X-a] DENY
   mmmm
   /* [O.91371.01] */
   /* <explanation of error> */
;
```

Autonomous Message

Not applicable.

Explanation Of Parameters

EXC-DSPC
- Execute on DSP Application circuit pack

<p_npc>
- NPC number of DSP Application circuit pack

<q_npc>
- NPC number of end of range of DSP Application circuit packs

SD111 - Type field that addresses all DSP Application circuit packs
that run the application

The command that follows the NPC number for the DSP Application is sent to the
DSP Application with that number, which reads that command and acts on it.

<z_npc>
- NPC number of DSP Application circuit pack that responds to the command

ED-PRMTR-TS:DEFAULT
- Change defaults for UMC, MUX, and SIG codes

UMC - Defines the unassigned multiplexer channel code

uu - Unassigned multiplexer channel code in hex notation (8 bits)

The original default is X"FF".

MUX - Defines the multiplexer out of synchronization code

yy - Multiplexer out of synchronization code in hex notation (8 bits)

The original default is X"FF".

SIG - Defines the signaling bits

a - Signaling bits in hex notation (4 bits)

The original default signaling bits are X"F".
The signaling bits are sent by the subrate application
to the facility terminating NPC

mmmm Explanation of Error Classification

SROF   Status, requested operation failed

Explanation of Error

A SPECIFIC TG193 REQUIRED FOR THIS COMMAND
SUBRATE APPLICATION FAILED

EXC,DSPC,ED,PRMTR,TS,TERM,RLS

CHANGE SUBRATE TERMINATE AND LEAVE

Explanation Of Command

This command changes the terminate and leave state of the cross-connection associated with a subrate circuit. The termination point is defined in terms of an external facility termination (that is, an NPC, channel, and subrate circuit number). If the termination point specified is under test or is not cross-connected, the command will be denied.

This command cannot be used to change the terminate and leave status of the entire X.50 channel (that is, all subrate circuits within the X.50 channel at once). Also, this command cannot be used to change the terminate and leave status of an external facility termination that is looped on itself.

The termination state resulting from the command depends on the state
prior to the command as indicated by the following table.
In that table

> R means Released State,
> F means FROM State,
> T means TO State,
> B means BOTH States,
> TERM means Terminate and Leave Activate,
> RLS means Terminate and Leave Release.

PRIOR STATE	REQUESTED CHANGE	NEW STATE	PRIOR STATE	REQUESTED CHANGE	NEW STATE
R	TERM F	F	R	RLS F	DNY
R	TERM T	T	R	RLS T	DNY
R	TERM B	B	R	RLS B	DNY
F	TERM F	DNY	F	RLS F	R
F	TERM T	B	F	RLS T	DNY
F	TERM B	B	F	RLS B	R
B	TERM F	DNY	B	RLS F	T
B	TERM T	DNY	B	RLS T	F
B	TERM B	DNY	B	RLS B	R
T	TERM T	DNY	T	RLS T	R
T	TERM F	B	T	RLS F	DNY
T	TERM B	B	T	RLS B	R

Caution: UMC is inserted towards the direction that is terminated, potentially causing a loss of service.

Note on NPC and Channel Numbering

There exist two numbering schemes for NPC numbers in DACS II. NPCs can be numbered either sequentially or hierarchically. Also note that on DACS II, sequential NPC numbers may be stated in 3-digit or 4-digit form. The NPC numbering scheme for DACS II is explained in detail in the Introduction part of this chapter. The messages that follow refer to NPC numbers, but do not show any details on NPC numbering. As just stated, the reader is referred to the beginning of this chapter for this information. On DACS II ISX, only sequential NPC numbers in 3-digit form are used.

The numbering of channels is also described in the Introduction.

Note on Subrate Circuit Numbering

Individual subrate circuits within an `x.50` multiplex are referred to by subrate circuit number. The numbering convention for subrate circuits within an `x.50` circuits is shown in the following table.

Rate in kbit/s	Possible Circuit Numbers
2.4 & 1.2	1-1 2-1 3-1 4-1 5-1 1-2 2-2 3-2 4-2 5-2 1-3 2-3 3-3 4-3 5-3 1-4 2-4 3-4 4-4 5-4
4.8	1-1 2-1 3-1 4-1 5-1 1-2 2-2 3-2 4-2 5-2
9.6	1-1 2-1 3-1 4-1 5-1
19.2	1-1 2-1 3-1 4-1 (two 9.6 slots each)

For **X.57** circuits, the subrate circuit number need not be stated in the command (it is optional). If it is stated, it must be **1-1**.

Command

[I.91381]
**EXC-DSPC:[<xy>]:<p_npc>:[<ww>]:\\
ED-PRMTR-TS:<t_npc>-ddd[-f-f]:{TERM|RLS}m;**

Completion Message

[O.91381]
```
   [<xy>] yy-mm-dd hh:mm:ss LINK-n[vv]
M  EXC DSPC::<p_npc>:[<ww>]:\
ED PRMTR TS:<t_npc>-ddd[-f-f]:{TERM|RLS}m COMPLD
   /* [O.91381] */
   /* NEW STATE */
   "TERMs"
[  /* TO customer circuit number */]
[  "1-1"]
;
```

Denial Message

```
[O.91381.01]
   [<xy>] yy-mm-dd hh:mm:ss LINK-n[vv]
M  EXC DSPC::<p_npc>:[<ww>]:\
ED PRMTR TS:<t_npc>-ddd[-f-f]:{TERM|RLS}m DENY
   mmmm
   /* [O.91381.01] */
   /* <explanation of error condition code> */
[  /* TO customer circuit number */]
[  "1-1"]
;
```

Autonomous Message

Not applicable.

Explanation Of Parameters

EXC-DSPC
> - Execute on DSP Application circuit pack

<p_npc>
> - NPC number of DSP Application circuit pack

> The command that follows the NPC number for the DSP Application circuit pack is sent to the DSP Application circuit pack with that number, which reads that command and acts on it.

ED-PRMTR-TS
> - Change the terminate and leave state as directed by subsequent parameters

TERM - Terminate

RLS - Release

> The requested termination state change is indicated by the TERM or RLS where TERM activates and RLS releases the terminate and leave state.

m   - Requested termination state

      m   *Explanation*

      F   FROM. Terminate or release the FROM side
      T   TO. Terminate or release the TO side
      B   BOTH. Terminate or release BOTH sides

The TO direction is defined as facing towards the external facility termination indicated by the NPC, channel, and subrate circuit number. (The TO and FROM directions are the same sides that are connected to the upper and lower test port channels, respectively, in the corresponding CONN-TACC-TS:::MON test access command.)

<t_npc>
     - Number of "TO" facility terminating NPC

ddd   - Channel number on that facility terminating NPC

f-f   - Subrate circuit number

NEW STATE indicates the new termination state of the circuit as a result of the command. The circuit can be left terminated in either or both directions, or left in the released state.

mmmm Explanation of Error Classification

ENEQ Equipage, not equipped

    Explanation of Error

    NPC <t_npc> IS NOT EQUIPPED

IDNV   Input, data not valid

    Explanation of Error

    TERM/RLS CANNOT BE SPECIFIED FOR AN UNMAPPED CIRCUIT

IDRG   Input, data out of range

    Explanation of Error

    INVALID CHANNEL NUMBER
    INVALID CIRCUIT NUMBER
    INVALID NPC NUMBER
    THE NPC IS CURRENTLY INVOLVED IN A ROLL

SNIS   Status, not in-service

    Explanation of Error

    NPC <t_npc> IS OUT-OF-SERVICE

SNVS   Status, not in valid state

Explanation of Error

CHANNEL <t_npc>-ddd IS NOT ESTABLISHED TO SUBRATE
        APPLICATION
THE SPECIFIED ACCESS POINT IS UNDER TEST

SROF   Status, requested operation failed

Explanation of Error

A SPECIFIC TG193 REQUIRED FOR THIS COMMAND
SUBRATE APPLICATION FAILED
TERM/RLS CANNOT BE SPECIFIED FOR A LOOPED CIRCUIT
TERMINATE AND LEAVE IS ALREADY IN REQUESTED STATE

EXC,DSPC,RTRV,CRS,TS

RETRIEVE SUBRATE CROSS-CONNECT

Explanation Of Command

This command requests the FROM channel connectivity information for each subrate circuit in the established channel or range of established channels.

Only one subrate circuit will be reported for an X.57 channel.

The following additional information is also shown:

- The channel number of the subrate application circuit pack that the channel <t_npc>ddd is established (cross-connected) to.

- The UMC, MUX, and SIG values for the channel.

    — The UMC code is the Unassigned Multiplexer Code, which defaults to X'FF'.

    — The MUX code is the Multiplexer out of Synch code, which defaults to X'FF'.

    — The SIG code defines the signaling bits '<t_npc>d' that are transmitted to the downstream facility if signaling bits are provisioned on that facility terminating NPC. The SIG code defaults to X'F'.

Note on NPC and Channel Numbering

There exist two numbering schemes for NPC numbers in DACS II. NPCs can be numbered either sequentially or hierarchically. Also note that on DACS II, sequential NPC numbers may be stated in 3-digit or 4-digit form. The NPC numbering scheme for DACS II is explained in detail in the Introduction part of this chapter. The messages that follow refer to NPC numbers, but do not show any details on NPC numbering. As just stated, the reader is referred to the beginning of this chapter for this information. On DACS II ISX, only sequential NPC numbers in 3-digit form are used.

The numbering of channels is also described in the Introduction.

Note on Subrate Circuit Numbering

Individual subrate circuits within an **x.50** multiplex are referred to by subrate circuit number. The numbering convention for subrate circuits within an **x.50** circuits is shown in the following table.

Rate in kbit/s	Possible Circuit Numbers
2.4 & 1.2	1-1 2-1 3-1 4-1 5-1 1-2 2-2 3-2 4-2 5-2 1-3 2-3 3-3 4-3 5-3 1-4 2-4 3-4 4-4 5-4
4.8	1-1 2-1 3-1 4-1 5-1 1-2 2-2 3-2 4-2 5-2
9.6	1-1 2-1 3-1 4-1 5-1
19.2	1-1 2-1 3-1 4-1 (two 9.6 slots each)

For **x.57** circuits, the subrate circuit number need not be stated in the command (it is optional). If it is stated, it must be **1-1**.

Command

```
[I.91121]
EXC-DSPC:[<xy>]:{<p_npc>|<p_npc>&&[&]-<q_npc>|SD111}:[<ww>]:\
RTRV-CRS-TS:<t_npc>-ddd[&&-eee];
```

Completion Message

For an X.57 channel

```
[O.91121]
    <xy> yy-mm-dd hh:mm:ss LINK-n[vv]
M   EXC DSPC::<z_npc>:[<ww>]:RTRV CRS TS:<t_npc>-ddd[&&-eee] COMPLD
    /* [O.91121] */
    "UMC-X-uu,MUX-X-yy,SIG-X-a"
    /* NPC Number-Channel Number */
    "<t_npc>-hhh"
    /* Application and FROM Data */
    "TO,<ttt>,X57,<from-inf>"
>
[Another complete message if a range of channels was used]
>
             .
             .
>
[Another complete message if a range of channels was used]
>
    <xy> yy-mm-dd hh:mm:ss LINK-n[vv]
M   EXC DSPC::<z_npc>:[<ww>]:RTRV CRS TS:<t_npc>-ddd[&&-eee] COMPLD
;
```

Output Example

```
[O.91121]
    xy yy-mm-dd hh:mm:ss LINK-n[vv]
M   EXC DSPC::031:ww:RTRV CRS TS:041-001 COMPLD
    /* [O.91121] */
    "UMC-X-FF,MUX-X-FF,SIG-X-F"
    /* NPC Number-Channel Number */
    "041-001"
    /* Application and FROM Data */
    "TO,SR_CHANNEL-013,X57,063-002/3-2/48"
>
    <xy> yy-mm-dd hh:mm:ss LINK-n[vv]
M   EXC DSPC::031:ww:RTRV CRS TS:041-001 COMPLD
;
```

For an X.50 channel

```
[O.91121]
    <xy> yy-mm-dd hh:mm:ss LINK-n[vv]
M   EXC DSPC::<z_npc>:[<ww>]:RTRV CRS TS:<t_npc>-ddd[&&-eee] COMPLD
    /* [O.91121] */
    "UMC-X-uu,MUX-X-yy,SIG-X-a"
    /* NPC Number-Channel Number */
    "<t_npc>-hhh"
    /* Application Data */
    "TO,<ttt>,X50"
    /* FROM Data */
    /* PHASE 1, PHASE 2, PHASE 3 */
    "<from-inf>,<from-inf>,<from-inf>"
    "<from-inf>,<from-inf>,<from-inf>"
    "<from-inf>,<from-inf>,<from-inf>"
    "<from-inf>,<from-inf>,<from-inf>"
    /* PHASE 4, PHASE 5 */
    "<from-inf>,<from-inf>"
    "<from-inf>,<from-inf>"
    "<from-inf>,<from-inf>"
    "<from-inf>,<from-inf>"
>
[Another complete message if a range of channels was used]
>

             .
             .
>
[Another complete message if a range of channels was used]
>
    <xy> yy-mm-dd hh:mm:ss LINK-n[vv]
M   EXC DSPC::<z_npc>:[<ww>]:RTRV CRS TS:<t_npc>-ddd[&&-eee] COMPLD
;
```

Output Example

[O.91121]
```
    xy yy-mm-dd hh:mm:ss LINK-n[vv]
M   EXC DSPC::031:ww:RTRV CRS TS:041-001 COMPLD
    /* [O.91121] */
    "UMC-X-FF,MUX-X-FF,SIG-X-F"
    /* NPC Number-Channel Number */
    "041-001"
    /* Application Data */
    "TO,SR_CHANNEL-013,X50"
    /* FROM Data */
    /* PHASE 1, PHASE 2 ,PHASE 3 */
    "023-024/3-1/96,-IDLE---------,-IDLE---------"
    "023-024/3-1/96,-IDLE---------,-IDLE---------"
    "023-024/3-1/96,-IDLE---------,-IDLE---------"
    "023-024/3-1/96,-IDLE---------,-IDLE---------"
    /* PHASE 4, PHASE 5 */
    "063-014/3-2/48,011-018/4-4/24"
    "004-027/1-1/48,-IDLE---------"
    "063-014/3-2/48,012-019/5-3/24"
    "004-027/1-1/48,013-020/2-4/24"
>
    <xy> yy-mm-dd hh:mm:ss LINK-n[vv]
M   EXC DSPC::031:ww:RTRV CRS TS:041-001 COMPLD
;
```

Note: It may be somewhat confusing to the reader that the first circuit in phase 4, even though it occupies the first and the third position, only points to the second position of the circuit it is connected to. The reason is very simple. A circuit always points to the first position it occupies within the phase, because that is how we address a circuit; even though the data in the third position of phase 4 is physically connected to the fourth position of phase 3 of circuit 063-014. For the same reason all 9.6 circuit point to the first position within each phase, even though they occupy all four positions.

Denial Message

```
[O.91121.01]
    <xy> yy-mm-dd hh:mm:ss LINK-n[vv]
M   EXC DSPC::<z_npc>:[<ww>]:RTRV CRS TS:<t_npc>-ddd[&&-eee] DENY
    mmmm
    /* [O.91121.01] */
    /* <explanation of error condition code> */
;
```

Autonomous Message

Not applicable.

Explanation Of Parameters

EXC-DSPC
- Execute on DSP Application circuit pack

<p_npc>
- NPC number of DSP Application circuit pack or beginning of range

<q_npc>
- NPC number for end of range specified

SD111 - Type designation for DSP Application circuit pack addressing all circuit packs running that application

The command that follows the NPC number(s) or type designation for the DSP Application card is sent to the DSP Application card or cards with that number(s) or designation, which read(s) that command and act(s) on it.

<z_npc>
- NPC number of DSP Platform circuit pack running the subrate application, which is generating this particular output message

If the input command is addressed to a single DSP Application circuit pack, then the output NPC number <z_npc> is equal to the input NPC number <p_npc>. If the input command is addressed to a range of NPCs or to all DSP Application circuit packs via the type field, then the <z_npc> value identifies the DSP Application circuit pack that is actually generating the particular output message.

RTRV-CRS-TS
- Query for information on FROM circuits connected to a particular TO circuit.

<t_npc>
- Number of "TO" facility terminating NPC

ddd - Channel number on that facility terminating NPC

eee - Highest channel number for range of channel numbers

The channel <t_npc>-ddd (through <t_npc>-eee if range specified) must be established using a subrate establish command before a subrate query can be completed.

UMC - Defines the unassigned multiplexer channel code for this channel

uu - Unassigned multiplexer channel code in hex notation (8 bits)
   The default is X"FF".

MUX - Defines the multiplexer out of synchronization code for this channel

yy - Multiplexer out of synchronization code in hex notation (8 bits)
   The default is X"FF".

SIG - Defines the signaling bits for this channel

a - Signaling bits (abcd) in hex notation (4 bits)

The default signaling bits are X"F". The signaling bits are sent by the subrate application to the facility terminating NPC, which inserts them into Time Slot 16 if appropriate.

hhh - Channel number.

A particular channel number within the range from ddd through eee displayed in the output message that associates the output with that channel number.

ttt - Subrate application channel number (TO side) in the form: SR_CHANNEL-ttt

X50 - This is an X.50 channel

X57 - This is an X.57 channel

UNMAP - Test access channel not connected because circuit is not mapped
   (cross-connected)

from-inf

> - information on From circuit, which is in the following form: **<f_npc>-jjj/l-l/rr**

> *where:*

> | | |
> |---|---|
> | **<f_npc>** | FROM circuit facility terminating NPC |
> | **jjj** | FROM channel in that NPC |
> | **l-l** | FROM customer (subrate) circuit in that channel |
> | | **l-l** follows the X.50 circuit numbering convention |
> | | **l-l** has the value **l-l** for an X.57 channel |
> | **rr** | Subrate circuit rate value (24, 48, 96, 19) |

> > *where:*
> > **24** stands for 2.4 kbit/s
> > **48** stands for 4.8 kbit/s
> > **96** stands for 9.6 kbit/s
> > **19** stands for 19.2 kbit/s

> | | |
> |---|---|
> | **-IDLE---------** | This subrate circuit is idle |

<f_npc>

> - FROM circuit facility terminating NPC

jjj - Channel number in that NPC connected to the test access channel

mmmm	Explanation of Error Classification
IDRG	Input, data out of range

Explanation of Error

INVALID CHANNEL NUMBER
INVALID CHANNEL RANGE NUMBER
INVALID NPC NUMBER
THE NPC IS CURRENTLY INVOLVED IN A ROLL

SNVS	Status, not in valid state

Explanation of Error

THE SPECIFIED CHANNEL IS TEST PORT

SROF	Status, requested operation failed

Explanation of Error

SUBRATE APPLICATION FAILED

EXC,DSPC,RTRV,EQPT,TS,SRHDW

RETRIEVE SUBRATE HARDWARE

Explanation Of Command

This subrate command requests a circuit* trace for the subrate circuit identified as the TO side. The subrate circuit number is a required parameter for all X.50 circuits; it is an optional parameter for X.57 circuits. The output for this command is as follows:

1. The NPC number, the channel number, and the subrate circuit number for the FROM side of the cross-connection (even if the TO side is temporarily connected to a test port channel).

2. The channel number of the subrate application circuit pack that the FROM circuit is connected to.

3. The channel number of the subrate application circuit pack that the TO circuit is connected to.

4. The rate of the circuit.

5. Whether the circuit is terminated and which side is terminated.

6. Whether the circuit is under test access and the state of the test access.

7. The identity of the test port for the TO circuit, if the TO circuit is in monitor or split mode.

8. If the circuit is not cross-connected, the command will still work, but answers for the FROM side will say NOT CROSS-CONNECTED and the rate will be answered as UNKNOWN, unless it is an X.57 circuit.

---

*   This has also been called a hardware trace in the older DACS II implementation, which is why the keyword is SRHDW.

If the facility terminating channel referenced in the command has not been established to the subrate application, the command will be denied.

Note on NPC and Channel Numbering

There exist two numbering schemes for NPC numbers in DACS II. NPCs can be numbered either sequentially or hierarchically. Also note that on DACS II, sequential NPC numbers may be stated in 3-digit or 4-digit form. The NPC numbering scheme for DACS II is explained in detail in the Introduction part of this chapter. The messages that follow refer to NPC numbers, but do not show any details on NPC numbering. As just stated, the reader is referred to the beginning of this chapter for this information. On DACS II ISX, only sequential NPC numbers in 3-digit form are used.

The numbering of channels is also described in the Introduction.

Note on Subrate Circuit Numbering

Individual subrate circuits within an `x.50` multiplex are referred to by subrate circuit number. The numbering convention for subrate circuits within an `x.50` circuits is shown in the following table.

Rate in kbit/s	Possible Circuit Numbers
2.4 & 1.2	1-1 2-1 3-1 4-1 5-1 1-2 2-2 3-2 4-2 5-2 1-3 2-3 3-3 4-3 5-3 1-4 2-4 3-4 4-4 5-4
4.8	1-1 2-1 3-1 4-1 5-1 1-2 2-2 3-2 4-2 5-2
9.6	1-1 2-1 3-1 4-1 5-1
19.2	1-1 2-1 3-1 4-1 (two 9.6 slots each)

For `x.57` circuits, the subrate circuit number need not be stated in the command (it is optional). If it is stated, it must be `1-1`.

Command

[I.91131]
```
EXC-DSPC:[<xy>]:{<p_npc>|<p_npc>&&[&]-<q_npc>|SD111}:[<ww>]:\
RTRV-EQPT-TS:<t_npc>-ddd[-f-f]:SRHDW;
```

Completion Message

```
[O.91131]
    <xy> yy-mm-dd hh:mm:ss LINK-n[vv]
M   EXC DSPC::<z_npc>:[<ww>]:\
RTRV EQPT TS:<t_npc>-ddd[-f-f]:SRHDW COMPLD
    /* [O.91131] */
    "FROM-{NOT CROSS-CONNECTED|<f_npc>-jjj-l-l,SR_CHANNEL-vvv}"
    "TO,SR_CHANNEL-ttt"
    "RATE-{rr|UNKNOWN},TL-{R|F|T|B},TA-{NONE|MON|SPL}[,TP-kk]"
;
```

Output Example

```
    xy yy-mm-dd hh:mm:ss LINK-n[vv]
M   EXC DSPC::031:ww:RTRV EQPT TS:041-001-2-1:SRHDW COMPLD
    /* [O.91131] */
    "FROM-063-002-4-1,SR_CHANNEL-012"
    "TO,SR_CHANNEL-013"
    "RATE-96,TL-R,TA-NONE"
;
```

Denial Message

```
[O.91131.01]
    <xy> yy-mm-dd hh:mm:ss LINK-n[vv]
M   EXC DSPC::<z_npc>:[<ww>]:RTRV EQPT TS:\
<t_npc>-ddd[-f-f]:SRHDW DENY
    mmmm
    /* [O.91131.01] */
    /* <explanation of error condition code> */
;
```

Autonomous Message

Not applicable.

Explanation Of Parameters

EXC-DSPC

       - Execute on DSP Application circuit pack

<p_npc>
- NPC number of DSP Application circuit pack

<q_npc>
- NPC number for end of range specified

SD111 - Type designation for DSP Application circuit pack that addresses
all circuit packs running the application

The command that follows the NPC number(s) or type designation for the DSP
Application card is sent to the DSP Application card or cards with that number(s) or
designation, which read(s) that command and act(s) on it.

<z_npc>
- NPC number of DSP Platform running the subrate application, which
is generating this particular output message

If the input command is addressed to a single DSP Application circuit pack, then
the output NPC number <z_npc> is equal to the input NPC number <p_npc>. If the
input command is addressed to a range of NPCs or to all DSP Application circuit
packs via the type field, then the <z_npc> value identifies the DSP Application
circuit pack that is actually generating the particular output message.

RTRV-EQPT-TS
- Query for information on individual subrate (customer) circuit.

SRHDW - get information on individual subrate (customer) circuit

<t_npc>
- Number of "TO" facility terminating NPC

ddd - Channel number on that facility terminating NPC

The channel <t_npc>-ddd must be established using a subrate establish command
before a subrate query can be completed.

f-f - Subrate circuit number in that channel
(A required parameter except for X.57 circuits)

<f_npc>
- Number of "FROM" facility terminating NPC to be retrieved

jjj - Channel number on that facility terminating NPC to be retrieved

l-l - Subrate circuit number in that channel to be retrieved

vvv - Subrate application channel number (FROM side)

ttt - Subrate application channel number (TO side)

RATE   - Subrate circuit rate

rr   - Subrate circuit rate value (24, 48, 96, 19)

where:

24   stands for 2.4 kbit/s
48   stands for 4.8 kbit/s
96   stands for 9.6 kbit/s
19   stands for 19.2 kbit/s

UNKNOWN
            - The X.50 circuit is unassigned

TL   - Terminate and Leave state

R   - Released, circuit not terminated

F   - FROM side terminated

T   - TO side terminated

B   - Both sides terminated

TA   - Test Access

NONE   - No test access port connected to this circuit

MON   - Test port is in Monitor mode

SPL   - Test port is in Split mode

TP   - Subrate test port for the TO circuit

kk   - Test port number for TO circuit

The subrate test port number is an optional parameter. It only appears if the TO circuit is actually in monitor or split test access mode.

mmmm Explanation of Error Classification

IDNV   Input, data not valid

Explanation of Error

SUBRATE CIRCUIT NUMBER MUST BE SPECIFIED

IDRG   Input, data out of range

Explanation of Error

INVALID CHANNEL NUMBER
INVALID CIRCUIT NUMBER
INVALID NPC NUMBER
SUBRATE CIRCUIT NUMBER f-f IS OUT OF RANGE FOR X50
        CHANNEL <f_npc>-ddd
SUBRATE CIRCUIT NUMBER f-f IS OUT OF RANGE FOR X57
        CHANNEL <f_npc>-ddd
THE NPC IS CURRENTLY INVOLVED IN A ROLL

SNVS   Status, not in valid state

Explanation of Error

THE SPECIFIED ACCESS POINT IS UNDER TEST
THE SPECIFIED CHANNEL <f_npc>-ddd IS A TEST PORT

SROF   Status, requested operation failed

Explanation of Error

SUBRATE APPLICATION FAILED

EXC,DSPC,RTRV,EVT,TS,SROOF

RETRIEVE SUBRATE CHANNELS OUT-OF-FRAME

Explanation Of Command

The purpose of this command is to request the framing status of the subrate de-multiplexer associated with:

1. a single X.50 channel searched for on a single subrate application NPC, or a range of NPCs, or the whole frame,

2. a range of X.50 channels searched for on a single subrate application NPC, or a range of NPCs, or the whole frame,

3. all X.50 channels on a single subrate NPC,

4. all X.50 channels on a range of subrate NPCs,

5. all X.50 channels in the frame.

The following four status indications may be reported:

1.	OOF	The subrate framing has been lost
2.	AIS	The incoming facility terminating NPC has found a Loss of Signal (LOS), Loss of E1 Framing (LOF), or Alarm Indication Signal on the incoming signal. The subrate de-multiplexer sees only the all "1"s signal.
3.	FAR_END	The far end had an LOS, LOF, AIS, or OOF condition

The X.50 channels that are reported in the output message must be established and have active cross-connections.

Note on NPC and Channel Numbering

There exist two numbering schemes for NPC numbers in DACS II. NPCs can be numbered either sequentially or hierarchically. Also note that on DACS II, sequential NPC numbers may be stated in 3-digit or 4-digit form. The NPC numbering scheme for DACS II is explained in detail in the Introduction part of this chapter. The messages that follow refer to NPC numbers, but do not show any details on NPC numbering. As just stated, the reader is referred to the beginning of this chapter for this information. On DACS II ISX, only sequential NPC numbers in 3-digit form are used.

The numbering of channels is also described in the Introduction.

Command

```
[I.91151]
EXC-DSPC:[<xy>]:{<p_npc>|<p_npc>&&[&]-<q_npc>|SD111}:[<ww>]:\
RTRV-EVT-TS:[<t_npc>-ddd[&&-eee]]:SROOF;
```

Completion Message

Message responding to single channel request:

```
[O.91151]
    <xy> yy-mm-dd hh:mm:ss LINK-n[vv]
M   EXC DSPC::<z_npc>:[<ww>]:RTRV EVT TS:<t_npc>-ddd:SROOF COMPLD
    /* [O.91151] */
    /* Facility, Subrate status */
    "<t_npc>-ddd,<mux_stat>"
;
```

**Message responding to a request for a range of channels (optional),
an entire subrate NPC, range of subrate NPCs, or the whole frame:**

```
[O.91152]
    <xy> yy-mm-dd hh:mm:ss LINK-n[vv]
M   EXC DSPC::<z_npc>:[<ww>]:\
RTRV EVT TS:[<t_npc>-ddd[&&-eee]]:SROOF COMPLD
    /* [O.91152] */
    /* Facility, Subrate status */
    "<t_npc>-ddd,<mux_stat>"
                    .
                    .
    "<t_npc>-ddd,<mux_stat>"


                .
                .


    <xy> yy-mm-dd hh:mm:ss LINK-n[vv]
M   EXC DSPC::<z_npc>:[<ww>]:\
RTRV EVT TS:[<t_npc>-ddd[&&-eee]]:SROOF COMPLD
    /* [O.91152] */
    /* Facility, Subrate status */
    "<t_npc>-ddd,<mux_stat>"
                .
                .
    "<t_npc>-ddd,<mux_stat>"
;
```

Message response when no problems were found:

```
[O.91153]
    <xy> yy-mm-dd hh:mm:ss LINK-n[vv]
M   EXC DSPC::<z_npc>:[<ww>]:RTRV EVT TS::SROOF COMPLD
    /* [O.91153] */
    /* NO SUBRATE CHANNELS ARE OUT-OF-FRAME */
;
```

Denial Message

```
[O.91151.01]
   <xy> yy-mm-dd hh:mm:ss LINK-n[vv]
M  EXC DSPC::<z_npc>:[<ww>]:\
RTRV EVT TS:[<t_npc>-ddd[&&-eee]]:SROOF DENY
   mmmmm
   /* [O.91151.01] */
   /* <explanation of error condition code> */
;
```

Autonomous Message

Not applicable.

Explanation Of Parameters

EXC-DSPC
> - Execute on DSP Application circuit pack

<p_npc>
> - NPC number of DSP Application circuit pack

<q_npc>
> - NPC number for end of range specified

SD111 - Type designation for DSP Application circuit pack that addresses
   all circuit packs running the subrate application

> The command that follows the NPC number(s) or type designation for the DSP Application card is sent to the DSP Application card or cards with that number(s) or designation, which read(s) that command and act(s) on it.

<z_npc>
> - NPC number of DSP Application running the subrate application, which
>   is generating this particular output message

> If the input command is addressed to a single DSP Application circuit pack, then the output NPC number <z_npc> is equal to the input NPC number <p_npc>. If the input command is addressed to a range of NPCs or to all DSP Application circuit packs via the type field, then the <z_npc> value identifies the DSP Application circuit pack that is actually generating the particular output message.

RTRV-EVT-TS
      - Obtain information on subrate events

SROOF - Events are subrate out-of-frame conditions

<t_npc>
      - Number of facility terminating NPC

ddd   - Channel number on that facility terminating NPC

eee   - Channel number at high end of range of channel numbers

mux_stat
      - The state of the channel as follows:

mux	*States*
OOF	The subrate framing has been lost
AIS	The incoming facility terminating NPC has found a Loss Of Signal (LOS), Loss of E1 Framing (LOF), or Alarm Indication Signal (AIS) on the incoming signal. The subrate de-multiplexer sees the all "1"s signal.
FAR_END	The far end had an LOS, LOF, AIS, or OOF condition.

mmmm Explanation of Error Classification

IDRG   Input, data out of range

Explanation of Error

INVALID CHANNEL NUMBER
INVALID CHANNEL RANGE NUMBER
INVALID NPC NUMBER
THE NPC IS CURRENTLY INVOLVED IN A ROLL

SNVS   Status, not in valid state

Explanation of Error

NO X50 CHANNELS ESTABLISHED TO THIS TG193

SROF   Status, requested operation failed

Explanation of Error

SUBRATE APPLICATION FAILED

EXC,DSPC,RTRV,PRMTR,EQPT,LOAD

UTILITY QUERY, **LOAD**

Explanation Of Command

This subrate application command requests resource allocation information for DSP
Application circuit packs that run the subrate application. This command may be directed to
one circuit pack, to a range of circuit packs, or to all subrate circuit packs in the frame.

Command

```
[I.91141]
EXC-DSPC:[<xy>]:{<p_npc>|<p_npc>&&[&]-<q_npc>|SD111}:[<ww>]:\
RTRV-PRMTR-EQPT:LOAD;
```

Completion Message

```
[O.91141]
   <xy> yy-mm-dd hh:mm:ss LINK-n[vv]
M  EXC DSPC::<z_npc>:[<ww>]:RTRV PRMTR EQPT:LOAD COMPLD
   /* [O.91141] */
   /* NPC number, channels alloc, test port channels alloc, \
free channels */
   "<z_npc>,ttt,uuu,vvv"
;
```

Denial Message

```
[O.91141.01]
    <xy> yy-mm-dd hh:mm:ss LINK-n[vv]
M EXC DSPC::<z_npc>:[<ww>]:RTRV PRMTR EQPT:LOAD DENY
    mmmm
    /* [O.91141.01] */
    /* <explanation of error> */
;
```

Autonomous Message

Not applicable.

Explanation Of Parameters

EXC-DSPC
- Execute on DSP Application circuit pack

<p_npc>
- NPC number of DSP Application circuit pack running the subrate application

<q_npc>
- NPC number for end of range specified

SD111 - Type designation for DSP Application circuit pack that addresses
all circuit packs running the application

The command that follows the NPC number(s) or type designation for the DSP
Application card is sent to the DSP Application card or cards with that number(s) or
designation, which read(s) that command and act(s) on it.

<z_npc>
- NPC number of DSP Application circuit pack running the subrate application,
which is generating this particular output message and to which the displayed
data refers.

If the input command is addressed to a single DSP Application circuit pack, then
the output NPC number <z_npc> is equal to the input NPC number <p_npc>. If the
input command is addressed to a range of NPCs or to all DSP Application circuit
packs via the type field, then the <z_npc> value identifies the DSP Application
circuit pack that is actually generating the particular output message.

RTVR-PRMTR-EQPT:LOAD
- Obtain load information on DSP Application circuit pack

`ttt`   - Number of channels (time slots) that are allocated for subrate circuits

`uuu`   - Number of channels (time slots) that are allocated for test ports

`vvv`   - Number of free channels (time slots) on circuit pack

`X50/X57`
          - Defines the allocated channels as being used by X.50/X.57 circuits

mmmm Explanation of Error Classification

SROF   Status, requested operation failed

      Explanation of Error

      SUBRATE APPLICATION FAILED

EXC,DSPC,RTRV,PRMTR,TS,DEFAULT

UTILITY QUERY, DEFAULT

Explanation Of Command

This command returns the default bit patterns for the UMC, MUX and SIG parameters. The default bit patterns for the UMC and the MUX bit pattern are 8 bits of all "1"s unless changed by the ED-PRMTR-TS:DEFAULT [I.91371] command. The UMC pattern is sent when a channel in a multiplex of an X.50 channel is not occupied. The MUX pattern is sent when a subrate out-of-frame condition exists.

The SIG bit pattern specifies the "a,b,c,d" signaling bits that are sent from the subrate application to the NPC, which then in turn are used to set the signaling bits in CAS Time Slot 16. The default setting for the four signaling bits is all "1"s unless changed by the ED-PRMTR-TS:DEFAULT command.

Command

```
[I.91111]
EXC-DSPC:[<xy>]:{<p_npc>|<p_npc>&&[&]-<q_npc>|SD111}:[<ww>]:\
RTRV-PRMTR-TS:DEFAULT;
```

Completion Message

```
[O.91111]
   <xy> yy-mm-dd hh:mm:ss LINK-n[vv]
M  EXC DSPC::<z_npc>:[<ww>]:RTRV PRMTR TS:DEFAULT COMPLD
   /* [O.91111] */
   "UMC-X-uu,MUX-X-yy,SIG-X-a"
;
```

Denial Message

```
[O.91111.01]
   <xy> yy-mm-dd hh:mm:ss LINK-n[vv]
M EXC DSPC::<z_npc>:[<ww>]:RTRV PRMTR TS:DEFAULT DENY
   mmmmm
   /* [O.91111.01] */
   /* <explanation of error condition code> */
;
```

Autonomous Message

Not applicable.

Explanation Of Parameters

EXC-DSPC
- Execute on DSP Platform circuit pack

<p_npc>
- NPC number of DSP Platform running the subrate application or beginning of range

<q_npc>
- NPC number for end of range specified

SD111 - Type designation for DSP Platform circuit pack that addresses
all circuit packs running that application.

The command that follows the NPC number(s) or type designation for the DSP
Application card is sent to the DSP Application card or cards with that number(s) or
designation, which read(s) that command and act(s) on it.

<z_npc>
- NPC number of DSP Platform running the subrate application, which
is generating this particular output message

If the input command is addressed to a single DSP Application circuit pack, then the output NPC number <z_npc> is equal to the input NPC number <p_npc>. If the input command is addressed to a range of NPCs or to all DSP Application circuit packs via the type field, then the <z_npc> value identifies the DSP Application circuit pack that is actually generating the particular output message.

RTVR-PRMTR-TS:DEFAULT
- Obtain default values for UMC, MUX, and SIG bit patterns

UMC   - Defines the unassigned multiplexer channel code

uu   - Unassigned multiplexer channel code in hex notation (8 bits)

MUX   - Defines the multiplexer out of synchronization code

yy   - Multiplexer out of synchronization code in hex notation (8 bits)

SIG   - Defines the signaling bits

a   - Signaling bits (abcd) in hex notation (4 bits)
sent by the subrate application to the facility terminating NPC

mmmm Explanation of Error Classification

SROF   Status, requested operation failed

Explanation of Error

SUBRATE APPLICATION FAILED

EXC,DSPC,RTRV,TACC,T1

UTILITY QUERY FOR TEST PORTS

Explanation Of Command

This command reports on any test ports that are established to the application. For each test port that is established, the output message reports on the state of that test port, which may be in one of two states:

1. MONITOR mode,

2. SPLIT mode,

Note on NPC and Channel Numbering

There exist two numbering schemes for NPC numbers in DACS II. NPCs can be numbered either sequentially or hierarchically. Also note that on DACS II, sequential NPC numbers may be stated in 3-digit or 4-digit form. The NPC numbering scheme for DACS II is explained in detail in the Introduction part of this chapter. The messages that follow refer to NPC numbers, but do not show any details on NPC numbering. As just stated, the reader is referred to the beginning of this chapter for this information. On DACS II ISX, only sequential NPC numbers in 3-digit form are used.

The numbering of channels is also described in the Introduction.

Note on Subrate Circuit Numbering

Individual subrate circuits within an `x.50` multiplex are referred to by subrate circuit number. The numbering convention for subrate circuits within an `x.50` circuits is shown in the following table.

Rate in kbit/s	Possible Circuit Numbers
2.4 & 1.2	1-1 2-1 3-1 4-1 5-1 1-2 2-2 3-2 4-2 5-2 1-3 2-3 3-3 4-3 5-3 1-4 2-4 3-4 4-4 5-4
4.8	1-1 2-1 3-1 4-1 5-1 1-2 2-2 3-2 4-2 5-2
9.6	1-1 2-1 3-1 4-1 5-1
19.2	1-1 2-1 3-1 4-1 (two 9.6 slots each)

For **x.57** circuits, the subrate circuit number need not be stated in the command (it is optional). If it is stated, it must be **1-1**.

Command

[l.91191]
```
EXC-DSPC:[<xy>]:{<p_npc>|<p_npc>&&[&]-<q_npc>|SD111}:[<ww>]:\
RTRV-TACC-T1;
```

Completion Message

[O.91191]
```
    <xy> yy-mm-dd hh:mm:ss LINK-n[vv]
M   EXC DSPC::<z_npc>:[<ww>]:RTRV TACC T1 COMPLD
    /* [O.91191] */
[   /* test port number:state:NPC-channel-subrate channel */]
[   "kk:<state>:<t_npc>-ddd-f-f"
    /* Total number of test ports established */
    "nn"
;
```

Denial Message

Not applicable.

Autonomous Message

Not applicable.

Explanation Of Parameters

RTRV-TACC-T1
- Invoke a report on test ports.

nn   - The total number of test ports established to this application

kk   - The number of the test port established to the application

   Test port numbers may range between 1 and 96.

<state>
- The test port may have the following states (modes):

<state> Explanation

MON   Monitor mode
SPL   Split mode

<t_npc>
- number of facility terminating NPC that defines the circuit under test

ddd   - channel on that NPC

f-f   - subrate circuit number in that channel that is under test

mmmm	**Explanation of Error Classification**
SROF	Status, requested operation failed
	Explanation of Error
	SUBRATE APPLICATION FAILED

REPT,ALM,TS,DSPC,OOF,CLEAR,FAR,END

SUBRATE OUT OF FRAME CONDITION AUTONOMOUS MESSAGE

Explanation Of Command

This autonomous message reports a subrate Out Of Frame (OOF) condition detected locally for a particular facility terminating NPC and channel. The OOF condition will only be reported if it is **not** caused by a Loss Of Signal (LOS), Loss Of Frame (LOF), or Alarm Indication Signal (AIS) on that particular NPC. The message is also generated if the Out Of Frame condition is cleared.

If multiple channels on a DSPP circuit pack that runs the subrate application change from CLEAR to OOF and/or from OOF to CLEAR within the same 5 second interval, then the multiple events are consolidated into a single message.

This message reports OOF, LOS, LOF, or AIS detected at the Far End and signaled via the "A" bit of an X.50 framing pattern. The keyword in the message that signals this condition is FAR_END.

Command

Not applicable.

Completion Message

Not applicable.

Denial Message

Not applicable.

Autonomous Message

```
[O.91011]
   [<xy>] yy-mm-dd hh:mm:ss
A  xxx.yyy REPT ALM TS DSPC <p_npc>
   /* [O.91011] */
   /* NPC Number:channel number,type of alarm */
   ["<f_npc>:ddd,{OOF|FAR_END|CLEAR}"]
         .
         .
         .
   "<t_npc>:jjj,{OOF|FAR_END|CLEAR}"
;
```

Explanation Of Parameters

DSPC - DSP Platform circuit pack on which the subrate application resides

<p_npc>
        - NPC number of the DSP Platform circuit pack

REPT ALM TS
        - Report an alarm in the subrate area

OOF - Subrate Out Of Frame condition

FAR_END
        - Indicates that the Far End, from which the signal is being received,
          has an OOF, LOS, LOF, or AIS condition

CLEAR - An OOF or FAR_END condition has been cleared

NPC - Network processing circuit

<f_npc>
        - The facility terminating NPC number that has the channel with the condition

ddd - The channel number on the facility terminating NPC that has the condition

<t_npc>
        - The facility terminating NPC number that has the channel with the condition

jjj - The channel number on the facility terminating NPC that has the condition

Command Denials

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Command Denials

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Command Denials

Application Generated Error Messages

mmmm *Explanation*

ENEQ NPC <t_npc> IS NOT EQUIPPED
THE FROM SIDE NPC <f_npc> IS NOT EQUIPPED
THE SPECIFIED TEST PORT IS NOT EQUIPPED
THE TO SIDE NPC <t_npc> IS NOT EQUIPPED

IDMS THE TO SIDE NPC IS NOT SPECIFIED

IDNV CANNOT SPECIFY SUBRATE FOR 64K TEST ACCESS
CHANNELS ARE NOT CONNECTED TO EACH OTHER
CIRCUIT <f_npc>-ddd-f-f IS UNASSIGNED
INVALID DATA RATE FOR CHANNEL CIRCUIT
INVALID SUBRATE CIRCUIT NUMBERS FOR CONNECTION
RATE MUST BE SPECIFIED FOR UNMAPPED SUBRATE CIRCUIT
SPECIFIED RATE DOES NOT MATCH EXISTING CIRCUIT RATE
SUBRATE CIRCUIT NUMBER MUST BE SPECIFIED
SUBRATE CIRCUIT NUMBER MUST BE SPECIFIED FOR X50
    CHANNEL <f_npc>-ddd-f-f
TERM/RLS CANNOT BE SPECIFIED FOR AN UNMAPPED CIRCUIT
THE SPECIFIED NPC <f_npc> IS NOT A VALID FACILITY
    TERMINATING TYPE
THE SPECIFIED RATE IS NOT CONSISTENT WITH THE ACTUAL
    CIRCUIT RATE

mmmm	Explanation

THE SPECIFIED RATE IS NOT VALID
THE SPECIFIED SUBRATE CIRCUIT NUMBER f-f IS NOT VALID

IDRG CHANNEL <t_npc> IS OUT OF RANGE FOR NPC TYPE SPECIFIED
INVALID CHANNEL NUMBER
INVALID CHANNEL RANGE NUMBER
INVALID CIRCUIT NUMBER
INVALID HEX NUMBER
INVALID NPC NUMBER
INVALID RATE (S/B 24, 48, 96, 19)
INVALID TEST PORT NUMBER
SUBRATE CIRCUIT NUMBER f-f IS OUT OF RANGE FOR X50
   CHANNEL <f_npc>-ddd
SUBRATE CIRCUIT NUMBER f-f IS OUT OF RANGE FOR X57
   CHANNEL <f_npc>-ddd
THE NPC IS CURRENTLY INVOLVED IN A ROLL

SAAS CIRCUIT <f_npc>-ddd-f-f IS ASSIGNED
SPECIFIED CHANNEL IS ALREADY ASSIGNED

SARB CONNECTION EXCEEDS REMAINING DSPP CAPACITY

SNIS NEW NPC <t_npc> IS OUT-OF-SERVICE
NPC <t_npc> IS OUT-OF-SERVICE
THE FROM SIDE NPC <f_npc> IS OUT-OF-SERVICE
THE NPC FOR TEST PORT kk IS OUT-OF-SERVICE
THE TO SIDE NPC <t_npc> IS OUT-OF-SERVICE

SNVS CHANNEL <f_npc>-ddd IS NOT SUBRATE ESTABLISHED TO THIS
   TG193
CHANNEL <t_npc>-ddd IS NOT ESTABLISHED TO SUBRATE
   APPLICATION
NEW CHANNEL IS ESTABLISHED TO OTHER TG193
NO X50 CHANNELS ESTABLISHED TO THIS TG193
OLD CHANNEL IS NOT SUBRATE ESTABLISHED TO THIS TG193
SPECIFIED CHANNELS ARE TWO X57 CIRCUITS
TEST PORT IS ALREADY CONNECTED
TEST PORT IS ALREADY IN MONITOR MODE
TEST PORT IS ALREADY IN SPLIT MODE
TEST PORT IS NOT CONNECTED
THE SPECIFIED ACCESS POINT IS NOT ESTABLISHED TO THIS
   TG193
THE SPECIFIED ACCESS POINT IS UNDER TEST
THE SPECIFIED CHANNEL <f_npc>-ddd IS A TEST PORT
THE SPECIFIED CHANNEL IS TEST PORT
THE SPECIFIED TEST ACCESS NPC IS UNDER TEST
THE SPECIFIED TEST ACCESS NPC MUST BE IN MONITOR MODE
   AT FIRST

mmmm   *Explanation*

SROF   A SPECIFIC TG193 REQUIRED FOR THIS COMMAND
           ACTIVE SUBRATE CROSS-CONNECTS ARE PRESENT ON THE
             CHANNEL
           CHANNEL OR A CIRCUIT IS UNDER TEST
           NEW CHANNEL HAS ACTIVE CROSS-CONNECT
           NEW CHANNEL IS ALREADY ESTABLISHED DIFFERENTLY THAN OLD
           OLD AND NEW CHANNELS OVERLAP
           OLD AND NEW RANGES ARE NOT THE SAME
           SUBRATE APPLICATION FAILED
           SUBRATE CIRCUIT RATE IS NOT VALID FOR TEST ACCESS
           TERM/RLS CANNOT BE SPECIFIED FOR A LOOPED CIRCUIT
           TERMINATE AND LEAVE IS ALREADY IN REQUESTED STATE
           TEST ACCESS CHANNEL IS NOT IDLE
           TEST PORT kk IS NOT ESTABLISHED
           THE CIRCUIT UNDER TEST IS A 64K CHANNEL
           THE CIRCUIT UNDER TEST IS LOOPED
           THE CIRCUIT UNDER TEST IS UNMAPPED
           THE FROM SIDE NPC <f_npc> IS FAILED
           THE NPC FOR TEST PORT kk IS FAILED
           THE TO SIDE NPC <t_npc> IS FAILED

Possible error messages generated by application when running on DACS II

           A loopback is active on the TO termination
           AIS invalid for cross-connection specified
           Active CCN side not IS or failed or pested or hardware OOS
           CCB not eqd, not IS, or failed or inactive side CCB not eqd or not IS
           Cross-connect a non Mode I channel to DCLU
           Cross-connect a non SLC channel to DCLU
           DSPP not in service, or failed
           ETSI not equipped, not in service, or failed
           FC not eqd, not IS, or failed or inactive side FC not eqd or not IS
           FMC cannot be cross-connected in this format
           FTMI not equipped, not in service, or failed
           Invalid TO channel number
           Invalid TO channel number range
           Invalid channel 000 cross-connection specified
           Invalid channel 031 cross-connection specified
           Invalid keyword(s) combination specified
           Invalid parameter combination
           Invalid range for specified TO NPC type
           Line format types are incompatible

MUX or TRB invalid for cross-connection specified
NAM invalid for cross-connection specified
No NPC's out of service and OOS keyword used
RT-DCLU cross-connect with different channel number
RT-DCLU cross-connect with different ids
Reqd FMT not eqd,not IS,or failed,or inact side FMT not eqd, or not IS
Required FLI not equipped, not in service, or failed
Required MIU not equipped, not in service, or failed
Required MXR not equipped, not in service, or failed
SC invalid for cross-connection specified
TO NPC is not provisioned as DGA
TSI not eqd, not IS, or failed or inactive side TSI not eqd or not IS
Termination is in process of being rolled
The parameter specified does not match with the NPC type
Trunk conditioning is invalid
Trunk type is not allowed in the circuit specified
UNIT not equipped, not in service, or failed
Unmatched channel range
Unmatched channel range involving SLC Mode III termination
Using the 24th channel of a T1DM NPC

Possible status messages generated by application when running on DACS II

Status message	Explanation
ASGN	Test port is assigned
BAD PSEUDO CHANNEL RANGE	DSPC pseudo channel out of range
BADCCB	CCB OOS or failed
BADCCN	CCN OOS or failed
BADCHAN	Bad channel number was specified
BADDSPI	DSPI OOS or failed

BADFC	FC OOS or failed
BADFLI	FLI OOS or failed
BADFMT	FMT (Formatter) OOS or failed
BADFTMI	FTMI OOS or failed
BADNPC	Bad NPC number
BADTSI	TSI OOS or failed
FAIL	Test port Group NPC failed
INERR	Input error
MCOND	An entity in the network is OOS or failed
NA	DACS CCN or UNIT involved cannot perform the cross-connect
NMON	Not Monitor, the testport is not currently in monitor mode
NUTST	Test port kk is presently idle
OOS	Test port Group NPC out of service
SG COND 02	Test port is dynamic
T_DCLU	Attempt to test a locally switched channel
UEQD	Test port kk is unequipped
UEQD	The test port Group NPC or the test port is not equipped
UTST	Under Test
T ASGN	Termination assigned
T INVLD	Invalid NPC type

T NOMTH	No Match
T ROLL	Circuit is involved in a roll
T TG	NPC is grown as a test group
T TP	NPC is used for test access
T UASGN	unassign
T UEQD	Unequipped
T UNPASGN	Unassigned or Not Properly Assigned
T UTST	Under Test

Possible error messages generated by application when running on ISX

AIS invalid for cross-connection specified
Active SXC side not IS or failed or pested or hardware OOS
Can't connect within the same SDTYPE npc
FMC cannot be cross-connected in this format
Invalid TO channel number
Invalid channel 000 cross-connection specified
Invalid channel 031 cross-connection specified
Invalid keyword(s) combination specified
Invalid parameter combination
Invalid range for specified NPC type
Invalid range for specified TO NPC type
MUX or TRB invalid for cross-connection specified
NPC containing channel 000 is invalid type
No NPC's out of service and OOS keyword used
No RDLD circuits and INCL keyword used
SC invalid for cross-connection specified
The parameter specified does not match with the NPC type
Trunk conditioning must match for range disconnect with DCC keyword
Unmatched channel range
Using the 24th channel of a T1DM NPC

Possible status messages generated by application when running on ISX

Status message	Explanation
ASGN	Test port is assigned
BAD CHAN	Bad channel number was specified
BAD PSEUDO CHANNEL RANGE	DSPC pseudo channel out of range
BADCCN	CCN OOS or failed
INERR	Input error
MCOND	An entity in the network is OOS or failed
NA	DACS CCN cannot perform the cross-connect
NMON	Not Monitor, the testport is not currently in monitor mode
NUTST	Test port kk is presently idle
SG COND 02	Test port is static
T_DCLU	Attempt to test a locally switched channel
UEQD	Test port kk is unequipped
UEQD	The test port is not equipped
UTST	Under Test
T ASGN	Termination assigned
T INVLD	Invalid NPC type

T INVNFS	Invalid, Not Frame Word Setting
T NOMTH	No Match
T TP	NPC is used for test access
T UASGN	unassign
T UEQD	Unequipped
T UNPASGN	Unassigned or Not Properly Assigned
T UTST	Under Test

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Numeric List of Keywords

91001	**EXC,DSPC,BADVERB,CMD,USAGE**
91011	**REPT,ALM,TS,DSPC,OOF,CLEAR,FAR,END**
91111	**EXC,DSPC,RTRV,PRMTR,TS,DEFAULT**
91121	**EXC,DSPC,RTRV,CRS,TS**
91131	**EXC,DSPC,RTRV,EQPT,TS,SRHDW**
91141	**EXC,DSPC,RTRV,PRMTR,EQPT,LOAD**
91151	**EXC,DSPC,RTRV,EVT,TS,SROOF**
91191	**EXC,DSPC,RTRV,TACC,T1**
91211	**EXC,DSPC,CONN,TACC,TS,MON,RATE**
91221	**EXC,DSPC,CHG,TACC,TS,SPLT,MON**
91231	**EXC,DSPC,CHG,TL,TS,TERM,RLS,F,T,B**
91241	**EXC,DSPC,DISC,TACC,TS**
91251	**EXC,DSPC,DISC,TACC,TS,ALL,LINKS**
91311	**EXC,DSPC,CRTE,CRS,TS,X50,X57,UMC,MUX**
91321	**EXC,DSPC,DLT,CRS,TS,DCC**
91331	**EXC,DSPC,CONN,CRS,TS,RATE,NORM**
91341	**EXC,DSPC,CONN,CRS,TS,RATE,TERM**
91351	**EXC,DSPC,DISC,CRS,TS,RATE**
91361	**EXC,DSPC,ED,CRTE,TS,DCC**
91371	**EXC,DSPC,ED,PRMTR,TS,DEFAULT,UMC,MUX**
91381	**EXC,DSPC,ED,PRMTR,TS,TERM,RLS**

Alphabetic Command Summary

[I.91221]
```
EXC-DSPC:[<xy>]:<p_npc>:[<ww>]:CHG-TACC-TS::kk:{SPLT|MON};
```

[I.91231]
```
EXC-DSPC:[<xy>]:<p_npc>:[<ww>]:CHG-TL-TS::kk:{TERM|RLS}{F|T|B};
```

[I.91331]
```
EXC-DSPC:[<xy>]:<p_npc>:[<ww>]:CONN-CRS-TS:\
<f_npc>-ddd[-f-f],<t_npc>-jjj[-l-l]:RATE-rr[:NORM,NORM];
```

   Example:
```
   EXC-DSPC::029::CONN-CRS-TS:023-001-4-1,024-002-3-2:RATE-48;
```

[I.91341]
```
EXC-DSPC:[<xy>]:<p_npc>:[<ww>]:CONN-CRS-TS:\
<f_npc>-ddd[-f-f],<t_npc>-jjj[-l-l]:RATE-rr:TERM,TERM;
```

   Example:
```
   EXC-DSPC::029::CONN-CRS-TS:023-001-4-1,024-002-3-2:\
   RATE-48:TERM,TERM;
```

[I.91211]
```
EXC-DSPC:[<xy>]:<p_npc>:[<ww>]:\
CONN-TACC-TS:<t_npc>-ddd[-f-f]:kk:MON[:RATE-rr];
```

[I.91311]
```
EXC-DSPC:[<xy>]:<p_npc>:[<ww>]:CRTE-CRS-TS:\
<t_npc>-ddd[&&-eee]:{X50|X57-rr}:::[UMC-X-uu]:\
[MUX-X-yy][:SIG-X-a];
```

[I.91351]
```
EXC-DSPC:[<xy>]:<p_npc>:[<ww>]:\
DISC-CRS-TS:<f_npc>-ddd[-f-f],<t_npc>-jjj[-l-l][:RATE-rr];
```

[I.91241]
```
EXC-DSPC:[<xy>]:<p_npc>:[<ww>]:DISC-TACC-TS::kk;
```

[I.91251]
```
EXC-DSPC:[<xy>]:<p_npc>:[<ww>]:DISC-TACC-TS::{ALL|LINKS};
```

[I.91321]
```
EXC-DSPC:[<xy>]:<p_npc>:[<ww>]:\
DLT-CRS-TS:<t_npc>-ddd[&&-eee][:DCC];
```

[I.91361]
```
EXC-DSPC:[<xy>]:<p_npc>:[<ww>]:ED-CRTE-TS:\
<f_npc>-ddd[&&-eee],<t_npc>-jjj[&&-kkk]:[:DCC];
```

[I.91371]
```
EXC-DSPC:[<xy>]:{<p_npc>|<p_npc>&&[&]-<q_npc>|SD111}:[<ww>]:\
ED-PRMTR-TS:DEFAULT:[UMC-X-uu]:[MUX-X-yy][:SIG-X-a];
```

[I.91381]
```
EXC-DSPC:[<xy>]:<p_npc>:[<ww>]:\
ED-PRMTR-TS:<t_npc>-ddd[-f-f]:{TERM|RLS}m;
```

[I.91121]
```
EXC-DSPC:[<xy>]:{<p_npc>|<p_npc>&&[&]-<q_npc>|SD111}:[<ww>]:\
RTRV-CRS-TS:<t_npc>-ddd[&&-eee];
```

[I.91131]
```
EXC-DSPC:[<xy>]:{<p_npc>|<p_npc>&&[&]-<q_npc>|SD1111}:[<ww>]:\
RTRV-EQPT-TS:<t_npc>-ddd[-f-f]:SRHDW;
```

[I.91151]
```
EXC-DSPC:[<xy>]:{<p_npc>|<p_npc>&&[&]-<q_npc>|SD111}:[<ww>]:\
RTRV-EVT-TS:[<t_npc>-ddd[&&-eee]]:SROOF;
```

[I.91141]
```
EXC-DSPC:[<xy>]:{<p_npc>|<p_npc>&&[&]-<q_npc>|SD111}:[<ww>]:\
RTRV-PRMTR-EQPT:LOAD;
```

[I.91111]
```
EXC-DSPC:[<xy>]:{<p_npc>|<p_npc>&&[&]-<q_npc>|SD111}:[<ww>]:\
RTRV-PRMTR-TS:DEFAULT;
```

[I.91191]
```
EXC-DSPC:[<xy>]:{<p_npc>|<p_npc>&&[&]-<q_npc>|SD111}:[<ww>]:\
RTRV-TACC-T1;
```

Glossary

A

AIS
Alarm Indication Signal.

C

CAS
Channel Associated Signaling.

CGA
Carrier Group Alarm.

Channel
A 64 kbit/s portion of a T1 or E1 transmission line.

Create (or Grow a circuit pack)
To place a circuit pack on the DACS II or DACS II ISX equipment list.

Cross-connection
A data transmission path set up between two NPCs.

CUS
Customer-controlled circuit.

D

DACS II
Digital Access and Cross-connect System II.

DACS II ISX
Digital Access and Cross-connect System II - Integral Shelf Cross-connect.

DCC
Disconnect Channel Code.

DDN
Digital Data Network.

DDS
Digital Data Services (In North America).

Digroup

A circuit pack containing two Network Processing Circuits.

DS0

Digital Signal Level Zero — a signal with a data rate of 64 kbit/s.

DS1

Digital Signal Level One — a signal with a data rate of 1544 kbit/s, equivalent to a T1 signal.

DSP

Digital Signal Processing.

DSPP

Digital Signal Processing Platform — a platform used for digital signal manipulation.

E

E1

European Digital Signal Level 1 — a 30 channel transmission line used throughout the world, which transmits at the 2048 kbit/s rate. An E1 signal is also called a 2 Mbit/s signal.

F

Facility Terminating NPC

A Network Processing Circuit on the DACS II or DACS II ISX that terminates either T1 or E1 signals.

FLI

Facility Line Interface.

Framing Bit

When used for subrate data, it is the first bit in a byte of a DS0 channel. This bit allows multiple subrate circuits to be multiplexed into a single DS0 circuit.

FTM

Facility Terminating Module.

G

GIW
Growth Insertion Word - an Insertion Word (IW) specified at the time the facility terminating NPC is grown.

Grow (or Create a circuit pack)
To place a circuit pack on the DACS II or DACS II ISX equipment list.

I

IFTU
Integrated Facility Terminating Unit.

INCL
Inclusive. When this keyword is specified in the `TCON` or `CONN-CRS-T0` command, redline (RDC/RDLD) and customer-controlled circuits (CUS) can be disconnected.

IW
Insertion Word — a byte of data that is sent out on a transmission line to indicate either transmission problems or an idle circuit.

K

kbit/s
Kilobits per second.

L

LOF
Loss of Frame alignment.

LOS
Loss of Signal.

M

Mbit/s or Mb/s
Megabits per second.

MC
Main Controller of the DACS II or DACS II ISX systems.

MEMA
The memory slot on the DACS II ISX which holds the primary memory storage card.

MEMB
The memory slot on the DACS II ISX which holds the secondary memory storage card.

MMFG
Multiplexer/MIU Interface Group.

MML
HuMan-to-Machine Language — one of two command languages used by the DACS II and DACS II ISX system.

Monitor (Test Access)
One of four test access states which allows both directions of data transmission to be observed without disturbing the data flow.

MUX
Multiplexer out of Synchronization.

N

NPC
Network Processing Circuit.

NPM
Network Processing Module.

NPSM
Network Processing SubModule.

NSA
NonSignaling Associated.

O

OOF
　Out-of-Frame alignment for Subrate channels such as X.50 channels.

OOS
　Out-of-Service.

P

PBA
　Primary Block Alarm.

PCMCIA
　Personal Computer Memory Card International Association — memory cards used by the DACS II and DACS II ISX in the primary and secondary memory slots which contain the system's control and application information.

PDS
　Program Documentation Standard — one of two command languages used by the DACS II and the DACS II ISX.

PMEM
　The memory slot on the DACS II ISX which holds the primary memory storage card.

Provision
　To place a circuit pack on the DACS II or DACS II ISX equipment list, bring the circuit pack into service, and set up cross-connections on a circuit pack.

R

RDC/RDLD
　Red-lined circuit. High priority circuit.

Released (Test Access)
　One of four test access states in which the test access connection (in either monitor or split mode) is released.

Restore (a circuit pack)
　To place a circuit pack in service.

S

SMEM
The memory slot on the DACS II which holds the secondary memory storage card.

Split (Test Access)
One of four test access states which creates complete two-way transmission between each side of the circuit under test and the two test access channels.

SRM
Subrate Multiplexer

T

T1
Transmission Digital Signal Level 1 — a 24 channel transmission line used predominately in North America, which transmits at the rate of 1544 kbit/s.

T1DM Framing
T1 Data Multiplexer Framing — a framing method that uses a framing pattern in channel 24, in addition to D4 framing, in order to improve the time to capture framing.

Terminated (Test Access)
One of four test access states which reserves all of the resources for a cross-connection to be activated at a later time.

Test Access
Placing a circuit in test access allows the capability of observing the circuit's performance. (See also: Monitor, Split, Terminated, and Released.)

TG193/TG193B
The Digital Signal and Processing Platform circuit pack used to run the X.50/X.57 Subrate application.

TRB
Standard DS1 trouble signal

TRSP
Transparent, no signaling

U

UMC
Unoccupied Multiplexer code.

UTST
Under Test

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