Lucent Technologies
Bell Labs Innovations

DDS Subrate and MJU Application Release 1.0.4, PDS for DACS II Release 1.0.5, PDS for DACS II ISX

User's Manual

365-350-110
Issue 1
November 1998

Notice

Every effort was made to ensure that the information in this document was complete and accurate at the time of printing. However, information is subject to change.

Trademarks

VISA is a registered trademark of The VISA International Service Association

American Express is a registered trademark of The American Express Company

Mastercard is a registered trademark of The Mastercard International Incorporated

SLC is a registered trademark of Lucent Technologies

Mandatory Customer Information

Federal Communications Commission (FCC) Notification and Repair Information

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Security Statement

In rare instances, unauthorized individuals make connections to the telecommunications network through the use of remote access features. In such event, applicable tariffs require that the customer pay all network charges for traffic. Lucent Technologies cannot be responsible for such charges, and will not make any allowance or give any credit for charges that result from unauthorized access.

Documentation Ordering Information

The ordering number for this document is 365-350-110. To order this document, call the Lucent Technologies Customer Information Center in Indianapolis, Indiana, on 1-888-582-3688. For more ordering information, refer to "How to Order Documentation" in the section "About this Document."

Technical Support Telephone Number

The Lucent Technologies Regional Technical Assistance Center (RTAC) provides a technical assistance telephone number which is staffed 24 hours a day. For technical assistance, simply call 1-800-225-RTAC.

Documentation Support Telephone Number

Lucent Technologies provides a telephone number for you to report errors or to ask questions about the information in this document. The support telephone number is:

1-800-334-0404

Developed by The Lucent Technologies Customer Training and Information Products Organization.

How Are We Doing?

Document Title: DDS Subrate and MJU Application Release 1.0.4, PDS for DACS II Release 1.0.5, PDS for DACS II ISX User's Manual

Document No.: 365-350-110 Issue 1 Date: November 1998

Lucent Technologies welcomes your feedback on this document. Your comments can be of great value in helping us improve our documentation.

1. Please rate the effectiveness of this document in the following areas:

	Excellent	Good	Fair	Poor	Not Applicable
Ease of Use					////////////////////
Clarity					////////////////////
Completeness					////////////////////
Accuracy					////////////////////
Organization					////////////////////
Appearance					////////////////////
Examples					
Illustrations					
Overall Satisfaction					////////////////////

2. Please check the ways you feel we could improve this document:

- ☐ Improve the overview/introduction
- ☐ Improve the table of contents
- ☐ Improve the organization
- ☐ Include more figures
- ☐ Add more examples
- ☐ Add more detail
- ☐ Make it more concise/brief
- ☐ Add more step-by-step procedures/tutorials
- ☐ Add more troubleshooting information
- ☐ Make it less technical
- ☐ Add more/better quick reference aids
- ☐ Improve the index

Please provide details for the suggested improvement. _____

_____

3. What did you like most about this document?

_____

_____

4. Feel free to write any comments below or on an attached sheet.

_____

_____

_____

_____

If we may contact you concerning your comments, please complete the following:

Name: _____ Telephone Number: _____

Company/Organization: _____ Date: _____

Address: _____

When you have completed this form, please fold, tape, and return to address on back or Fax to: 336-727-3043.

Do Not Cut—Fold Here And Tape

Lucent Technologies
Bell Labs Innovations

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 1999 GREENSBORO, N.C.

POSTAGE WILL BE PAID BY ADDRESSEE

DOCUMENTATION SERVICES
2400 Reynolda Road
Winston-Salem, NC 27199-2029

Contents

Contents

Contents

Figures

1 Introduction

2 DDS Subrate and MJU Tutorial

Tables

About This Document

Purpose

This document provides users with procedural information needed to support the daily operation and maintenance activities of the Digital Data Services (DDS) Subrate and Multipoint Junction Unit (MJU) Application for the DACS II or DACS II ISX system. This document only supports the PDS language.

This document contains the following:

- A tutorial discussing subrate multiplexing, MJU operations, and error correction standards
- DDS Subrate and MJU application specific operation and maintenance procedures
- DDS Subrate and MJU application specific command and messages
- DDS Subrate and MJU application specific denial codes
- A quick reference guide listing all of the command syntax for the DDS subrate and MJU application.

Intended Audiences

This document is targeted for the individuals responsible for the provisioning, operation, and maintenance of the DDS Subrate and MJU application.

How to Use This Document

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

- 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

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

- *DACS II 24 Channel (1544 kbit/s Interface) Operation and Maintenance course (TR3521)*
- *DACS II 30 Channel (1544 kbit/s Interface) Operation and Maintenance course (TR3522)*
- *DACS II ISX 24 Channel (1544 kbit/s Interface) Operation and Maintenance course (TR3526)*
- *DACS II ISX 30 Channel (2048 kbit/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 document. You should also become familiar with the reasons why a subrate application command can be denied. This information is presented in Chapter 8 - "Command Denials."

Contents

- **Chapter 1 - Introduction**

  This chapter provides an overview of the DDS Subrate and MJU Application. It describes the subrate application, hardware and software requirements, functional operation, and the use of the command and message set that is provided with the subrate application software.

- **Chapter 2 - Tutorial**

  This chapter contains a basic introduction to the functionality of subrate cross-connecting, MJU operations, and error correction.

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

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

- **Chapter 4 - Subrate Provisioning**

  This chapter contains the procedures to provision the Digital Signal Processing (DSP) Platform TG193B circuit pack, including growing and restoring the TG193B DSP circuit pack, establishing cross-connection paths, and setting up various types of subrate cross-connection paths.

- **Chapter 5 - MJU Operations**

  This chapter contains the procedures for establishing and disconnecting MJU block configurations.

- **Chapter 6 - Subrate Test Access**

  This chapter contains the procedures to create test ports and subrate test connections.

- **Chapter 7 - Commands and Messages**

  This chapter contains all of the commands and messages for the DDS Subrate and MJU application.

- **Chapter 8 - Command Denials**

  This chapter lists the command denial codes and their meanings. This information is useful in determining problems with the subrate application. You should be familiar with the contents of this chapter before you attempt any of the other procedures.

- **Chapter 9 - Quick Reference Guide**

  This chapter contains a list of all of the commands and parameters for the 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 terminal screen.

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

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 Release 8.2.2 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 8.2.2 Operation and Maintenance Manuals:
  - 365-353-161 (PDS)
  - 365-353-171 (MML)
  - 365-353-181 (PDS 2.048-Mb/s Interface)
  - 365-353-191 (MML 2.048-Mb/s Interface)

  Audience: End-user maintenance personnel

  Contents: Procedures to operate and maintain the DACS II.

- DACS II Release 8.2.2 Command and Message Manuals:
  - 365-353-162 (PDS)
  - 365-353-172 (MML)
  - 365-353-182 (PDS 2.048-Mb/s Interface)
  - 365-353-192 (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 8.2.2 Quick Reference Guides:
  - 365-353-163 (PDS)
  - 365-353-173 (MML)
  - 365-353-183 (PDS 2.048-Mb/s)
  - 365-353-193 (MML 2.048-Mb/s)

  Audience: End-user maintenance personnel

  Content: Abbreviated list of system commands and parameters.
- DACS II Release 8.2.2, Software Release Description:
  - Com. Code CC108356866

  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:

- X.50/X.57 Subrate Application
  Release 1.0.3 for DACS II
  Release 1.0.4 for DACS II ISX
  MML 2.048 Mbit/s Interface, User's Manual
  - — 365-350-101 (MML)

  Audience: End-user maintenance personnel

  Content: Complete manual describing how to install and operate the X.50/X.57 Subrate application on the DACS II or DACS II ISX. Commands and messages describing how to perform subrate cross-connects and subrate test access are included.
- Digital Multipoint Bridge (DMB)
  DSP Platform Application
  Release 1.0.2 for DACS II
  Release 1.0.3 for DACS II ISX
  User's 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.

How to Order Documentation

To order additional copies of this document, send or call in an order as follows:

- To order by Mail:

  Lucent Technologies
  Customer Information Center
  Attention: Order Entry Section
  2855 N. Franklin Road
  P. O. Box 19901
  Indianapolis, IN 46219

- To order by Telephone (Monday through Friday);

  Within the United States of America:
  1-888-LUCENT-8 (7:30 a.m. to 6:30 p.m. EST)
  (1-888-582-3688)

  FAX within the United States of America:
  1-317-322-6484

  Australia and all European countries:
  Toll 317-322-6416

  Far East, North America, and other:
  Toll 317-322-6646

  FAX for all international:
  Toll 317-322-6699

Regional Bell Operating Companies and Bell Operating Companies must process orders through their company documentation coordinator.

For commercial customers, a check, money order, purchase order number, or charge card number (*VISA** bank card, *American Express*† credit card services, or *Master Card*‡ bank card) is required with all orders. Checks must be made payable to Lucent Technologies.

Lucent Technologies entities should use Form IND 1-80.80 FA, available through the Customer Information Center.

---

* Registered trademark of VISA International Service Association

† Registered trademark of American Express Company

‡ Registered trademark of Mastercard International Incorporated

One-time orders include a binder (if applicable) and the document contents for the current issue in effect at the time of order. After placing a one-time order, you can request a standing order for any document revisions *of that software release*. Documents for new software releases do *not* go to standing-order customers. You will only get those documents if you order the new software release.

How to Comment on This Document

A feedback form is located at the beginning of this publication, immediately after the title page. Please fill out the feedback form and return it (postage free) to the address on the back.

If the feedback form is missing, send comment on this publication to:

Lucent Technologies
DACS II Documentation Coordinator
Room 1B-320
101 Crawfords Corner Road
Holmdel, NJ 07733-3030

Electronic Documentation

Documentation for DACS II and DACS II ISX is now available in electronic form, on CD-ROM (compact disk, read-only memory). CD-ROM has many advantages over traditional paper documentation, including cost savings, search and retrieve capability, and the assurance of the most current documentation.

CD-ROM is available by annual subscription (on standing order).

- To order, call your Technical Information Resource Manager, your Lucent Technologies Account Executive, or the Lucent Technologies Customer Information Center (1-888-582-3688).
- For pricing information, contact your Lucent Technologies Network Systems Account Executive or the Lucent Technologies Customer Information Center (1-888-582-3688).
- For technical information, call Lucent Technologies Documentation Support (1-800-334-0404).

Introduction

1

Contents

Introduction

1

Overview

The DDS Subrate and MJU application extends Lucent Technologies' subrate capability to the DACS II and DACS II ISX on the DSP Platform. In addition, it introduces the following features:

- Subrate multiplexing and MJU capability at the 19.2 kbit/s data rate
- An anti-streaming feature for MJU circuits

The DDS Subrate and MJU application currently exists on the DACS II through the Digital Signal Processing Unit (DSPU). By having the application available on the DSP application circuit pack, the customer will have the flexibility to use this feature without having to invest in a DSPU.

The application runs on the Digital Signal Processing (DSP) Platform, which includes both hardware and software. The hardware consists of the DSP TG193B circuit pack. The software that runs on the DSP Platform is treated by the DACS II and DACS II ISX as a separate application. The software, provided on separate PCMCIA cards, can be installed at any time.

The DSP TG193B circuit pack plugs into any slot in:

- The DACS II Facility Terminating Unit (FTU/IFTU)
- The DACS II ISX Network Processing Module (NPM)

Each pack has a capacity of up to 64 time slots, or channels. The channels of the TG193B circuit pack may be cross-connected to other channels on other Network Processing Circuits (NPCs) in the system.

The DDS Subrate and MJU application runs on the DSP Platform for the following DACS releases:

- DACS II Release 8.2.2 and subsequent releases
- DACS II ISX Release 3.1.2 and subsequent DACS II ISX releases

The following table summarizes the functionality of the DDS Subrate and MJU application:

Table 1-1. Summary of Functionality

	MJU Support	Subrate Multiplexing	Error Correction	Test Access
2.4 kbit/s	yes	yes	Majority Vote	yes
4.8 kbit/s	yes	yes	Majority Vote	yes
9.6 kbit/s	yes	yes	Majority Vote	yes
19.2 kbit/s	yes	yes	Parity	yes
56 kbit/s	yes	N/A	Parity	yes
DS0B circuits	N/A	N/A	Parity	yes

The DDS Subrate and MJU application supports both the PDS and MML command languages.

This document contains procedures for the following topics:

- Installing the DSP application software and hardware
- Provisioning the DSP TG193B circuit pack for the subrate application
- Establishing channels from facility terminating NPCs to the DSP circuit pack, including the provisioning of error correction
- Cross-connecting subrate circuits to each other and to MJU blocks
- Creating test access at the subrate level
- Using the anti-streaming feature to stop streaming MJU branches

Getting Started

This section briefly describes the installation and provisioning processes for the DDS Subrate and MJU 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 subrate application is packaged separately from the DACS II/DACS II ISX software and, therefore, must be installed separately. The following briefly describes the installation process:

1. The SMEM/MEMB* memory card is temporarily removed from the SMEM/MEMB Memory Card slot. The PCMCIA card containing the subrate application is then inserted into the SMEM/MEMB Memory Card slot.
2. The subrate application is then copied to the DACS II/DACS II ISX Memory Card in the PMEM/MEMA Memory Card slot.
3. The PCMCIA card that contains the subrate application is removed from the SMEM/MEMB Memory Card slot, and the DACS II/DACS II ISX SMEM/MEMB 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 is provided in Chapter 3 in the section entitled, "Upgrading the Digital Signal Processing (DSP) Platform 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 DDS Subrate and MJU application. Each step is reversible and must be done in sequence.

1. The first step in the provisioning process is to **grow** the DSP TG193B circuit pack(s). The DDS Subrate and MJU application runs on one or more DSP TG193B circuit packs. Growing a DSP circuit pack puts the circuit pack into the DACS II/DACS II ISX equipment list. As with other circuit packs in a frame, the **GRTH** command is used to install the desired number of DSP circuit packs on the system. Since the DSP circuit pack

* SMEM and PMEM correspond to the memory cards slots in the DACS II frame. MEMA and MEMB correspond to the memory card slots in the DACS II ISX frame.

can be used for other applications, the **GRTH** command is described in detail in the DACS II and DACS II ISX Command and Message Manuals.

The DSP circuit pack need not be physically equipped before issuing the **GRTH** 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 II/DACS II ISX command **RST**.

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

   The **RST** command is described in detail in the *DACS II* and *DACS II ISX Commands and Messages 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 **SECH**. 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.

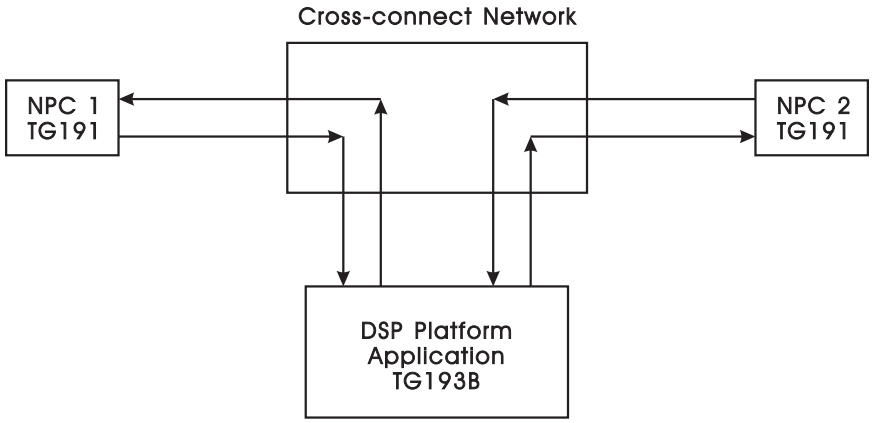

Figure 1-1. Connection Established Between NPC and DSP Circuit Pack

In the **SECH** command, the type of circuit is specified. It can be either a DS0A or a DS0B circuit. For each circuit type, the data rate of that circuit must be specified. For DS0A circuits, the rate **rr** specifies 2.4, 4.8, 9.6, 19.2, or 56 kbit/s data rates. For DS0B circuits, the number of subrate channels (**nn**) needs to be specified. Values of 20, 10, and 5 correlate to the 2.4, 4.8, and 9.6 kbit/s multiplexes, respectively.

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 **SCON**. Please note that the subrate cross-connections cannot be performed until the DSP circuit pack is cross-connected to the appropriate facility terminating NPCs.

   In this command, the data rate of the two circuits to be cross-connected must be specified. The rate **rr** specifies 2.4, 4.8, 9.6, or 19.2 kbit/s data rates. 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 that a previous **SECH** command connected to the DSP circuit pack
   - The channel number in that NPC
   - The subrate circuit number in that channel

   Subrate circuit numbers in a DS0B channel are stated sequentially from 1 to 5, 1 to 10, or 1 to 20 for 9.6, 4.8, and 2.4 kbit/s circuits respectively. The subrate circuit numbers for 19.2 kbit/s circuits within a DS0B multiplex are 2 and 4; 2 corresponding to multiplex positions 2 and 3; 4 corresponding to multiplex positions 4 and 5.

   It is possible to cross-connect a 2.4 or 4.8 kbit/s circuit to a 9.6 kbit/s circuit position in a DS0B with five 9.6 kbit/s circuit positions. Conversely, it is also possible to cross-connect a 2.4 kbit/s circuit to a 4.8 kbit/s circuit position in a DS0B that has ten circuit positions. In either of the two situations, the circuit of the lower rate is "stuffed" into the circuit position of the higher rate. For example, a 4.8 kbit/s circuit on a ten-position DS0B may be connected to a 9.6 kbit/s circuit on a five-position DS0B by duplicating the data bytes in one direction and by taking only every second data byte in the other direction.

CAUTION:
The following channels must not be cross-connected to the DSP circuit pack with this DDS Subrate and MJU application:

- NPCs that carry clear unchannelized circuits
- Channels that are provisioned as test port channels
- Channel 24 of an NPC grown with T1DM framing or channel 24 of an NPC grown with DMI signaling. (T1s in T1DM mode use Channel 24 as an additional framing channel)

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

MJU Circuit Cross-connections

MJU circuits are cross-connected using the **SCON::MPTM** command, which creates MJU blocks and cross-connects DS0A circuits to them. A **HUBID** number ranging from 00 to 77 (two octal digits) must be established for the frame before MJU blocks can be created. The HUBID is used to identify an MJU tree during test access. An MJU tree responds with the HUBID to various inband signals that are sent to an MJU tree during test access. The procedures for creating MJU blocks and cross-connecting to MJU blocks are described in Chapter 5.

Once the first MJU block has been created, its branches may be either cross-connected to DS0A channels on facility terminating NPCs, subrate circuits within a DS0B channel, or cascaded to other newly created MJU blocks.

Test Access and Termination Capability

The subrate application also provides test access capability. This test access capability has four distinct functions:

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.
3. **Terminated** - allows the user to reserve all the resources necessary for a circuit or circuits and to turn the cross-connections on at a later time.
4. **Released** - the test access connection (in either monitor or split mode) is removed.

The procedures for creating test ports and subrate test connections are described in Chapter 6.

The Utility Query Commands

As in the DACS II or DACS II ISX systems, the subrate application has utilities to query what circuits have been established, what circuits have been cross-connected, etc. In addition, there is a query command to check how much of a TG193B circuit pack's capacity is being used and how much of the capacity is available for use. There are several utility query procedures. The commands are provided in Chapter 7.

DDS Subrate and MJU Tutorial

2

Contents

DDS Subrate and MJU Tutorial

2

Overview

This tutorial was developed to provide users with background information on the following DDS Subrate and MJU application features:

- Subrate Multiplexing and Cross-connection
- MJU Operations
- Error Correction Standards

Subrate Multiplexing and Cross-connection

Subrate data is received and transmitted by DACS II/DACS II ISX within regular DS0 channels embedded in DS1 signals. Individual DS0 channels that carry subrate data are classified as either DS0A or DS0B channels. DS0A channels carry a single subrate circuit. Since the data rate of subrate circuits is always less than the 64 kbit/s rate of a DS0A channel, additional bits are added to allow a subrate circuit to be carried by a DS0A. This is called bit or byte stuffing. DS0B channels carry several subrate circuits embedded, or multiplexed, in a 64 kbit/s channel. Framing is needed to allow the individual subrate circuits to be demultiplexed from an incoming DS0B.

Each byte in a DS0 channel that is used for subrate has the layout shown in Figure 2-1.

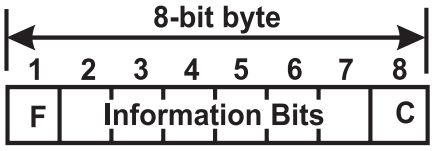

Figure 2-1. 8-bit Byte Structure for Subrate

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

NOTE:
For 56 kbit/s circuits only, bit positions 1 through 7 are information bits. There is no need for a framing bit because 56 kbit/s circuits are not multiplexed within 64 kbit/s circuits.

The control bit has a value of "1" if the information bits represent data. It has a value of "0" if the information bits represent control information. Control information is used within the MJU such that only one branch is transmitting to the master leg at a time. The branch with a "1" in the bit position 8 will transmit data back to the master leg.

For the purpose of multiplexing subrate circuits, the value of the control bit is ignored. This control bit is important for the Multipoint Junction Unit part of this application, discussed later.

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 DS0 (except for 56 kbit/s circuits).

DS0A Subrate Channels

For the subrate circuit rates of 2.4, 4.8, and 9.6 kbit/s, a DS0A channel carries stuffed bytes to fill out the 64 kbit/s channel. The following table outlines the number of stuffed bytes that are required to fill out a DS0A channel:

Table 2-1. Stuffed Bytes within a DS0A Channel

Data Rate	Number of Data Bytes	Number of Stuffed Bytes	Total Number of Bytes Per Data Byte
2.4 kbit/s	1	19	20
4.8 kbit/s	1	9	10
9.6 kbit/s	1	4	5

To illustrate how the number of stuffed bytes is derived, observe the following example for a 9.6 kbit/s DS0A channel. Six information bits are transmitted at a rate of 9.6 kbit/s. With 8 bits to each byte, we can find the rate to transmit an 8 bit byte by computing the equation:

(9.6 kbit/s ÷ 6 information bits) x 8 bits/byte = 12.8 kbit/s

12.8 kbit/s is the rate needed to transmit the entire 8 bit byte.

To find the number of total bytes in the DS0A channel, divide the 64 kbit/s data rate (the data rate of the entire DS0A) by 12.8 kbit/s:

64 kbit/s ÷ 12.8 kbit/s = 5 bytes in total

One of those bytes is the data byte, the other four bytes are the stuffed, repeated data bytes needed to fill up the DS0A channel. Follow this example to find the number of stuffed bytes for 2.4 and 4.8 kbit/s circuits.

Figure 2-2 displays the 9.6 kbit/s DS0A byte format.

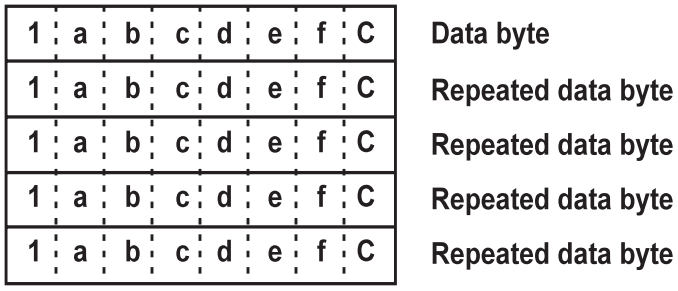

Figure 2-2. Byte Format for the 9.6 kbit/s DS0A Circuit

Notice that the framing bit is set to "1." For subrate framing, the framing bit of an incoming DS0A is a "don't care" bit. For outgoing DS0As, the framing bit is always set to "1" by the DDS Subrate application.

DS0B Subrate Channels

Figure 2-3 displays an example of the byte format of a 9.6 kbit/s DS0B circuit.

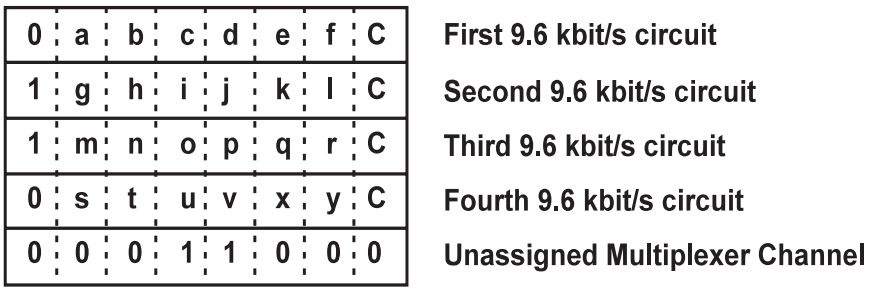

Figure 2-3. Byte Format for the 9.6 kbit/s DS0B Circuit

The circuit carries four 9.6 kbit/s subrate circuits in bytes 1 through 4 plus one byte with a framing pattern of "F0011000" in byte 5. This framing pattern is called the Unassigned Multiplexer Channel pattern. All unassigned subrate circuits carry this pattern. The data for an individual 9.6 kbit/s circuit consists of one byte (minus the framing and control bits) in the identical position of each successive frame of the DS0B data stream.

The DS0B format shown in Figure 2-3 is designed to carry 9.6 kbit/s circuits, but it may also carry 4.8 or 2.4 kbit/s circuits in stuffed mode. The data byte in a 4.8 kbit/s DS0B circuit is repeated once when occupying a 9.6 kbit/s circuit. The data byte in a 2.4 kbit/s DS0B circuit is repeated three times when occupying a 9.6 kbit/s circuit. Supporting 2.4 and 4.8 kbit/s data rates in this manner is inefficient.

Two additional DS0B framing patterns are provided by the Bellcore standard in document TA-TSY-000189, "Generic Requirements for the Subrate Multiplexer," Issue 1, April 1986. There is a framing pattern of 10 bits for 4.8 kbit/s circuits and a framing pattern of 20 bits for 2.4 kbit/s circuits. Table 2-2 shows the framing patterns for each DS0B format. Notice that 4.8 kbit/s circuits can also accommodate 2.4 kbit/s circuits in stuffed mode.

Table 2-2. DS0B Formats and Framing Bit Patterns

	9.6 kbit/s	4.8 kbit/s	2.4 kbit/s
# of subrate circuits carried in each DS0B	5	10	20
Framing pattern	01100	0110010100	01100101001110000100
Can also carry in stuffed mode	4.8 and 2.4	2.4	NA

Demultiplexing and Multiplexing Subrate Circuits

This subrate feature permits the user to take several DS0A circuits and multiplex the embedded subrate circuits onto one or more DS0B circuits. This permits the user to reduce the number of 64 kbit/s channels that are needed to transport the subrate signal from one location to the next. The application also allows users to demultiplex and multiplex subrate circuits between DS0B channels as shown in Figure 2-4. In this figure, two 9.6 kbit/s circuits in multiplex position 1 and 5 of DS0B channel 01 are demultiplexed and then cross-connected to the 9.6 kbit/s circuits in multiplex positions 2 and 3 of the DS0B channel 02.

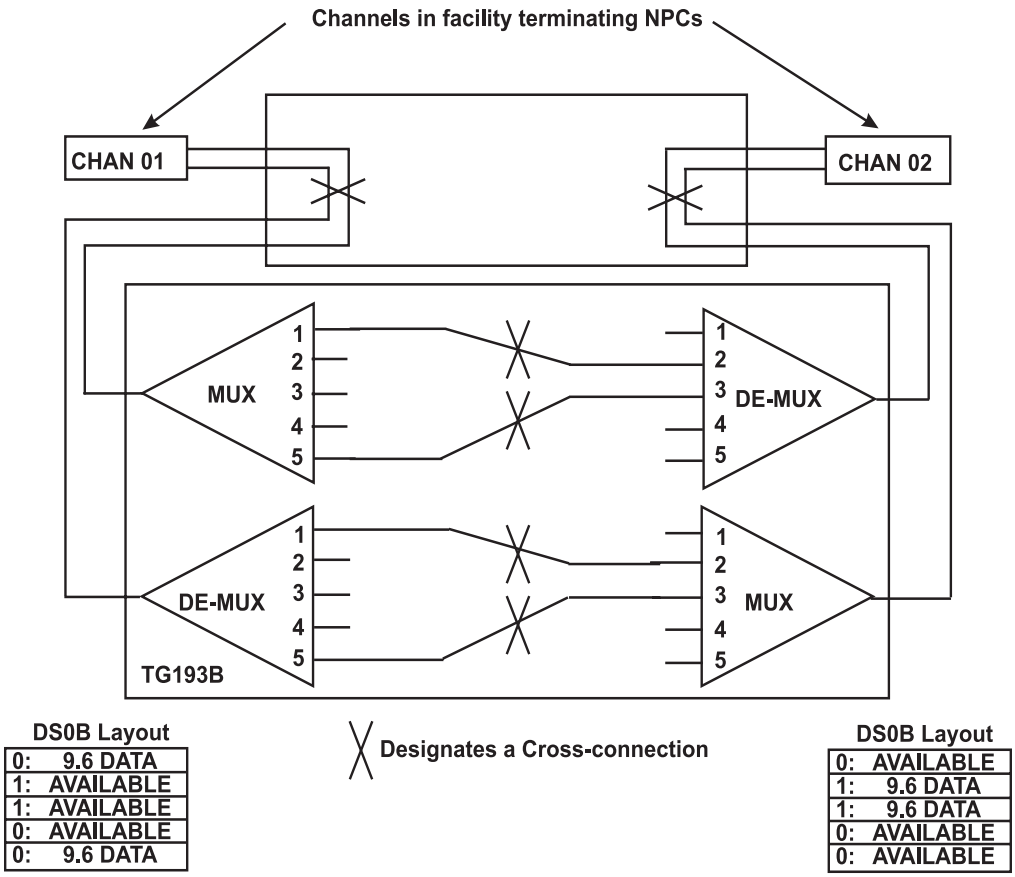

Figure 2-4. Demultiplexing and Multiplexing DS0B Circuits

19.2 kbit/s Circuits in a DS0B Multiplex

19.2 kbit/s circuits are very common in North America, but 19.2 kbit/s is not an integer fraction of the 64 kbit/s DS0 rate, as represented by the 2.4, 4.8, and 9.6 kbit/s rates, and hence does not fit into the regular subrate scheme. As a result, a separate standard, documented in ANSI standard T1.107-1995, exists for 19.2 kbit/s circuits. When a 19.2 kbit/s circuit is multiplexed in a DS0B (normally carrying five 9.6 kbit/s subrate circuits, see Figure 2-3), it is treated as two adjacent 9.6 kbit/s circuits. There are only two positions in a DS0B that may be occupied by a 19.2 kbit/s circuit; these are positions 2 and 3 grouped together and positions 4 and 5. All other circuit positions (1 and 2 or positions 3 and 4) are invalid for a 19.2 kbit/s circuit.

19.2 kbit/s DS0A Circuits

As previously stated, 19.2 kbit/s does not fit into the regular subrate scheme. ANSI standard T1.107-1995 has emerged to carry 19.2 kbit/s circuits all by themselves. This standard is displayed in Figure 2-5.

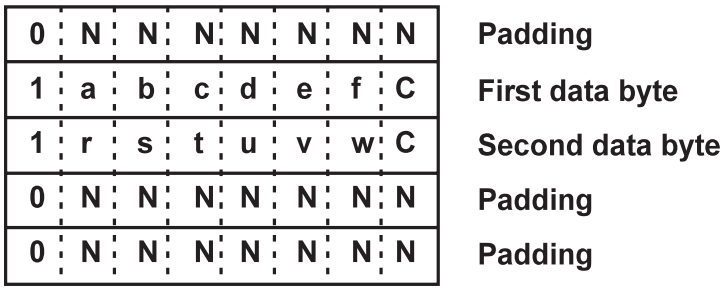

Figure 2-5. Byte Format for the 19.2 DS0A Circuit

A 19.2 kbit/s DS0A resembles a 9.6 kbit/s DS0B that has circuit positions 2 and 3 occupied. All other circuit positions are padded. The padding typically consists of a duplication of the second data byte (except for the framing bit) for circuit positions 4, 5 and position 1 of the next frame.

Multipoint Junction Unit Operation

The standards for Multipoint Junction Units (MJUs) are described in the Bellcore Technical Advisory, TA-TSY-000192, Issue 2, April 1986. A block diagram of a basic MJU configuration is shown in Figure 2-6.

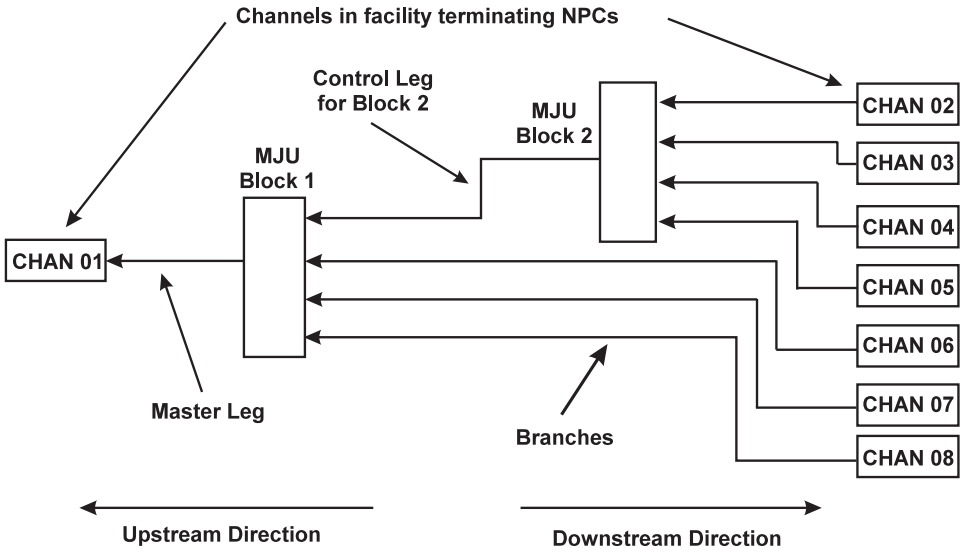

Figure 2-6. Basic MJU Configuration

An MJU configuration allows a master leg to broadcast data, or control information, downstream to all of the branches connected to the master leg. Only one branch at a time is allowed to send data to the master leg. MJU configurations are used in many everyday applications, such as Automatic Teller Machine (ATM) networks and lottery machine networks.

As Figure 2-6 shows, MJU circuits are created from individual MJU blocks. An MJU block consists of a control leg and four branches for each control leg. The first control leg in an MJU configuration is called the master leg. The master leg is connected to the control station, which operates all of the equipment that is connected to the branches. A control station may be in a bank and the branches may be connected to ATM machines. MJU blocks can be cascaded by connecting a branch to the control leg of another MJU block, thus creating MJU "trees."

MJUs deal exclusively with DS0A circuits. The 2.4, 4.8, 9.6, 19.2, and 56 kbit/s data rates are supported. However, the application may be connected to DS0A circuits that are embedded, or multiplexed, within DS0B circuits after the demultiplexing step has taken place in the application.

Primary Channels

MJU blocks perform a basic broadcast function in the downstream direction from the master leg to the branches. In the upstream direction, they perform an "AND" function on bits 2 through 7 (bits 1 through 7 for 56 kbit/s circuits), and an "OR" function on bit 8, the control bit. The control station allows only one branch to send data back over the channel because the "AND" function would corrupt the data. The channel that carries data from one of the branches to the control leg is called the Primary Channel. Branches that are not transmitting data normally send the Control Mode Idle (CMI) bit stream, 11111110, or the Data Mode Idle (DMI) bit stream, 11111111.

Secondary Channels

In addition to the normal mode of transmitting data from branch to control station, a branch may send data to the control station over the Secondary Channel. The Secondary Channel uses every third bit in the control bit stream to send information. Only one branch may send data over the secondary channel, but the branch need not be the same branch that is sending data over the Primary Channel.

Secondary Channel data will not effect the Primary Channel data unless a transition from Control Mode to Data Mode is detected. Two "0" bits in a row in bit 8 (the Control bit position) indicates a transition from Data Mode to Control Mode. Two "1" bits in a row in bit 8 indicates a transition from Data Mode to Control Mode.

Error Correction Standards

The two error correction standards used in this application are Majority Vote and Parity. The Majority Vote error correction is used for DS0A circuits with data rates of 2.4, 4.8,and 9.6 kbit/s. Parity error correction is used for DS0B circuits and DS0A circuits with data rates of 19.2 and 56 kbit/s.

Majority Vote Error Correction

When not operating with Majority Vote error correction, DACS II/DACS II ISX randomly chooses one byte of the repeating pattern as the significant data byte for that DS0A. It does not matter what byte position in the pattern is picked.

Majority Vote uses the repeated byte patterns, as shown for 9.6 kbit/s in Figure 2-2, to make error corrections. To fix a small number of bit errors in the incoming DS0A data stream, the Majority Vote error correction algorithm performs the following actions:

1. Establishes the repeating pattern of five bytes
2. Analyzes each bit position of the incoming data stream

Majority voting is a comparison scheme performed on a bit-by-bit basis. The majority voting is done on each column, except for the framing bits in bit position 1. The framing bits are forced to all "1"s. The Majority Vote algorithm will determine the correct bit as the one which appears at least three out of five times in a column of a 5-byte pattern. Majority voting for the 2.4 and 4.8 kbit/s data rates are performed in the same manner.

Parity Error Correction

The Parity error correction algorithm uses the BCH error correction algorithm. Figure 2-7 shows the channel configuration for the 56 kbit/s DS0A and the DS0B circuits.

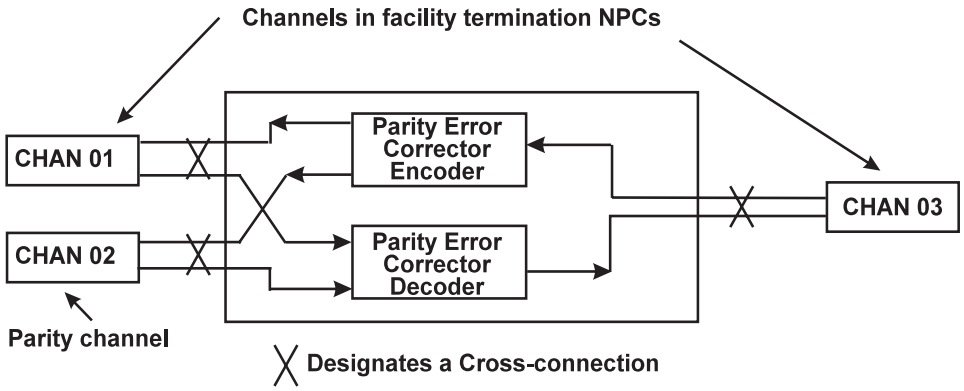

Figure 2-7. Parity Error Correction for 56 kbit/s and DS0B Circuits

A separate parity channel, typically adjacent and synchronized to the data channel, is used to carry the parity data. The data and parity channels are analyzed by the Parity error decoders using the BCH algorithm, which thus creates the error corrected bytes. In the opposite transmission direction, the Parity error encoder uses the BCH algorithm to create a parity byte for each data byte.

The BCH algorithm is also used for parity error correction on 19.2 kbit/s circuits. However, with 19.2 kbit/s circuits, there is room to carry the data bytes and the parity bytes on the same channel. This is shown in Figure 2-8.

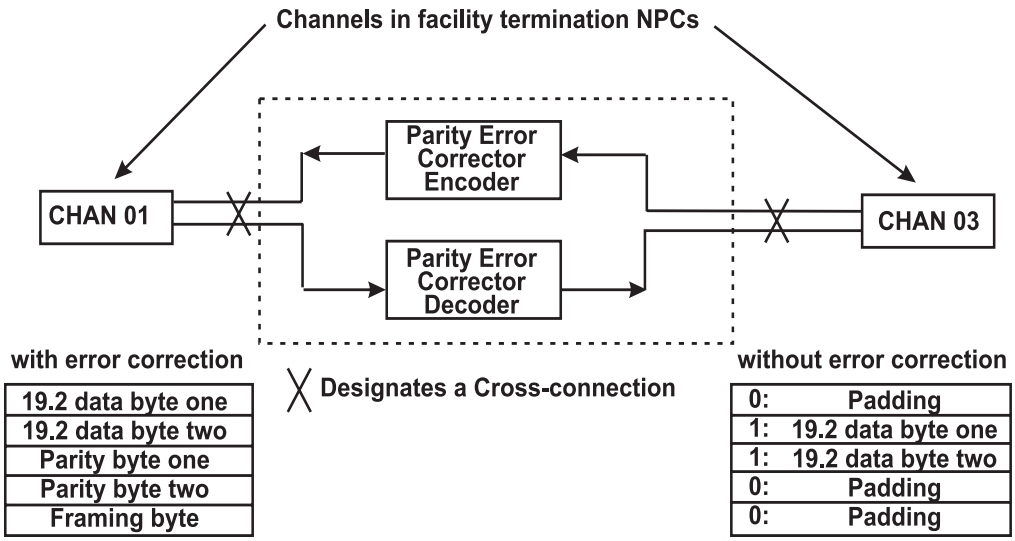

Figure 2-8. Parity Error Correction Function for 19.2 kbit/s Circuits

Notice that the format of the 19.2 kbit/s channel without error correction, on the right, is identical to the format shown in Figure 2-5. On the left is the format for the error corrected 19.2 kbit/s channel, shown in more detail in Figure 2-9.

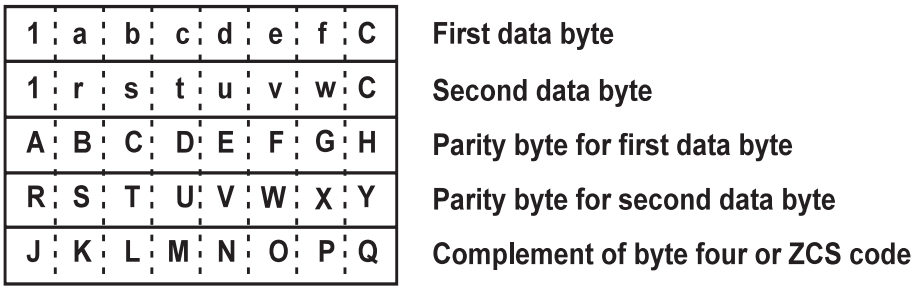

Figure 2-9. Byte Format for a Parity Error Corrected 19.2 kbit/s DS0A Circuit

The first two bytes are the data bytes. The "1"s in bit position 1 are the framing bits, and the "C"s in bit position 8 are the control bits. Byte 3 carries the parity data for byte 1, and byte 4 carries the parity data for byte 2. Byte 5 acts as a framing byte, which is created by complementing byte 4. If byte 4 is all "1"s, then byte 5 will contain the Zero Code Suppression (ZCS) code, 00011000.

Software and Hardware Installation

3

Contents

Software and Hardware Installation

3

Software Installation Procedures

Software that runs on the Digital Signal Processing (DSP) 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 or 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.

Listing Application Releases Resident on a DSP Application Distribution Card

This procedure is used to list the application releases that are on a DSP application 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 (I.51001) **UTL::QRY,MEMSTAT!** 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::MC,MCOND!

Where:

MC = Main Controller
MCOND = Maintenance Condition

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

RMV::SMEM! (for DACS II)
RMV::MEMB! (for DACS II ISX)

4 Remove and replace the memory card in SMEM/MEMB with the DSP application distribution card.

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

RST::SMEM! (for DACS II)
RST::MEMB! (for DACS II ISX)

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
-------------- ------- ---- --------- ------ -----------------
SD4load          bbbbbb  SD4  g.ii.rr  yy/mm/dd hh:mm:ss

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

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
-------------- ------- ---- --------- ------ -----------------
SD4load          bbbbbb  SD4  g.ii.rr  yy/mm/dd hh:mm:ss

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

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 application distribution card.

Step	Procedure

8 To exit the DSP application Load Installation Utility enter **Q!**

The following message will then be displayed:

INSTALL QUIT

9 Remove the DSP application distribution card from the system and replace it with the DACS II/DACS II ISX memory card. Enter the following command to remove SMEM/MEMB from service:

RMV::SMEM! (for DACS II)
RMV::MEMB! (for DACS II ISX)

10 Remove and replace the DSP application distribution card in SMEM/MEMB with the memory card that was previously removed in steps 2 and 3.

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

RST::SMEM! (for DACS II)
RST::MEMB! (for DACS II ISX)

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::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:

UTL::QRY,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 at this time. If the reason for the denial still cannot be determined, contact your Technical Support personnel.

Installing the Digital Signal Processing (DSP) Application Software

This procedure is used to install a particular DSP 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::MC,MCOND!

Where:

MC = Main Controller
MCOND = Maintenance Condition

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

RMV::SMEM! (for DACS II)
RMV::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 application software.

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

RST::SMEM! (for DACS II)
RST::MEMB! (for DACS II ISX)

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 application 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 application 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, and 23.

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 application software executables.

Output similar to the following will be displayed:

For DACS II:

```
Installing DSP load file: 1.04/SD4load, bbbbbb bytes
from SMEM to PMEM

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

Step	Procedure

For DACS II ISX:

```
Installing DSP load file: 1.04/SD4load, bbbbbb bytes
from MEMB to MEMA

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

13 Enter **1!** to verify that the application software just installed was properly loaded on the PMEM/MEMA memory card.

14 To exit the DSP application 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::SMEM! (for DACS II)
RMV::MEMB! (for DACS II ISX)

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

17 Replace the DSP application 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::SMEM! (for DACS II)
RST::MEMB! (for DACS II ISX)

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

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

UTL::BMTR,FROM PMEM,TO SMEM,EXCT! (for DACS II)
UTL::BMTR,FROM MEMA,TO MEMB,EXCT! (for DACS II ISX)

Step	Procedure

When the **EXCT** 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.

BMTR = Backup memory transfer
FROM = The FROM field specifies the source for backup memory transfer.
TO = The TO field specifies the destination for backup memory transfer.
EXCT = Executables. This keyword causes a transfer of only the system software executables from one memory card to the other.

Output similar to the following will be displayed:

For DACS II:

```
WARNING: different SD4load file exists on target: PMEM
OLD (PMEM): SD4xx g.ii.rr  yy/mm/dd hh:mm:ss
NEW (SMEM): SD4xx g.ii.rr  yy/mm/dd hh:mm:ss
2 NPCs may be affected

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

For DACS II ISX:

```
WARNING: different SD4load file exists on target: MEMA
OLD (MEMA): SD4xx g.ii.rr  yy/mm/dd hh:mm:ss
NEW (MEMB): SD4xx g.ii.rr  yy/mm/dd hh:mm:ss
2 NPCs may be affected

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

20 Enter **Y!** Output similar to the following will be displayed:

For DACS II:

```
Installing DSP load file: 1.04/SD4load, bbbbbb bytes from
SMEM to PMEM

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

Step	Procedure

For DACS II ISX:

```
Installing DSP load file: 1.04/SD4load, bbbbbb bytes from
MEMB to MEMA

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

21 Enter **INSTALL!** and then select "**1. List DSPP Load Files**" to verify that the DSP application software application is on both memory cards:

22 To exit the DSP application 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

```
UTL::QRY,MEMSTAT!
```

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 at this time.

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

```
RST::MC!
```

Where:

MC = Main Controller

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 **UTL::QRY,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) Application Software

This procedure is used to upgrade the DSP application software that has been previously installed onto a memory card. 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 application distribution card.

Step	Procedure

1 Enter the following command to insure 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:

UTL::QRY,MEMSTAT!

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::MC,MCOND!

Where:

MC = Main Controller
MCOND = Maintenance Condition

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

RMV::SMEM! (for DACS II)
RMV::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 application software application.

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

RST::SMEM! (for DACS II)
RST::MEMB! (for DACS II ISX)

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 upgrade the DSP application 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 application 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
-------------- ------- ---- --------- ----------------------
SD4load          bbbbbb  SD4  g.ii.rr  yy/mm/dd hh:mm:ss

=============== LOADS ON SMEM: (DACS II CARD) ================
NAME             BYTES  TYPE  VERSION    DATE BUILT
-------------- ------- ---- --------- ----------------------
SD4load          bbbbbb  SD4  g.ii.rr  yy/mm/dd hh:mm:ss

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

For DACS II ISX:

```
DSP LOADS ON MEMORY CARDS:

================ LOADS ON MEMA: (ISX CARD) ==================
NAME             BYTES  TYPE  VERSION    DATE BUILT
-------------- ------- ---- --------- ----------------------
SD4load          bbbbbb  SD4  g.ii.rr  yy/mm/dd hh:mm:ss

================ LOADS ON MEMB: (ISX CARD) ==================
NAME             BYTES  TYPE  VERSION    DATE BUILT
-------------- ------- ---- --------- ----------------------
SD4load          bbbbbb  SD4  g.ii.rr  yy/mm/dd hh:mm:ss

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

Step	Procedure

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 application 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:
```

10 Enter **2!** to upgrade the DSP application software executables.

Output similar to the following will be displayed:

For DACS II:

```
WARNING: different SD4load file exists on target: PMEM
OLD (PMEM): SD4xx g.ii.rr  yy/mm/dd hh:mm:ss
NEW (SMEM): SD4xx g.ii.rr  yy/mm/dd hh:mm:ss
X NPCs may be affected
Do you wish to continue overwrite of this file? [y/N]:
```

For DACS II ISX:

```
WARNING: different SD4load file exists on target: MEMA
OLD (MEMA): SD4xx g.ii.rr  yy/mm/dd hh:mm:ss
NEW (MEMB): SD4xx g.ii.rr  yy/mm/dd hh:mm:ss
X NPCs may be affected
Do you wish to continue overwrite of this file? [y/N]:
```

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

Output similar to the following will be displayed:

Step	Procedure

For DACS II:

```
Installing DSP load file: 1.04/SD4load, bbbbbb bytes
from SMEM to PMEM

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

For DACS II ISX:

```
Installing DSP load file: 1.04/SD4load, bbbbbb bytes
from MEMB to MEMA

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

12 Quit the INSTALL menu by entering **Q!**

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

RMV::SMEM! (for DACS II)
RMV::MEMB! (for DACS II ISX)

14 Remove and replace the DSP application 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::SMEM! (for DACS II)
RST::MEMB! (for DACS II ISX)

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 **EXCT** 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).

UTL::BMTR,FROM PMEM,TO SMEM,EXCT! (for DACS II)
UTL::BMTR,FROM MEMA,TO MEMB,EXCT! (for DACS II ISX)

When the **EXCT** 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.

BMTR = Backup memory transfer

Step	Procedure

FROM = The FROM field specifies the source for backup memory transfer.

TO = The TO field specifies the destination for backup memory transfer.

EXCT = Executables. This keyword causes a transfer of only the system software executables from one memory card to the other.

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:

WARNING:
This may cause a momentary service interruption.

RST::MC!

Where:

MC = Main Controller

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

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:

UTL::QRY,MEMSTAT!

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.

Step	Procedure
	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 at this time.

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:

UTL::QRY,MEMSTAT!

Output similar to the following will be displayed:

[O.51001]

For DACS II:

```
M hh:mm:ss xy,ww n[vv] UTL QRY MEMSTAT  e LN MSG:
DEV   EXCT     DBASE    DATE      TIME      FID  UID
RAM   gg.pp.r  gg.pp.r  aa/bb/yr  hr:mn:sc  fg   <uid>
PMEM  gg.pp.r  gg.pp.r  aa/bb/yr  hr:mn:sc  fg   <uid>
SMEM  gg.pp.r  gg.pp.r  aa/bb/yr  hr:mn:sc  fg   <uid>
DEV   APPLICATION TYPE  DATE      VERSION
PMEM  SD4               aa/bb/yr  gen.iss.rel
                  .
                  .
[PMEM  SD4               aa/bb/yr  gen.iss.rel]
SMEM  SD4               aa/bb/yr  gen.iss.rel
                  .
                  .
[SMEM  SD4               aa/bb/yr  gen.iss.rel]
UTL QRY MEMSTAT COMPL
```

Step	Procedure

For DACS II ISX:

```
M hh:mm:ss xy,ww n[vv] UTL QRY MEMSTAT  e LN MSG:
DEV   EXCT     DBASE    DATE      TIME      FID  UID
RAM   gg.pp.r  gg.pp.r  aa/bb/yr  hr:mn:sc  fg   <uid>
MEMA  gg.pp.r  gg.pp.r  aa/bb/yr  hr:mn:sc  fg   <uid>
MEMB  gg.pp.r  gg.pp.r  aa/bb/yr  hr:mn:sc  fg   <uid>
DEV   APPLICATION TYPE  DATE      VERSION
MEMA  SD4               aa/bb/yr  gen.iss.rel
                  .
                  .
[MEMA  SD4               aa/bb/yr  gen.iss.rel]
MEMB  SD4               aa/bb/yr  gen.iss.rel
                  .
                  .
[MEMB  SD4               aa/bb/yr  gen.iss.rel]
UTL QRY MEMSTAT COMPL
```

For a description of each field, refer to the **UTL::QRY,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 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 application TG193B card(s) grown for the DDS Subrate and MJU application are removed from service and degrown (using the **RMV::NPC** and **DGRTH::NPC before** removing the application:

UTL::QRY,MEMSTAT!

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::MC,MCOND!

Where:

MC = Main Controller
MCOND = Maintenance Condition

5 Enter the following command line to display the DSP application Load Installation Utility menu:

INSTALL!

Output similar to the following will be displayed:

Step	Procedure

```
******* 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:
```

6 Enter **1!** to list the DSP application 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
-------------- ------- ---- --------- ----------------------
SD4load          bbbbbb  SD4  g.ii.rr  yy/mm/dd hh:mm:ss

=============== LOADS ON SMEM: (DACS II CARD) ================
NAME             BYTES  TYPE  VERSION    DATE BUILT
-------------- ------- ---- --------- ----------------------
SD4load          bbbbbb  SD4  g.ii.rr  yy/mm/dd hh:mm:ss

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

For DACS II ISX:

```
DSP LOADS ON MEMORY CARDS:

================ LOADS ON MEMA: (ISX CARD) ==================
NAME             BYTES  TYPE  VERSION    DATE BUILT
-------------- ------- ---- --------- ----------------------
SD4load          bbbbbb  SD4  g.ii.rr  yy/mm/dd hh:mm:ss

================ LOADS ON MEMB: (ISX CARD) ==================
NAME             BYTES  TYPE  VERSION    DATE BUILT
-------------- ------- ---- --------- ----------------------
SD4load          bbbbbb  SD4  g.ii.rr  yy/mm/dd hh:mm:ss

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

Step	Procedure

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

The DSP application 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]:
```

Step	Procedure

For DACS II ISX:

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

9 Enter **A!**

Output similar to the following will be displayed:

For DACS II:

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

       1.  Remove SD4load        (  bbbbbb bytes)
       Q.  QUIT

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

For DACS II ISX:

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

       1.  Remove SD4load        (  bbbbbb 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 will remove SD4load on PMEM.

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

For DACS II ISX:

```
WARNING:  This will remove SD4load on MEMA.

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

Step	Procedure

11 Enter **Y!**

Output similar to the following will be displayed:

For DACS II:

```
File SD4load removed from PMEM.
```

For DACS II ISX:

```
File SD4load removed from MEMA.
```

The DSP application 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:
```

12 Repeat steps 7—11 for the memory card that resides in SMEM/MEMB. In step 9, enter **B!** for SMEM/MEMB.

13 Enter **1!** to list the DSP application 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.

14 To exit the DSP application Load Installation Utility, enter **Q!**

The following message will then be displayed:

```
INSTALL QUIT
```

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

```
RST::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:

```
UTL::QRY,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 at this time.

Hardware Installation Procedure

Install the Digital Signal Processing (DSP) Application Circuit Pack

This procedure describes how to install the Digital Signal Processing (DSP) application 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

In order to utilize the DDS Subrate and MJU application to perform subrate and MJU 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. One or more DSP circuit packs can be used for this application.

This chapter outlines the procedures for performing each of the provisioning steps for the DDS Subrate and MJU 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.

CAUTION:

The following channels must not be cross-connected to the DSP circuit pack with this DDS Subrate and MJU application:

- NPCs that carry clear unchannelized circuits
- Channels that are provisioned as test port channels
- Channel 24 of an NPC grown with T1DM framing or channel 24 of an NPC grown with DMI signaling. (T1s in T1DM mode use Channel 24 as an additional framing channel)

Increasing Channel Capacity of a DSP Application Card

Overview: On DACS II ISX, each DSP application card supports 64 channels that may be cross-connected to either facility terminating NPCs or other DSP application cards. However, on DACS II, if the DSP application card is provisioned in a Facility Terminating Module (FTM) (there are 4 FTMs in an IFTU or FTU), which supports DA, DE, or DS type NPCs, then only 48 channels are supported on that DSP application card.

The capacity of the DSP application card can be increased to 64 channels by provisioning the application card in a Facility Terminating Module (FTM) that is provisioned for NPCs used in 2.048 Mbit/s transmission. (An individual FTM in a unit may be provisioned for 2.048 Mbit/s transmission, eventhough the other three FTMs in the unit are provisioned for DA, DE, or DS type NPCs.) Use the procedure below to accomplish this.

Step	Procedure

1 Enter the following command to increase the capacity of the DSP application card to 64 channels:

`GRTH::UNIT q[q],FTMI d,IMP <imp>!`

Where:

`q[q]` = The unit number of the IFTU (FTU).

`d` = The FTM number within that unit (1 through 4).

`<imp>` = The characteristic impedance (75 or 120 ohms) of any 2.048 Mbit/s E1 NPCs that may also be provisioned in the FTM.

If the FTM is only provisioned with DSP application cards, then it doesn't matter whether 75 or 120 ohms is used.

Growing the DSP Circuit Pack for the DDS Subrate and MJU Application

This procedure describes how to grow the DSP TG193B circuit pack for the DDS Subrate and MJU 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 equipped before issuing the **GRTH** command.

The DDS Subrate and MJU application can run on one or more DSP TG193B circuit packs. Each DSP circuit pack used for the DDS Subrate and MJU application must be grown in the same way.

The **GRTH** 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 7.

Step	Procedure

1 Enter the following command line to grow the TG193B circuit pack for the application:

GRTH::NPC <p_npc>-<q_npc>,TYPE SD411!

Where:

GRTH = 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. **TYPE** = Type **SD411** = Type identifier for the DDS Subrate and MJU Application.

Restoring the DSP Application Circuit Pack

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** command (abort).

The **RST::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::NPC <p_npc>[-<q_npc>]!

Where:

RST = 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.

Establishing Cross-connections

Establish Subrate Channel

This procedure is used to connect a channel (or a range of channels) in an NPC to the subrate application on the DSP platform.

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

This procedure is used to establish one of seven types of channels as follows:

1. A DS0B channel capable of multiplexing 5, 10, or 20 subrate circuits without error correction
2. A DS0A channel (at any data rate) without error correction
3. A DS0A channel with majority vote error correction
4. A 19.2 kbit/s DS0A channel with parity error correction
5. A 56 kbit/s channel with associated parity channel error correction (this type of error correction is also commonly referred to as "56 kbit/s dataport" error correction)
6. A DS0B channel capable of multiplexing 5, 10, or 20 subrate circuits with associated parity channel error correction

NOTE:
5-channel DS0Bs are used for either 9.6 kbit/s or 19.2 kbit/s circuits. For a 19.2 kbit/s circuit, only circuit number 02 and 04 are allowed. 19.2 kbit/s circuits occupy two positions within the 5-channel DS0B multiplex. 19.2 kbit/s circuit number 02 occupies multiplex position 02 and 03. 19.2 kbit/s circuit number 04 occupies multiplex position 04 and 05.

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.

DS0B Channel Without Error Correction

A DS0B Channel without error correction is established by specifying a digroup, channel and the **DS0B nn** field.

The **SEC**, **PEC**, or **PCH** keywords must not be present for this type of channel.

DS0A Channels Without Error Correction

A DS0A channel without error correction is established by specifying a digroup, channel, and the **DS0A rr** field.

The **SEC**, **PEC**, or **PCH** keywords must not be present for this type of channel.

DS0A Channels With Majority Vote Error Correction

A DS0A channel with majority vote error correction is established by specifying the **DS0A** keyword with an **rr** value of 24, 48, or 96, and the **SEC** keyword.

An **rr** value of 19 or 56 is not allowed. The **PEC** and **PCH** keywords must not be present for this type of channel.

19.2 kbit/s Channels With Error Correction

A 19.2 kbit/s channel with parity channel error correction is established by specifying the **DS0A** keyword with an **rr** value of 19, and the **PEC** keyword. Use of the **PEC** keyword is only allowed if the **rr** value is 19.

56 kbit/s Channels With Error Correction

A 56 kbit/s channel with parity error correction is established by specifying the **DS0A** keyword with a value of 56, and the **PCH** keyword. This command has the effect of establishing two channels, one for carrying the subrate data and one for carrying parity error correction information.

Range provisioning of 56 kbit/s channels with error correction is not allowed because parity channels need to be assigned. Using the **PCH** keyword when the **rr** value is less than 56 is also not allowed.

DS0B Channels With Error Correction

A DS0B channel with parity error correction is established by specifying the **DS0B nn** and the **PCH** keywords. Range provisioning of this type of channel is not allowed.

Actions Performed When a Channel is Established

The following actions are performed by the DACS II/DACS II ISX when a channel is established:

1. If the channel is a DS0B channel, the appropriate framing pattern is sent to the facility terminating NPCs.
2. The Unassigned Multiplexer Channel (UMC) Code (F0011000, where F is the framing bit if DS0B 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** command.

4. The Insertion Word (IW) for the channel on the facility terminating NPC is provisioned with the Multiplexer-out-of-Synch (MUX) code, 00011010. This pattern is sent if DACS II/DACS II ISX detects a failure on the DSP circuit pack that is connected to that channel.

CAUTION:
The number of unassigned subrate channels established to a digroup using the D4-type framing should be limited. When the UMC is present on too many channels, it produces a yellow alarm. A limit of 10 channels is safe for an AT&T (Lucent Technologies) D-bank.

Step	Procedure

1 Enter the following command line to establish a cross-connection between a channel (or a range of channels) in an NPC to the DSP circuit pack:

DSPC::<p_npc>:SECH:TO <t_npc>ddd[-eee],
{DS0A rr|DS0B nn}[,{SEC|PEC|PCH[ppp]}]!

Where:

DSPC = Execute on DSP platform

<p_npc> = NPC number of DSP platform where command is sent.

SECH = Establish cross-connected channel to subrate application

TO = To

<t_npc> = Number of facility terminating NPC

ddd = Channel number on facility terminating NPC

eee = Channel number for end of range specified.

DS0A = Digital Signal 0A

rr = DS0A channel rate, 24, 48, 96, 19, or 56, corresponding to 2.4, 4.8, 9.6, 19.2, and 56 kbit/s circuits respectively.

Step	Procedure

DS0B = Digital Signal 0B

nn = Number of DS0B subrate channels, 05, 10, or 20, corresponding to 9.6, 4.8, and 2.4 kbit/s circuits respectively.

SEC = Subrate majority vote error correction

SEC can only be used together with DS0A channels with a rate of 2.4, 4.8, or 9.6 kbit/s.

PEC = Parity error correction for 19.2 kbit/s DS0A channels

PCH = Parity channel

ppp = Parity channel number

If not specified in the input command, this number defaults to the data channel number + 1 (**ddd** + 1).

Change Subrate Established Channel

This command moves a subrate established channel (DS0A or DS0B) 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, DS0A/DS0B format, number of subrate multiplexer channels, error correction, terminate and leave state, etc.) as the old channel.

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

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:

DSPC::<p_npc>:CHG:SECH,OLD <f_npc>ddd[-eee],
NEW <t_npc>jjj[-kkk][,PCH ppp][,DCC]!

Where:

DSPC = Execute on DSP platform

<p_npc> = NPC number of DSP platform where command is sent

CHG = Change

SECH = Channels containing subrate circuits

OLD = Old

NEW = New

<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 **PCH** = Parity channel **ppp** = Parity channel number of NEW parity error correction channel **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

Disestablish Subrate Channel

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.

The subrate application will deny the disestablish channel command if subrate circuits on the channel are still cross-connected.

The disestablish command additionally supports the following:

- Disestablishment of a range of 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.

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:

DSPC::<p_npc>:SDCH:TO <t_npc>ddd[-eee][,DCC]!

Where:

DSPC = Execute on DSP platform

<p_npc> = NPC number of DSP platform where the command is sent.

SDCH = Disconnect (disestablish) a channel from the subrate application

TO = To

<t_npc> = Number of facility terminating NPC

ddd = Channel number on that NPC

eee = Channel number for end of range specified

PCH = Parity Channel

Step	Procedure

ppp = Parity error correction channel number

The **PCH** keyword and the parity channel number, **ppp**, appear in the output message if a parity channel was associated with channel **ddd** at the time channel **ddd** was established. The system automatically finds and disestablishes the parity channel associated with channel **ddd**.

Channel ranges are not allowed if the range includes any channel associated with parity channel error correction.

DCC = Disconnect Code

DCC causes the Digital Data System (DDS) 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 **GRTH::NPC** command associated with the specified NPC is used.

Cross-connecting Subrate Circuits

Cross-connect Subrate Circuits

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. Refer to the "Disestablish Subrate Channel" procedure previously described.

All DS0A and/or DS0B channels must be established using a subrate establish command before subrate circuits carried by them can be cross-connected.

The subrate circuit number fields in the command below are optional for DS0A terminations. If not specified, the default value for the subrate circuit number is 01.

Step	Procedure

1 Enter one of the following three command lines to create a subrate cross-connection:

For a single subrate cross-connection:

```
DSPC::<p_npc>:SCON:RATE rr,FROM\
<f_npc>ddd[/ff],TO <t_npc>jjj[/ll]!
```

For a range of DS0A channel cross-connections:

```
DSPC::<p_npc>:SCON:RATE rr,FROM <f_npc>ddd-eee[/01],\
TO <t_npc>jjj-kkk[/01]!
```

For a range of subrate circuits within a DS0B channel:

```
DSPC::<p_npc>:SCON:RATE rr,FROM <f_npc>ddd/ff-mm,\
TO <t_npc>jjj/ll-nn!
```

Where:

DSPC = Execute on DSP platform

<p_npc> = NPC number of DSP platform where command is sent

SCON = Cross-connect two (or more) subrate circuits to each other

FROM = From

TO = To

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

rr = Circuit rate (24, 48, 96, 19 or 56, corresponding to 2.4, 4.8, 9.6, 19.2, and 56 kbit/s respectively)

The following applies to a single subrate cross-connection:

<f_npc>ddd[/ff] = From termination

Where:

<f_npc> Number of FROM facility terminating NPC

ddd Channel number on that facility terminating NPC

ff Subrate circuit number in that channel, optional if DS0A channel

Step	Procedure

<t_npc>jjj[/ll] = To termination

Where:

<t_npc> Number of TO facility terminating NPC

jjj Channel number on that facility terminating NPC

ll Subrate circuit number in that channel, optional if DS0A channel DS0B circuit

The following applies to cross-connections of a range of DS0A channels:

<f_npc>ddd-eee[/01] = From termination

Where:

<f_npc> Number of FROM facility terminating NPC

ddd Channel number on that facility terminating NPC starting range

eee Channel number on that facility terminating NPC ending range

01 Optional subrate circuit number, since this applies to DS0A channels

<t_npc>jjj-kkk[/01] = To termination

Where:

<t_npc> Number of TO facility terminating NPC

jjj Channel number on that facility terminating NPC starting range

kkk Channel number on that facility terminating NPC ending range

01 Optional subrate circuit number, since this applies to DS0A channels

Step	Procedure

The following applies to cross-connections of a range of DS0B channels:

<f_npc>ddd/ff-mm = From termination

Where:

<f_npc> Number of FROM facility terminating NPC

ddd Channel number on that facility terminating NPC

ff Beginning subrate circuit number in a range

mm Ending subrate circuit number in a range

<t_npc>jjj/ll-nn = To termination

Where:

<t_npc> Number of TO facility terminating NPC

jjj Channel number on that facility terminating NPC

ll Beginning subrate circuit number in a range

nn Ending subrate circuit number in a range

Cross-connect Subrate Circuits in Terminated State

This procedure performs a terminated cross-connection of the FROM and TO customer circuits in both directions.

All DS0A and/or DS0B channels must be established using a subrate establish command before subrate circuits carried by them can be cross-connected.

The subrate circuit number fields in the command are optional for DS0A terminations. If not specified, the default value is 01.

Step	Procedure

1 Enter one of the following command lines to perform a terminated cross-connection:

For a single subrate cross-connection:

```
DSPC::<p_npc>:SCNT:RATE rr,FROM\
<f_npc>ddd[/ff],TO <t_npc>jjj[/ll]!
```

For a range of DS0A channel cross-connections:

```
DSPC::<p_npc>:SCNT:RATE rr,FROM <f_npc>ddd-eee[/01],\
TO <t_npc>jjj-kkk[/01]!
```

For a range of subrate circuits within a DS0B channel:

```
DSPC::<p_npc>:SCNT:RATE rr,FROM <f_npc>ddd/ff-mm,\
TO <t_npc>jjj/ll-nn!
```

Step	Procedure

Where:

DSPC = Execute on DSP platform

<p_npc> = NPC number of DSP platform where command is sent

SCNT = Cross-connect two (or more) subrate circuits to each other and terminate them in both directions

FROM = From

TO = To

RATE = Rate

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

rr = Circuit rate: 24, 48, 96, 19 or 56, corresponding to 2.4, 4.8, 9.6, 19.2, and 56 kbit/s respectively

The following applies to a single subrate cross-connection:

<f_npc>ddd[/ff] = From termination

Where:

<f_npc> Number of FROM facility terminating NPC

ddd Channel number on that facility terminating NPC

ff Subrate circuit number in that channel, optional if DS0A channel

<t_npc>jjj[/ll] = To termination

Where:

<t_npc> Number of TO facility terminating NPC

jjj Channel number on that facility terminating NPC

ll Subrate circuit number in that channel, optional if DS0A channel

Step	Procedure

The following applies to cross-connections of a range of DS0A channels:

<f_npc>ddd-eee[/01] = From termination

Where:

<f_npc> Number of FROM facility terminating NPC

ddd Channel number on that facility terminating NPC starting range

eee Channel number on that facility terminating NPC ending range

01 Optional subrate circuit number, since this applies to DS0A channels

<t_npc>jjj-kkk[/01] = To termination

Where:

<t_npc> Number of TO facility terminating NPC

jjj Channel number on that facility terminating NPC starting range

kkk Channel number on that facility terminating NPC ending range

01 Optional subrate circuit number, since this applies to DS0A channels

Step	Procedure

The following applies to cross-connections of a range of DS0B channels:

<f_npc>ddd/ff-mm = From termination

Where:

<f_npc> Number of FROM facility terminating NPC

ddd Channel number on that facility terminating NPC

ff Beginning subrate circuit number in a range

mm Ending subrate circuit number in a range

<t_npc>jjj/ll-nn = To termination

Where:

<t_npc> Number of TO facility terminating NPC

jjj Channel number on that facility terminating NPC

ll Beginning subrate circuit number in a range

nn Ending subrate circuit number in a range

Change Subrate Terminate and Leave State

This procedure is used to change the terminate and leave state of the cross-connection associated with a subrate two-point or multipoint 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 DS0B channel (that is, all subrate circuits within the DS0B 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
TLA = Terminate and Leave Activate
TLR = Terminate and Leave Release

Table 4-1. Termination States

PRIOR STATE	REQUESTED CHANGE	NEW STATE	PRIOR STATE	REQUESTED CHANGE	NEW STATE
R	TLA F	F	R	TLR F	DNY
R	TLA T	T	R	TLR T	DNY
R	TLA B	B	R	TLR B	DNY
F	TLA F	DNY	F	TLR F	R
F	TLA T	B	F	TLR T	DNY
F	TLA B	B	F	TLR B	R
B	TLA F	DNY	B	TLR F	T
B	TLA T	DNY	B	TLR T	F
B	TLA B	DNY	B	TLR B	R
T	TLA T	DNY	T	TLR T	R
T	TLA F	B	T	TLR F	DNY
T	TLA B	B	T	TLR B	R

Step	Procedure

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

DSPC::<p_npc>:CHG:{TLA|TLR} m,TO <t_npc>ddd[/ff]!

Where:

DSPC = Execute on DSP Platform circuit pack

<p_npc> = NPC number of DSP Platform circuit pack

CHG = Change the terminate and leave state as directed by the subsequent parameters:

TLA = Terminate and leave active

TLR = Terminate and leave release

The requested termination state change is indicated by the **TLA** or **TLR** keywords where **TLA** activates and **TLR** 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 side

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

ff = Subrate circuit number

Disconnect Subrate Circuits

This procedure disconnects the FROM and TO circuits in both directions. The channels **abcddd** and **ghijjj** must have been previously cross-connected using either the **SCON** or the **SCNT** 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 **SCON** or the **SCNT** command.

Step	Procedure

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

For a single subrate cross-connection:

```
DSPC::<p_npc>:SDIS:[RATE rr,]FROM <f_npc>ddd[/ff],\
TO <t_npc>jjj[/ll]!
```

For a range of DS0A channel cross-connections:

```
DSPC::<p_npc>:SDIS:[RATE rr,]FROM <f_npc>ddd-eee[/01],\
TO <t_npc>jjj-kkk[/01]!
```

For a range of subrate circuits within a DS0B channel:

```
DSPC::<p_npc>:SDIS:[RATE rr,]FROM <f_npc>ddd/ff-mm,\
TO <t_npc>jjj/ll-nn!
```

Where:

DSPC = Execute on DSP platform

<p_npc> = NPC number of DSP platform where command is sent

SDIS = Disconnect subrate circuits previously cross-connected

FROM = From

TO = To

RATE = Rate

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

rr = Circuit rate (24, 48, 96, 19 or 56, corresponding to 2.4, 4.8, 9.6, 19.2, and 56 kbit/s respectively)

Step	Procedure

The following applies to a single subrate cross-connection:

<f_npc>ddd[/ff] = From termination

Where:

<f_npc> Number of FROM facility terminating NPC

ddd Channel number on that facility terminating NPC

ff Subrate circuit number in that channel, optional if DS0A channel

<t_npc>jjj[/ll] = To termination

Where:

<t_npc> Number of TO facility terminating NPC

jjj Channel number on that facility terminating NPC

ll Subrate circuit number in that channel, optional if DS0A channel

The following applies to cross-connections of a range of DS0A channels:

<f_npc>ddd-eee[/01] = From termination

Where:

<f_npc> Number of FROM facility terminating NPC

ddd Channel number on that facility terminating NPC starting range

eee Channel number on that facility terminating NPC ending range

01 Optional subrate circuit number, since this applies to DS0A channels

Step	Procedure

<t_npc>jjj-kkk[/01] = To termination

Where:

<t_npc> Number of TO facility terminating NPC

jjj Channel number on that facility terminating NPC starting range

kkk Channel number on that facility terminating NPC ending range

01 Optional subrate circuit number, since this applies to DS0A channels

The following applies to cross-connections of a range of DS0B channels:

<f_npc>ddd/ff-mm = From termination

Where:

<f_npc> Number of FROM facility terminating NPC

ddd Channel number on that facility terminating NPC

ff Beginning subrate circuit number in a range

mm Ending subrate circuit number in a range

Step	Procedure
<t_npc>jjj/ll-nn =	To termination Where: **<t_npc>** Number of TO facility terminating NPC **jjj** Channel number on that facility terminating NPC **ll** Beginning subrate circuit number in a range **nn** Ending subrate circuit number in a range

MJU Operations

5

Contents

MJU Operations

5

Overview

An MJU block has a control leg and four branches. Not all of the branches must be connected. An MJU block transmits data from the control leg to all branches. This data is transmitted in the downstream direction. In the upstream direction (from branches to control leg), an MJU block performs a logical AND function for all data bits. All branches, except the primary branch, transmit "1"s upstream. Therefore, the data of the one branch that does not have all "1"s is transmitted to the control leg.

NOTE:
Refer to the "Multipoint Junction Unit Operation" section of Chapter 2 for basic MJU configuration information.

MJU blocks also transmit secondary channel information, which is embedded in the control channel bit in bit position 8. Only one branch can transmit secondary channel data to the control leg at any one time.

Although MJU blocks are restricted to four branches, the user may create MJU structures of substantial size by cascading MJU blocks. These MJU structures are called MJU trees. The cascading of MJU blocks is done by simply connecting a branch of an MJU block that has already been created to the control leg of an MJU block that is about to be created.

MJU trees are started by creating MJU block 0001. The control leg of MJU 0001 connects to a subrate circuit coming from a facility terminating NPC. Its branches may be connected to other subrate circuits established from facility terminating NPCs. Branches may also be connected to newly created MJU blocks that increase the size of the MJU tree.

The subrate circuit that connects to the control leg of the first MJU block in an MJU tree is also called the master control leg. The subrate circuit number, channel number, and NPC number for that subrate circuit defines the MJU tree and must be specified in any cross-connect or disconnect command dealing with that MJU tree.

The rate of subrate circuits that are processed by a single MJU tree must always be the same. Thus, the master control leg and all the branches must be connected to subrate circuits operating at the same rate.

The kind of subrate circuits that can be connected are as follows:

1. DS0A circuits of one of the following rates may be connected: 2.4, 4.8, 9.6, 19.2, or 56 kbit/s (As long as the circuit rates are all identical for an individual MJU tree.)
2. Subrate circuits carried in DS0B circuits may be connected. The rates may be 2.4, 4.8, 9.6, or 19.2 kbit/s.

The error correction that circuits connected to MJU blocks are subjected to may vary as follows:

1. DS0A circuits of 2.4, 4.8, or 9.6 kbit/s may be subject to majority vote error correction before the connection to an MJU block.
2. DS0A circuit of 19.2 or 56 kbit/s may be subject to parity error correction before the connection to an MJU block.
3. A DS0B channel itself may be subject to parity error correction before being demultiplexed into its component subrate circuits and having some of those subrate circuits connected to MJU blocks.

All of the specifications for error correction are handled at the time a circuit is established to the DDS Subrate and MJU application.

This command specifically does one of the following:

1. It creates an MJU block and connects the control leg as well as some or all of the branches to previously established channels of facility terminating NPCs.
2. It creates an MJU block and connects the control leg to an idle branch of a previously created MJU block. This is called cascading of MJU blocks. In addition, it connects some or all branches of the MJU block to channels of facility terminating NPCs.
3. It connects branches of MJU blocks that were not previously connected to channels of facility terminating NPCs.

All channels that carry subrate circuits (either DS0A circuits or DS0B circuits carrying subrate circuits within them) must be established before they can be cross-connected by the subrate application.

Any branches that remain unconnected after an MJU block has been created send the Control Mode Idle (CMI), 11111110 code upstream. This makes the unconnected branch look like an idle branch. When one or more MJU branches are disconnected from a subrate circuit, the Unassigned Multiplexer Channel (UMC) code is sent towards the facility and the CMI code is sent upstream from the disconnected branch.

Each MJU tree is identified by the facility terminating NPC, channel, and (if applicable) the subrate circuit number that is the master control leg for the MJU tree. All commands that cross-connect or disconnect any channels to MJU blocks within that tree and all commands that create an additional MJU block or delete one or more MJU blocks identify the MJU tree by referring to the master control leg.

Before the first MJU block of an MJU tree can be created, the application software requests the Hub Identification (HUBID) number from the DSP Platform (generic software). For this reason, the HUBID must be set on the frame (DACS II/DACS II ISX) that the application is running on. The MJU circuits provisioned on an application card use the HUBID to identify the DACS II/DACS II ISX frame in response to in-band test messages.

The HUBID can be set or changed via a DACS II/DACS II ISX command which can be found in the *DACS II* and *DACS II ISX Command and Message Manuals*.

The HUBID is coded as an octal number and has a range in octal from 00 to 77 (00 to 63 in decimal).

MJU Operation Procedures

Subrate Multipoint Cross-connection

This command creates an MJU block and the subrate cross-connections that connect to it. MJU blocks transmit data from the control leg to all branches.

All subrate circuits that are cross-connected by this command must first be established. Refer to Chapter 4 for additional information on establishing channels to the subrate application.

Step	Procedure

1 Enter the following command line to create an MJU block:

DSPC::<p_npc>:SCON:[RATE rr,]MPTM <f_npc>ddd[/ff],
MJU ssss[,MA(tttt,u)][,<branch>][,<branch>]
[,<branch>][,<branch>]!

Where:

DSPC = Execute on the DSP Platform

<p_npc> = NPC number of DSP Platform where command is sent

SCON = Cross-connect subrate circuits to an MJU block

This definition of **SCON** depends on the presence of the **MPTM** keyword in the command string. The subrate circuits may be either DS0A circuits or subrate circuits within DS0B circuits.

RATE = Rate

rr = Subrate circuit transmission rate (24, 48, 96, 19, or 56 for 2.4, 4.8, 9.6, 19.2, or 56 kbit/s, respectively)

MPTM = Multipoint master

Step	Procedure

<f_npc>ddd[/ff] = Master control leg termination

Where:

<f_npc> Number of facility terminating NPC that contains the master control leg

ddd Channel number that contains the master control leg

ff Subrate circuit number in that channel, if the channel is a DS0B circuit

MJU = Multipoint Junction Unit block

ssss = MJU block addressed by this command (0001 through 9999)

If the MJU block being addressed by the **SCON** command is 0001 (MJU **ssss** is MJU 0001), then the connection field **MA(tttt,u)** must not appear in the command, because MJU block 0001 must be connected to the Master control leg defined above.

MA = Master

tttt = MJU block number (0001 through 9999)

u = Branch number (1 through 4)

The keyword **MA** plus the value for **tttt** and **u** are used only if an MJU block's control leg is to be connected to a branch of a previously created MJU block for the purpose of cascading MJU blocks. When the keyword **MA** is used, the control leg of MJU block **ssss** is connected to branch **u** of MJU block **tttt**.

The first MJU block in a set of cascaded MJU blocks must be connected to the master control leg defined above and must be assigned the number 0001. The next MJU block may then be connected to a branch of MJU block 0001. All subsequently created MJU blocks may be connected to branches of previously created MJU blocks as long as there is an unconnected branch on a previously created MJU block.

Step	Procedure
	If a branch of an MJU block other than MJU block 0001 is to be connected after that MJU block has been created, then the keyword **MA** and its associated fields **tttt** and **u** need not be used. These fields are optional in that case. However, if these fields are used, they will be checked for consistency. Field **tttt** cannot equal field **ssss**, since that would connect an MJU block's control leg to a branch of that same MJU block, which does not make any sense. Also, branch **u** must not have been previously connected. **branch** = Branch number and termination for that branch **BRi<t_npc>jjj[/ll]** Where: **i** Number of branch (1 through 4) **<t_npc>** Number of facility terminating NPC to be connected to branch **jjj** Channel number on that facility terminating NPC **ll** Subrate circuit number in that channel (optional if DS0A channel) An individual command may have up to four branch fields that specify how branch 1 through 4 should be connected. It is legal to create an MJU block and not connect any of the branches at the time the MJU block is being created. The **i** designation in **BRi** specifies the branch number for a connection.

Subrate Multipoint Terminated Cross-connection

This command creates an MJU block and the subrate cross-connections that connect to it. All the branches that are connected will be placed in the terminate and leave state.

This command may also cross-connect additional branches to an already existing MJU block and place those additional branches in the terminate and leave state.

At least one branch must be specified in the command.

All terminated branches have the UMC code sent downstream towards the facility end of the branches and have the CMI code sent upstream towards the MJU block.

The terminated branches may be released at a later time with the **CHG,TLR** command. Once branches have been released, the circuit will perform as if it had been connected using the **SCON** command.

MJU control legs are not terminated with this command. This includes the control leg of MJU 0001 that is connected to the multipoint master. MJU control legs can be terminated using the **CHG,TLA** command. By not terminating control legs, the user can set up an MJU tree using a mixture of **SCNT** commands (to connect to terminated branches) and **SCON** commands (to connect to unterminated branches). Also, by not terminating the multipoint master and MJU control legs, transmission to and from the active (not terminated) subrate circuits is preserved.

Step	Procedure

1 Enter the following command line to create an MJU block with terminated branches:

```
DSPC::<p_npc>:SCNT:[RATE rr,]MPTM <f_npc>ddd[/ff],\
MJU ssss[,MA(tttt,u)],<branch>[,<branch>]\
[,<branch>][,<branch>]!
```

Step	Procedure

Where:

DSPC = Execute on the DSP Platform

<p_npc> = NPC number of DSP Platform where command is sent

SCNT = Cross-connect subrate circuits to an MJU block and terminate the branches

This definition of **SCNT** depends on the presence of the **MPTM** keyword in the command string. The subrate circuits may be either DS0A circuits or subrate circuits within DS0B circuits.

MPTM = Multipoint master

<f_npc>ddd[/ff] = Master control leg termination

Where:

<f_npc> Number of facility terminating NPC that contains the master control leg

ddd Channel number that contains the master control leg

ff Subrate circuit number in that channel, if the channel is a DS0B circuit

MJU = Multipoint Junction Unit block

ssss = MJU block addressed by this command (0001 through 9999)

If the MJU block being addressed by the **SCNT** command is 0001 (MJU **ssss** is MJU 0001), then the connection field **MA(tttt,u)** must not appear in the command, because MJU block 0001 must be connected to the Master control leg defined above.

RATE = Rate

rr = Subrate circuit transmission rate (24, 48, 96, 19, or 56 for 2.4, 4.8, 9.6, 19.2, or 56 kbit/s, respectively)

Step	Procedure

MA = Master

tttt = MJU block number (0001 through 9999)

u = Branch number (1 through 4)

The keyword **MA** plus the value for **tttt** and **u** are used only if an MJU block's control leg is to be connected to a branch of a previously created MJU block for the purpose of cascading MJU blocks. When the keyword **MA** is used, the control leg of MJU block **ssss** is connected to branch **u** of MJU block **tttt**.

The first MJU block in a set of MJU blocks that are cascaded must be connected to the master control leg defined above and must be assigned the number 0001. The next MJU block may then be connected to a branch of MJU block 0001. All subsequently created MJU blocks may be connected to branches of previously created MJU blocks as long as there is an unconnected branch on a previously created MJU block.

If a branch of an MJU block other than MJU block 0001 is to be connected after that MJU block has been created, then the keyword **MA** and its associated fields **tttt** and **u** need not be used. These fields are optional in that case. However, if these fields are used, they will be checked for consistency.

Field **tttt** cannot equal field **ssss**, since that would connect an MJU block's control leg to a branch of that same MJU block, which does not make any sense. Also, branch **u** must not have been previously connected.

Step	Procedure
	branch = Branch number and termination for that branch **BRi<t_npc>jjj[/ll]** Where: **i** Number of branch (1 through 4) **<t_npc>** Number of facility terminating NPC to be connected to branch **jjj** Channel number on that facility terminating NPC An individual command may have up to four branch fields that specify how branch 1 through 4 should be connected. The **i** designation in **BRi** specifies the branch number for a connection.

Change Subrate Cross-connection for MJU Connected Circuits

This command changes the external facility termination associated with a multipoint circuit branch from an existing digroup, channel, and (optional) subrate circuit number to a NEW digroup, channel, and (optional) subrate circuit number. This command can also be used to change the external facility termination associated with the multipoint master control leg from an existing digroup, channel, and (optional) subrate circuit number to a NEW digroup, channel, and (optional) subrate circuit number; the **MPTM** keyword must be used in that case.

The rate of the NEW subrate circuit must match the rate of the MJU tree.

Execution of this command causes the disconnection of the existing facility and reconnection to a NEW external facility termination. The external facility termination associated with the original connection is left established to the Subrate feature with the UMC code inserted towards the OLD facility.

Once moved to the NEW facility termination, the circuit or the multipoint circuit master leg and all of its associated branches is(are) left in the same terminate and leave state that existed with the OLD channel. For example, if the OLD 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 either before or after moving the channel by using the **CHG** command.

This command combines the operations of the **SDIS** and **SCON** commands that would be necessary to do the same change but with a minimum of service interruption.

Before using this command, the NEW channel must be established to the Subrate feature (**SECH**), and the NEW facility termination must not already be cross-connected (for example, with a previous **SCON**). The specified OLD facility termination must be cross-connected in an existing Subrate multipoint circuit and the specified NEW facility termination cannot be the same as the OLD. Also, neither the NEW termination nor any portion of the existing circuit can be under test access at the time this command is issued.

Circuits connected to an out-of-service facility NPC may also be moved with this command. This change requires no special keyword in the input command, but the output message will indicate that the facility is out-of-service.

NOTE:
The UMC code may not be inserted in the disconnected facility channel until the facility is restored to service under these conditions.

If the facility NPC associated with the NEW channel is out-of-service, the command will be denied.

Step	Procedure

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

DSPC::<p_npc>:CHG:SCON,OLD <f_npc>ddd[/ff],
NEW <t_npc>jjj[/ll][,MPTM]!

Where:

DSPC = Execute on the DSP Platform

<p_npc> = NPC number of DSP Platform where command is sent

CHG:SCON,OLD,NEW = Change (edit) the subrate circuit connected to an MJU block

The subrate circuit may either be connected to a branch of an MJU tree or to the master control leg. If the subrate circuit connected to the master control leg is to be changed, then the **MPTM** keyword must be specified.

<f_npc> = Number of OLD facility terminating NPC

ddd = Channel number on that facility terminating NPC

ff = Number of subrate circuit on that channel

<t_npc> = Number of NEW facility terminating NPC

jjj = Channel number on that facility terminating NPC

ll = Number of subrate circuit on that channel

MPTM = Multipoint Master

MPTM indicates that the circuit change is for the master control leg of MJU block 0001

Disconnect MJU Branches

This command disconnects branches from Multipoint Junction Unit (MJU) blocks that had previously been connected using the **SCON** or the **SCNT** command. This command disconnects a minimum of one branch and a maximum of four branches.

MJU blocks themselves may not be disconnected with this command; the command **SDIS,RATE,MPTM,MJU,ALL** must be used for that function.

Branches may be disconnected from MJU blocks incrementally, one command at a time. A command might address MJU block 0005, that has all four branches connected, and disconnect branches 1 and 2. This disconnection will be performed without service interruptions to branches 3 and 4 that are still connected. Another command might address MJU 0005 again and disconnect branch 3, leaving branch 4 undisturbed and still operating.

For additional information on creating, cross-connecting, and cascading MJU blocks, refer to Chapter 7.

Step	Procedure

1 Enter the following command line to disconnect branches from an MJU block:

DSPC::<p_npc>:SDIS:[RATE rr,]MPTM <f_npc>ddd[/ff],
MJU ssss, <branch>[,<branch>][,<branch>][,<branch>]!

Where:

DSPC = Execute on the DSP Platform

<p_npc> = NPC number of DSP Platform where command is sent

SDIS = Disconnect subrate circuits from the branches of an MJU block

This definition of **SDIS** depends on the presence of the **MPTM** keyword in the command string. The subrate circuits may be either DS0A circuits or subrate circuits within DS0B circuits.

Step	Procedure

<f_npc>ddd[/ff] = Master control leg termination

Where:

<f_npc> Number of facility terminating NPC that contains the master control leg

ddd Channel number on that facility terminating NPC that contains the master control leg

ff Subrate circuit number in that channel, if the channel is a DS0B circuit

The master control leg termination must be specified exactly as specified in previous cross-connect commands for this MJU tree.

MJU = Multipoint Junction Unit block

ssss = MJU block addressed by this command (0001 through 9999)

RATE = Rate

rr = Subrate circuit transmission rate (24, 48, 96, 19 or 56, corresponding with 2.4, 4.8, 9.6, 19.2, and 56 kbit/s respectively)

MA = Master

tttt = MJU block number (0001 through 9999)

u = Branch number (1 through 4)

The keyword **MA** plus the value for **tttt** and **u** are given in the completion message to identify the MJU block to which this MJU block is connected.

Step	Procedure
	branch = Branch number and termination for that branch **BRi<t_npc>jjj[/ll]** Where: **i** Number of branch (1 through 4) **<t_npc>** Number of facility terminating NPC connected to branch **jjj** Channel number on that facility terminating NPC **ll** Subrate circuit number in that channel (optional if DS0A channel) An individual command may disconnect up to four branches. The **i** designation in **BRi** specifies the branch number for a connection.

Deleting MJU Blocks

This command performs a cascaded MJU block disconnection and deletion. The **MJU-ssss** field identifies the place to begin the disconnection and deletion. **MJU-ssss** as well as any MJU blocks cascaded from it will be disconnected and deleted. The MJU block number, **ssss**, must be the same number that was specified to create the MJU block using the **SCON** or **SCNT** command. If only branches are to be disconnected from an MJU block without deleting the MJU block itself, then the **SDIS:RATE,MPTM,MJU** command should be used.

For additional information on creating, cross-connecting, and cascading MJU blocks, refer to Chapter 7.

Step	Procedure

1 Enter the following command line to delete MJU blocks:

DSPC::SDIS:[RATE rr,]MPTM <f_npc>ddd[/ff],
MJU ssss[,ALL]!

Where:

DSPC = Execute on the DSP Platform

<p_npc> = NPC number of DSP Platform where command is sent

SDIS = Disconnect MJU block(s) and delete it/them (also see the **ALL** keyword description)

This definition of **SDIS** depends on the presence of the **MPTM** keyword in the command string. The subrate circuits may be either DS0A circuits or subrate circuits within DS0B circuits.

<f_npc>ddd[/ff] = Master control leg termination

Where:

<f_npc> Number of facility terminating NPC that contains the master control leg

ddd Channel number on that facility terminating NPC that contains the master control leg

ff Subrate circuit number in that channel, if the channel is a DS0B circuit

Step	Procedure

The master control leg termination must be specified exactly as specified in previous cross-connect commands for this MJU tree.

MJU = Multipoint Junction Unit block

ssss = MJU block addressed by this command (0001 through 9999)

The output message differentiates between OLD and NEW MJU blocks. The OLD section lists all the disconnected MJUs and branches associated with each one. This includes the branch data for MJU **ssss**, as well as the data for up to twenty additional MJUs that may have been cascaded from MJU **ssss** and its associated downstream connections.

The NEW section lists the connection data for the MJU block immediately upstream after the disconnection of the control leg of **MJU ssss**. If the disconnected MJU **ssss** is MJU 0001, the NEW MJU fields are filled with zeros, indicating that no MJU blocks remain in the circuit.

ALL = All

If **ALL** is specified, then MJU block **ssss**, its control leg, and all other MJU blocks and their branches directly or indirectly connected to the branches of MJU block **ssss** will be disconnected.

If **ALL** is not specified, all branches of MJU block **ssss** must be previously disconnected. Then, MJU block **ssss** and its control leg only will be disconnected.

MA = Master

tttt = MJU block number (0001 through 9999)

u = Branch number (1 through 4)

The keyword **MA** plus the value for **tttt** and **u** are given in the completion message to identify the MJU block that MJU block **ssss** had been connected to.

Step	Procedure
	RATE = Rate **rr** = Subrate circuit transmission rate: 24, 48, 96, 19 or 56, corresponding with 2.4, 4.8, 9.6, 19.2, and 56 kbit/s respectively

Set, Change, or Turn Off Anti-Streaming for MJU Trees

This command is used to perform the following tasks:

- Turning on the anti-streaming feature for a particular MJU tree
- Setting or changing the time-out value for the anti-streaming feature for a particular MJU tree
- Turning off the anti-streaming feature for a particular MJU tree
- Turning on the anti-streaming feature for a streaming branch that started streaming while the MJU tree it belonged to did not have the anti-streaming feature turned on

The anti-streaming feature sets a time-out value for the duration of time that a particular branch of an MJU tree is transmitting data upstream to the master control point. A particular branch should never transmit data beyond a certain time value. If it does, it disrupts the transmission of data by other branches in the upstream direction.

The anti-streaming feature turns a streaming branch off, if that branch exceeds the time-out value. Once a branch is turned off, meaning it is looped onto itself, it will only be turned back on, if it goes back to control mode (i.e. the received data stream on that branch changes bit 8 from 1 to 0). When a streaming branch is detected, an autonomous message will display on the DACS terminal, indicating the identity of the branch and when the anti-streaming capability discovered the branch.

Step	Procedure

1 Enter the following command line to set, change, or turn off anti-streaming for MJU trees:

DPSC::<p_npc>:CHG:ASTREAM,MPTM <f_npc>ddd[/ff],
{ss|OFF}!

Where:

DSPC = Execute on the DSP Platform

<p_npc> = NPC number of DSP Platform where command is sent

CHG:ASTREAM = Set or turn off the MJU branch anti-streaming time out value

MPTM = Multipoint master, points to subrate circuit that identifies the MJU tree

Step	Procedure

<f_npc> = Number of facility terminating NPC that carries the subrate circuit for the MJU master control leg

ddd = Channel on that NPC that carries that subrate circuit

ff = Number of subrate circuit for the master control leg on that channel

This subrate circuit number has the value 01 for DS0A circuits and may be omitted for those DS0A circuits.

ss = Number of seconds for the time-out value of the anti-streaming feature

The range of the time-out value is between 01 and 99. Both digits must be entered.

OFF = Keyword to indicate that the anti-streaming feature is to be turned off.

NOTE:
The anti-streaming feature cannot be turned off for a particular MJU tree, if a branch on that MJU tree is currently in the streaming state. If it is desired to turn anti-streaming off while a branch is streaming, then the user must first disconnect the branch that is streaming. Then, and only then, anti-streaming can be turned off.

This command should be used together with the **UTL::QRY,ASTREAM** utility command that retrieves anti-streaming information such as the time-out values and the identity of branch circuits that have been turned off. For additional information on this utility command and the other DDS Subrate and MJU application commands, refer to Chapter 7.

Subrate Test Access

6

Contents

Subrate Test Access

6

Overview

Test access for DDS Subrate and MJU circuits is performed through facility terminating NPCs which are grown as Test Port NPCs.

Test Ports may be provisioned on Test Port NPCs grown as Dual Di-Groups in the usual manner. The facility side of such a Test Port NPC must be connected to test equipment in the usual manner.

Test access can perform four different functions:

- Monitor
  - — Monitor mode is the only mode than 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 Unassigned Multiplexer Code (UMC) bit pattern is sent towards the external facility.
- Released
  - — Release 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 while under test access.

The DDS Subrate and MJU application supports the test access of subrate circuits operating at 2.4, 4.8, 9.6, 19.2, and 56 kbit/s data rates.

If the test access point specified is connected to an MJU branch that is not cross-connected, the output message will contain the keyword **UNMAPPED**. In this case, the upper Test Port channel is connected to the branch and the lower Test Port channel is not connected.

If a craft connection used to operate a test access session is dropped, then all test access states on any legs established with that link are dropped, as if released from test access. Similarly, if the DACS II or DACS II ISX frame is reset or rebooted, then any test access connections will be released.

Subrate Test Access Procedures

Subrate Test Access - Monitor Mode

This command creates a subrate test access connection in monitor mode for a subrate circuit **not** involving an MJU block. This command can be used to create test access for an entire DS0B that carries subrate circuits. The circuit may be in either the terminated or released state prior to being placed under test access. This command does not change the terminated or released state of the circuit.

Step	Procedure

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

DSPC::<p_npc>:STST:MON,TO <t_npc>ddd[/ff],TP kk!

Where:

DSPC = Execute on the DSP Platform

<p_npc> = NPC number of DSP Platform where command is sent

STST = Create test access connection in monitor mode

TP = Test Port

<t_npc> = Number of TO facility terminating NPC containing circuit to be accessed

ddd = Channel number on that facility terminating NPC

ff = Number of subrate circuit in that channel to be accessed for testing

Step	Procedure

The termination **<t_npc>ddd[/ff]** is the TO side and is connected to the upper test access channel. If the test access channels have already been connected to the circuit to be tested, the external facility termination must not be specified or the command will be denied. Refer to the "Subrate Test Access - Split or Monitor" procedure to change a test access circuit to the Split mode.

Variable **<t_npc>ddd[/ff]** specifies the NPC, channel, and subrate circuit number to be connected to the Test Port. If a multiplexed DS0B channel is tested, the subrate circuit number **ff** is omitted. To test a single subrate circuit in the DS0B channel, the subrate circuit number field must be specified. When the tested channel is a nonmultiplexed (DS0A) channel, the subrate circuit number is entered as 01, or if the user prefers, the subrate circuit number can be omitted and the system will default the value to 01.

kk = Number of Test Port carrying the test access channels

MON - Monitor mode

TO - To

Create Test Access Connection in Monitor Mode for MJU Trees

This command is used to create a test access connection for the master control leg or one of the branches of a Multipoint Junction Unit (MJU) tree. If this command is applied to a branch, it will create a test access connection regardless of whether that branch is cross-connected or not. Test access channels may not be applied to branches that are connected to control legs of cascaded MJU blocks.

This command does not change the terminated or released state of the circuit.

Step	Procedure

1 Enter the following command line to create a test access connection for the master control leg or one of the branches of an MJU block:

```
DSPC::<p_npc>:STST:MON,TO <t_npc>ddd[/ff],\
MJU ssss,[BRi,]TP kk!
```

Where:

DSPC = Execute on the DSP Platform

<p_npc> = NPC number of DSP Platform where command is sent

STST = Create test access connection in monitor mode

TP = Test Port

<t_npc> = Number of facility terminating NPC containing master control leg of MJU tree

ddd = Channel number on that facility terminating NPC containing master control leg

ff = Number of subrate circuit in that channel that is the master control leg of the MJU tree

kk = Number of Test Port carrying the test access channels

MON = Monitor mode

TO = To

MJU = Multipoint Junction Unit block

Step	Procedure
	ssss = Number of MJU block subjected to test access If **ssss** is equal to 0001, then the master control leg or one of the branches may be subjected to test access. If **ssss** indicates an MJU block other than 0001, a branch must be specified in the command, since the control leg of a cascaded MJU block may not be subjected to test access. **BR** = Branch of an MJU block **i** = Number of branch (1 through 4) of the specified MJU block When a branch number is specified, that branch is connected to the specified test access channel. The upper test access channel (TO side) will face the branch and the lower test access channel (FROM side) will face downstream towards the facility termination. If a branch is not specified, then **ssss** must be 0001, pointing to the master control leg.

Change Subrate Test Access - Split or Monitor Mode

This command 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, entire DS0B circuits, or DS0A circuits cross-connected to the master control leg or one of the branches of an MJU tree can be put into split mode or changed from split mode to monitor mode. In split mode, data transmission in the tested circuit is interrupted.

CAUTION:
Split test access to a DS0B channel carrying multiple subrate circuits can potentially cause loss of service to as many subrate circuits as are occupying that DS0B channel. Split test access to the master control leg of an MJU tree will interrupt the operation of the entire MJU tree.

Step	Procedure

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

DSPC::<p_npc>:STST:{SPL|MON},TP kk!

Where:

DSPC = Execute on the DSP Platform

<p_npc> = NPC number of DSP Platform where command is sent

STST = Change mode of test access connection from split to monitor or from monitor to split mode

TP = Test Port
kk = Number of Test Port carrying the test access channels

SPL = Split mode

MON = Monitor mode

Terminate and Leave Cross-connections via Subrate Test Access

This command changes a circuit under test access from the released to the Terminate and Leave Active state. Conversely, this command can also change a circuit under test access from the terminated to the released state.

This command can only be used on subrate cross-connected circuits. It cannot be used for entire DS0B circuits that are under test access, nor can it be used for unmapped (not cross-connected) circuits nor circuits looped onto themselves.

Both two-point subrate cross-connections and MJU subrate cross-connections may have their terminated or released state changed by this command.

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 **CHG** command located in the section entitled *Change Subrate Terminate and Leave State* in Chapter 4.

CAUTION:
The 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 Table 4-1. In that table:

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

Table 6-1. Termination States

PRIOR STATE	REQUESTED CHANGE	NEW STATE	PRIOR STATE	REQUESTED CHANGE	NEW STATE
R	TLA F	F	R	TLR F	DNY
R	TLA T	T	R	TLR T	DNY
R	TLA B	B	R	TLR B	DNY
F	TLA F	DNY	F	TLR F	R
F	TLA T	B	F	TLR T	DNY
F	TLA B	B	F	TLR B	R
B	TLA F	DNY	B	TLR F	T
B	TLA T	DNY	B	TLR T	F
B	TLA B	DNY	B	TLR B	R
T	TLA T	DNY	T	TLR T	R
T	TLA F	B	T	TLR F	DNY
T	TLA B	B	T	TLR B	R

The TO and FROM directions are defined as follows:

1. If a subrate cross-connect between subrate demultiplexers and multiplexers (this is called a two-point circuit) has been subjected to test access using the **STST:MON** command, then the TO direction is defined by the circuit number **<t_npc>ddd[/ff]** used in that command. The FROM direction is, of course, the subrate circuit that the TO subrate circuit had been cross-connected to.

   If the TO and FROM directions when setting up the test access connection is the reverse of the TO and FROM directions defined by a prior **CHG::{TLA|TLR}** command, then the TO and FROM directions of the test access command holds.

2. If the master control leg of an MJU tree has been subjected to test access using the **STST:MON,TO,MJU** command, then the TO direction is towards MJU 0001 and the FROM direction is towards the facility termination of the master control leg.

3. If a branch of an MJU block has been subjected to test access using the **STST:MON,TO,MJU** command, then the TO direction is towards the branch of the MJU block and the FROM direction is towards the facility termination of that branch.

Step	Procedure

1 Enter the following command line to change the terminate and leave state of a subrate circuit under test access:

DSPC::<p_npc>:STST:{TLA|TLR} {F|T|B},TP kk!

Where:

DSPC = Execute on the DSP Platform

<p_npc> = NPC number of DSP Platform where command is sent

STST = Subrate test access command

TP = Test Port

TLA = Terminate and leave active

TLR = Release test point from terminate and leave state

F = FROM direction - applies to either the **TLA** or **TLR** keyword preceding it

T = TO direction - applies to either the **TLA** or **TLR** keyword preceding it

B = BOTH directions - applies to either the **TLA** or **TLR** keyword preceding it

kk = Number of Test Port carrying the test access channels

Release a Subrate Circuit from Test Access

This command releases a single subrate circuit from test access and restores the circuit to released or terminated state. The output from this command depends upon whether the access point is a DS0A, DS0B, or MJU.

Step	Procedure

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

DSPC::<p_npc>:STST:TPR,TP kk!

Where:

DSPC = Execute on the DSP Platform

<p_npc> = NPC number of DSP Platform where command is sent

STST:TPR,TP = Disconnect test access connection

kk = Number of Test Port carrying the test access channels

Release Multiple Subrate Circuits from Test Access

This command releases multiple subrate circuits from test access and restores these circuits to released or terminated state. 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 Platform circuit pack running the DDS Subrate and MJU 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.

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.

Step	Procedure

1 Enter the following command line to release multiple subrate circuits from test access:

DSPC::<p_npc>:STST:TPR,{ALL|LINKS}!

Where:

DSPC = Execute on the DSP Platform

<p_npc> = NPC number of DSP Platform where command is sent

STST:TPR = Disconnect test access connection

ALL = All

This keyword releases 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.

Step	Procedure
	LINKS = Links This keyword releases all test access channels for the addressed DSP circuit pack running the DDS Subrate and MJU application, regardless over which administrative link the test access connection had been initiated.

Commands and Messages

7

Contents

Contents

Contents

Contents

Contents

Contents

Commands and Messages

7

Introduction

1. Common Material for all Commands

This manual documents all commands and messages for the DDS Subrate and Multipoint Junction Unit application for both DACS II and DACS II ISX. The reader of this Command and Message Manual 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:

```
DSPC:[FRM xy,SEQ ww]:<p_npc>:SCON:RATE rr,FROM <f_npc>ddd[/ff],\
TO <t_npc>jjj[/ll]!
```

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 choses 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 including SLC Facilities
3. Prefix Notation for all Application Commands

All the explanations below apply to North American transmission facilities based on 24 channel DS1 and DS3 facilities.

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 a T1 (also called a DS1) facility is called a Network Processing Circuit (NPC). Physically these NPCs are packaged two together on what is called a Dual-Digroup card. Dual-Digroup 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-Digroup 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 DDS Subrate and Multipoint Junction Unit application) runs, are also physically plugged into the same kind of card slot that is used for the Dual-Digroup 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 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. On DACS II, if the DSP application card is provisioned in a Facility Terminating Module (FTM) (there are 4 FTMs in an IFTU or FTU), which supports DA, DE, or DS type NPCs, then only 48 channels are supported on that DSP application card. The user may increase the capacity of the DSP application card to 64 channels by provisioning it in a Facility Terminating Module (FTM) that is provisioned for International NPCs. The following command accomplishes this:

GRTH:[FRM xy,SEQ ww]:UNIT q[q],FTMI d,IMP <imp>!

Where "q[q]" is the unit number of the IFTU (FTU), "d" is the FTM number within that unit, values are "1" through "4", and "<imp>" is "75" or "120", which is the characteristic impedance (in ohms) of any International E1 NPCs that may also be provisioned within the module. If such an International FTM is only provisioned with DSP application cards then one of the impedance values must be provisioned, but it does not matter, whether 75 or 120 is selected.

DACS II also supports units that terminate DS3s, they are called DS3Us. Within each DS3U six DS3 circuits may be terminated. Within each of the DS3 circuits 28 DS1 circuits are embedded. Each of these embedded DS1 circuits is also called an NPC and is addressed individually.

Below the DACS II ISX and DACS II NPC addressing scheme are explained in detail.

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 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 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 DS1 Terminations

Below is the 3-digit sequential NPC numbering scheme for DACS II that may be used for units 1 through 6. This application may address DA, DE, or DS type facility terminating NPCs as well as DSP Application NPCs* (which are of the SD type) in this way. The valid values are:

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

2.2.2 Sequential 4-digit NPC Numbering for DS1 Terminations

Below is the 4-digit sequential NPC numbering scheme for DACS II frames. This scheme can accommodate the maximum number of units that a DACS II frame may have, which is sixteen. This application may address DA, DE, or DS type facility terminating NPCs as well as DSP Platform NPCs (which are of the SD type) in this way. The valid values are:

Unit 1	Unit 2	Unit 3	Unit 4
NPC 0001-0160	**NPC 0161-0320**	**NPC 0321-0480**	**NPC 0481-0640**
Unit 5	Unit 6	Unit 7	Unit 8
NPC 0641-0800	**NPC 0801-0960**	**NPC 0961-1120**	**NPC 1121-1280**
Unit 9	Unit 10	Unit 11	Unit 12
NPC 1281-1440	**NPC 1441-1600**	**NPC 1601-1760**	**NPC 1761-1920**
Unit 13	Unit 14	Unit 15	Unit 16
NPC 1921-2080	**NPC 2081-2240**	**NPC 2241-2400**	**NPC 2401-2560**

* Even numbered NPCs are illegal for DSP Application NPCs; also, even numbered NPCs following odd DSP Application NPCs are not usable and are skipped as previously explained.

2.2.3 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) being able to utilize a full complement of 64 channels 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 is 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**

2.2.4 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) being able to utilize a full complement of 64 channels 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 is 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**

2.2.5 Sequential 3-digit NPC Numbering for 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 TA and TE type facility terminating NPCs within a 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**

2.2.6 Sequential 4-digit NPC Numbering for 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 TA and TE type facility terminating NPCs within a 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 0641-0800 080A-080H	**NPC 0801-0960 096A-096H**	**NPC 0961-1120 112A-112H**	**NPC 1121-1280 128A-128H**
Unit 9	Unit 10	Unit 11	Unit 12
NPC 1281-1440 144A-144H	**NPC 1441-1600 160A-160H**	**NPC 1601-1760 176A-176H**	**NPC 1761-1920 192A-192H**
Unit 13	Unit 14	Unit 15	Unit 16
NPC 1921-2080 208A-208H	**NPC 2081-2240 224A-224H**	**NPC 2241-2400 240A-240H**	**NPC 2401-2560 256A-256H**

2.2.7 Hierarchical Numbering for DS1 Terminations

The hierarchical numbering scheme for DS1 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 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. DSP Platform NPCs may be addressed this way, but again even NPC numbers are illegal for those NPCs. Below is the hierarchical NPC numbering scheme for DACS II. This application may address DA, DE, or DS type facility terminating NPCs as well as DSP Platform NPCs (which are of the SD type). The valid values are:

uvmnp - 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

2.2.8 Hierarchical Numbering for E1 Terminations

The hierarchical numbering scheme for E1 Termination NPCs (identically to DS1 terminations as noted above) is also 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. 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 Platform NPCs (which are of the SD type). The valid values are:

uvmnp - 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

2.2.9 Hierarchical Numbering for DS3 Terminations

The hierarchical numbering scheme for DS3 Termination NPCs 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 NPCs numbered from 1 through 28. 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. This application may address TA, or TE type facility terminating NPCs. The valid values are:

uvmnp - 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

3. Channel Numbering Within NPCs

The channel numbers on NPCs that terminate DS1 facilities, i.e. NPCs of type DA, DE, TA, or TE, range from 001 through 024 on both DACS II and DACS II ISX.

Channels of LSIU NPCs, which are of type LS, range from 0 through 31.

For SLC 96 and SLC Series 5 circuits on DACS II the channel numbers are as follows:

001-047	Odd only (SLC 96® Carrier, Mode 3, DGA)
049-095	Odd only (SLC 96 Carrier, Mode 3, DGC)
001-024	Odd and Even (SLC 96 Carrier, Mode 1, DGA)
025-048	Odd and Even (SLC 96 Carrier, Mode 1, DGB)
049-072	Odd and Even (SLC 96 Carrier, Mode 1, DGC)
073-096	Odd and Even (SLC 96 Carrier, Mode 1, DGD)
001-024	Odd and Even (SLC Series 5 Carrier, Feature Package C, DGA)
025-048	Odd and Even (SLC Series 5 Carrier, Feature Package C, DGB)
049-072	Odd and Even (SLC Series 5 Carrier, Feature Package C, DGC)
073-096	Odd and Even (SLC Series 5 Carrier, Feature Package C, DGD)

The channel numbers for DSP application cards range from 1 through 64. The user does not normally worry about actual application channel numbers, because they are not user assignable; the application assigns those numbers instead. However, some application queries and such utilities as the UTL::QRY,CMAP command in DACS II and DACS II ISX will output the actual application assigned channel number.

Please note that on DACS II ISX all 64 channel numbers are always available to the application. On DACS II, however, all 64 channels are only available, if the DSP application has been grown and restored in an International FTM as previously noted. In a North American FTM only 48 channels are available. The actual channel numbers in this latter case range from 1 through 63, with every channel number that is divisible by four not being used.

4. Prefix Notation for All Application Commands

All commands that are sent to and all messages that are received from the DDS Subrate and Multipoint Junction Unit 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.94021.

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

```
DSPC:[FRM xy,SEQ ww]:{<p_npc>|<p_npc>-<q_npc>|SD411}:\
<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.

SD411 - 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 (SD411 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 SD411 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 SD411 in the prefix of the command. These commands are the UTL,QRY commands. 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:

```
M hh:mm:ss xy,ww n[vv] DSPC <z_npc> \
<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 message (O.94011) **DSPC,BADVERB,CMD** in this chapter.

(This page intentionally left blank.)

ALM,DSPC,CHANNEL,SUBRATE,STATUS,OOF

**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 for T1 NPCs. 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.

Command

Not applicable.

Completion Message

Not applicable.

Denial Message

Not applicable.

Autonomous Message

[O.94021]

```
I hh:mm:ss xy,ww  ALM DSPC <p_npc>  e LN MSG
CHANNEL          SUBRATE STATUS
[<f_npc>ddd          {OOF|CLEAR}]
<t_npc>jjj           {OOF|CLEAR}    COMPL
```

Explanation Of Parameters

ALM - Alarm message

DSPC - DSP Platform circuit pack on which the DDS subrate application resides

<p_npc>
- NPC number of the DSP Platform circuit pack

e LN MSG
- The number of lines in the message is "e"

OOF - Subrate Out Of Frame condition

CLEAR - An OOF 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

DSPC,BADVERB,CMD

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. The error in the command occurred after a correct command verb **DSPC** and a correct application address. This means that the command parser in DACS II ISX or DACS II found the valid command verb **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 PDS command received by the application that had a bad verb or a syntax error.

Completion Message

Not applicable.

Denial Message

[O.94011]

```
M hh:mm:ss xy,ww  DSPC aaa {BADVERB|CMD}  e LN MSG
<First 70 characters of input message>
<Remaining text of input message>
[USAGE:]
[<usage line>]
        .
        .
[<Usage line>] DNY
```

Autonomous Message

Not applicable.

Explanation Of Parameters

e LN MSG
- The number of lines in the message is "e"

BADVERB
- The subrate application found a bad verb in the command string

The subrate application terminated processing of the string. Please note that no USAGE pattern is produced in this case, because no valid verb was found to generate the USAGE pattern for.

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 will be generated.

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

Verb: - **CHG** (for commands 94361, 94381, 94461, 94471)

Usage:

```
- CHG:ASTREAM,MPTM <f_npc>ddd[/ff],{ss|OFF}!
- CHG:SCON,OLD <f_npc>ddd[/ff],NEW <t_npc>jjj[/ll][,MPTM]!
- CHG:SECH,OLD <f_npc>ddd[-eee],NEW <t_npc>jjj[-kkk].br
        [,PCH ppp][,DCC]!
- CHG:{TLA|TLR} m,TO <t_npc>ddd[/ff]!
```

Verb: - **SCON** (for command 94331, 94411)

Usage:

```
- SCON:RATE rr,FROM <f_npc>ddd[/ff],TO <t_npc>jjj[/ll]!
- SCON:RATE rr,FROM <f_npc>ddd-eee[/01],TO <t_npc>jjj-kkk[/01]!
- SCON:RATE rr,FROM <f_npc>ddd/ff-mm,TO <t_npc>jjj/ll-nn!
- SCON:[RATE rr,]MPTM <t_npc>ddd[/ff],MJU ssss[,MA(tttt,u)]\
        [,<branch>][,<branch>][,<branch>][,<branch>]!
```

Verb: - **SCNT** (for command 94341, 94421)

Usage:

```
- SCNT:RATE rr,FROM <f_npc>ddd[/ff],TO <t_npc>jjj[/ll]!
- SCNT:RATE rr,FROM <f_npc>ddd-eee[/01],.br
        TO <t_npc>jjj-kkk[/01]!
- SCNT:RATE rr,FROM <f_npc>ddd/ff-mm,TO <t_npc>jjj/ll-nn!
- SCNT:[RATE rr,]MPTM <f_npc>ddd[/ff],MJU ssss[,MA(tttt,u)]
        ,<branch>[,<branch>][,<branch>][,<branch>]!
```

Verb: - **SDCH** (for command 94321)

Usage:

```
- SDCH:TO <t_npc>ddd[-eee][,DCC]!
- SDCH:TO kk,TP!
```

Verb: - **SDIS** (for command 94351, 94431, 94441)

Usage:

```
- SDIS:[RATE rr,]FROM <f_npc>ddd[/ff],TO <t_npc>jjj[/ll]!
- SDIS:[RATE rr,]FROM <f_npc>ddd-eee/[01],.br
        TO <t_npc>jjj-kkk/[01]!
- SDIS:[RATE rr,]FROM <f_npc>ddd/ff-mm,TO <t_npc>jjj/ll-nn!
- SDIS:[RATE rr,]MPTM <f_npc>ddd[/ff],MJU ssss[,ALL]!
- SDIS:[RATE rr,]MPTM <f_npc>ddd[/ff],MJU ssss,<branch>\
        [,<branch>][,<branch>][,<branch>]!
```

Verb: - **SECH** (for command 94311)

Usage:

```
- SECH:TO <t_npc>ddd[-eee],{DS0B nn|DS0A rr}.br
          [,{SEC|PEC|PCH [ppp]}]!
- SECH:TO kk,TP!
```

Verb: - **STST** (for commands 94211, 94221, 94231, 94241, 94251, 94261)

Usage:

```
- STST:MON,TO <t_npc>ddd[/ff],MJU ssss,[BRi,]TP kk!
- STST:MON,TO <t_npc>ddd[/ff],TP kk!
- STST:{SPL|MON},TP kk!
- STST:{TLA|TLR} {F|T|B},TP kk!
- STST:TPR,TP kk!
- STST:TPR,{ALL|LINKS}!
```

Verb: - **UTL** (for commands 94111, 94121, 94131, 94141, 94151, 94161, 94171, 94181)

Usage:

```
- UTL:QRY,ASTREAM,{MPTM <f_npc>ddd[/ff]|ALL}!
- UTL:QRY,CAPAC!
- UTL:QRY,TPS!
- UTL:QRY,LOAD!
- UTL:QRY,SECH,TO <t_npc>ddd[-eee]!
- UTL:QRY,SCON,CH,TO <t_npc>ddd[-eee]!
- UTL:QRY,SRHDW,TO <t_npc>ddd[/ff]!
- UTL:QRY,SROOF[,TO <t_npc>ddd[-eee]]!
```

DSPC,CHG,ASTREAM,MPTM,OFF

SET, CHANGE, OR TURN OFF ANTI-STREAMING FEATURE FOR MJU TREE

Explanation Of Command

This command turns the anti-streaming feature on or off for a particular MJU tree. Also, this command sets or changes the time-out value for the anti-streaming feature for a particular MJU tree.

The anti-streaming feature sets a time-out value for the duration of time that a particular branch of an MJU tree is allowed to be transmitting data upstream to the master control point. A particular branch should never transmit data beyond a certain time value. If it does, it disrupts the transmission of data by other branches in the upstream direction. The anti-streaming feature turns a so-called streaming branch off, if that branch exceeds the time-out value. Once a branch is turned off, meaning it is looped onto itself, it will only be turned back on, if it goes back to control mode (i.e. the received data stream on that branch changes bit 8 from one to zero).

This command may also be used to capture and turn off a streaming branch that started streaming while the MJU tree it belonged to did not have the anti-streaming feature turned on.

This command should be used together with a utility command (I.94171) that retrieves anti-streaming information such as the time-out values and the identity of branch circuits that have been turned off.

Note: The anti-streaming feature cannot be turned-off for a particular MJU tree, if a branch on that MJU tree is currently in the streaming state. If it is desired to turn anti-streaming off while a branch is streaming, then the user must first disconnect the branch that is streaming by using command I.94431, then and only then can anti-streaming be turned off.

Note on NPC 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 Section. The messages below 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 section for this information. On DACS II ISX, only sequential NPC numbers in 3-digit form are used.

Note: In PDS, when NPC number and channel number are specified together, the NPC number must be of fixed length; that is, for a three digit NPC number the NPC number must always be specified as a three digit number with leading zeros if necessary, and a four digit NPC number must always be specified as a four digit number with leading zeros if necessary.

Note on Channel Numbering

Channels in NPCs that terminate T1 facilities are numbered from 001 through 024. However, channels in SLC 96 or SLC Series 5 carriers have a more complex channel numbering scheme that is documented in the Introduction part of this Section. (Only DACS II supports SLC 96 or SLC 5.) The user should also note that channel 24 in a T1 provisioned with T1DM framing cannot be used because it is reserved for framing.

Note on Subrate Circuit Numbering

Individual subrate circuits within a DS0B multiplex are referred to by subrate circuit number. The table below shows the range of subrate circuit numbers for the three different types of DS0B channels.

DS0B Type	Subrate Circuit Number Range	Maximum Rate of Circuit
20-channel	01 through 20	2.4 kbit/s
10-channel	01 through 10	4.8 kbit/s
5-channel	01 through 05	19.2 kbit/s

Note: 5-channel DS0Bs are normally used for either 9.6 kbit/s or 19.2 kbit/s circuits. For a 19.2 kbit/s circuit, only circuit number 02 and 04 are allowed. 19.2 kbit/s circuits occupy two positions within the 5-channel DS0B multiplex. 19.2 kbit/s circuit number 02 occupies multiplex position 02 and 03. 19.2 kbit/s circuit number 04 occupies multiplex position 04 and 05.

DS0A channels have only one subrate circuit that is "stuffed" to fill out a 64 kbit/s channel. The subrate circuit number for a DS0A channel is 01. This subrate circuit number need not be specified in the commands referring to a DS0A channel.

Command

[I.94471]

```
DSPC:[FRM xy,SEQ ww]:<p_npc>:CHG:ASTREAM,MPTM <f_npc>ddd[/ff],{ss|OFF}!
```

Completion Message

[O.94471]

```
M hh:mm:ss xy,ww n[vv] DSPC <p_npc> CHG ASTREAM \
MPTM <f_npc>ddd[/ff] {ss|OFF} COMPL
```

Denial Message

[O.94471.01]

```
M hh:mm:ss xy,ww n[vv] DSPC <p_npc> CHG ASTREAM \
MPTM <f_npc>ddd[/ff] {ss|OFF}  2 LN MSG:
<explanation of error> DNY
```

Autonomous Message

Not applicable.

Explanation Of Parameters

CHG:ASTREAM
- Set or turn off the MJU branch anti-streaming time out value

MPTM - Multipoint master, points to subrate circuit that identifies the MJU tree

<f_npc>
- Number of facility terminating NPC that carries the subrate circuit for the MJU master control leg

ddd - Channel on that NPC that carries that subrate circuit

ff - Number of subrate circuit for the master control leg on that channel This subrate circuit number has the value 01 for DS0A circuits and may be omitted for those DS0A circuits.

ss - Number of seconds for the time-out value for the anti-streaming feature
The range of the time-out value is between 01 and 99.
Both digits must be entered.

OFF - Keyword to indicate that the anti-streaming feature is to be turned off.

Explanation of Error

CHANNEL <t_npc>ddd IS A PARITY CHANNEL
CIRCUIT <f_npc>ddd/ff IS NOT A VALID MULTIPOINT MASTER LEG
INVALID SUBRATE CIRCUIT NUMBER FOR CHANNEL <f_npc>ddd
MUST POINT TO LOWER CHANNEL WHEN LOOPING TEST ACCESS CHANNELS
NPC <t_npc> IS NOT VALID
SUBRATE CIRCUIT NUMBER MUST BE SPECIFIED FOR DS0B CHANNEL <f_npc>ddd
CHANNEL ddd IS OUT OF RANGE FOR NPC TYPE SPECIFIED
RANGE OF CHANNELS NOT ALLOWED IN THIS COMMAND
SD411 PREFIX NOT ALLOWED FOR THIS COMMAND
SUBRATE CIRCUIT NUMBER ff IS OUT OF RANGE FOR DS0B CHANNEL <f_npc>ddd
INITIALIZATION OF APPLICATION IS IN PROGRESS, RETRY COMMAND LATER
CHANNEL <t_npc>ddd IS NOT SUBRATE ESTABLISHED TO THIS TG193
ANTI-STREAMING WAS ALREADY OFF FOR THIS MJU TREE
BRANCHES ARE CURRENTLY STREAMING
NO MJU TREES EXIST ON THIS CIRCUIT PACK
NPC IS BEING ROLLED
SUBRATE APPLICATION FAILED

DSPC,CHG,SCON,OLD,NEW,MPTM

CHANGE SUBRATE CROSS-CONNECTION FOR MJU CONNECTED CIRCUITS

Explanation Of Command

This command changes the external facility termination associated with a multipoint circuit branch from an existing digroup, channel, and (optional) subrate circuit number to a **NEW** digroup, channel, and (optional) subrate circuit number. This command can also be used to change the external facility termination associated with the multipoint master control leg from an existing digroup, channel, and (optional) subrate circuit number to a **NEW** digroup, channel, and (optional) subrate circuit number; the **MPTM** keyword must be used in that case.

The rate of the new subrate circuit must match the rate of the MJU tree.

Execution of this command causes the disconnection of the existing facility and reconnection to a **NEW** external facility termination. The external facility termination associated with the original connection is left established to the Subrate feature with the unassigned multiplexer channel (UMC) code inserted towards the **OLD** facility.

Once moved to the **NEW** facility termination, the circuit or the multipoint circuit master leg and all of its associated branches is (are) left in the same terminate and leave state that existed with the **OLD** channel. For example, if the **OLD** 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 either before or after moving the channel by using the Subrate Change Termination command (I.94381).

In effect, this command combines the operations of **SDIS** (I.94431) and **SCON** (I.94411) commands that would be necessary to do the same change, but with a minimum of service interruption.

Before using this command, the **NEW** channel must be established to the Subrate feature (**SECH**), and the **NEW** facility termination must not already be cross-connected (for example, with a previous **SCON**). The specified **OLD** facility termination must be cross-connected in an existing Subrate multipoint circuit and the specified **NEW** facility termination cannot be the same as the **OLD**. Also, neither the **NEW** termination nor any portion of the existing circuit can be under test access at the time this command is issued.

Circuits 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 indicate that the facility is out-of-service. The user should note that the UMC code may not be inserted in the disconnected facility channel until the facility is restored to service under these conditions.

If the facility NPC associated with the **NEW** channel is out-of-service, the command will be denied.

Note on NPC 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 Section. The messages below 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 section for this information. On DACS II ISX, only sequential NPC numbers in 3-digit form are used.

Note: In PDS, when NPC number and channel number are specified together, the NPC number must be of fixed length; that is, for a three digit NPC number the NPC number must always be specified as a three digit number with leading zeros if necessary, and a four digit NPC number must always be specified as a four digit number with leading zeros if necessary.

Note on Channel Numbering

Channels in NPCs that terminate T1 facilities are numbered from 001 through 024. However, channels in SLC 96 or SLC Series 5 carriers have a more complex channel numbering scheme that is documented in the Introduction part of this Section. (Only DACS II supports SLC 96 or SLC 5.) The user should also note that channel 24 in a T1 provisioned with T1DM framing cannot be used because it is reserved for framing.

Note on Subrate Circuit Numbering

Individual subrate circuits within a DS0B multiplex are referred to by subrate circuit number. The table below shows the range of subrate circuit numbers for the three different types of DS0B channels.

DS0B Type	Subrate Circuit Number Range	Maximum Rate of Circuit
20-channel	01 through 20	2.4 kbit/s
10-channel	01 through 10	4.8 kbit/s
5-channel	01 through 05	19.2 kbit/s

Note: 5-channel DS0Bs are normally used for either 9.6 kbit/s or 19.2 kbit/s circuits. For a 19.2 kbit/s circuit, only circuit number 02 and 04 are allowed. 19.2 kbit/s circuits occupy two positions within the 5-channel DS0B multiplex. 19.2 kbit/s circuit number 02 occupies multiplex position 02 and 03. 19.2 kbit/s circuit number 04 occupies multiplex position 04 and 05.

DS0A channels have only one subrate circuit that is "stuffed" to fill out a 64 kbit/s channel. The subrate circuit number for a DS0A channel is 01. This subrate circuit number need not be specified in the commands referring to a DS0A channel.

Command

[I.94461]

```
DSPC:[FRM xy,SEQ ww]:<p_npc>:CHG:SCON,\
OLD <f_npc>ddd[/ff],NEW <t_npc>jjj[/ll][,MPTM]!
```

Completion Message

[O.94461]

```
M hh:mm:ss xy,ww n[vv] DSPC <p_npc> CHG SCON  2 LN MSG:
OLD <f_npc>ddd[/ff] NEW <t_npc>jjj[/ll][ MPTM][ OOS] COMPL
```

Denial Message

[O.94461.01]

```
M hh:mm:ss xy,ww n[vv] DSPC <p_npc> CHG SCON  3 LN MSG:
OLD <f_npc>ddd[/ff] NEW <t_npc>jjj[/ll][ MPTM]
<explanation of error> DNY
```

Autonomous Message

Not applicable.

Explanation Of Parameters

CHG:SCON,OLD,NEW

- Change the subrate circuit connected to an MJU block

The subrate circuit may either be connected to a branch of an MJU tree or to the master control leg. If the subrate circuit connected to the master control leg is to be changed, then the **MPTM** keyword must be specified.

<f_npc>

- Number of "OLD" facility terminating NPC

ddd - Channel number on that facility terminating NPC

ff - Number of subrate circuit on that channel

<t_npc>

- Number of "NEW" facility terminiating NPC

jjj - Channel number on that facility terminating NPC

ll - Number of subrate circuit on that channel

MPTM - Multipoint Master, indicates that the circuit change is for the master control leg of MJU block 0001

OOS - Out-of-service

The OOS keyword appears in the output whenever the circuit change has taken place with the OLD channel's facility terminating NPC out-of-service. In this case, the user should note that the appropriate disconnect channel code (UMC) may not be inserted in the disestablished channel until the facility is restored to service.

Explanation of Error

NPC <t_npc> IS NOT EQUIPPED
CHANNEL <t_npc>ddd IS A PARITY CHANNEL
INVALID SUBRATE CIRCUIT NUMBER FOR CHANNEL <f_npc>ddd
MUST POINT TO LOWER CHANNEL WHEN LOOPING TEST ACCESS CHANNELS
NPC <t_npc> IS NOT VALID
SUBRATE CIRCUIT NUMBER MUST BE SPECIFIED FOR DS0B CHANNEL <f_npc>ddd
CHANNEL ddd IS OUT OF RANGE FOR NPC TYPE SPECIFIED
RANGE OF CHANNELS NOT ALLOWED IN THIS COMMAND

SD411 PREFIX NOT ALLOWED FOR THIS COMMAND
SUBRATE CIRCUIT NUMBER ff IS OUT OF RANGE FOR DS0B CHANNEL <f_npc>ddd
CHANNEL <f_npc>ddd/ff IS NOT ASSIGNED
INITIALIZATION OF APPLICATION IS IN PROGRESS, RETRY COMMAND LATER
NPC <t_npc> IS OUT-OF-SERVICE
CHANNEL <f_npc>ddd OR A SUBRATE CIRCUIT IS UNDER TEST
MPTM MUST BE SPECIFIED TO CHANGE MASTER CONTROL LEG
OLD CHANNEL <f_npc>ddd IS NOT SUBRATE ESTABLISHED TO THIS TG193
NEW CHANNEL <t_npc>ddd IS A TEST ACCESS CHANNEL
NEW CHANNEL IS ALREADY ESTABLISHED DIFFERENTLY THAN OLD
NEW CIRCUIT <t_npc>ddd/ff IS ALREADY SR CROSS-CONNECTED
NPC <f_npc> IS FAILED
NPC IS BEING ROLLED
OLD AND NEW CHANNELS ARE THE SAME
OLD CHANNEL HAS NO ACTIVE SR CROSS-CONNECTS
RATE OF NEW SUBRATE CIRCUIT DOES NOT MATCH RATE OF MJU TREE
SUBRATE APPLICATION FAILED

DSPC,CHG,SECH,OLD,NEW,PCH,DCC

CHANGE SUBRATE ESTABLISHED CHANNEL

Explanation Of Command

This command moves a subrate established channel (**DS0A** or **DS0B**) 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, **DS0A**/**DS0B** format, number of subrate multiplexer channels, error correction, etc.) as the **OLD**. When present, any subrate circuits that use the **OLD** channel for one or more ends are also moved to the **NEW** channel. In effect, this command combines the operations of the **SDIS**, **SDCH**, **SECH**, and **SCON** commands that would be necessary to do the same change. This command does not move a test port that had previously been established.

Prior to this command, the **NEW** channel must not be established or used in any DACS II 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 (**SDCH**) to achieve the same effect as the **CHG** 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 **DS0B** 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 either before or after moving the channel by using the subrate change termination command (**CHG,TLA,TLR,TO**).

Any majority vote error correction that had been provisioned with an old channel of 2.4, 4.8, or 9.6 kbit/s rate will be moved to the new channel. Any parity error correction that had been provisioned with an old channel of 19.2 kbit/s rate will be moved to the new channel. No changes in error correction can be made while moving established channels with this command.

A range of channels may be specified, provided that parity channel error correction with separate error correction channels is not used with any channels within the **OLD** or **NEW** channel ranges. This means that a 19.2 kbit/s DS0A channel with parity error correction may be part of a range, but a DS0B channel or a 56 kbit/s DS0A channel with parity error correction may not be part of a range of channels, because they require separate parity channels.

If the **OLD** channel has an error correction parity channel associated with it, the **NEW** channel must be specified with the location of the new parity channel by use of the **PCH ppp** field, even if the new parity channel will be located adjacent to the channel it is associated with. (Note that the location of the **OLD** channel's parity channel need not be specified since the system will locate and move it along with the data channel automatically.) When specified, the **NEW** parity channel must not be already established or cross-connected unless it is already established as the **NEW** channel's parity channel. If the **OLD** channel is not established with parity channel error correction, the **NEW** channel cannot be specified with the **PCH** field.

Use of the optional **DCC** keyword causes the unassigned multiplexer channel (UMC) code to be inserted in the **OLD** channel(s) towards the facility terminating NPC listed after **OLD** in the message text. If this keyword is not specified, the disconnection code specified in the **GRTH NPC** when the **OLD** NPC was provisioned 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.

Note on NPC 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 Section. The messages below 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 section for this information. On DACS II ISX, only sequential NPC numbers in 3-digit form are used.

Note: In PDS, when NPC number and channel number are specified together, the NPC number must be of fixed length; that is, for a three digit NPC number the NPC number must always be specified as a three digit number with leading zeros if necessary, and a four digit NPC number must always be specified as a four digit number with leading zeros if necessary.

Note on Channel Numbering

Channels in NPCs that terminate T1 facilities are numbered from 001 through 024. However, channels in SLC 96 or SLC Series 5 carriers have a more complex channel numbering scheme that is documented in the Introduction part of this Section. (Only DACS II supports SLC 96 or SLC 5.) The user should also note that channel 24 in a T1 provisioned with T1DM framing cannot be used because it is reserved for framing.

Command

[I.94361]

```
DSPC:[FRM xy,SEQ ww]:<p_npc>:CHG:SECH,\
OLD <f_npc>ddd[-eee],NEW <t_npc>jjj[-kkk][,PCH ppp][,DCC]!
```

Completion Message

[O.94361]

```
M hh:mm:ss xy,ww n[vv] DSPC <p_npc> CHG SECH  2 LN MSG:
OLD <f_npc>ddd[-eee] NEW <t_npc>jjj[-kkk][ PCH ppp][ DCC][ OOS] COMPL
```

Denial Message

[O.94361.01]

```
M hh:mm:ss xy,ww n[vv] DSPC <p_npc> CHG SECH  e LN MSG:
OLD <f_npc>ddd[-eee] NEW <t_npc>jjj[-kkk][ PCC ppp][ DCC]
[yyy,zzz]
<explanation of error> DNY
```

Autonomous Message

Not applicable.

Explanation Of Parameters

CHG:SECH
- Change channels containing subrate circuits

OLD - Old circuit(s)

NEW - New circuit(s)

<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

PCH - Parity channel

ppp - Channel number of NEW parity error correction channel

DCC - Disconnect code

The **DCC** keyword indicates that the DDS 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 abc is used.

e - Number of lines in the message.

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.

nnn - Channel number of OLD error correction parity channel

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.

Explanation of Error

NPC <t_npc> IS NOT EQUIPPED
CHANNEL <t_npc>ddd IS A PARITY CHANNEL
NPC <t_npc> IS NOT VALID
CHANNEL ddd IS OUT OF RANGE FOR NPC TYPE SPECIFIED
RANGE OF CHANNELS AND PCH ERROR CORRECTION NOT ALLOWED
SD411 PREFIX NOT ALLOWED FOR THIS COMMAND
ddd-eee IS AN INVALID RANGE OF CHANNELS
INITIALIZATION OF APPLICATION IS IN PROGRESS, RETRY
COMMAND LATER
NPC <t_npc> IS OUT-OF-SERVICE
CHANNEL <f_npc>ddd OR A SUBRATE CIRCUIT IS UNDER TEST
CHANNEL <t_npc>ddd IS NOT SUBRATE ESTABLISHED TO THIS
TG193
OLD CHANNEL <f_npc>ddd IS NOT SUBRATE ESTABLISHED TO
THIS TG193
NEW CHANNEL <t_npc>ddd IS A TEST ACCESS CHANNEL
NEW CHANNEL HAS ACTIVE SR CROSS-CONNECTS
NEW CHANNEL IS ALREADY ESTABLISHED DIFFERENTLY THAN
OLD
NPC <f_npc> IS FAILED
NPC IS BEING ROLLED
OLD AND NEW CHANNELS ARE THE SAME
OLD AND NEW CHANNELS PARTIALLY OVERLAP
OLD CHANNEL HAS NO ACTIVE SR CROSS-CONNECTS
SUBRATE APPLICATION FAILED

DSPC,CHG,TLA,TLR,TO

CHANGE SUBRATE TERMINATE AND LEAVE

Explanation Of Command

This command changes the terminate and leave state of the cross-connection associated with a subrate two-point or multipoint 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, this command will be denied. However, test access commands may be used to change the terminate and leave state if the termination point is under test (see command I.94231).

CAUTION: UMC or CMI is inserted towards the direction that is terminated, potentially causing a loss of service. UMC is inserted in all cases except in the direction of the master control leg of an MJU tree, in which case CMI is inserted.

The external facility termination given by the NPC, channel, and subrate circuit number can be one end of a two-point circuit, or the master leg or branch of a multipoint (MJU) circuit. However, control legs of MJU blocks that are connected to branches of previously created MJU blocks (i.e. cascaded MJU blocks) may not be terminated.

This command cannot be used to change the terminate and leave status of the entire DS0B channel (that is, all subrate within the DS0B 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 direction,
T means TO direction,
B means BOTH directions,
TLA means Terminate and Leave Activate,
TLR means Terminate and Leave Release.

PRIOR STATE	REQUESTED CHANGE	NEW STATE	PRIOR STATE	REQUESTED CHANGE	NEW STATE
R	TLA F	F	R	TLR F	DNY
R	TLA T	T	R	TLR T	DNY
R	TLA B	B	R	TLR B	DNY
F	TLA F	DNY	F	TLR F	R
F	TLA T	B	F	TLR T	DNY
F	TLA B	B	F	TLR B	R
B	TLA F	DNY	B	TLR F	T
B	TLA T	DNY	B	TLR T	F
B	TLA B	DNY	B	TLR B	R
T	TLA T	DNY	T	TLR T	R
T	TLA F	B	T	TLR F	DNY
T	TLA B	B	T	TLR B	R

The TO and FROM directions are defined as follows:

1. If a subrate 2-pt cross-connect is terminated using this command, then the TO direction is defined by the facility termination **`<f_npc>ddd[/ff]`** used in the command. The FROM direction is, of course, the subrate circuit that the TO subrate circuit is cross-connected to.
2. If the master control leg of an MJU tree is specified using this command, then the TO direction is always towards the facility termination of the master control leg and the FROM direction is downstream towards MJU 0001 (the master MJU block). (Note that this convention is opposite to the convention used in command I.94231.)
3. If a branch of an MJU block is specified using this command, then the TO direction is towards the facility termination of the branch and the FROM direction is upstream towards the branch of the MJU block. (Note that this convention is opposite to the convention used in command I.94231.)

Note on NPC 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 Section. The messages below 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 section for this information. On DACS II ISX, only sequential NPC numbers in 3-digit form are used.

Note: In PDS, when NPC number and channel number are specified together, the NPC number must be of fixed length; that is, for a three digit NPC number the NPC number must always be specified as a three digit number with leading zeros if necessary, and a four digit NPC number must always be specified as a four digit number with leading zeros if necessary.

Note on Channel Numbering

Channels in NPCs that terminate T1 facilities are numbered from 001 through 024. However, channels in SLC 96 or SLC Series 5 carriers have a more complex channel numbering scheme that is documented in the Introduction part of this Section. (Only DACS II supports SLC 96 or SLC 5.) The user should also note that channel 24 in a T1 provisioned with T1DM framing cannot be used because it is reserved for framing.

Note on Subrate Circuit Numbering

Individual subrate circuits within a DS0B multiplex are referred to by subrate circuit number. The table below shows the range of subrate circuit numbers for the three different types of DS0B channels.

DS0B Type	Subrate Circuit Number Range	Maximum Rate of Circuit
20-channel	01 through 20	2.4 kbit/s
10-channel	01 through 10	4.8 kbit/s
5-channel	01 through 05	19.2 kbit/s

Note: 5-channel DS0Bs are normally used for either 9.6 kbit/s or 19.2 kbit/s circuits. For a 19.2 kbit/s circuit, only circuit number 02 and 04 are allowed. 19.2 kbit/s circuits occupy two positions within the 5-channel DS0B multiplex. 19.2 kbit/s circuit number 02 occupies multiplex position 02 and 03. 19.2 kbit/s circuit number 04 occupies multiplex position 04 and 05.

DS0A channels have only one subrate circuit that is "stuffed" to fill out a 64 kbit/s channel. The subrate circuit number for a DS0A channel is 01. This subrate circuit number need not be specified in the commands referring to a DS0A channel.

Command

[I.94381]
DSPC:[FRM xy,SEQ ww]:<p_npc>:CHG:{TLA|TLR} m,
TO <t_npc>ddd[/ff]!

Completion Message

[O.94381]
**M hh:mm:ss xy,ww n[vv] DSPC <p_npc> CHG {TLA|TLR} m **
<t_npc>ddd/ff NEW STATE TLA s COMPL

Denial Message

[O.94381.01]
**M hh:mm:ss xy,ww n[vv] DSPC <p_npc> CHG {TLA|TLR} m **
<t_npc>ddd/ff 2 LN MSG:
<explanation of error> DNY

Autonomous Message

Not applicable.

Explanation Of Parameters

CHG - Change the terminate and leave state as directed by subsequent parameters

TLA - Terminate and leave activate

TLR - Terminate and leave release

The requested termination state change is indicated by the TLA or TLR where TLA activates and TLR 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

s - Resulting termination state of the circuit

s	*Explanation*
R	Neither side is terminated
F	FROM side is terminated
T	TO side is terminated
B	BOTH sides are terminated

TO - To termination

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

ddd - Channel number on that facility terminating NPC

ff - 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.

Explanation of Error

NPC <t_npc> IS NOT EQUIPPED
CHANNEL <t_npc>ddd IS A PARITY CHANNEL
INVALID SUBRATE CIRCUIT NUMBER FOR CHANNEL <f_npc>ddd
MUST POINT TO LOWER CHANNEL WHEN LOOPING TEST ACCESS CHANNELS
NPC <t_npc> IS NOT VALID
SUBRATE CIRCUIT NUMBER MUST BE SPECIFIED FOR DS0B CHANNEL <f_npc>ddd
TLA CANNOT BE SPECIFIED FOR A LOOPED CHANNEL
TLA CANNOT BE SPECIFIED FOR AN UNMAPPED CIRCUIT
TLR CANNOT BE SPECIFIED FOR AN UNMAPPED CIRCUIT
CHANNEL ddd IS OUT OF RANGE FOR NPC TYPE SPECIFIED
RANGE OF CHANNELS NOT ALLOWED IN THIS COMMAND
SD411 PREFIX NOT ALLOWED FOR THIS COMMAND
SUBRATE CIRCUIT NUMBER ff IS OUT OF RANGE FOR DS0B CHANNEL <f_npc>ddd
INITIALIZATION OF APPLICATION IS IN PROGRESS, RETRY COMMAND LATER
NPC <t_npc> IS OUT-OF-SERVICE
SPECIFIED ACCESS POINT IS UNDER TEST
THE SPECIFIED ACCESS POINT IS NOT SUBRATE ESTABLISHED TO THIS TG193

CIRCUIT IS ALREADY IN RELEASED STATE
CIRCUIT IS ALREADY IN TERMINATED STATE
NPC <f_npc> IS FAILED
NPC IS BEING ROLLED
SUBRATE APPLICATION FAILED

DSPC,SCNT,RATE,FROM,TO

SUBRATE TERMINATED CROSS-CONNECTION

Explanation Of Command

This command performs a terminated cross-connection of the FROM and TO subrate circuits. This means UMC is inserted in both directions. A range of channels may be specified for DS0A channels, and a range of subrate circuits may be specified for DS0B channels.

Note on NPC 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 Section. The messages below 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 section for this information. On DACS II ISX, only sequential NPC numbers in 3-digit form are used.

Note: In PDS, when NPC number and channel number are specified together, the NPC number must be of fixed length; that is, for a three digit NPC number the NPC number must always be specified as a three digit number with leading zeros if necessary, and a four digit NPC number must always be specified as a four digit number with leading zeros if necessary.

Note on Channel Numbering

Channels in NPCs that terminate T1 facilities are numbered from 001 through 024. However, channels in SLC 96 or SLC Series 5 carriers have a more complex channel numbering scheme that is documented in the Introduction part of this Section. (Only DACS II supports SLC 96 or SLC 5.) The user should also note that channel 24 in a T1 provisioned with T1DM framing cannot be used because it is reserved for framing.

Note on Subrate Circuit Numbering

Individual subrate circuits within a DS0B multiplex are referred to by subrate circuit number. The table below shows the range of subrate circuit numbers for the three different types of DS0B channels.

DS0B Type	Subrate Circuit Number Range	Maximum Rate of Circuit
20-channel	01 through 20	2.4 kbit/s
10-channel	01 through 10	4.8 kbit/s
5-channel	01 through 05	19.2 kbit/s

Note: 5-channel DS0Bs are normally used for either 9.6 kbit/s or 19.2 kbit/s circuits. For a 19.2 kbit/s circuit, only circuit number 02 and 04 are allowed. 19.2 kbit/s circuits occupy two positions within the 5-channel DS0B multiplex. 19.2 kbit/s circuit number 02 occupies multiplex position 02 and 03. 19.2 kbit/s circuit number 04 occupies multiplex position 04 and 05.

DS0A channels have only one subrate circuit that is "stuffed" to fill out a 64 kbit/s channel. The subrate circuit number for a DS0A channel is 01. This subrate circuit number need not be specified in the commands referring to a DS0A channel.

Command

USAGE: The following applies to a single subrate cross-connection:

[I.94341]
```
DSPC:[FRM xy,SEQ ww]:<p_npc>:SCNT:RATE rr,FROM <f_npc>ddd[/ff],\
TO <t_npc>jjj[/ll]!
```

USAGE: The following applies to cross-connections of a range of DS0A channels:

[I.94341]
```
DSPC:[FRM xy,SEQ ww]:<p_npc>:SCNT:RATE rr,FROM <f_npc>ddd-eee[/01],\
TO <t_npc>jjj-kkk[/01]!
```

USAGE: The following applies to cross-connections of a range of subrate circuits within a DS0B channel:

[I.94341]
```
DSPC:[FRM xy,SEQ ww]:<p_npc>:SCNT:RATE rr,FROM <f_npc>ddd/ff-mm,\
TO <t_npc>jjj/ll-nn!
```

Completion Message

USAGE: The following applies to a single subrate cross-connection:

[O.94341]
```
M hh:mm:ss xy,ww n[vv] DSPC <p_npc> SCNT RATE rr  2 LN MSG:
<f_npc>ddd/[ff],<t_npc>jjj/[ll] COMPL
```

USAGE: The following applies to cross-connections of a range of DS0A channels:

[O.94341]
```
M hh:mm:ss xy,ww n[vv] DSPC <p_npc> SCNT RATE rr  2 LN MSG:
<f_npc>ddd-eee/[01],<t_npc>jjj-kkk/[01] COMPL
```

USAGE: The following applies to cross-connections of a range of subrate circuits within a DS0B channel:

[O.94341]
```
M hh:mm:ss xy,ww n[vv] DSPC <p_npc> SCNT RATE rr  2 LN MSG:
<f_npc>ddd/ff-mm,<t_npc>jjj/ll-nn COMPL
```

Denial Message

USAGE: The following applies to a single subrate cross-connection:

[O.94341.01]
```
M hh:mm:ss xy,ww n[vv] DSPC <p_npc> SCNT RATE rr  3 LN MSG:
<f_npc>ddd/[ff],<t_npc>jjj/[ll]
<explanation of error> DNY
```

USAGE: The following applies to cross-connections of a range of DS0A channels:

[O.94341.01]
```
M hh:mm:ss xy,ww n[vv] DSPC <p_npc> SCNT RATE rr  3 LN MSG:
<f_npc>ddd-eee/[01],<t_npc>jjj-kkk/[01]
<explanation of error> DNY
```

USAGE: The following applies to cross-connections of a range of subrate circuits within a DS0B channel:

[O.94341.01]
```
M hh:mm:ss xy,ww n[vv] DSPC <p_npc> SCNT RATE rr  3 LN MSG:
<f_npc>ddd/ff-mm,<t_npc>jjj/ll-nn
<explanation of error> DNY
```

Autonomous Message

Not applicable.

Explanation Of Parameters

SCNT - Cross-connect two or more subrate circuits to each other and terminate them in both directions

FROM - Points to FROM subrate circuit(s)

TO - Points to TO subrate circuit(s)

The following applies to a single subrate cross-connection:

<f_npc>ddd[/ff]
- From termination

<f_npc>	Number of "FROM" facility terminating NPC
ddd	Channel number on that facility terminating NPC
ff	Subrate circuit number in that channel, optional if DS0A channel

<t_npc>jjj[/ll]
- To termination

<t_npc>	Number of "TO" facility terminating NPC
jjj	Channel number on that facility terminating NPC
ll	Subrate circuit number in that channel, optional if DS0A channel

The following applies to cross-connections of a range of DS0A channels:

<f_npc>ddd-eee[/01]
- From termination

<f_npc>	Number of "FROM" facility terminating NPC
ddd	Channel number on that facility terminating NPC starting range
eee	Channel number on that facility terminating NPC ending range
01	Optional subrate circuit number, since this applies to DS0A channels

<t_npc>jjj-kkk[/01]
- To termination

<t_npc>	Number of "TO" facility terminating NPC
jjj	Channel number on that facility terminating NPC starting range
kkk	Channel number on that facility terminating NPC ending range
01	Optional subrate circuit number, since this applies to DS0A channels

The following applies to cross-connections of a range of subrate circuits within a DS0B channel:

<f_npc>ddd/ff-mm
- From termination

<f_npc>	Number of "FROM" facility terminating NPC
ddd	Channel number on that facility terminating NPC
ff	Beginning subrate circuit number in a range
mm	Ending subrate circuit number in a range

<t_npc>jjj/ll-mm
- To termination

<t_npc>	Number of "TO" facility terminating NPC
jjj	Channel number on that facility terminating NPC
ll	Beginning subrate circuit number in a range
nn	Ending subrate circuit number in a range

All DS0A and/or DS0B channels must be established using a subrate establish command before subrate circuits carried by them can be cross-connected.

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

RATE - Rate

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

rr - Circuit rate (24, 48, 96, 19 or 56)

rr	*rate in kb/s*
24	2.4
48	4.8
96	9.6
19	19.2
56	56

The RATE cannot exceed the maximum rate of the subrate multiplexers associated with those DS0B channels. The allowed subrate circuit numbers (ff, ll, mm, and nn) depend on the rate of the circuit and the type of DS0B channel associated with each termination, as shown below:

Circuit Rate rr	DS0B Type		
	20-channel (max. rate 2.4 kb/s)	10-channel (max. rate 4.8 kb/s)	5-channel (max. rate 9.6 kb/s)
RATE 24	Circuit #s 1-20 Allowed	Circuit #s 1-10 Allowed	Circuit #s 1-5 Allowed
RATE 48	Denied	Circuit #s 1-10 Allowed	Circuit #s 1-5 Allowed
RATE 96	Denied	Denied	Circuit #s 1-5 Allowed
RATE 19	Denied	Denied	Circuit #s 2 & 4 Allowed
RATE 56	Denied	Denied	Denied

The subrate circuit numbers ff and ll are optional when the circuit is within a DS0A channel, because there is only one subrate circuit in a DS0A channel. If specified, it must appear as 01.

Zero Code Suppression Restrictions

The user must ensure that a circuit using the secondary channel capability is assigned only to a facility termination that is compatible with this capability. If the termination is a DS0A or if its associated facility NPC was grown without zero code suppression, any assignment of the NEW termination is compatible with the secondary channel capability. If the termination is in a DS0B **and** its associated facility NPC was grown with zero suppression, the user can only assign secondary channel services to a termination with the following subrate circuit numbers within the given DS0B type:

DS0B Type	Allowed Subrate Numbers
20-channel	2, 3, 6, 8, 11, 12, 13, and 18
10-channel	2, 3, 6, and 8
5-channel	2 and 3

The fields FROM <f_npc>ddd/[ff] and TO <t_npc>jjj/[ll] specify the subrate circuits to cross-connect. Either subrate circuit may be designated FROM or TO.

Explanation of Error

NPC <t_npc> IS NOT EQUIPPED
CHANNEL SR MULTIPLEXER RATE CANNOT SUPPORT CIRCUIT RATE
NPC <t_npc> IS NOT VALID
RATE <rate> IS INVALID
CHANNEL ddd IS OUT OF RANGE FOR NPC TYPE SPECIFIED
INVALID RANGE FOR CROSS-CONNECTION
SD411 PREFIX NOT ALLOWED FOR THIS COMMAND
ddd-eee IS AN INVALID RANGE OF CHANNELS
ff-mm IS AN INVALID RANGE OF CIRCUITS
CHANNEL <f_npc>ddd/ff IS ASSIGNED
INITIALIZATION OF APPLICATION IS IN PROGRESS, RETRY COMMAND LATER
NPC <t_npc> IS OUT-OF-SERVICE
NPC <f_npc> IS FAILED

DSPC,SCNT,RATE,MPTM,MJU,MA

SUBRATE MULTIPOINT TERMINATED CROSS-CONNECTION

Explanation Of Command

Creation of a Multipoint Junction Unit (MJU) Block with Terminated Branches

This command creates an MJU block and the subrate cross-connections that connect to it. All the branches that are connected will be placed in the terminate and leave state. Also, this command may cross-connect additional branches to an already existing MJU block and place those additional branches in the terminate and leave state. At least one branch must be specified in the command. All terminated branches have the UMC (Unassigned Multiplexer Channel, 0001 1000) code sent downstream towards the facility end of the branches and have the CMI (Control Mode Idle, 1111 1110) code sent upstream towards the MJU block.

The terminated branches may be released at a later time with the **CHG,TLR** command (I.94381). Once branches have been released, the circuit will perform as if it had been connected using the **SCON** command (I.94411).

MJU control legs are not terminated with this command. This includes the control leg of MJU 0001 that is connected to the multipoint master. MJU control legs can be terminated using the **CHG,TLA** command (I.94381). By not terminating control legs, the user can set up an MJU tree using a mixture of **SCNT** commands (to connect to terminated branches) and **SCON** commands (to connect to unterminated branches). Also, by not terminating the multipoint master and MJU control legs, transmission to and from the active (not terminated) subrate circuits is preserved.

Even though MJU blocks are restricted to four branches*, the user may create MJU structures of substantial size by cascading MJU blocks. The MJU structures thus created are called MJU trees in this document. The cascading of MJU blocks is done by simply connecting a branch of an MJU block that has already been created to the control leg of an MJU block that is about to be created.

MJU trees are started by creating MJU block 0001. The control leg of MJU 0001 connects to a subrate circuit coming from a facility terminating NPC. Its branches may be connected to other subrate circuits established from facility terminating NPCs. Branches may also be connected to newly created MJU blocks that increase the size of the MJU tree.

The subrate circuit that connects to the control leg of the first MJU block in an MJU tree is also called the master control leg. The subrate circuit number, channel number, and NPC number for that subrate circuit defines the MJU tree and must be specified in any cross-connect or disconnect command dealing with that MJU tree.

The rate of subrate circuits that are processed by a single MJU tree must always be the same. Thus, the master control leg and all the branches must be connected to subrate circuits operating at the same rate.

The kind of subrate circuits that can be connected and the error correction that they may be subjected to may vary as follows:

1. DS0A circuits of one of the following rates may be connected: 2.4, 4.8, 9.6, 19.2, or 56 kbit.s. (As long as the circuit rates are all identical for an individual MJU tree.)
2. Subrate circuits carried in DS0B circuits may be connected. The rates may be 2.4, 4.8, 9.6, or 19.2 kbit/s.
3. DS0A circuits of 2.4, 4.8, or 9.6 kbit/s may be subject to majority vote error correction before the connection to an MJU block.
4. DS0A circuit of 19.2 or 56 kbit/s may be subject to parity error correction before the connection to an MJU block.
5. A DS0B channel itself may be subject to parity error correction before being demultiplexed into its component subrate circuits and having some of those subrate circuits connected to MJU blocks.

All of the specifications for error correction are handled at the time a circuit is established to the DDS Subrate and MJU application.

This command specifically does one of the following:

1. It creates an MJU block and connects the control leg as well as some or all of the branches to previously established channels of facility terminating NPCs and then places the branches in terminate and leave state.

---

* The reason is that the inband control codes that select branches are restricted to selecting 1 out of 4 branches.

2. It creates an MJU block and connects the control leg to an idle branch of a previously created MJU block. This is called cascading of MJU blocks. In addition, it connects some or all branches of the MJU block to channels of facility terminating NPCs. All branches thus connected are placed in terminate and leave state.
3. It connects branches of MJU blocks that were not previously connected to channels of facility terminating NPCs. All branches thus connected are placed in terminate and leave state.

All channels that carry subrate circuits (either DS0A circuits or DS0B circuits carrying subrate circuits within them) must be established before they can be cross-connected by the subrate application.

Any branches that remain unconnected after an MJU block has been created send the CMI (Control Mode Idle, 1111 1110) code upstream. This makes the unconnected branch look like an idle branch.

Identification of MJU Trees

Each MJU tree is identified by the facility terminating NPC, channel, and if applicable the subrate circuit number that is the master control leg for the MJU tree. All commands that cross-connect or disconnect any channels to MJU blocks within that tree and all commands that create an additional MJU block or delete one or more MJU blocks identify the MJU tree by refering to the master control leg. The master control leg follows the **MPTM** keyword in the command.

Note on NPC 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 Section. The messages below 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 section for this information. On DACS II ISX, only sequential NPC numbers in 3-digit form are used.

Note: In PDS, when NPC number and channel number are specified together, the NPC number must be of fixed length; that is, for a three digit NPC number the NPC number must always be specified as a three digit number with leading zeros if necessary, and a four digit NPC number must always be specified as a four digit number with leading zeros if necessary.

Note on Channel Numbering

Channels in NPCs that terminate T1 facilities are numbered from 001 through 024. However, channels in SLC 96 or SLC Series 5 carriers have a more complex channel numbering scheme that is documented in the Introduction part of this Section. (Only DACS II supports SLC 96 or SLC 5.) The user should also note that channel 24 in a T1

provisioned with T1DM framing cannot be used because it is reserved for framing.

Note on Subrate Circuit Numbering

Individual subrate circuits within a DS0B multiplex are referred to by subrate circuit number. The table below shows the range of subrate circuit numbers for the three different types of DS0B channels.

DS0B Type	Subrate Circuit Number Range	Maximum Rate of Circuit
20-channel	01 through 20	2.4 kbit/s
10-channel	01 through 10	4.8 kbit/s
5-channel	01 through 05	19.2 kbit/s

Note: 5-channel DS0Bs are normally used for either 9.6 kbit/s or 19.2 kbit/s circuits. For a 19.2 kbit/s circuit, only circuit number 02 and 04 are allowed. 19.2 kbit/s circuits occupy two positions within the 5-channel DS0B multiplex. 19.2 kbit/s circuit number 02 occupies multiplex position 02 and 03. 19.2 kbit/s circuit number 04 occupies multiplex position 04 and 05.

DS0A channels have only one subrate circuit that is "stuffed" to fill out a 64 kbit/s channel. The subrate circuit number for a DS0A channel is 01. This subrate circuit number need not be specified in the commands referring to a DS0A channel.

Restrictions for NPCs with Zero Code Suppression

The user must ensure that a circuit using the secondary channel capability is assigned only to a facility termination that is compatible with this capability. If the termination is a DS0A or if its associated facility NPC was grown without zero suppression, any assignment of the NEW termination is compatible with the secondary channel capability. If the termination is in a DS0B **and** its associated facility NPC was grown with zero suppression, the user can only assign secondary channel services to a termination with the following subrate numbers within the given DS0B type:

DS0B Type	Allowed Subrate Numbers
20-channel	2, 3, 6, 8, 11, 12, 13, and 18
10-channel	2, 3, 6, and 8
5-channel	2 and 3

Command

[I.94421]

```
DSPC:[FRM xy,SEQ ww]:<p_npc>:SCNT:[RATE rr,]MPTM <f_npc>ddd[/ff],\
MJU ssss[,MA(tttt,u)],<branch>[,<branch>][,<branch>][,<branch>]!
```

Completion Message

[O.94421]

```
M hh:mm:ss xy,ww n[vv] DSPC <p_npc> SCNT RATE rr  5 LN MSG:
MPTM <f_npc>ddd/ff MJU ssss
[MA tttt,u ]<branch> [<branch> ][<branch> ][<branch>]
NEW MJU ssss  MA {tttt,u|MPTM} s  BR1 <data> s  BR2 <data> s
                                  BR3 <data> s  BR4 <data> s  COMPL
```

Denial Message

[O.94421.01]

```
M hh:mm:ss xy,ww n[vv] DSPC <p_npc> SCNT[ RATE rr]  4 LN MSG:
MPTM <f_npc>ddd/ff MJU ssss
[MA tttt,u ]<branch> [<branch> ][<branch> ][<branch> ]
<explanation of error> DNY
```

Autonomous Message

Not applicable.

Explanation Of Parameters

SCNT - Cross-connect subrate circuits to an MJU block and terminate the branches
This definition of **SCNT** depends on the presence of the **MPTM** keyword in the command string. The subrate circuits may be either DS0A circuits or subrate circuits within DS0B circuits.

MPTM - Multipoint master

<f_npc>ddd[/ff]
- Master control leg termination

where:

<f_npc>	Number of facility terminating NPC that contains the master control leg
ddd	Channel number that contains the master control leg
ff	Subrate circuit number in that channel, if the channel is a DS0B circuit

MJU - Multipoint Junction Unit block

ssss - MJU block addressed by this command (0001 through 9999)
If the MJU block being addressed by the SCNT command is 0001 (MJU ssss is MJU 0001), then the connection field **MA(tttt,u)** must not appear in the command, because MJU block 0001 must be connected to the Master control leg defined above.

MA - Master

tttt - MJU block number (0001 through 9999)

u - Branch number (1 through 4)

The keyword MA plus the value for **tttt** and **u** are used only if an MJU block's control leg is to be connected to a branch of a previously created MJU block for the purpose of cascading MJU blocks. When the keyword MA is used, the control leg of MJU block **ssss** is connected to branch **u** of MJU block **tttt**.

The first MJU block in a set of MJU blocks that are cascaded must be connected to the master control leg defined above and must be assigned the number 0001. The next MJU block may then be connected to a branch of MJU block 0001. All subsequently created MJU blocks may be connected to branches of previously created MJU blocks as long as there is an unconnected branch on a previously created MJU block.

If a branch of an MJU block other than MJU block 0001 is to be connected after that MJU block has been created, then the keyword MA and its associated fields **tttt** and **u** need not be used. These fields are optional in that case. However, if these fields **are** used, they will be checked for consistency.

Field **tttt** cannot equal field **ssss**, since that would connect an MJU block's control leg to a branch of that same MJU block, which does not make any sense. Also, branch **u** must not have been previously connected.

branch

- Branch number and termination for that branch

branch = BRi <t_npc>jjj[/ll]

where:

i	number of branch (1 through 4)
<t_npc>	Number of facility terminating NPC to be connected to branch
jjj	Channel number on that facility terminating NPC
ll	Subrate circuit number in that channel (optional if DS0A channel)

An individual command may have up to four branch fields that specify how branch 1 through 4 should be connected. The **i** designation in BRi specifies the branch number for a connection.

data - Data

The data fields refer to the connection data associated with the four branch legs of MJU ssss. Each branch data field can take one of three forms, depending on whether the branch is unassigned, cross-connected to an external facility termination, or cross-connected to a cascaded MJU control leg.

data	*Explanation*
000000/00	For unassigned branches
<t_npc>jjj/ll	For branches connected to external facility terminations
MJU nnnn	For branches connected to another MJU with number nnnn (0002 through 9999)

s - Termination state of the MJU control leg or branch

Variable **s** contained in the MA and branch data indicates the terminate and leave status of each MJU connection. Branches or MJU blocks connected by the **SCNT** command are assigned the "BOTH sides terminated" state automatically. Branches or MJU blocks connected by the **SCON** command (specified in a separate command entry, I.94411) are assigned the RELEASED state automatically. The "TO" direction is defined as the direction facing the MJU

s	*Explanation*
R	RELEASED. Neither side is terminated
F	FROM side is terminated
T	TO side is terminated
B	BOTH sides are terminated

RATE - Rate

rr - Subrate circuit transmission rate (24, 48, 96, 19 or 56)

rr	*rate in kb/s*
24	2.4
48	4.8
96	9.6
19	19.2
56	56

The value **rr** specifies the transmission rate of the subrate circuit that is being cross-connected to the MJU block. All subrate circuits connected to the master control leg and all the branches of an MJU tree must have the same rate. At the time MJU block 0001 is created and connected to the subrate channel that is going to be the master control leg, the rate is determined from the rate that was used at the time the circuit was established. Therefore, the **RATE** field is optional and normally need not be specified. There are, however, two exceptions. If a 2.4 kbit/s circuit is carried in a 5 or 10 position DS0B circuit in stuffed mode, then its actual **RATE** must be specified. The same is true for a 4.8 kbit/s circuit that is carried in stuffed mode in a 5 position DS0B. In all other cases the **RATE** field is optional. If the user specifies RATE, it will be checked. If a discrepancy is found, the command will be denied.

For DS0B circuits, the RATE depends on the number of subrate channels in the DS0B circuit as shown below. The allowed subrate circuit numbers (**ff** and **ll**) also depend on the number of channels in the DS0B circuit.

Circuit Rate rr	DS0B Type		
	20-channel (max. rate 2.4 kb/s)	10-channel (max. rate 4.8 kb/s)	5-channel (max. rate 9.6 kb/s)
RATE 24	Circuit #s 1-20 Allowed	Circuit #s 1-10 Allowed	Circuit #s 1-5 Allowed
RATE 48	Denied	Circuit #s 1-10 Allowed	Circuit #s 1-5 Allowed
RATE 96	Denied	Denied	Circuit #s 1-5 Allowed
RATE 19	Denied	Denied	Circuit #s 2 & 4 Allowed
RATE 56	Denied	Denied	Denied

The subrate circuit numbers **ff** and **ll**, are optional when the circuit is a DS0A channel, because there is only one subrate circuit in a DS0A channel. If specified, it must appear as **01**.

Explanation of Error

NPC <t_npc> IS NOT EQUIPPED
BRi IS SPECIFIED MORE THAN ONCE
CHANNEL <f_npc>ddd IS A TEST ACCESS CHANNEL
CHANNEL <f_npc>ddd/ff IS CONNECTED BUT NOT AS MULTIPOINT MASTER LEG
CHANNEL <f_npc>ddd/ff IS SPECIFIED MORE THAN ONCE
CHANNEL <t_npc>ddd IS A PARITY CHANNEL
CHANNEL SR MULTIPLEXER RATE CANNOT SUPPORT CIRCUIT RATE
CIRCUIT RATE MUST BE SPECIFIED
HUBID NOT SET
INVALID SUBRATE CIRCUIT NUMBER FOR CHANNEL <f_npc>ddd
MA FIELD MUST BE SPECIFIED FOR A NEW MJU
MA FIELD NOT ALLOWED WHEN MJU 1 IS SPECIFIED
MA FIELD POINTS TO MJU NOT PREVIOUSLY CREATED
MJU NUMBERS IN MJU AND MA FIELDS CANNOT BE THE SAME
MUST POINT TO LOWER CHANNEL WHEN LOOPING TEST ACCESS CHANNELS
NPC <t_npc> IS NOT VALID
RATE <rate> IS INVALID
SPECIFIED RATE DOES NOT MATCH EXISTING CIRCUIT RATE
SUBRATE CIRCUIT NUMBER MUST BE SPECIFIED FOR DS0B CHANNEL <f_npc>ddd
BRANCH NUMBER i IS OUT OF RANGE
CHANNEL ddd IS OUT OF RANGE FOR NPC TYPE SPECIFIED
RANGE OF CHANNELS NOT ALLOWED IN THIS COMMAND
SD411 PREFIX NOT ALLOWED FOR THIS COMMAND
SUBRATE CIRCUIT NUMBER ff IS OUT OF RANGE FOR DS0B CHANNEL <f_npc>ddd
UPSTREAM BRANCH SPECIFIED IN MA FIELD IS OUT OF RANGE
BRi IS ALREADY ASSIGNED TO ANOTHER CHANNEL OR MJU
CHANNEL <f_npc>ddd/ff IS ASSIGNED
MJU ssss ALREADY EXISTS IN THE CIRCUIT
UPSTREAM BRANCH SPECIFIED IN MA FIELD IS ASSIGNED
CONNECTION EXCEEDS REMAINING CAPACITY
INITIALIZATION OF APPLICATION IS IN PROGRESS, RETRY COMMAND LATER
NPC <t_npc> IS OUT-OF-SERVICE
CHANNEL <t_npc>ddd IS NOT SUBRATE ESTABLISHED TO THIS TG193
NPC <f_npc> IS FAILED
NPC IS BEING ROLLED
SUBRATE APPLICATION FAILED

DSPC,SCON,RATE,FROM,TO

SUBRATE CROSS-CONNECTION

Explanation Of Command

This command cross-connects the FROM and TO subrate circuits. A range of channels may be specified for DS0A channels, and a range of subrate circuits may be specified for DS0B channels.

Note on NPC 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 Section. The messages below 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 section for this information. On DACS II ISX, only sequential NPC numbers in 3-digit form are used.

Note: In PDS, when NPC number and channel number are specified together, the NPC number must be of fixed length; that is, for a three digit NPC number the NPC number must always be specified as a three digit number with leading zeros if necessary, and a four digit NPC number must always be specified as a four digit number with leading zeros if necessary.

Note on Channel Numbering

Channels in NPCs that terminate T1 facilities are numbered from 001 through 024. However, channels in SLC 96 or SLC Series 5 carriers have a more complex channel numbering scheme that is documented in the Introduction part of this Section. (Only DACS II supports SLC 96 or SLC 5.) The user should also note that channel 24 in a T1 provisioned with T1DM framing cannot be used because it is reserved for framing.

Note on Subrate Circuit Numbering

Individual subrate circuits within a DS0B multiplex are referred to by subrate circuit number. The table below shows the range of subrate circuit numbers for the three different types of DS0B channels.

DS0B Type	Subrate Circuit Number Range	Maximum Rate of Circuit
20-channel	01 through 20	2.4 kbit/s
10-channel	01 through 10	4.8 kbit/s
5-channel	01 through 05	19.2 kbit/s

Note: 5-channel DS0Bs are normally used for either 9.6 kbit/s or 19.2 kbit/s circuits. For a 19.2 kbit/s circuit, only circuit number 02 and 04 are allowed. 19.2 kbit/s circuits occupy two positions within the 5-channel DS0B multiplex. 19.2 kbit/s circuit number 02 occupies multiplex position 02 and 03. 19.2 kbit/s circuit number 04 occupies multiplex position 04 and 05.

DS0A channels have only one subrate circuit that is "stuffed" to fill out a 64 kbit/s channel. The subrate circuit number for a DS0A channel is 01. This subrate circuit number need not be specified in the commands referring to a DS0A channel.

Command

USAGE: The following applies to a single subrate cross-connection:

[I.94331]
```
DSPC:[FRM xy,SEQ ww]:<p_npc>:SCON:RATE rr,FROM <f_npc>ddd[/ff],\
TO <t_npc>jjj[/ll]!
```

USAGE: The following applies to cross-connections of a range of DS0A channels:

[I.94331]
```
DSPC:[FRM xy,SEQ ww]:<p_npc>:SCON:RATE rr,FROM <f_npc>ddd-eee[/01],\
TO <t_npc>jjj-kkk[/01]!
```

USAGE: The following applies to cross-connections of a range of subrate circuits within a DS0B channel:

[I.94331]
```
DSPC:[FRM xy,SEQ ww]:<p_npc>:SCON:RATE rr,FROM <f_npc>ddd/ff-mm,\
TO <t_npc>jjj/ll-nn!
```

Completion Message

USAGE: The following applies to a single subrate cross-connection:

[O.94331]
```
M hh:mm:ss xy,ww n[vv] DSPC <p_npc> SCON RATE rr  2 LN MSG:
<f_npc>ddd/[ff],<t_npc>jjj/[ll] COMPL
```

USAGE: The following applies to cross-connections of a range of DS0A channels:

[O.94331]
```
M hh:mm:ss xy,ww n[vv] DSPC <p_npc> SCON RATE rr  2 LN MSG:
<f_npc>ddd-eee/[01],<t_npc>jjj-kkk/[01] COMPL
```

USAGE: The following applies to cross-connections of a range of subrate circuits within a DS0B channel:

[O.94331]
```
M hh:mm:ss xy,ww n[vv] DSPC <p_npc> SCON RATE rr  2 LN MSG:
<f_npc>ddd/ff-mm,<t_npc>jjj/ll-nn COMPL
```

Denial Message

USAGE: The following applies to a single subrate cross-connection:

[O.94331.01]
```
M hh:mm:ss xy,ww n[vv] DSPC <p_npc> SCON RATE rr  3 LN MSG:
<f_npc>ddd/[ff],<t_npc>jjj/[ll]
<explanation of error> DNY
```

USAGE: The following applies to cross-connections of a range of DS0A channels:

[O.94331.01]
```
M hh:mm:ss xy,ww n[vv] DSPC <p_npc> SCON RATE rr  3 LN MSG:
<f_npc>ddd-eee/[01],<t_npc>jjj-kkk/[01]
<explanation of error> DNY
```

USAGE: The following applies to cross-connections of a range of subrate circuits within a DS0B channel:

[O.94331.01]
```
M hh:mm:ss xy,ww n[vv] DSPC <p_npc> SCON RATE rr  3 LN MSG:
<f_npc>ddd/ff-mm,<t_npc>jjj/ll-nn
<explanation of error> DNY
```

Autonomous Message

Not applicable.

Explanation Of Parameters

SCON - Cross-connect two or more subrate circuits to each other

FROM - Points to FROM subrate circuit(s)

TO - Points to TO subrate circuit(s)

The following applies to a single subrate cross-connection:

<f_npc>ddd[/ff]
- From termination

<f_npc>	Number of "FROM" facility terminating NPC
ddd	Channel number on that facility terminating NPC
ff	Subrate circuit number in that channel, optional if DS0A channel

<t_npc>jjj[/ll]
- To termination

<t_npc>	Number of "TO" facility terminating NPC
jjj	Channel number on that facility terminating NPC
ll	Subrate circuit number in that channel, optional if DS0A channel

The following applies to cross-connections of a range of DS0A channels:

<f_npc>ddd-eee[/01]
- From termination

<f_npc>	Number of "FROM" facility terminating NPC
ddd	Channel number on that facility terminating NPC starting range
eee	Channel number on that facility terminating NPC ending range
01	Optional subrate circuit number, since this applies to DS0A channels

<t_npc>jjj-kkk[/01]
- To termination

<t_npc>	Number of "TO" facility terminating NPC
jjj	Channel number on that facility terminating NPC starting range
kkk	Channel number on that facility terminating NPC ending range
01	Optional subrate circuit number, since this applies to DS0A channels

The following applies to cross-connections of a range of subrate circuits within a DS0B channel:

<f_npc>ddd/ff-mm
- From termination

<f_npc>	Number of "FROM" facility terminating NPC
ddd	Channel number on that facility terminating NPC
ff	Beginning subrate circuit number in a range
mm	Ending subrate circuit number in a range

<t_npc>jjj/ll-mm
- To termination

<t_npc>	Number of "TO" facility terminating NPC
jjj	Channel number on that facility terminating NPC
ll	Beginning subrate circuit number in a range
nn	Ending subrate circuit number in a range

All DS0A and/or DS0B channels must be established using a subrate establish command before subrate circuits carried by them can be cross-connected.

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

RATE - Rate

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

rr - Circuit rate (24, 48, 96, 19 or 56)

rr	*rate in kb/s*
24	2.4
48	4.8
96	9.6
19	19.2
56	56

The RATE cannot exceed the maximum rate of the subrate multiplexers associated with those DS0B channels. The allowed subrate numbers (ff, ll, mm, and nn) depend on the rate of the circuit and the type of DS0B channel associated with each termination, as shown below:

Circuit Rate rr	DS0B Type		
	20-channel (max. rate 2.4 kb/s)	10-channel (max. rate 4.8 kb/s)	5-channel (max. rate 9.6 kb/s)
RATE 24	Circuit #s 1-20 Allowed	Circuit #s 1-10 Allowed	Circuit #s 1-5 Allowed
RATE 48	Denied	Circuit #s 1-10 Allowed	Circuit #s 1-5 Allowed
RATE 96	Denied	Denied	Circuit #s 1-5 Allowed
RATE 19	Denied	Denied	Circuit #s 2 & 4 Allowed
RATE 56	Denied	Denied	Denied

The subrate circuit numbers ff and ll, are optional when the circuit is within a DS0A channel, because there is only one subrate circuit in a DS0A channel. If specified, it must appear as 01.

The user must ensure that a circuit using the secondary channel capability is assigned only to a facility termination that is compatible with this capability. If the termination is a DS0A or if its associated facility NPC was grown without zero suppression, any assignment of the NEW termination is compatible with the secondary channel capability. If the termination is in a DS0B **and** its associated facility NPC was grown with zero suppression, the user can only assign secondary channel services to a termination with the following subrate circuit numbers within the given DS0B type:

DS0B Type	Allowed Subrate Numbers
20-channel	2, 3, 6, 8, 11, 12, 13, and 18
10-channel	2, 3, 6, and 8
5-channel	2 and 3

The fields, FROM <f_npc>ddd/[ff] and TO <t_npc>jjj/[ll] specify the subrate circuits to cross-connect. Either subrate circuit may be designated FROM or TO.

Explanation of Error

NPC <t_npc> IS NOT EQUIPPED
CHANNEL <t_npc>ddd IS A PARITY CHANNEL
CHANNEL SR MULTIPLEXER RATE CANNOT SUPPORT CIRCUIT RATE
INVALID SUBRATE CIRCUIT NUMBER FOR CHANNEL <f_npc>ddd
MUST POINT TO LOWER CHANNEL WHEN LOOPING TEST ACCESS CHANNELS
NPC <t_npc> IS NOT VALID
RATE <rate> IS INVALID
SUBRATE CIRCUIT NUMBER MUST BE SPECIFIED FOR DS0B CHANNEL <f_npc>ddd
TEST ACCESS CHANNELS CAN ONLY BE LOOPED TO THEMSELVES
CHANNEL ddd IS OUT OF RANGE FOR NPC TYPE SPECIFIED
INVALID RANGE FOR CROSS-CONNECTION
RANGE OF CHANNELS NOT ALLOWED IN THIS COMMAND
SD411 PREFIX NOT ALLOWED FOR THIS COMMAND
SUBRATE CIRCUIT NUMBER ff IS OUT OF RANGE FOR DS0B CHANNEL <f_npc>ddd
ddd-eee IS AN INVALID RANGE OF CHANNELS
ff-mm IS AN INVALID RANGE OF CIRCUITS
CHANNEL <f_npc>ddd/ff IS ASSIGNED
CONNECTION EXCEEDS REMAINING CAPACITY
INITIALIZATION OF APPLICATION IS IN PROGRESS, RETRY COMMAND LATER
NPC <t_npc> IS OUT-OF-SERVICE
CHANNEL <t_npc>ddd IS NOT SUBRATE ESTABLISHED TO THIS TG193
SPECIFIED CHANNEL IS A TEST ACCESS POINT
NPC <f_npc> IS FAILED
NPC IS BEING ROLLED
SUBRATE APPLICATION FAILED

DSPC,SCON,RATE,MPTM,MJU,MA

SUBRATE MULTIPOINT CROSS-CONNECTION

Explanation Of Command

Creation of Multipoint Junction Unit (MJU) Blocks

This command creates an MJU block and the subrate cross-connections that connect to it. An MJU block has a control leg and four branches; not all of the branches must be connected. An MJU block transmits data from the control leg to all branches. This is called the downstream direction. In the upstream direction (from branches to control leg) an MJU block performs a logical "AND" function for all data bits. It is assumed that all branches except one transmit "1"s upstream; therefore, the data of the one branch that does not have all "1"s is transmitted to the control leg. MJU blocks also transmit secondary channel information embedded in the control channel bit in bit position 8. Only one branch is expected to transmit secondary channel data to the control leg at any one time.

Even though MJU blocks are restricted to four branches*, the user may create MJU structures of substantial size by cascading MJU blocks. The MJU structures thus created are called MJU trees in this document. The cascading of MJU blocks is done by simply connecting a branch of an MJU block that has already been created to the control leg of an MJU block that is about to be created.

MJU trees are started by creating MJU block 0001. The control leg of MJU 0001 connects to a subrate circuit coming from a facility terminating NPC. Its branches may be connected to other subrate circuits established from facility terminating NPCs. Branches may also be connected to newly created MJU blocks that increase the size of the MJU tree.

* The reason is that the inband control codes that select branches are restricted to selecting 1 out of 4 branches.

The subrate circuit that connects to the control leg of the first MJU block in an MJU tree is also called the master control leg. The subrate circuit number, channel number, and NPC number for that subrate circuit defines the MJU tree and must be specified in any cross-connect or disconnect command dealing with that MJU tree.

The rate of subrate circuits that are processed by a single MJU tree must always be the same. Thus, the master control leg and all the branches must be connected to subrate circuits operating at the same rate.

The kind of subrate circuits that can be connected and the error correction that they may be subjected to may vary as follows:

1. DS0A circuits of one of the following rates may be connected: 2.4, 4.8, 9.6, 19.2, or 56 kbit.s. (As long as the circuit rates are all identical for an individual MJU tree.)
2. Subrate circuits carried in DS0B circuits may be connected. The rates may be 2.4, 4.8, 9.6, or 19.2 kbit/s.
3. DS0A circuits of 2.4, 4.8, or 9.6 kbit/s may be subject to majority vote error correction before the connection to an MJU block.
4. DS0A circuit of 19.2 or 56 kbit/s may be subject to parity error correction before the connection to an MJU block.
5. A DS0B channel itself may be subject to parity error correction before being demultiplexed into its component subrate circuits and having some of those subrate circuits connected to MJU blocks.

All of the specifications for error correction are handled at the time a circuit is established to the DDS Subrate and MJU application.

This command specifically does one of the following:

1. It creates an MJU block and connects the control leg as well as some or all of the branches to previously established channels of facility terminating NPCs.
2. It creates an MJU block and connects the control leg to an idle branch of a previously created MJU block. This is called cascading of MJU blocks. In addition, it connects some or all branches of the MJU block to channels of facility terminating NPCs.
3. It connects branches of MJU blocks that were not previously connected to channels of facility terminating NPCs.

All channels that carry subrate circuits (either DS0A circuits or DS0B circuits carrying subrate circuits within them) must be established before they can be cross-connected by the subrate application.

Any branches that remain unconnected after an MJU block has been created send the CMI (Control Mode Idle, 1111 1110) code upstream. This makes the unconnected branch look like an idle branch.

Identification of MJU Trees

Each MJU tree is identified by the facility terminating NPC, channel, and if applicable the subrate circuit number that is the master control leg for the MJU tree. All commands that cross-connect or disconnect any channels to MJU blocks within that tree and all commands that create an additional MJU block or delete one or more MJU blocks identify the MJU tree by refering to the master control leg. The master control leg follows the **MPTM** keyword in the command.

Note on NPC 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 Section. The messages below 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 section for this information. On DACS II ISX, only sequential NPC numbers in 3-digit form are used.

Note: In PDS, when NPC number and channel number are specified together, the NPC number must be of fixed length; that is, for a three digit NPC number the NPC number must always be specified as a three digit number with leading zeros if necessary, and a four digit NPC number must always be specified as a four digit number with leading zeros if necessary.

Note on Channel Numbering

Channels in NPCs that terminate T1 facilities are numbered from 001 through 024. However, channels in SLC 96 or SLC Series 5 carriers have a more complex channel numbering scheme that is documented in the Introduction part of this Section. (Only DACS II supports SLC 96 or SLC 5.) The user should also note that channel 24 in a T1 provisioned with T1DM framing cannot be used because it is reserved for framing.

Note on Subrate Circuit Numbering

Individual subrate circuits within a DS0B multiplex are referred to by subrate circuit number. The table below shows the range of subrate circuit numbers for the three different types of DS0B channels.

DS0B Type	Subrate Circuit Number Range	Maximum Rate of Circuit
20-channel	01 through 20	2.4 kbit/s
10-channel	01 through 10	4.8 kbit/s
5-channel	01 through 05	19.2 kbit/s

Note: 5-channel DS0Bs are normally used for either 9.6 kbit/s or 19.2 kbit/s circuits. For a 19.2 kbit/s circuit, only circuit number 02 and 04 are allowed. 19.2 kbit/s circuits occupy two positions within the 5-channel DS0B multiplex. 19.2 kbit/s circuit number 02 occupies multiplex position 02 and 03. 19.2 kbit/s circuit number 04 occupies multiplex position 04 and 05.

DS0A channels have only one subrate circuit that is "stuffed" to fill out a 64 kbit/s channel. The subrate circuit number for a DS0A channel is 01. This subrate circuit number need not be specified in the commands referring to a DS0A channel.

Restrictions for NPCs with Zero Code Suppression

The user must ensure that a circuit using the secondary channel capability is assigned only to a facility termination that is compatible with this capability. If the termination is a DS0A or if its associated facility NPC was grown **without** zero suppression, any assignment of the NEW termination is compatible with the secondary channel capability. If the termination is in a DS0B **and** its associated facility NPC was grown **with** zero suppression, the user can only assign secondary channel services to a termination with the following subrate circuit numbers within the given DS0B type:

DS0B Type	Allowed Subrate Numbers
20-channel	2, 3, 6, 8, 11, 12, 13, and 18
10-channel	2, 3, 6, and 8
5-channel	2 and 3

Command

[I.94411]

```
DSPC:[FRM xy,SEQ ww]:<p_npc>:SCON:[RATE rr,]MPTM <t_npc>ddd[/ff],\
MJU ssss[,MA(tttt,u)][,<branch>][,<branch>][,<branch>][,<branch>]!
```

Completion Message

[O.94411]

```
M hh:mm:ss xy,ww n[vv] DSPC <p_npc> SCON RATE rr  5 LN MSG:
MPTM <t_npc>ddd/ff MJU ssss
[MA tttt,u ][<branch> ][<branch> ][<branch> ][<branch>]
NEW MJU ssss  MA {tttt,u|MPTM} s  BR1 <data> s  BR2 <data> s
                                  BR3 <data> s  BR4 <data> s  COMPL
```

Denial Message

[O.94411.01]
M hh:mm:ss xy,ww n[vv] DSPC <p_npc> SCON[RATE rr] 4 LN MSG:
MPTM <t_npc>ddd/ff MJU ssss
[MA tttt,u][<branch>][<branch>][<branch>][<branch>]
<explanation of error> DNY

Autonomous Message

Not applicable.

Explanation Of Parameters

SCON - Cross-connect subrate circuits to an MJU block
This definition of SCON depends on the presence of the MPTM keyword in the command string. The subrate circuits may be either DS0A circuits or subrate circuits within DS0B circuits.

MPTM - Multipoint master

<t_npc>ddd[/ff]
- Master control leg termination

where:

<t_npc>	Number of facility terminating NPC that contains the master control leg
ddd	Channel number that contains the master control leg
ff	Subrate circuit number in that channel, if the channel is a DS0B circuit

MJU - Multipoint Junction Unit block

ssss - MJU block addressed by this command (0001 through 9999)
If the MJU block being addressed by the SCON command is 0001 (MJU **ssss** is MJU 0001), then the connection field **MA(tttt,u)** must not appear in the command, because MJU block 0001 must be connected to the Master control leg defined above.

MA - Master

tttt - MJU block number (0001 through 9999)

u - Branch number (1 through 4)

The keyword MA plus the value for **tttt** and **u** are used only if an MJU block's control leg is to be connected to a branch of a previously created MJU block for the purpose of cascading MJU blocks. When the keyword MA is used, the control leg of MJU block **ssss** is connected to branch **u** of MJU block **tttt**.

The first MJU block in a set of MJU blocks that are cascaded must be connected to the master control leg defined above and must be assigned the number 0001. The next MJU block may then be connected to a branch of MJU block 0001. All subsequently created MJU blocks may be connected to branches of previously created MJU blocks as long as there is an unconnected branch on a previously created MJU block.

If a branch of an MJU block other than MJU block 0001 is to be connected after that MJU block has been created, then the keyword MA and its associated fields **tttt** and **u** need not be used. These fields are optional in that case. However, if these fields **are** used, they will be checked for consistency.

Field **tttt** cannot equal field **ssss**, since that would connect an MJU block's control leg to a branch of that same MJU block, which does not make any sense. Also, branch **u** must not have been previously connected.

branch

- Branch number and termination for that branch

branch = BRi **<t_npc>jjj[/ll]**

where:

i	number of branch (1 through 4)
<t_npc>	Number of facility terminating NPC to be connected to branch
jjj	Channel number on that facility terminating NPC
ll	Subrate circuit number in that channel (optional if DS0A channel)

An individual command may have up to four branch fields that specify how branch 1 through 4 should be connected. It is legal to create an MJU block and not connect any of the branches at the time the MJU block is being created. The **i** designation in BRi specifies the branch number for a connection.

data - Data

The data fields refer to the connection data associated with the four branch legs of MJU ssss. Each branch data field can take one of three forms, depending on whether the branch is unassigned, cross-connected to an external facility termination, or cross-connected to a cascaded MJU control leg.

data	*Explanation*
000000/00	For unassigned branches
<t_npc>jjj/ll	For branches connected to external facility terminations
MJU nnnn	For branches connected to another MJU with number nnnn (0002 through 9999)

s - Termination state of the MJU control leg or branch

Variable **s** contained in the MA and branch data indicates the terminate and leave status of each MJU connection. Branches or MJU blocks connected by the **SCON** command are assigned the RELEASED status automatically. Branches or MJU blocks connected by the **SCNT** command (specified in a separate command entry) are assigned the "BOTH sides terminated" state automatically. The "TO" direction is defined as the direction facing the MJU

s	*Explanation*
R	RELEASED. Neither side is terminated
F	FROM side is terminated
T	TO side is terminated
B	BOTH sides are terminated

RATE - Rate

rr - Subrate circuit transmission rate (24, 48, 96, 19 or 56)

rr	*rate in kb/s*
24	2.4
48	4.8
96	9.6
19	19.2
56	56

The value **rr** specifies the transmission rate of the subrate circuit that is being cross-connected to the MJU block. All subrate circuits connected to the master control leg and all the branches of an MJU tree must have the same rate. At the time MJU block 0001 is created and connected to the subrate channel that is going to be the master control leg, the rate is determined from the rate that was used at the time the circuit was established. Therefore, the RATE field is optional and normally need not be specified. There are, however, two exceptions. If a 2.4 kbit/s circuit is carried in a 5 or 10 position DS0B circuit in stuffed mode, then its actual RATE must be specified. The same is true for a 4.8 kbit/s circuit that is carried in stuffed mode in a 5 position DS0B. In all other cases the RATE field is optional. If the user specifies RATE, it will be checked. If a discrepancy is found, the command will be denied.

For DS0B circuits, the RATE depends on the number of subrate channels in the DS0B circuit as shown below. The allowed subrate circuit numbers (**ff** and **ll**) also depend on the number of channels in the DS0B circuit.

Circuit Rate rr	DS0B Type		
	20-channel (max. rate 2.4 kb/s)	10-channel (max. rate 4.8 kb/s)	5-channel (max. rate 9.6 kb/s)
RATE 24	Circuit #s 1-20 Allowed	Circuit #s 1-10 Allowed	Circuit #s 1-5 Allowed
RATE 48	Denied	Circuit #s 1-10 Allowed	Circuit #s 1-5 Allowed
RATE 96	Denied	Denied	Circuit #s 1-5 Allowed
RATE 19	Denied	Denied	Circuit #s 2 & 4 Allowed
RATE 56	Denied	Denied	Denied

The subrate circuit numbers **ff** and **ll**, are optional when the circuit is a DS0A channel, because there is only one subrate circuit in a DS0A channel. If specified, it must appear as **01**.

Explanation of Error

NPC <t_npc> IS NOT EQUIPPED
BRi IS SPECIFIED MORE THAN ONCE
CHANNEL <f_npc>ddd IS A TEST ACCESS CHANNEL
CHANNEL <f_npc>ddd/ff IS CONNECTED BUT NOT AS MULTIPOINT MASTER LEG
CHANNEL <f_npc>ddd/ff IS SPECIFIED MORE THAN ONCE
CHANNEL <t_npc>ddd IS A PARITY CHANNEL
CHANNEL SR MULTIPLEXER RATE CANNOT SUPPORT CIRCUIT RATE
CIRCUIT RATE MUST BE SPECIFIED
HUBID NOT SET
INVALID SUBRATE CIRCUIT NUMBER FOR CHANNEL <f_npc>ddd
MA FIELD MUST BE SPECIFIED FOR A NEW MJU
MA FIELD NOT ALLOWED WHEN MJU 1 IS SPECIFIED
MA FIELD POINTS TO MJU NOT PREVIOUSLY CREATED
MJU NUMBERS IN MJU AND MA FIELDS CANNOT BE THE SAME
MUST POINT TO LOWER CHANNEL WHEN LOOPING TEST ACCESS CHANNELS
NPC <t_npc> IS NOT VALID
RATE <rate> IS INVALID
SPECIFIED RATE DOES NOT MATCH EXISTING CIRCUIT RATE
SUBRATE CIRCUIT NUMBER MUST BE SPECIFIED FOR DS0B CHANNEL <f_npc>ddd
BRANCH NUMBER i IS OUT OF RANGE
CHANNEL ddd IS OUT OF RANGE FOR NPC TYPE SPECIFIED
SD411 PREFIX NOT ALLOWED FOR THIS COMMAND

SUBRATE CIRCUIT NUMBER ff IS OUT OF RANGE FOR DS0B
CHANNEL <f_npc>ddd
UPSTREAM BRANCH SPECIFIED IN MA FIELD IS OUT OF RANGE
BRi IS ALREADY ASSIGNED TO ANOTHER CHANNEL OR MJU
CHANNEL <f_npc>ddd/ff IS ASSIGNED
MJU ssss ALREADY EXISTS IN THE CIRCUIT
UPSTREAM BRANCH SPECIFIED IN MA FIELD IS ASSIGNED
CONNECTION EXCEEDS REMAINING CAPACITY
INITIALIZATION OF APPLICATION IS IN PROGRESS, RETRY
COMMAND LATER
NPC <t_npc> IS OUT-OF-SERVICE
CHANNEL <t_npc>ddd IS NOT SUBRATE ESTABLISHED TO THIS
TG193
NPC <f_npc> IS FAILED
NPC IS BEING ROLLED
SUBRATE APPLICATION FAILED

DSPC,SDCH,TO,DCC

SUBRATE DISESTABLISH CHANNEL

Explanation Of Command

This command disestablishes a channel (or a range of channels) on a facility terminating NPC from the subrate application residing on the DSP Application circuit pack. This command also disestablishes application-to-application connections.

The Subrate & MJU application will deny the disestablish channel command if subrate circuits on the channel are still cross-connected.

The disestablish command supports:

1. Disestablishement of a range of channels; but the range is limited to 12 circuits or less.
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, which causes the UMC bit pattern to become the Insertion Word (IW) for the disconnected channel on the facility terminating NPC.
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 SECH:TO,DS0A (I.94311) for information on how to establish application-to-application connections. Also see DACS II or DACS II ISX command UTL::QRY,APPL (I.51201) for information on all pseudo channel numbers currently in use on the frame.

Note on RED Circuit and CUS Markings

Channels established to the DDS Subrate and MJU application are automatically marked as Red circuits at the time they are established. This marking requires the INCL keyword if a facility terminating NPC carrying such a channel is to be removed. Similarly, the DSP Platform circuit pack running the application can only be removed using the INCL keyword if channels are still established to it. (This is useful, for the remote possibility that a circuit pack fails and has to be replaced without removing all the individual circuits that these circuit packs carry.) The Red marking is removed at the time a channel is disestablished.

On DACS II (but not on DACS II ISX), channels may have the CUS (for customer) marking. The CUS marking is disabled at the time a channel is established to this application, but is re-enabled once that channel is disestablished.

Note on NPC 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 Section. The messages below 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 section for this information. On DACS II ISX, only sequential NPC numbers in 3-digit form are used.

Note: In PDS, when NPC number and channel number are specified together, the NPC number must be of fixed length; that is, for a three digit NPC number the NPC number must always be specified as a three digit number with leading zeros if necessary, and a four digit NPC number must always be specified as a four digit number with leading zeros if necessary.

Note on Channel Numbering

Channels in NPCs that terminate T1 facilities are numbered from 001 through 024. However, channels in SLC 96 or SLC Series 5 carriers have a more complex channel numbering scheme that is documented in the Introduction part of this Section. (Only DACS II supports SLC 96 or SLC 5.) The user should also note that channel 24 in a T1 provisioned with T1DM framing cannot be used because it is reserved for framing.

Command

[I.94321]
DSPC:[FRM xy,SEQ ww]:<p_npc>:SDCH:TO <t_npc>ddd[-eee][,DCC]!

Completion Message

[O.94321]

```
M hh:mm:ss xy,ww n[vv] DSPC <p_npc> SDCH <t_npc>ddd[-eee][ DCC]\
[ PCH ppp][ OOS] COMPL
```

Denial Message

[O.94321.01]

```
M hh:mm:ss xy,ww n[vv] DSPC <p_npc> SDCH <t_npc>ddd[-eee][ DCC][ qqq]\
  2 LN MSG:
<explanation of error> DNY
```

Autonomous Message

Not applicable.

Explanation Of Parameters

SDCH - Delete (disestablish) a channel from the subrate application

TO - To

<t_npc>
- Number of facility terminating NPC

ddd - Channel number on that NPC

eee - Channel number for end of range specified, range must not exceed 12 circuits.

PCH - Parity Channel

ppp - Parity error correction channel number

The PCH keyword and the parity channel number appear in the output message if a parity channel had been associated with channel ddd at the time the channel had been established. The system automatically finds and disestablishes the parity channel associated with channel ddd.

If a parity channel had been associated with a channel at establishment, then a range of channels cannot be used in the disestablish command.

Note: Disestablishment can only be done after all Subrate cross-connections are disconnected.

DCC - Disconnect Code

Causes the Digital Data System (DDS) Unassigned Multiplexer Code (UMC) 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 facility terminating NPC is used.

OOS - Out of service

Channels established to an out-of-service facility terminating 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.

qqq - Channel number involved in the denial (ddd through eee)

The user should note that none of the preceding channels in the range is disestablished if a problem is found, and subsequent channels may or may not have additional problems.

Explanation of Error

CHANNEL <t_npc>ddd IS A PARITY CHANNEL
NPC <t_npc> IS NOT VALID
ATTEMPTING TO DISESTABLISH MORE THAN 12 DS0B CHANNELS
ATTEMPTING TO DISESTABLISH MORE THAN 32 CHANNELS
CHANNEL ddd IS OUT OF RANGE FOR NPC TYPE SPECIFIED
RANGE OF CHANNELS AND PCH ERROR CORRECTION NOT ALLOWED
SD411 PREFIX NOT ALLOWED FOR THIS COMMAND
ddd-eee IS AN INVALID RANGE OF CHANNELS
INITIALIZATION OF APPLICATION IS IN PROGRESS, RETRY COMMAND LATER
CHANNEL <t_npc>ddd IS NOT SUBRATE ESTABLISHED TO THIS TG193
ACTIVE SUBRATE CROSS-CONNECTS ARE PRESENT ON THE CHANNEL
CHANNEL <f_npc>ddd IS UNDER TEST
NPC IS BEING ROLLED
SUBRATE APPLICATION FAILED

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
NPC containing channel 000 is invalid 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.

DSPC,SDIS,RATE,FROM,TO

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 **SCON** or **SCNT** verbs) before they can be disconnected with **SDIS**. A range of DS0A channels and a range of subrate circuits within DS0B channels may be disconnected with a single command invocation.

The optional **RATE rr** field defines the rate at which the **FROM** and **TO** subrate circuits had been cross-connected. If specified, it will be checked and must be the same rate as originally appeared in the **SCON** or **SCNT** command.

Note on NPC 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 Section. The messages below 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 section for this information. On DACS II ISX, only sequential NPC numbers in 3-digit form are used.

Note: In PDS, when NPC number and channel number are specified together, the NPC number must be of fixed length; that is, for a three digit NPC number the NPC number must always be specified as a three digit number with leading zeros if necessary, and a four digit NPC number must always be specified as a four digit number with leading zeros if necessary.

Note on Channel Numbering

Channels in NPCs that terminate T1 facilities are numbered from 001 through 024. However, channels in SLC 96 or SLC Series 5 carriers have a more complex channel numbering scheme that is documented in the Introduction part of this Section. (Only DACS II supports SLC 96 or SLC 5.) The user should also note that channel 24 in a T1 provisioned with T1DM framing cannot be used because it is reserved for framing.

Note on Subrate Circuit Numbering

Individual subrate circuits within a DS0B multiplex are referred to by subrate circuit number. The table below shows the range of subrate circuit numbers for the three different types of DS0B channels.

DS0B Type	Subrate Circuit Number Range	Maximum Rate of Circuit
20-channel	01 through 20	2.4 kbit/s
10-channel	01 through 10	4.8 kbit/s
5-channel	01 through 05	19.2 kbit/s

Note: 5-channel DS0Bs are normally used for either 9.6 kbit/s or 19.2 kbit/s circuits. For a 19.2 kbit/s circuit, only circuit number 02 and 04 are allowed. 19.2 kbit/s circuits occupy two positions within the 5-channel DS0B multiplex. 19.2 kbit/s circuit number 02 occupies multiplex position 02 and 03. 19.2 kbit/s circuit number 04 occupies multiplex position 04 and 05.

DS0A channels have only one subrate circuit that is "stuffed" to fill out a 64 kbit/s channel. The subrate circuit number for a DS0A channel is 01. This subrate circuit number need not be specified in the commands referring to a DS0A channel.

Command

USAGE: The following applies to a single subrate disconnection:

[I.94351]
```
DSPC:[FRM xy,SEQ ww]:<p_npc>:SDIS:[RATE rr,]\
FROM <f_npc>ddd[/ff],TO <t_npc>jjj[/ll]!
```

USAGE: The following applies to disconnections of a range of DS0A channels:

[I.94351]
```
DSPC:[FRM xy,SEQ ww]:<p_npc>:SDIS:[RATE rr,]\
FROM <f_npc>ddd-eee/[01],TO <t_npc>jjj-kkk/[01]!
```

USAGE: The following applies to disconnections of a range of subrate circuits within a DS0B channel:

[I.94351]
DSPC:[FRM xy,SEQ ww]:<p_npc>:SDIS:[RATE rr,]
FROM <f_npc>ddd/ff-mm,TO <t_npc>jjj/ll-nn!

Completion Message

USAGE: The following applies to a single subrate disconnection:

[O.94351]
M hh:mm:ss xy,ww n[vv] DSPC <p_npc> SDIS [RATE rr] 2 LN MSG:
<f_npc>ddd/[ff],<t_npc>jjj/[ll][OOS] COMPL

USAGE: The following applies to disconnections of a range of DS0A channels:

[O.94351]
M hh:mm:ss xy,ww n[vv] DSPC <p_npc> SDIS [RATE rr] 2 LN MSG:
<f_npc>ddd-eee/[01],<t_npc>jjj-kkk/[01][OOS] COMPL

USAGE: The following applies to disconnections of a range of subrate circuits within a DS0B channel:

[O.94351]
M hh:mm:ss xy,ww n[vv] DSPC <p_npc> SDIS [RATE rr] 2 LN MSG:
<f_npc>ddd/ff-mm,<t_npc>jjj/ll-nn[OOS] COMPL

Denial Message

USAGE: The following applies to a single subrate disconnection:

[O.94351.01]
M hh:mm:ss xy,ww n[vv] DSPC <p_npc> SDIS [RATE rr] 3 LN MSG:
<f_npc>ddd/[ff],<t_npc>jjj/[ll]
<explanation of error> DNY

USAGE: The following applies to disconnections of a range of DS0A channels:

[O.94351.01]
M hh:mm:ss xy,ww n[vv] DSPC <p_npc> SDIS [RATE rr] 3 LN MSG:
<f_npc>ddd-eee/[01],<t_npc>jjj-kkk/[01]
<explanation of error> DNY

USAGE: The following applies to disconnections of a range of subrate circuits within a DS0B channel:

[O.94351.01]

```
M hh:mm:ss xy,ww n[vv] DSPC <p_npc> SDIS [ RATE rr]  3 LN MSG:
<f_npc>ddd/ff-mm,<t_npc>jjj/ll-nn
<explanation of error> DNY
```

Autonomous Message

Not applicable.

Explanation Of Parameters

SDIS - Disconnect subrate circuits previously cross-connected

FROM - Points to FROM subrate circuit(s)

TO - Points to TO subrate circuit(s)

The following applies to a single subrate disconnection:

<f_npc>ddd[/ff]
- From termination

<f_npc>	Number of "FROM" facility terminating NPC
ddd	Channel number on that facility terminating NPC
ff	Subrate circuit number in that channel (optional if DS0A channel)

<t_npc>jjj[/ll]
- To termination

<t_npc>	Number of "TO" facility terminating NPC
jjj	Channel number on that facility terminating NPC
ll	Subrate circuit number in that channel (optional if DS0A channel)

The following applies to disconnections of a range of DS0A channels:

<f_npc>ddd-eee[/01]
- From termination

<f_npc>	Number of "FROM" facility terminating NPC
ddd	Channel number on that facility terminating NPC starting range
eee	Channel number on that facility terminating NPC ending range
01	Optional subrate circuit number, since this applies to DS0A channels

<t_npc>jjj-kkk[/01]
- To termination

<t_npc>	Number of "TO" facility terminating NPC
jjj	Channel number on that facility terminating NPC starting range
kkk	Channel number on that facility terminating NPC ending range
01	Optional subrate circuit number, since this applies to DS0A channels

The following applies to disconnections of a range of subrate circuits within a DS0B channels:

<f_npc>ddd/ff-mm
- From termination

<f_npc>	Number of "FROM" facility terminating NPC
ddd	Channel number on that facility terminating NPC
ff	Beginning subrate circuit number in a range
mm	Ending subrate circuit number in a range

<t_npc>jjj/ll-mm
- To termination

<t_npc>	Number of "TO" facility terminating NPC
jjj	Channel number on that facility terminating NPC
ll	Beginning subrate circuit number in a range
nn	Ending subrate circuit number in a range

RATE - Rate

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

rr - Circuit rate (24, 48, 96, 19 or 56)

rr	*rate in kb/s*
24	2.4
48	4.8
96	9.6
19	19.2
56	56

00S - indicates the FROM, TO, or BOTH facility terminating NPCs are out-of-service

Explanation of Error

CHANNEL <t_npc>ddd IS A PARITY CHANNEL
INVALID SUBRATE CIRCUIT NUMBER FOR CHANNEL <f_npc>ddd
MUST POINT TO LOWER CHANNEL WHEN LOOPING TEST ACCESS CHANNELS
NPC <t_npc> IS NOT VALID
RATE <rate> IS INVALID
SPECIFIED RATE DOES NOT MATCH EXISTING CIRCUIT RATE
SUBRATE CIRCUIT NUMBER MUST BE SPECIFIED FOR DS0B CHANNEL <f_npc>ddd
TEST ACCESS CHANNELS CAN ONLY BE LOOPED TO THEMSELVES
CHANNEL ddd IS OUT OF RANGE FOR NPC TYPE SPECIFIED
INVALID RANGE FOR CROSS-CONNECTION
RANGE OF CHANNELS NOT ALLOWED IN THIS COMMAND
SD411 PREFIX NOT ALLOWED FOR THIS COMMAND
SUBRATE CIRCUIT NUMBER ff IS OUT OF RANGE FOR DS0B CHANNEL <f_npc>ddd
ddd-eee IS AN INVALID RANGE OF CHANNELS
ff-mm IS AN INVALID RANGE OF CIRCUITS
CHANNELS ARE NOT CONNECTED TO EACH OTHER
INITIALIZATION OF APPLICATION IS IN PROGRESS, RETRY COMMAND LATER
CHANNEL <f_npc>ddd IS UNDER TEST
CHANNEL <t_npc>ddd IS NOT SUBRATE ESTABLISHED TO THIS TG193
NPC IS BEING ROLLED
SUBRATE APPLICATION FAILED

DSPC,SDIS,RATE,MPTM,MJU

SUBRATE MULTIPOINT DISCONNECTION OF BRANCHES

Explanation Of Command

Disconnection of Multipoint Junction Unit (MJU) Branches

This command disconnects branches from Multipoint Junction Unit (MJU) blocks that had previously been connected using the **SCON** or **SCNT** command. MJU blocks themselves may not be disconnected with this command; the command **SDIS,RATE,MPTM,MJU,ALL** must be used for that function. This command disconnects a minimum of one branch and a maxiumum of four branches with a single invocation of the command.

Branches may be disconnected from MJU blocks incrementally, one command at a time. A command might address an MJU block that has all four branches connected, and disconnect branches 1 and 2. This disconnection will be performed without service interruptions to branches 3 and 4 that are still connected. Another command might address MJU 0005 again and disconnect branch 3, leaving branch 4 undisturbed and still operating.

For a more detailed explanation of creating and cross-connecting MJU blocks and cascading MJU blocks, see the command: **SCON,RATE,MPTM,MJU,MA**

Actions when Branches are Disconnected

When a branch of an MJU block is disconnected from a subrate circuit, the Unassigned Multiplexer Channel (UMC) code is sent towards the facility. The CMI (Control Mode Idle, 1111 1110) code is sent upstream from the disconnected branch.

Identification of MJU Trees

Each MJU tree is identified by the facility terminating NPC, channel, and if applicable the subrate circuit number that is the master control leg for the MJU tree. All commands that cross-connect or disconnect any channels to MJU blocks within that tree and all commands that create an additional MJU block or delete one or more MJU blocks identify the MJU tree by refering to the master control leg. The master control leg follows the **MPTM** keyword in the command.

Note on NPC 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 Section. The messages below 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 section for this information. On DACS II ISX, only sequential NPC numbers in 3-digit form are used.

Note: In PDS, when NPC number and channel number are specified together, the NPC number must be of fixed length; that is, for a three digit NPC number the NPC number must always be specified as a three digit number with leading zeros if necessary, and a four digit NPC number must always be specified as a four digit number with leading zeros if necessary.

Note on Channel Numbering

Channels in NPCs that terminate T1 facilities are numbered from 001 through 024. However, channels in SLC 96 or SLC Series 5 carriers have a more complex channel numbering scheme that is documented in the Introduction part of this Section. (Only DACS II supports SLC 96 or SLC 5.) The user should also note that channel 24 in a T1 provisioned with T1DM framing cannot be used because it is reserved for framing.

Note on Subrate Circuit Numbering

Individual subrate circuits within a DS0B multiplex are referred to by subrate circuit number. The table below shows the range of subrate circuit numbers for the three different types of DS0B channels.

DS0B Type	Subrate Circuit Number Range	Maximum Rate of Circuit
20-channel	01 through 20	2.4 kbit/s
10-channel	01 through 10	4.8 kbit/s
5-channel	01 through 05	19.2 kbit/s

Note: 5-channel DS0Bs are normally used for either 9.6 kbit/s or 19.2 kbit/s circuits. For a 19.2 kbit/s circuit, only circuit number 02 and 04 are allowed. 19.2 kbit/s circuits occupy two positions within the 5-channel DS0B multiplex. 19.2 kbit/s circuit number 02 occupies multiplex position 02 and 03. 19.2 kbit/s circuit number 04 occupies multiplex position 04 and 05.

DS0A channels have only one subrate circuit that is "stuffed" to fill out a 64 kbit/s channel. The subrate circuit number for a DS0A channel is 01. This subrate circuit number need not be specified in the commands referring to a DS0A channel.

Command

[I.94431]

```
DSPC:[FRM xy,SEQ ww]:<p_npc>:SDIS:[RATE rr,]MPTM <f_npc>ddd[/ff],\
MJU ssss,<branch>[,<branch>][,<branch>][,<branch>]!
```

Completion Message

[O.94431]

```
M hh:mm:ss xy,ww n[vv] DSPC <p_npc> SDIS RATE rr \
MPTM <f_npc>ddd/ff  4 LN MSG:
MJU ssss <branch> [<branch> ][<branch> ][<branch>]
NEW MJU ssss  MA {tttt,u|MPTM} s  BR1 <data> s  BR2 <data> s
                                  BR3 <data> s  BR4 <data> s \
[OOS]  COMPL
```

Denial Message

[O.94431.01]

```
M hh:mm:ss xy,ww n[vv] DSPC <p_npc> SDIS[ RATE rr] \
MPTM <f_npc>ddd/ff  3 LN MSG:
MJU ssss <branch> [<branch> ][<branch> ][<branch> ]
<explanation of error> DNY
```

Autonomous Message

Not applicable.

Explanation Of Parameters

SDIS - Disconnect subrate circuits from the branches of an MJU block
This definition of SDIS depends on the presence of the MPTM keyword in the command string. The subrate circuits may be either DS0A circuits or subrate circuits within DS0B circuits.

MPTM - Multipoint master

<f_npc>ddd[/ff]
- Master control leg termination

where:

<f_npc>	Number of facility terminating NPC that contains the master control leg
ddd	Channel number on that facility terminating NPC that contains the master control leg
ff	Subrate circuit number in that channel, if the channel is a DS0B circuit

The master control leg termination must be specified exactly as specified in previous cross-connect commands for this MJU tree.

MJU - Multipoint Junction Unit block

ssss - MJU block addressed by this command (0001 through 9999)

MA - Master

tttt - MJU block number (0001 through 9999)

u - Branch number (1 through 4)

The keyword MA plus the value for **tttt** and **u** are given in the completion message to identify the MJU block to which this MJU block is connected.

branch
- Branch number and termination for that branch

branch = BRi[<t_npc>jjj[/ll]]

where:

i	Number of branch (1 through 4)
<t_npc>	Number of facility terminating NPC connected to branch
jjj	Channel number on that facility terminating NPC
ll	Subrate circuit number in that channel (optional if DS0A channel)

An individual command may have up to four branch fields that are to be disconnected. The **i** designation in BRi specifies the branch number for a connection. The NPC number, channel number, and subrate circuit number need not be specified, but if they are specified they are checked for correctness

data - Data

The data fields refer to the connection data associated with the four branch legs of MJU ssss. Each branch data field can take one of four forms, depending on whether the branch is unassigned, cross-connected to an external facility termination, or cross-connected to a cascaded MJU control leg, or cross-connected to another subrate application circuit pack.

data	*Explanation*
000000/00	For unassigned branches
<t_npc>jjj/ll	For branches connected to external facility terminations
M**JU nnnn**	For branches connected to another MJU with number nnnn (0002 through 9999)

s - Termination state of the MJU control leg or branch

Variable **s** contained in the MA and branch data indicates the terminate and leave status of each MJU connection. The "TO" direction is defined as the direction facing the MJU

s	*Explanation*
R	RELEASED. Neither side is terminated
F	FROM side is terminated
T	TO side is terminated
B	BOTH sides are terminated

RATE - Rate

rr - Subrate circuit transmission rate (24, 48, 96, 19 or 56)

rr	*rate in kb/s*
24	2.4
48	4.8
96	9.6
19	19.2
56	56

The value **rr** specifies the transmission rate of the subrate circuit that is being cross-connected to the MJU block. All subrate circuits connected to the master control leg and all the branches of an MJU tree must have the same rate. The RATE field is optional. If the customer specifies RATE, it will be checked. If a discrepancy is found, the command will be denied.

00S - Out of Service
If the disconnected facilities are associated with one or more out-of-service NPCs, then the OOS keyword appears in the output message. In this case, the user should note that the Unassigned Multiplexer Channel (UMC) code may not be inserted towards the facilities of the disconnected circuits until they are restored to service.

Explanation of Error

BRi IS CONNECTED TO A DOWNSTREAM MJU
BRi IS NOT CONNECTED AS SPECIFIED
BRi IS SPECIFIED MORE THAN ONCE
CHANNEL <f_npc>ddd/ff IS CONNECTED BUT NOT AS
MULTIPOINT MASTER LEG
CHANNEL <f_npc>ddd/ff IS SPECIFIED MORE THAN ONCE
CHANNEL <t_npc>ddd IS A PARITY CHANNEL
INVALID SUBRATE CIRCUIT NUMBER FOR CHANNEL <f_npc>ddd
MJU ssss DOES NOT EXIST IN THE CIRCUIT
MUST POINT TO LOWER CHANNEL WHEN LOOPING TEST ACCESS
CHANNELS
NPC <t_npc> IS NOT VALID
SPECIFIED RATE DOES NOT MATCH EXISTING CIRCUIT RATE
SUBRATE CIRCUIT NUMBER MUST BE SPECIFIED FOR DS0B
CHANNEL <f_npc>ddd
BRANCH NUMBER i IS OUT OF RANGE
CHANNEL ddd IS OUT OF RANGE FOR NPC TYPE SPECIFIED
RANGE OF CHANNELS NOT ALLOWED IN THIS COMMAND
SD411 PREFIX NOT ALLOWED FOR THIS COMMAND
SUBRATE CIRCUIT NUMBER ff IS OUT OF RANGE FOR DS0B
CHANNEL <f_npc>ddd
BRi IS UNASSIGNED
CHANNEL <f_npc>ddd/ff IS NOT ASSIGNED
INITIALIZATION OF APPLICATION IS IN PROGRESS, RETRY
COMMAND LATER
CHANNEL <f_npc>ddd IS UNDER TEST
CHANNEL <t_npc>ddd IS NOT SUBRATE ESTABLISHED TO THIS
TG193
NPC IS BEING ROLLED
SUBRATE APPLICATION FAILED

DSPC,SDIS,RATE,MPTM,MJU,ALL

SUBRATE MULTIPOINT DELETION OF MJU BLOCKS

Explanation Of Command

Deletion of Multipoint Junction Unit (MJU) Blocks

This command performs a cascaded MJU block disconnection and deletion. The **MJU ssss** field identifies the place to begin the disconnection and deletion. **MJU ssss** as well as any MJU blocks cascaded from it will be disconnected and deleted. The MJU block number, **ssss**, must be the same number that was specified to create the MJU block using the **SCON** or **SCNT** command. If only branches are to be disconnected from an MJU block without deleting the MJU block itself, then the command I.94431 should be used.

This command has a limit on the number of blocks that may be disconnected and deleted in a single command invocation. This limit is 12 MJU blocks.

For a more detailed explanation of creating and cross-connecting MJU blocks and cascading MJU blocks see the command: **SCON,RATE,MPTM,MJU,MA** (I.94411).

Actions when MJU Blocks are Disconnected and Deleted

When one or more cascaded MJU blocks are disconnected from a subrate circuit, the Unassigned Multiplexer Channel (UMC, 0001 1000) code is sent downstream towards the facility of all subrate circuits disconnected from branches of MJU blocks. The CMI (Control Mode Idle, 1111 1110) code is sent upstream on the disconnected branch that had been connected to the control leg of the MJU block to which the command pointed.

Identification of MJU Trees

Each MJU tree is identified by the facility terminating NPC, channel, and if applicable the subrate circuit number that is the master control leg for the MJU tree. All commands that cross-connect or disconnect any channels to MJU blocks within that tree and all commands that create an additional MJU block or delete one or more MJU blocks identify the MJU tree by refering to the master control leg. The master control leg follows the **MPTM** keyword in the command.

Note on NPC 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 Section. The messages below 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 section for this information. On DACS II ISX, only sequential NPC numbers in 3-digit form are used.

Note: In PDS, when NPC number and channel number are specified together, the NPC number must be of fixed length; that is, for a three digit NPC number the NPC number must always be specified as a three digit number with leading zeros if necessary, and a four digit NPC number must always be specified as a four digit number with leading zeros if necessary.

Note on Channel Numbering

Channels in NPCs that terminate T1 facilities are numbered from 001 through 024. However, channels in SLC 96 or SLC Series 5 carriers have a more complex channel numbering scheme that is documented in the Introduction part of this Section. (Only DACS II supports SLC 96 or SLC 5.) The user should also note that channel 24 in a T1 provisioned with T1DM framing cannot be used because it is reserved for framing.

Note on Subrate Circuit Numbering

Individual subrate circuits within a DS0B multiplex are referred to by subrate circuit number. The table below shows the range of subrate circuit numbers for the three different types of DS0B channels.

DS0B Type	Subrate Circuit Number Range	Maximum Rate of Circuit
20-channel	01 through 20	2.4 kbit/s
10-channel	01 through 10	4.8 kbit/s
5-channel	01 through 05	19.2 kbit/s

Note: 5-channel DS0Bs are normally used for either 9.6 kbit/s or 19.2 kbit/s circuits. For a 19.2 kbit/s circuit, only circuit number 02 and 04 are allowed. 19.2 kbit/s circuits occupy two positions within the 5-channel DS0B multiplex. 19.2 kbit/s circuit number 02 occupies multiplex position 02 and 03. 19.2 kbit/s circuit number 04 occupies multiplex position 04 and 05.

DS0A channels have only one subrate circuit that is "stuffed" to fill out a 64 kbit/s channel. The subrate circuit number for a DS0A channel is 01. This subrate circuit number need not be specified in the commands referring to a DS0A channel.

Command

[I.94441]

```
DSPC:[FRM xy,SEQ ww]:<p_npc>:SDIS:[RATE rr,]MPTM <f_npc>ddd[/ff],\
MJU ssss[,ALL]!
```

Completion Message

[O.94441]

Single Output Message Case:

```
M hh:mm:ss xy,ww n[vv] DSPC <p_npc> SDIS RATE rr  e LN MSG:
MPTM <f_npc>ddd/ff MJU ssss[ ALL]
OLD MJU ssss  MA {tttt,u|MPTM} s  BR1 <data> s  BR2 <data> s
                                  BR3 <data> s  BR4 <data> s
                                                        .
                                                        .
                                                        .
[OLD MJU vvvv  MA wwww,x s  BR1 <data> s  BR2 <data> s]
[                           BR3 <data> s  BR4 <data> s]
                                                        .
                                                        .
                                                        .
NEW MJU tttt  MA {yyyy,z|MPTM} s  BR1 <data> s  BR2 <data> s
                                  BR3 <data> s  BR4 <data> s\
[ OOS] COMPL
```

Multiple Output Message Case:

```
M hh:mm:ss xy,ww n[vv] DSPC <p_npc> SDIS RATE rr  e LN MSG:
MPTM <f_npc>ddd/ff MJU ssss[ ALL]
OLD MJU ssss  MA {tttt,u|MPTM} s  BR1 <data> s  BR2 <data> s
                                  BR3 <data> s  BR4 <data> s
                                                        .
                                                        .
                                                        .
<Line 1 for an additional disconnected OLD MJU block>
<Line 2 for an additional disconnected OLD MJU block>  EOM

M hh:mm:ss xy,ww n[vv] DSPC <p_npc> SDIS RATE rr  e LN MSG:
MPTM <f_npc>ddd/ff MJU ssss[ ALL]
OLD MJU vvvv  MA wwww,x s  BR1 <data> s  BR2 <data> s
                           BR3 <data> s  BR4 <data> s
                                                        .
                                                        .
                                                        .
NEW MJU tttt  MA {yyyy,z|MPTM} s  BR1 <data> s  BR2 <data> s
                                  BR3 <data> s  BR4 <data> s\
[ OOS] COMPL
```

Denial Message

[O.94441.01]

```
M hh:mm:ss xy,ww n[vv] DSPC <p_npc> SDIS[ RATE rr]  e LN MSG:
MPTM <f_npc>ddd/ff MJU ssss[ ALL]
[OLD MJU ssss  MA {tttt,u|MPTM} s  BR1 <data> s  BR2 <data> s]
[                                  BR3 <data> s  BR4 <data> s]
<explanation of error> DNY
```

Autonomous Message

Not applicable.

Explanation Of Parameters

SDIS - Disconnect MJU block(s) and delete it/them (also see the ALL keyword description) This definition of SDIS depends on the presence of the MPTM keyword in the command string. The subrate circuits may be either DS0A circuits or subrate circuits within DS0B circuits.

MPTM - Multipoint master

The MPTM keyword also appears in place of the MA keyword in the output message, if and only if MJU **ssss** was MJU 0001, because the control leg for MJU 0001 is also the master control leg for the MJU tree.

<f_npc>ddd[/ff]
- Master control leg termination

where:

<f_npc>	Number of facility terminating NPC that contains the master control leg
ddd	Channel number on that facility terminating NPC that contains the master control leg
ff	Subrate circuit number in that channel, if the channel is a DS0B circuit

The master control leg termination must be specified exactly as specified in previous cross-connect commands for this MJU tree.

MJU - Multipoint Junction Unit block

ssss - MJU block addressed by this command (0001 through 9999)

The output message differentiates between OLD and NEW MJU blocks. The OLD section lists all the disconnected MJUs and branches associated with each one. This includes the branch data for MJU **ssss**, as well as the data for up to twenty additional MJUs that may have been cascaded from MJU **ssss** and its associated downstream connections. The NEW section lists the connection data for the MJU block immediately upstream **after** the disconnection of the control leg of MJU **ssss**. If the disconnected MJU **ssss** is MJU 0001, the NEW MJU fields are filled with zeros, indicating that no MJU blocks remain in the circuit.

ALL - All

If ALL is not specified, all branches of MJU block **ssss** must be previously disconnected. Then, MJU block **ssss** and its control leg only will be disconnected.

If ALL is specified, then MJU block **ssss**, its control leg, and all other MJU blocks and their branches directly or indirectly connected to the branches of MJU block **ssss** will be disconnected.

MA - Master

tttt - MJU block number (0001 through 9999)

u - Branch number (1 through 4)

The keyword MA plus the value for **tttt** and **u** are given in the completion message to identify the MJU block that MJU block **ssss** had been connected to.

vvvv - Number of a particular MJU block that has been disconnected, i.e., one of the OLD MJU blocks

wwww - Number of MJU block from which MJU block **vvvv** was cascaded

x - Branch number of MJU block **wwww** that had been connected to MJU block **vvvv**

tttt - The number of the MJU block the first MJU block that has been disconnected (MJU **ssss**) had been connected to. This is called the NEW MJU block.

yyyy - Number of MJU block from which MJU block **tttt** is cascaded

z - Branch number of MJU block **yyyy** that is connected to MJU block **tttt** .sp

data - Data

The data fields refer to the connection data associated with the four branch legs of a particular MJU block. Each branch data field can take one of four forms, depending on whether the branch is unassigned, cross-connected to an external facility termination, or cross-connected to a cascaded MJU control leg, or cross-connected to another subrate application circuit pack.

data	*Explanation*
000000/00	For unassigned branches
<t_npc>jjj/ll	For branches connected to external facility terminations
MJU nnnn	For branches connected to another MJU with number nnnn (0002 through 9999)

s - Termination state of the MJU control leg or branch

Variable **s** contained in the MA and branch data indicates the terminate and leave status of each MJU connection. The "TO" direction is defined as the direction facing the MJU

s	*Explanation*
R	RELEASED. Neither side is terminated
F	FROM side is terminated
T	TO side is terminated
B	BOTH sides are terminated

RATE - Rate

rr - Subrate circuit transmission rate (24, 48, 96, 19 or 56)

rr	*rate in kb/s*
24	2.4
48	4.8
96	9.6
19	19.2
56	56

The value **rr** specifies the transmission rate of the subrate circuit that is being cross-connected to the MJU block. All subrate circuits connected to the master control leg and all the branches of an MJU tree must have the same rate. The RATE field is optional. If the customer specifies RATE, it will be checked. If a discrepancy is found, the command will be denied.

OOS - Out of Service
If the disconnected facilities are associated with one or more out-of-service NPCs, then the OOS keyword appears in the output message. In this case, the user should note that the Unassigned Multiplexer Channel (UMC) code may not be inserted towards the facilities of the disconnected circuits until they are restored to service.

Explanation of Error

CHANNEL <f_npc>ddd/ff IS CONNECTED BUT NOT AS MULTIPOINT MASTER LEG
CHANNEL <t_npc>ddd IS A PARITY CHANNEL
CONNECTED BRANCHES ARE PRESENT AND THE ALL KEYWORD IS NOT SPECIFIED
MJU ssss DOES NOT EXIST IN THE CIRCUIT
NPC <t_npc> IS NOT VALID
RATE <rate> IS INVALID
SPECIFIED RATE DOES NOT MATCH EXISTING CIRCUIT RATE
ATTEMPTING TO DELETE MORE THAN 12 MJU BLOCKS
CHANNEL ddd IS OUT OF RANGE FOR NPC TYPE SPECIFIED
SD411 PREFIX NOT ALLOWED FOR THIS COMMAND
SUBRATE CIRCUIT NUMBER ff IS OUT OF RANGE FOR DS0B CHANNEL <f_npc>ddd
CHANNEL <f_npc>ddd/ff IS NOT ASSIGNED
INITIALIZATION OF APPLICATION IS IN PROGRESS, RETRY COMMAND LATER
CHANNEL <f_npc>ddd IS UNDER TEST
CHANNEL <t_npc>ddd IS NOT SUBRATE ESTABLISHED TO THIS TG193
NPC IS BEING ROLLED
SUBRATE APPLICATION FAILED

DSPC,SECH,TO,DS0A,DS0B,SEC,PEC,PCH

SUBRATE ESTABLISH CHANNEL

Explanation Of Command

This command connects a channel (or a range of channels) in a facility terminating NPC to the DDS Subrate & Multipoint Junction Unit (MJU) application on the DSP application circuit pack. This command also supports connections between DS0A circuits on two application cards and it supports the connection of DS0A circuits on DDS Subrate applications with X.57 circuits on X.50/X.57 International subrate applications. Application to application connections are described in greater detail below.

Once connected to the application, the signal in the channel and/or its subrate circuits may be processed by the application as follows:

1. DS0A channels may be cross-connected to MJU trees or to other subrate circuits.
2. DS0A channels of 2.4, 4.8, and 9.6 kbit/s rate may be error corrected using the majority vote algorithm.
3. DS0A channels of 19.2 and 56 kbit/s rate with associated parity data may be error corrected using that parity data.
4. DS0B circuits may be demultiplexed and its subrate circuits cross-connected to other subrate circuits, DS0A channels, or MJU trees.
5. DS0B circuits may be error corrected before being demultiplexed if they have an associated parity channel.
6. All DS0A and DS0B circuits may be connected to a pair of channels in a test port.

The application will deny this command if an attempt is made to establish a DS0B channel on channel 24 of a DS1 provisioned with the T1DM framing format.

This command is used to establish one of seven types of channels as follows:

1. A DS0B channel capable of multiplexing 5, 10, or 20 subrate circuits without error correction.
2. A DS0A channel (at any rate) without error correction.
3. A DS0A channel with majority vote error correction.
4. A 19.2 kbit/s DS0A channel with parity error correction.
5. A 56-kb/s channel with associated parity channel error correction. (This type of error correction is also commonly referred to as "56-kb/s dataport" error correction.)
6. A DS0B channel capable of multiplexing 5, 10, or 20 subrate circuits with an associated parity channel error correction.

When a channel is established, it cannot be already established, cross-connected by DACS II or DACS II ISX, nor under test access. All channels within a specified range are established with the same parameters.

NOTE:
For user convenience, an alphabetical "O" or a numerical "0" can be typed for the zero in DS0.

DS0B Channels Without Error Correction

A DS0B channel is established by specifying a digroup and channel and the **DS0B nn** field.

The **SEC**, **PEC**, or **PCH** fields must not be present for this type of channel.

DS0A Channels Without Error Correction

A DS0A channel without error correction is established by specifying a digroup and channel and **DS0A rr**.

Again, the **SEC**, **PEC**, or **PCH** keywords must not be present.

NOTE:
The Subrate & MJU application does not detect the rate of this type of channel, and cross-connection is allowed to any other Subrate channel. The user must ensure that the signal rate is compatible with the intended cross-connection.

For example, if a DS0A channel with an actual rate of 4.8 kb/s is established, a cross-connection to a 10-channel or 20-channel multiplexer is allowed, but only the connection to the 10-channel multiplexer will provide error-free transmission.

DS0A Channels With Majority Vote Error Correction

A subrate DS0A channel with majority vote error correction is established by specifying the **DS0A** keyword with an **rr** value of 24, 48, or 96, and the **SEC** keyword. Subrate error correction performs a majority vote among the repeated bytes inherent in the byte-stuffed subrate DS0A signal to determine the corrected data. An **rr** value of 19 or 56 is not allowed, and the **PEC** or **PCH** keyword must not be present in specifying this type of channel.

19.2 kbit/s Channels With Error Correction

A 19.2 kbit/s channel with parity channel error correction is established by specifying the **DS0A** keyword with an **rr** value of 19, and the **PEC** keyword. Also, use of the **PEC** keyword is only allowed if the **rr** value is 19.

56 kbit/s Channels With Error Correction

A 56-kb/s channel with parity channel error correction is established by specifying the **DS0A** keyword with an **rr** value of 56, and the **PCH** keyword. This command has the effect of establishing two channels, one for carrying the subrate data and one for carrying parity error correction information. If no parity channel number (**ppp**) is specified, the parity channel is assigned automatically to the next higher numbered channel from the data channel (**ddd + 1**). Due to the need to assign parity channels, range provisioning of 56 kbit/s channels with error correction is not allowed. Also, use of the **PCH** keyword when the **rr** value is less than 56 is not allowed.

WARNING:
The parity channel must be on the same NPC as the channel it is associated with. This command enforces this rule. However, the user must not separately ROLL a parity channel to a different NPC without also doing a ROLL on the associated data channel to the same NPC. For the same reason the user must not do a ROLL for a data channel that is associated with a parity channel without also doing a ROLL to the same NPC for the parity channel.

DS0B Channels With Error Correction

A DS0B channel that also has parity channel error correction performed on it is established by specifying the **DS0B nn** and **PCH** keywords. As above, the **nn** value determines the type of multiplexer, and the **PCH** keyword assigns a parity channel number **ppp** or defaults to **ddd + 1**. Also, range provisioning of this type of channel is not allowed. In addition, the warning against a separate ROLL for parity or data channel, explained above for 56 kbit/s DS0A channels, also applies.

Connections between Applications

DS0A channels may be connected from one DDS Subrate application to another DDS Subrate application or even to an X.57 channel on an X.50 international subrate application. This is useful for a number of reasons:

1. Two DS0B channels may be demultiplexed on two separate DDS subrate applications respectively and it is desired to connect one of the subrate (DS0A) circuits in the first DS0B with another subrate (DS0A) circuit in the second DS0B. An application connection between the two applications solves this problem.
2. It may be desirable to extend an MJU tree from one DDS Subrate and MJU application to another DDS Subrate and MJU application, because there is no more room on the first application card. An application to application connection solves this problem by connecting a branch on the first MJU tree with the master leg of a new MJU tree on the second application card.
3. If a DACS II or DACS II ISX performs a gateway function between circuits based on the North American standard and circuits based on the International standard, then it may be useful to connect DS0A circuits that have been demultipexed from a DS0B circuit on a DDS Subrate application with an X.57 circuit that has been demultiplexed from an X.50 circuit on an X.50 application.

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 **UTL::QRY,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.

DS0A channels of rate 56 kbit/s should not have an associated parity channel in order to be connected between two DDS Subrate applications.

Actions taken when Channel is Established

The following actions are taken when a channel is established:

1. If the channel is a DS0B channel, the appropriate framing pattern is sent towards the facility.
2. The UMC pattern (F0011000, where F is the framing bit if DS0B channel) is sent towards the facility. (UMC stands for Unassigned Multiplexer Channel Code.)
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 (00011010). 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.

Note on NPC 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 Section. The messages below 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 section for this information. On DACS II ISX, only sequential NPC numbers in 3-digit form are used.

Note: In PDS, when NPC number and channel number are specified together, the NPC number must be of fixed length; that is, for a three digit NPC number the NPC number must always be specified as a three digit number with leading zeros if necessary, and a four digit NPC number must always be specified as a four digit number with leading zeros if necessary.

Note on Channel Numbering

Channels in NPCs that terminate T1 facilities are numbered from 001 through 024. However, channels in SLC 96 or SLC Series 5 carriers have a more complex channel numbering scheme that is documented in the Introduction part of this Section. (Only DACS II supports SLC 96 or SLC 5.) The user should also note that channel 24 in a T1 provisioned with T1DM framing cannot be used because it is reserved for framing.

CAUTION:
The user should limit the number of subrate channels established to a digroup using D4-type framing. When the UMC is present on too many channels, it simulates a yellow alarm. A limit of 10 channels is safe for a Lucent Technologies (AT&T) D-bank.

NOTE:
When all 24 channels of an NPC using D4 superframe are established as DS0B channels, a yellow CGA can be declared for the NPC, even though there is no failure, if either of the following conditions exists:

1. The DS1 signal is looped at the DSX-1 and the mux-out-of-sync (MUX) code is transmitted on all channels.
2. The far end is transmitting the MUX code on all 24 channels.

When all 24 channels are receiving MUX, the D4 superframe yellow alarm signal is simulated, thus causing the CGA to be declared.

Command

Input command to establish DS0A or DS0B channels:

[I.94311]
```
DSPC:[FRM xy,SEQ ww]:<p_npc>:SECH:\
TO <t_npc>ddd[-eee],{DS0A rr|DS0B nn}[,{SEC|PEC|PCH[ ppp]}]!
```

Completion Message

Output message for DS0A and DS0B channels:

[O.94311]
```
M hh:mm:ss xy,ww n[vv] DSPC <p_npc> SECH <t_npc>ddd[-eee] \
{DS0A rr|DS0BA nn}[ SEC|PEC|PCH ppp}]COMPL
```

Denial Message

Error output message for DS0A and DS0B channels:

[O.94311.01]
M hh:mm:ss xy,ww n[vv] DSPC <p_npc> SECH <t_npc>ddd[-eee] 3 LN MSG: {DS0A rr|DS0B nn}[{SEC|PEC|PCH[ppp]}][qqq]
<explanation of error> DNY

Autonomous Message

Not applicable.

Explanation Of Parameters

SECH:TO
- Establish (cross-connect) channel to subrate application

<t_npc>
- The number of the facility terminating NPC

ddd - Channel number on facility terminating NPC

eee - Channel number for end of range specified.

DS0A - Digital signal 0A

rr - DS0A channel rate (24, 48, 96, 19, or 56)

The established channel is a DS0A type, that is, a single subrate signal at rate **rr**.

DS0B - Digital signal 0B

nn - Number of subrate channels in the DS0B (05, 10, or 20)

The established channel is connected to a subrate multiplexer capable of multiplexing **nn** subrate circuits. If **nn** is equal to 20, up to twenty 2.4 kbit/s subrate circuits can be multiplexed. If **nn** is equal to 10, up to ten 4.8 kbit/s circuits (or 2.4 kbit/s circuits in stuffed mode) can be multiplexed. If **nn** is equal to 5, up to five 9.6 kbit/s circuits (or 2.4 or 4.8 kbit/s circuits in stuffed mode) can be multiplexed.

SEC - Subrate error correction

Subrate majority vote error correction is performed on the established channel. **SEC** can only be used together with DS0A channels with a rate of 2.4, 4.8, or 9.6 kbit/s.

PEC - Parity error correction for 19.2 kbit/s DS0A channel

PCH - Parity channel

Parity error correction is performed on this channel. **PCH** can only be used together with a DS0A channel with a rate of 56 kbit/s or a DS0B channel.

The **SEC** and **PCH** fields are present in the output only if specified in the input command.

ppp - Parity channel number

Specifies the associated parity channel number. If not specified in the input command, this number defaults to the data channel number + 1 (**ddd + 1**).

qqq - Channel number involved in the denial (**ddd** through **eee**)

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.

Explanation of Error

NPC <t_npc> IS NOT EQUIPPED
CHANNEL <f_npc>ddd, PCH ERROR CORRECTION ONLY ALLOWED WITH RATE 56
CHANNEL <f_npc>ddd, PEC ERROR CORRECTION AND DS0B NOT ALLOWED
CHANNEL <f_npc>ddd, PEC ERROR CORRECTION ONLY ALLOWED WITH RATE 19
CHANNEL <f_npc>ddd, SR ERROR CORRECTION AND DS0B NOT ALLOWED
CHANNEL <f_npc>ddd, SR ERROR CORRECTION AND RATE 19 NOT ALLOWED
CHANNEL <f_npc>ddd, SR ERROR CORRECTION AND RATE 56 NOT ALLOWED
NPC <t_npc> IS NOT VALID
NUMBER OF SUBRATE CIRCUITS ff IS INVALID
RATE <rate> IS INVALID
CHANNEL ddd IS OUT OF RANGE FOR NPC TYPE SPECIFIED
RANGE OF CHANNELS AND PCH ERROR CORRECTION NOT ALLOWED
SD411 PREFIX NOT ALLOWED FOR THIS COMMAND

ddd-eee IS AN INVALID RANGE OF CHANNELS
SPECIFIED CHANNEL IS ALREADY ASSIGNED
CONNECTION EXCEEDS REMAINING CAPACITY
INITIALIZATION OF APPLICATION IS IN PROGRESS, RETRY
COMMAND LATER
NPC <t_npc> IS OUT-OF-SERVICE
NPC <f_npc> IS FAILED
NPC IS BEING ROLLED
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.

DSPC,STST,MON,TO,MJU,TP

CREATE SUBRATE TEST ACCESS CONNECTION IN MONITOR MODE FOR MJU TREES

Explanation Of Command

This command is used to create a test access connection for the master control leg or one of the branches of a Multipoint Junction Unit (MJU) tree. If this command applies to a branch, it will create a test access connection regardless of whether that branch is cross-connected or not. Test access channels may not be applied to branches that are connected to control legs of cascaded MJU blocks. (For test access of subrate cross-connections not involving MJU trees, see command I.94211.)

This command does not change the terminated or released state of the circuit. Also see command I.94231.

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.

If the test access point specified is connected to an MJU branch that is not cross-connected, the output message will contain the keyword **UNMAPPED**. In this case, the upper test access channel is connected to the branch and the lower test access channel is not connected.

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.

Note on NPC 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 Section. The messages below 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 section for this information. On DACS II ISX, only sequential NPC numbers in 3-digit form are used.

Note: In PDS, when NPC number and channel number are specified together, the NPC number must be of fixed length; that is, for a three digit NPC number the NPC number must always be specified as a three digit number with leading zeros if necessary, and a four digit NPC number must always be specified as a four digit number with leading zeros if necessary.

Note on Channel Numbering

Channels in NPCs that terminate T1 facilities are numbered from 001 through 024. However, channels in SLC 96 or SLC Series 5 carriers have a more complex channel numbering scheme that is documented in the Introduction part of this Section. (Only DACS II supports SLC 96 or SLC 5.) The user should also note that channel 24 in a T1 provisioned with T1DM framing cannot be used because it is reserved for framing.

Note on Subrate Circuit Numbering

Individual subrate circuits within a DS0B multiplex are referred to by subrate circuit number. The table below shows the range of subrate circuit numbers for the three different types of DS0B channels.

DS0B Type	Subrate Circuit Number Range	Maximum Rate of Circuit
20-channel	01 through 20	2.4 kbit/s
10-channel	01 through 10	4.8 kbit/s
5-channel	01 through 05	19.2 kbit/s

Note: 5-channel DS0Bs are normally used for either 9.6 kbit/s or 19.2 kbit/s circuits. For a 19.2 kbit/s circuit, only circuit number 02 and 04 are allowed. 19.2 kbit/s circuits occupy two positions within the 5-channel DS0B multiplex. 19.2 kbit/s circuit number 02 occupies multiplex position 02 and 03. 19.2 kbit/s circuit number 04 occupies multiplex position 04 and 05.

DS0A channels have only one subrate circuit that is "stuffed" to fill out a 64 kbit/s channel. The subrate circuit number for a DS0A channel is 01. This subrate circuit number need not be specified in the commands referring to a DS0A channel.

Command

[I.94261]

```
DSPC:[FRM xy,SEQ ww]:<p_npc>:STST:MON,TO <t_npc>ddd[/ff],\
MJU ssss,[BRi,]TP kk!
```

Completion Message

[O.94261]

```
M hh:mm:ss xy,ww n[vv] DSPC <p_npc> STST MON MPTM <t_npc>ddd[/ff]\
 MJU ssss[ BRi]  2 LN MSG:
RATE rr TP kk [ UNMAPPED] CGA (ftp) TLA s COMPL
```

Denial Message

[O.94261.01]

```
M hh:mm:ss xy,ww n[vv] DSPC <p_npc> STST MON MPTM \
<t_npc>ddd[/ff]  3 LN MSG:
MJU ssss[ BRi] TP kk
<explanation of error>  DNY
```

Autonomous Message

Not applicable.

Explanation Of Parameters

STST - Create test access connection in monitor mode

TP - Test port

<t_npc>
- Number of facility terminating NPC containing master control leg of MJU tree

ddd - Channel number on that facility terminating NPC containing master control leg

ff - Number of subrate circuit in that channel that is the master control leg of the MJU tree

The termination <t_npc>ddd[/ff] is the master control leg of the MJU tree. If an optional branch number has not been specified in the input command, then the upper test access channel in the test port (TO side) is connected to the control leg of the master MJU block (0001) and the lower test access channel faces the facility termination.

If the test access channels have already been connected to the circuit to be tested, the external facility termination must not be specified or the command will be denied. (Use command entry I.94221.)

If the master control leg is a nonmultiplexed (DS0A) channel, the subrate circuit number is optional and need not be specified. If it is specified, it must be 01.

kk - Number of test port carrying the test access channels

MON - Monitor mode

MJU - Multipoint Junction Unit block

ssss - Number of MJU block subjected to test access

If ssss is equal to 0001, then the master control leg or one of the branches may be subjected to test access. If ssss indicates an MJU block other than 0001, a branch must be specified in the command, since the control leg of a cascaded MJU block may not be subjected to test access.

BR - Branch of an MJU block

i - Number of branch (1 through 4) of the specified MJU block

When a branch number is specified, that branch is connected to the specified test access channel. The upper test access channel in the test port (TO side) will face the branch and the lower test access channel in the test port (FROM side) will face downstream towards the facility termination.

RATE - Circuit rate
rr - Circuit rate value (24, 48, 96, 19, or 56) for MJU tree

rr	*rate in kbit/s*
24	2.4
48	4.8
96	9.6
19	19.2
56	56

CGA - Carrier group alarm

ftp - CGA status

ftp defines the alarm status of the FROM, TO, and test access facilities, respectively. In the case where the TO side of the test access faces the master leg of a multipoint circuit, the corresponding TO CGA status is always listed as "0"; i.e., no alarm. If the test access is associated with a branch of a multipoint circuit, in which case the TO side faces upstream towards an MJU, the CGA status of the circuit's master leg facility is listed in the TO field.

f - FROM CGA state

f	*Explanation*
F	FROM facility in CGA
0	FROM facility is not in CGA

t - TO CGA state

t	*Explanation*
T	TO facility in CGA
0	TO facility is not in CGA

p - Test access NPC CGA state

p	*Explanation*
P	Test access NPC in CGA
0	Test access NPC is not in CGA

TLA - Terminate and leave activate

s - Termination state of the access point

s indicates the terminate and leave status of the test access point. s states whether the access point is terminated in the FROM, TO, or BOTH, directions, or whether all terminations are released.

s	*Explanation*
R	RELEASED. Neither side is terminated
B	BOTH sides of cross-connect are terminated
F	FROM side of cross-connect is terminated
T	TO side of cross-connect is terminated

UNMAPPED
- Unmapped

UNMAPPED appears in the output message if the branch subjected to test access is not cross-connected. When the test access point is unmapped, no signal is connected to the lower test access channel.

Explanation of Error

THE FROM SIDE NPC <f_npc> IS NOT EQUIPPED
THE SPECIFIED TEST PORT <kk> IS NOT EQUIPPED
THE TO SIDE NPC <t_npc> IS NOT EQUIPPED
BRANCH IS CONNECTED TO CONTROL LEG OF CASCADED MJU BLOCK
BRANCH MUST BE SPECIFIED FOR MJU ssss
MJU ssss DOES NOT EXIST IN THE CIRCUIT
NPC <t_npc> IS NOT VALID
THE SPECIFIED FACILITY TERMINATION IS NOT A MASTER CONTROL LEG
BRANCH NUMBER i IS OUT OF RANGE
CHANNEL ddd IS OUT OF RANGE FOR NPC TYPE SPECIFIED
SD411 PREFIX NOT ALLOWED FOR THIS COMMAND
SUBRATE CIRCUIT NUMBER ff IS OUT OF RANGE FOR DS0A CHANNEL <f_npc>ddd
SUBRATE CIRCUIT NUMBER ff IS OUT OF RANGE FOR DS0B CHANNEL <f_npc>ddd
FROM SIDE NPC <f_npc> IS OUT-OF-SERVICE
INITIALIZATION OF APPLICATION IS IN PROGRESS, RETRY COMMAND LATER
THE TEST PORT <kk> IS OUT-OF-SERVICE
TO SIDE NPC <t_npc> IS OUT-OF-SERVICE
SPECIFIED ACCESS POINT IS ALREADY UNDER TEST
SPECIFIED TEST PORT IS ALREADY BEING USED
SPECIFIED TEST PORT IS ALREADY IN MONITOR MODE
THE SPECIFIED ACCESS POINT IS NOT SUBRATE ESTABLISHED TO THIS TG193
FROM SIDE NPC <f_npc> IS FAILED
NPC IS BEING ROLLED
SUBRATE APPLICATION FAILED
TEST PORT <kk> IS FAILED
THE SPECIFIED TEST PORT IS NOT CONNECTED TO THIS TG193
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

DSPC,STST,MON,TO,TP

CREATE SUBRATE TEST ACCESS CONNECTION IN MONITOR MODE

Explanation Of Command

This command requests the creation of a test access connection in monitor mode for a subrate circuit not involving an MJU block. (See command I.94261 for subrate test access involving an MJU block.) In addition, this command can be used to create test access for an entire DS0B that carries subrate circuits. The circuit may be in the terminated or released state before being placed under test access. This command does not change the terminated or released state of the circuit. Also see command I.94231.

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 access 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 **DS0B** 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 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 Section. The messages below 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 section for this information. On DACS II ISX, only sequential NPC numbers in 3-digit form are used.

Note: In PDS, when NPC number and channel number are specified together, the NPC number must be of fixed length; that is, for a three digit NPC number the NPC number must always be specified as a three digit number with leading zeros if necessary, and a four digit NPC number must always be specified as a four digit number with leading zeros if necessary.

Note on Channel Numbering

Channels in NPCs that terminate T1 facilities are numbered from 001 through 024. However, channels in SLC 96 or SLC Series 5 carriers have a more complex channel numbering scheme that is documented in the Introduction part of this Section. (Only DACS II supports SLC 96 or SLC 5.) The user should also note that channel 24 in a T1 provisioned with T1DM framing cannot be used because it is reserved for framing.

Note on Subrate Circuit Numbering

Individual subrate circuits within a DS0B multiplex are referred to by subrate circuit number. The table below shows the range of subrate circuit numbers for the three different types of DS0B channels.

DS0B Type	Subrate Circuit Number Range	Maximum Rate of Circuit
20-channel	01 through 20	2.4 kbit/s
10-channel	01 through 10	4.8 kbit/s
5-channel	01 through 05	19.2 kbit/s

Note: 5-channel DS0Bs are normally used for either 9.6 kbit/s or 19.2 kbit/s circuits. For a 19.2 kbit/s circuit, only circuit number 02 and 04 are allowed. 19.2 kbit/s circuits occupy two positions within the 5-channel DS0B multiplex. 19.2 kbit/s circuit number 02 occupies multiplex position 02 and 03. 19.2 kbit/s circuit number 04 occupies multiplex position 04 and 05.

DS0A channels have only one subrate circuit that is "stuffed" to fill out a 64 kbit/s channel. The subrate circuit number for a DS0A channel is 01. This subrate circuit number need not be specified in the commands referring to a DS0A channel.

Command

[I.94211]
DSPC:[FRM xy,SEQ ww]:<p_npc>:STST:MON,TO <t_npc>ddd[/ff],TP kk!

Completion Message

For DS0A circuits or subrate circuits multiplexed within a DS0B

[O.94211]
```
M hh:mm:ss xy,ww n[vv] DSPC <p_npc> STST MON <t_npc>ddd[/ff]\
  2 LN MSG:
RATE rr TP kk [ UNMAPPED| LOOPED] CGA (ftp) TLA s COMPL
```

For entire 64 kbit/s DS0B circuits

[O.94212]
```
M hh:mm:ss xy,ww n[vv] DSPC <p_npc> STST MON <t_npc>ddd\
  2 LN MSG:
DS0B nn TP kk CGA (ftp) TLA s COMPL
```

Denial Message

[O.94211.01]
```
M hh:mm:ss xy,ww n[vv] DSPC <p_npc> STST MON <t_npc>ddd[/ff]\
  3 LN MSG:
TP kk [RATE rr]
<explanation of error>  DNY
```

Autonomous Message

Not applicable.

Explanation Of Parameters

STST - Create test access connection in monitor mode

TP - Test Port

<t_npc>
- Number of "TO" facility terminating NPC containing circuit to be accessed

ddd - Channel number on that facility terminating NPC

ff - Number of subrate circuit in that channel to be accessed for testing

The termination **<t_npc>ddd/ff** is the TO side and is connected to the upper test access channel in the test port. If the test access channels have already been connected to the circuit to be tested, the external facility termination must not be specified or the command will be denied. (Use command I.94221.)

Variable **<t_npc>ddd/ff** specifies the NPC, channel, and subrate circuit number to be connected to the test port. If a multiplexed DS0B channel is tested, the subrate circuit number **ff** is omitted. To test a single subrate circuit in the DS0B channel, the subrate circuit number field must be specified. When the tested channel is a nonmultiplexed (DS0A) channel, the subrate circuit number is entered as **01**, or if the user prefers, the subrate circuit number can be omitted and the system will default the value to 01.

kk - Number of test port carrying the pair of test access channels

MON - Monitor mode

RATE - Circuit rate
rr - Circuit rate value (24, 48, 96, 19, or 56)

rr indicates the 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 a DS0A established channel, the establish channel rate is listed. If the access is to an unconnected DS0B channel, the listed rate is the maximum subrate supported by the DS0B.

CGA - Carrier group alarm

ftp - CGA status, defines the alarm status of the FROM, TO, and test access facilities, respectively.

f - FROM CGA state

f	*Explanation*
F	FROM facility in CGA
0	FROM facility is not in CGA

t - TO CGA state

t	*Explanation*
T	TO facility in CGA
0	TO facility is not in CGA

p - Test access NPC CGA state

p	*Explanation*
P	Test access NPC in CGA
0	Test access NPC is not in CGA

DS0B - Subrate multiplexer channel

nn - Number of subrate channels (05, 10, or 20)

TLA - Terminate and leave activate

s - Termination state of the access point

s indicates the terminate and leave status of the test access point. s states whether the access point is terminated in the FROM, TO, or BOTH, directions, or whether all terminations are released.

s	*Explanation*
R	RELEASED. Neither side is terminated
B	BOTH sides of the cross-connect are terminated
F	FROM side is terminated
T	TO side is terminated

UNMAPPED
- Unmapped

UNMAPPED appears in the output message if the subrate circuit under test access is 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 subrate circuit that is looped on itself.

Explanation of Error

THE FROM SIDE NPC <f_npc> IS NOT EQUIPPED
THE SPECIFIED TEST PORT <kk> IS NOT EQUIPPED
THE TO SIDE NPC <t_npc> IS NOT EQUIPPED
NPC <t_npc> IS NOT VALID
SPECIFIED FACILITY TERMINATION IS CONNECTED TO AN MJU
THE SPECIFIED ACCESS POINT IS A PARITY CHANNEL
THE SPECIFIED SUBRATE CIRCUIT NUMBER ff IS NOT VALID
CHANNEL ddd IS OUT OF RANGE FOR NPC TYPE SPECIFIED
SD411 PREFIX NOT ALLOWED FOR THIS COMMAND
SUBRATE CIRCUIT NUMBER ff IS OUT OF RANGE FOR DS0A
CHANNEL <f_npc>ddd
SUBRATE CIRCUIT NUMBER ff IS OUT OF RANGE FOR DS0B
CHANNEL <f_npc>ddd

FROM SIDE NPC <f_npc> IS OUT-OF-SERVICE
INITIALIZATION OF APPLICATION IS IN PROGRESS, RETRY COMMAND LATER
THE TEST PORT <kk> IS OUT-OF-SERVICE
TO SIDE NPC <t_npc> IS OUT-OF-SERVICE
SPECIFIED ACCESS POINT IS ALREADY UNDER TEST
SPECIFIED TEST PORT IS ALREADY BEING USED
SPECIFIED TEST PORT IS ALREADY IN MONITOR MODE
THE SPECIFIED ACCESS POINT IS NOT SUBRATE ESTABLISHED TO THIS TG193
FROM SIDE NPC <f_npc> IS FAILED
NPC IS BEING ROLLED
SUBRATE APPLICATION FAILED
TEST PORT <kk> APPEARS NOT TO BE CONNECTED TO APPLICATION
TEST PORT <kk> IS FAILED
THE SPECIFIED TEST PORT IS NOT CONNECTED TO THIS TG193
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

DSPC,STST,SPL,MON,TP

CHANGE SUBRATE TEST ACCESS TO SPLIT OR MONITOR MODE

Explanation Of Command

This command changes a test access connection previously started in monitor mode to split mode. Additionally, if the test access connection was in split mode, this command can put it back into monitor mode. Test access connections for subrate circuits, entire DS0B circuits, or DS0A circuits cross-connected to the master control leg or one of the branches of an MJU tree can be put into split mode or changed from split mode to monitor mode. In split mode, data transmission in the tested circuit is interrupted.

CAUTION: Split test access to a **DS0B** channel carrying multiple subrate circuits can potentially cause loss of service to as many subrate circuits as are occupying that DS0B channel. Split test access to the master control leg of an MJU tree will interrupt the operation of the entire MJU tree.

The user must specify the test port number that was used in a previous test access command (I.94211 or I.94261) creating the test access connection in monitor mode.

Note on NPC 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 Section. The messages below 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 section for this information. On DACS II ISX, only sequential NPC numbers in 3-digit form are used.

Note: In PDS, when NPC number and channel number are specified together, the NPC number must be of fixed length; that is, for a three digit NPC number the NPC number must always be specified as a three digit number with leading zeros if necessary, and a four digit NPC number must always be specified as a four digit number with leading zeros if necessary.

Note on Channel Numbering

Channels in NPCs that terminate T1 facilities are numbered from 001 through 024. However, channels in SLC 96 or SLC Series 5 carriers have a more complex channel numbering scheme that is documented in the Introduction part of this Section. (Only DACS II supports SLC 96 or SLC 5.) The user should also note that channel 24 in a T1 provisioned with T1DM framing cannot be used because it is reserved for framing.

Note on Subrate Circuit Numbering

Individual subrate circuits within a DS0B multiplex are referred to by subrate circuit number. The table below shows the range of subrate circuit numbers for the three different types of DS0B channels.

DS0B Type	Subrate Circuit Number Range	Maximum Rate of Circuit
20-channel	01 through 20	2.4 kbit/s
10-channel	01 through 10	4.8 kbit/s
5-channel	01 through 05	19.2 kbit/s

Note: 5-channel DS0Bs are normally used for either 9.6 kbit/s or 19.2 kbit/s circuits. For a 19.2 kbit/s circuit, only circuit number 02 and 04 are allowed. 19.2 kbit/s circuits occupy two positions within the 5-channel DS0B multiplex. 19.2 kbit/s circuit number 02 occupies multiplex position 02 and 03. 19.2 kbit/s circuit number 04 occupies multiplex position 04 and 05.

DS0A channels have only one subrate circuit that is "stuffed" to fill out a 64 kbit/s channel. The subrate circuit number for a DS0A channel is 01. This subrate circuit number need not be specified in the commands referring to a DS0A channel.

Command

[I.94221]
DSPC:[FRM xy,SEQ ww]:<p_npc>:STST:{SPL|MON},TP kk!

Completion Message

For DS0A channels or subrate circuits multiplexed within a DS0B channel:

[O.94221]

```
M hh:mm:ss xy,ww n[vv] DSPC <p_npc> STST {SPL|MON} RATE rr TP kk\
  2 LN MSG:
<t_npc>ddd/ff [ UNMAPPED| LOOPED] CGA (ftp) TLA s COMPL
```

For entire 64 kbit/s DS0B circuits:

[O.94222]

```
M hh:mm:ss xy,ww n[vv] DSPC <p_npc> STST {SPL|MON} DS0B nn TP kk\
  2 LN MSG:
<t_npc>ddd CGA (ftp) TLA s COMPL
```

For cross-connection of master leg of MJU tree or branch of MJU block:

[O.94223]

```
M hh:mm:ss xy,ww n[vv] DSPC <p_npc> STST {SPL|MON} RATE rr TP kk\
  2 LN MSG:
MPTM <t_npc>ddd/ff MJU ssss[ BRi][ UNMAPPED] CGA (ftp) TLA s COMPL
```

Denial Message

[O.94221.01]

```
M hh:mm:ss xy,ww n[vv] DSPC <p_npc> STST {SPL|MON} TP kk  2 LN MSG:
<explanation of error>  DNY
```

Autonomous Message

Not applicable.

Explanation Of Parameters

STST - Change mode of test access connection from monitor to split or from split to monitor mode

TP - Test port

kk - Number of test port carrying the test access channels

SPL - Split mode

MON - Monitor mode

RATE - Circuit rate

rr - Circuit rate value (24, 48, 96, 19, or 56)

rr	*rate in kbit/s*
24	2.4
48	4.8
96	9.6
19	19.2
56	56

rr indicates the 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 or the rate of the MJU tree. 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 a DS0A established channel, the establish channel rate is listed. If the access is to an unconnected DS0B channel, the listed rate is the maximum subrate supported by the DS0B. If the access is to an unconnected MJU branch, the listed rate is the rate of the MJU tree.

<t_npc>ddd/ff
- External facility termination for the TO circuit of a non-MJU cross-connection

where:

<t_npc>	Number of facility terminating NPC
ddd	Channel number on that facility terminating NPC
ff	Subrate circuit number in that channel, if channel is a DS0B circuit. 01 if DS0A circuit.

MPTM <t_npc>ddd/ff
- External facility termination identifying master control leg

where:

MPTM	indicates multipoint master control leg
<t_npc>	Number of facility terminating NPC that contains the master control leg
ddd	Channel number on that facility terminating NPC that contains the master control leg
ff	Subrate circuit number in that channel, if channel is a DS0B circuit. 01 if DS0A circuit.

MJU - Multipoint Junction Unit (MJU) block subjected to test access

ssss - Block number of that MJU block

BR - Indicates that a branch of the specified MJU block is connected to the test port

i - Number of branch (1 through 4) that is connected to the test port

If BR appears in the output message, then the upper test access channel in the test port (TO side) faces the branch and the lower test access channel (FROM side) faces downstream towards the facility termination, unless the branch is not cross-connected (unmapped), in which case the lower test access channel remains unconnected.

CGA - Carrier Group Alarm

ftp - CGA status

ftp defines the alarm status of the FROM, TO, and test access facilities, respectively. In the case where the TO side of the test access faces the master leg of MJU block 0001, the corresponding TO CGA status is always listed as "0"; i.e., no alarm. If the test access is associated with a branch of an MJU tree, in which case the TO side faces upstream towards the MJU, the CGA status of the circuit's master leg facility is listed in the TO field.

f - FROM CGA state

f	*Explanation*
F	FROM facility in CGA
0	FROM facility is not in CGA

t - TO CGA state

t	*Explanation*
T	TO facility in CGA
0	TO facility is not in CGA

p - Test access NPC CGA state

p	*Explanation*
P	Test access NPC in CGA
0	Test access NPC is not in CGA

DS0B - Subrate multiplexer channel

nn - Number of subrate channels (05, 10, or 20)

TLA - Terminate and leave activate

s - Termination state of the access point

s indicates the terminate and leave status of the test access point. s states whether the access point is terminated in the FROM, TO, or BOTH, directions, or whether all terminations are released.

s	*Explanation*
R	RELEASED. Neither side is terminated
B	BOTH sides of cross-connect are terminated
F	FROM side of cross-connect is terminated
T	TO side of cross-connect is terminated

UNMAPPED

- Unmapped

UNMAPPED appears in the output message if the subrate circuit under test access is not cross-connected or if the MJU branch under test access is not cross-connected. When the test access point is unmapped, no signal is connected to the lower test access channel.

LOOPED

- Looped

Appears when a DS0A circuit or a subrate circuit within a DS0B circuit is looped on itself. In this case, only the upper test access channel is connected to the circuit. The lower test access channel remains unconnected.

Explanation of Error

THE FROM SIDE NPC <f_npc> IS NOT EQUIPPED
THE SPECIFIED TEST PORT <kk> IS NOT EQUIPPED
THE TO SIDE NPC <t_npc> IS NOT EQUIPPED
SD411 PREFIX NOT ALLOWED FOR THIS COMMAND
SPECIFIED TEST PORT IS NOT ASSIGNED
FROM SIDE NPC <f_npc> IS OUT-OF-SERVICE
INITIALIZATION OF APPLICATION IS IN PROGRESS, RETRY COMMAND LATER
THE TEST PORT <kk> IS OUT-OF-SERVICE
TO SIDE NPC <t_npc> IS OUT-OF-SERVICE
SPECIFIED TEST PORT IS ALREADY IN MONITOR MODE
SPECIFIED TEST PORT IS ALREADY IN SPLIT MODE
FROM SIDE NPC <f_npc> IS FAILED
NPC IS BEING ROLLED
SUBRATE APPLICATION FAILED
TEST PORT <kk> IS FAILED
THE SPECIFIED TEST PORT IS NOT CONNECTED TO THIS TG193
TO SIDE NPC <t_npc> IS FAILED

DSPC,STST,TLA,TLR,F,T,B,TP

CHANGE TERMINATE AND LEAVE STATE OF CIRCUIT VIA 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. This command can only be used on subrate cross-connected circuits. It cannot be used for entire DS0B circuits that are under test access, nor can it be used for unmapped (not cross-connected) circuits nor circuits looped onto themselves. Both two-point subrate cross-connections and MJU subrate cross-connections may have their terminated or released state changed by this command.
Before using this command, the circuit must be connected to a test port and must be either in monitor mode or in split mode. See the STST command (I.94211, I.94261, or I.94221) on how to put subrate circuits into monitor or split test access mode.

If a subrate circuit is not under test access, it can be terminated or released (if previously terminated) by using the CHG command (I.94381).

CAUTION: UMC or CMI is inserted towards the direction that is terminated, potentially causing a loss of service. UMC is inserted in all cases except in the direction of the master control leg of an MJU tree, in which case CMI is inserted.

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,
TLA means Terminate and Leave Activate,
TLR means Terminate and Leave Release.

PRIOR STATE	REQUESTED CHANGE	NEW STATE	PRIOR STATE	REQUESTED CHANGE	NEW STATE
R	TLA F	F	R	TLR F	DNY
R	TLA T	T	R	TLR T	DNY
R	TLA B	B	R	TLR B	DNY
F	TLA F	DNY	F	TLR F	R
F	TLA T	B	F	TLR T	DNY
F	TLA B	B	F	TLR B	R
B	TLA F	DNY	B	TLR F	T
B	TLA T	DNY	B	TLR T	F
B	TLA B	DNY	B	TLR B	R
T	TLA T	DNY	T	TLR T	R
T	TLA F	B	T	TLR F	DNY
T	TLA B	B	T	TLR B	R

Note on TO and FROM direction

The TO and FROM directions are defined as follows:

1. If a subrate cross-connect between subrate de-multiplexers and multiplexers (this is called a two-point circuit) has been subjected to test access using command I.94211, then the TO direction is defined by the circuit number <t_npc>ddd[/ff] used in that command. The FROM direction is, of course, the subrate circuit that the TO subrate circuit had been cross-connected to.

   If the TO and FROM directions when setting up the test access connection is the reverse of the TO and FROM directions defined by a prior **`CHG:{TLA|TLR}`** **command,** then the TO and FROM directions of the test access command holds.

2. If the master control leg of an MJU tree has been subjected to test access using command I.94261, then the TO direction is towards MJU 0001 and the FROM direction is towards the facility termination of the master control leg. (Note that this convention is opposite to the convention used in command I.94381.)

3. If a branch of an MJU block has been subjected to test access using command I.94261, then the TO direction is towards the branch of the MJU block and the FROM direction is towards the facility termination of that branch. (Note that this convention is opposite to the convention used in command I.94381.)

Note on NPC 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 Section. The messages below 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 section for this information. On DACS II ISX, only sequential NPC numbers in 3-digit form are used.

Note: In PDS, when NPC number and channel number are specified together, the NPC number must be of fixed length; that is, for a three digit NPC number the NPC number must always be specified as a three digit number with leading zeros if necessary, and a four digit NPC number must always be specified as a four digit number with leading zeros if necessary.

Note on Channel Numbering

Channels in NPCs that terminate T1 facilities are numbered from 001 through 024. However, channels in SLC 96 or SLC Series 5 carriers have a more complex channel numbering scheme that is documented in the Introduction part of this Section. (Only DACS II supports SLC 96 or SLC 5.) The user should also note that channel 24 in a T1 provisioned with T1DM framing cannot be used because it is reserved for framing.

Note on Subrate Circuit Numbering

Individual subrate circuits within a DS0B multiplex are referred to by subrate circuit number. The table below shows the range of subrate circuit numbers for the three different types of DS0B channels.

DS0B Type	Subrate Circuit Number Range	Maximum Rate of Circuit
20-channel	01 through 20	2.4 kbit/s
10-channel	01 through 10	4.8 kbit/s
5-channel	01 through 05	19.2 kbit/s

Note: 5-channel DS0Bs are normally used for either 9.6 kbit/s or 19.2 kbit/s circuits. For a 19.2 kbit/s circuit, only circuit number 02 and 04 are allowed. 19.2 kbit/s circuits occupy two positions within the 5-channel DS0B multiplex. 19.2 kbit/s circuit number 02 occupies multiplex position 02 and 03. 19.2 kbit/s circuit number 04 occupies multiplex position 04 and 05.

DS0A channels have only one subrate circuit that is "stuffed" to fill out a 64 kbit/s channel. The subrate circuit number for a DS0A channel is 01. This subrate circuit number need not be specified in the commands referring to a DS0A channel.

Command

[I.94231]
DSPC:[FRM xy,SEQ ww]:<p_npc>:STST:{TLA|TLR} {F|T|B},TP kk!

Completion Message

USAGE: For standard (DS0A or subrate circuit within DS0B) access points:

[O.94231]
```
M hh:mm:ss xy,ww n[vv] DSPC <p_npc> STST {TLA|TLR} {F|T|B} \
<t_npc>ddd/ff  2 LN MSG:
RATE rr TP kk CGA (ftp) TLA s COMPL
```

USAGE: For access points specified in terms of an MJU and (optional) branch number:

[O.94232]
```
M hh:mm:ss xy,ww n[vv] DSPC <p_npc> STST {TLA|TLR} {F|T|B} \
MPTM <t_npc>ddd/ff MJU ssss[ BRi]  2 LN MSG:
RATE rr TP kk CGA(ftp) TLA s COMPL
```

Denial Message

[O.94231.01]
```
M hh:mm:ss xy,ww n[vv] DSPC <p_npc> STST {TLA|TLR} {F|T|B} TP\
 kk  2 LN MSG:
<explanation of error>  DNY
```

Autonomous Message

Not applicable.

Explanation Of Parameters

STST - Subrate test access command

TP - Test port

TLA - Terminate and leave activate

TLR - Release test point from terminate and leave state

s - Termination state of the access point

s indicates the terminate and leave status of the test access point. **s** states whether the access point is terminated in the FROM, TO, or BOTH directions, or whether all terminations are released. The user should note that unmapped or looped access points cannot be terminated.

s	*Explanation*
R	RELEASED. Neither side is terminated
B	BOTH sides of the cross-connect are terminated
F	FROM side is terminated
T	TO side is terminated

kk - Number of test port carrying the test access channels

<t_npc>ddd/ff
- External facility termination for the TO circuit of a non-MJU cross-connection

where:

<t_npc>	Number of facility terminating NPC
ddd	Channel number on that facility terminating NPC
ff	Subrate circuit number in that channel, if channel is a DS0B circuit. 01 if DS0A circuit.

MPTM <t_npc>ddd/ff
- External facility termination identifying master control leg

where:

MPTM	indicates multipoint master control leg
<t_npc>	Number of facility terminating NPC that contains the master control leg
ddd	Channel number on that facility terminating NPC that contains the master control leg
ff	Subrate circuit number in that channel, if channel is a DS0B circuit. 01 if DS0A circuit.

MJU - Multipoint junction unit block subject to test access

ssss - Block number of that MJU block (0001 through 9999)

BR - Branch

i - Branch number of MJU under test (1 through 4)

RATE - Circuit rate

rr - Circuit rate value (24, 48, 96, 19, or 56)

rr	*rate in kbit/s*
24	2.4
48	4.8
96	9.6
19	19.2
56	56

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

CGA - Carrier group alarm

ftp - CGA status

ftp defines the alarm status of the FROM, TO, and test access facilities, respectively. In the case where the TO side of the test access faces the master leg of MJU block 0001, the corresponding TO CGA status is always listed as "0"; i.e., no alarm. If the test access is associated with a branch of an MJU tree, in which case the TO side faces upstream towards the MJU, the CGA status of the circuit's master leg facility is listed in the TO field.

f - FROM CGA state

f	*Explanation*
F	FROM facility in CGA
0	FROM facility is not in CGA

t - TO CGA state

t	*Explanation*
T	TO facility in CGA
0	TO facility is not in CGA

p - Test access NPC CGA state

p	*Explanation*
P	Test access NPC in CGA
0	Test access NPC is not in CGA

Explanation of Error

THE FROM SIDE NPC <f_npc> IS NOT EQUIPPED
THE SPECIFIED TEST PORT <kk> IS NOT EQUIPPED
THE TO SIDE NPC <t_npc> IS NOT EQUIPPED
SD411 PREFIX NOT ALLOWED FOR THIS COMMAND
SPECIFIED TEST PORT IS NOT ASSIGNED
FROM SIDE NPC <f_npc> IS OUT-OF-SERVICE
INITIALIZATION OF APPLICATION IS IN PROGRESS, RETRY COMMAND LATER
THE TEST PORT <kk> IS OUT-OF-SERVICE
TO SIDE NPC <t_npc> IS OUT-OF-SERVICE
CIRCUIT IS ALREADY IN RELEASED STATE
CIRCUIT IS ALREADY IN TERMINATED STATE
FROM SIDE NPC <f_npc> IS FAILED
NPC IS BEING ROLLED
SUBRATE APPLICATION FAILED
TEST PORT <kk> IS FAILED
THE CIRCUIT UNDER TEST IS A 64K CHANNEL
THE CIRCUIT UNDER TEST IS LOOPED
THE CIRCUIT UNDER TEST IS UNMAPPED
THE SPECIFIED TEST PORT IS NOT CONNECTED TO THIS TG193
TO SIDE NPC <t_npc> IS FAILED

DSPC,STST,TPR,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 DDS Subrate and MJU 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.94251]
DSPC:[FRM xy,SEQ ww]:<p_npc>:STST:TPR,{ALL|LINKS}!

Completion Message

[O.94251]
M hh:mm:ss xy,ww n[vv] DSPC <p_npc> STST TPR {ALL|LINKS} COMPL

[O.94252]
M hh:mm:ss xy,ww n[vv] DSPC <p_npc> STST TPR LINKS 2 LN MSG:
NO SUBRATE TEST ACCESS CHANNELS WERE ACTIVE COMPL

[O.94253]
M hh:mm:ss xy,ww n[vv] DSPC <p_npc> STST TPR ALL 2 LN MSG:
NO SUBRATE TEST ACCESS CHANNELS WERE ACTIVE BY LINK COMPL

[O.94254]
M hh:mm:ss xy,ww n[vv] DSPC <p_npc> STST TPR {ALL|LINKS} 2 LN MSG:
ONE OR MORE SUBRATE TEST ACCESS CHANNELS COULD NOT BE RELEASED COMPL

Denial Message

Not applicable.

Autonomous Message

[O.94251]
M hh:mm:ss xy,ww n[vv] DSPC <p_npc> STST TPR ALL COMPL

[O.94254]
M hh:mm:ss xy,ww n[vv] DSPC <p_npc> STST TPR ALL 2 LN MSG:
ONE OR MORE SUBRATE TEST ACCESS CHANNELS COULD NOT BE RELEASED COMPL

Explanation Of Parameters

STST:TPR
- 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 Platform circuit pack running the DDS Subrate application to be released, regardless over which administrative link the test access connection had been initiated.

Explanation of Error

SD411 PREFIX NOT ALLOWED FOR THIS COMMAND
INITIALIZATION OF APPLICATION IS IN PROGRESS, RETRY COMMAND LATER
NPC IS BEING ROLLED
SUBRATE APPLICATION FAILED

DSPC,STST,TPR,TP

RELEASE CIRCUIT FROM SUBRATE TEST ACCESS

Explanation Of Command

This command releases a subrate circuit from test access and restores the circuit to released or terminated state. The output from this command depends upon whether the access point is a DS0A, DS0B, or MJU.

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 that termination state upon release from test access.

Note on NPC 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 Section. The messages below 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 section for this information. On DACS II ISX, only sequential NPC numbers in 3-digit form are used.

Note: In PDS, when NPC number and channel number are specified together, the NPC number must be of fixed length; that is, for a three digit NPC number the NPC number must always be specified as a three digit number with leading zeros if necessary, and a four digit NPC number must always be specified as a four digit number with leading zeros if necessary.

Note on Channel Numbering

Channels in NPCs that terminate T1 facilities are numbered from 001 through 024. However, channels in SLC 96 or SLC Series 5 carriers have a more complex channel numbering scheme that is documented in the Introduction part of this Section. (Only DACS II supports SLC 96 or SLC 5.) The user should also note that channel 24 in a T1 provisioned with T1DM framing cannot be used because it is reserved for framing.

Note on Subrate Circuit Numbering

Individual subrate circuits within a DS0B multiplex are referred to by subrate circuit number. The table below shows the range of subrate circuit numbers for the three different types of DS0B channels.

DS0B Type	Subrate Circuit Number Range	Maximum Rate of Circuit
20-channel	01 through 20	2.4 kbit/s
10-channel	01 through 10	4.8 kbit/s
5-channel	01 through 05	19.2 kbit/s

Note: 5-channel DS0Bs are normally used for either 9.6 kbit/s or 19.2 kbit/s circuits. For a 19.2 kbit/s circuit, only circuit number 02 and 04 are allowed. 19.2 kbit/s circuits occupy two positions within the 5-channel DS0B multiplex. 19.2 kbit/s circuit number 02 occupies multiplex position 02 and 03. 19.2 kbit/s circuit number 04 occupies multiplex position 04 and 05.

DS0A channels have only one subrate circuit that is "stuffed" to fill out a 64 kbit/s channel. The subrate circuit number for a DS0A channel is 01. This subrate circuit number need not be specified in the commands referring to a DS0A channel.

Command

[I.94241]

```
DSPC:[FRM xy,SEQ ww]:<p_npc>:STST:TPR,TP kk!
```

Completion Message

USAGE: For standard (DS0A or subrate circuit within DS0B) subrate test access points:

[O.94241]

```
M hh:mm:ss xy,ww n[vv] DSPC <p_npc> STST TPR <t_npc>ddd/ff RATE rr\
  2 LN MSG:
TP kk TLA s[ UNMAPPED|LOOPED][ OOS] COMPL
```

USAGE: For DS0B test access points:

[O.94242]
```
M hh:mm:ss xy,ww n[vv] DSPC <p_npc> STST TPR <t_npc>ddd DS0B nn\
  2 LN MSG:
TP kk TLA R[ OOS] COMPL
```

USAGE: For access points specified in terms of an MJU and (optional) branch number:

[O.94243]
```
M hh:mm:ss xy,ww n[vv] DSPC <p_npc> STST TPR MPTM <t_npc>ddd/ff\
  2 LN MSG:
RATE rr TP kk MJU ssss[ BRi] TLA s[ UNMAPPED][ OOS] COMPL
```

Denial Message

[O.94241.01]
```
M hh:mm:ss xy,ww n[vv] DSPC <p_npc> STST TPR TP kk  2 LN MSG:
<explanation of error>  DNY
```

Autonomous Message

Not applicable.

Explanation Of Parameters

STST:STP,TPR
- Disconnect test access connection

kk - Number of test port carrying the test access channels

<t_npc>ddd/ff
- External facility termination for the TO circuit of a non-MJU cross-connection

where:

<t_npc>	Number of facility terminating NPC for the FROM circuit
ddd	Channel number on that facility terminating NPC
ff	Subrate circuit number in that channel, if channel is a DS0B circuit. 01 if DS0A circuit.

MPTM <t_npc>ddd/ff
- External facility termination identifying master control leg

where:

MPTM	indicates multipoint master control leg
<t_npc>	Number of facility terminating NPC that contains the master control leg
ddd	Channel number on that facility terminating NPC that contains the master control leg
ff	Subrate circuit number in that channel, if channel is a DS0B circuit. 01 if DS0A circuit.

MJU - Multipoint junction unit block

ssss - Block number of MJU under test (0001 through 9999)

BR - Branch

i - Branch number of MJU under test (1 through 4)

RATE - Circuit rate

rr - Circuit rate value (24, 48, 96, 19, or 56)

rr	*rate in kbit/s*
24	2.4
48	4.8
96	9.6
19	19.2
56	56

rr indicates the 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 a DS0A established channel, the establish channel rate is listed. If the access is to an unconnected DS0B channel, the listed rate is the maximum subrate supported by the DS0B.

DS0B - Subrate channel containing multiple subrate circuits

nn - Number of subrate subrate channels (05, 10, or 20)

TLA - Terminate and leave status of circuit after being release from test access

s - Termination state of the access point

s indicates the terminate and leave status of the test access point. s states whether the access point is terminated in the FROM, TO, or BOTH directions, or whether all terminations are released.

s	*Explanation*
R	RELEASED. Neither side is terminated
B	BOTH sides of the cross-connect are terminated
F	FROM side is terminated
T	TO side is terminated

UNMAPPED
- Unmapped

UNMAPPED appears in the output message if the subrate circuit under test access is not cross-connected or if the MJU branch under test access is 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 subrate circuit that is looped on itself.

OOS - facility for the circuit being released from test access is out-of-service or the test access NPC is out-of-service.

Explanation of Error

SD411 PREFIX NOT ALLOWED FOR THIS COMMAND
SPECIFIED TEST PORT IS NOT ASSIGNED
INITIALIZATION OF APPLICATION IS IN PROGRESS, RETRY COMMAND LATER
CHANNEL <t_npc>ddd IS NOT SUBRATE ESTABLISHED TO THIS TG193
NPC IS BEING ROLLED
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

DSPC,UTL,QRY,ASTREAM,MPTM,ALL

UTILITY QUERY FOR ANTI-STREAMING FEATURE

Explanation Of Command

This command obtains information on the antistreaming feature for one or all MJU trees on a DSP Platform circuit pack running the DDS Subrate and MJU application. Specifically, this command retrieves the following information for an individual MJU tree or for all MJU trees on that circuit pack:

1. Whether the anti-streaming feature is active.
2. The anti-streaming time out value in seconds (if active).
3. The branch circuits that are currently turned off (looped back onto themselves), because they are streaming.

This command may also address a range of application circuit packs or all application circuit packs in the frame. Therefore, all anti-streaming information may be retrieved by a single command execution.

Note on NPC 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 Section. The messages below 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 section for this information. On DACS II ISX, only sequential NPC numbers in 3-digit form are used.

Note: In PDS, when NPC number and channel number are specified together, the NPC number must be of fixed length; that is, for a three digit NPC number the NPC number must always be specified as a three digit number with leading zeros if necessary, and a four digit NPC number must always be specified as a four digit number with leading zeros if necessary.

Note on Channel Numbering

Channels in NPCs that terminate T1 facilities are numbered from 001 through 024. However, channels in SLC 96 or SLC Series 5 carriers have a more complex channel numbering scheme that is documented in the Introduction part of this Section. (Only DACS II supports SLC 96 or SLC 5.) The user should also note that channel 24 in a T1 provisioned with T1DM framing cannot be used because it is reserved for framing.

Note on Subrate Circuit Numbering

Individual subrate circuits within a DS0B multiplex are referred to by subrate circuit number. The table below shows the range of subrate circuit numbers for the three different types of DS0B channels.

DS0B Type	Subrate Circuit Number Range	Maximum Rate of Circuit
20-channel	01 through 20	2.4 kbit/s
10-channel	01 through 10	4.8 kbit/s
5-channel	01 through 05	19.2 kbit/s

Note: 5-channel DS0Bs are normally used for either 9.6 kbit/s or 19.2 kbit/s circuits. For a 19.2 kbit/s circuit, only circuit number 02 and 04 are allowed. 19.2 kbit/s circuits occupy two positions within the 5-channel DS0B multiplex. 19.2 kbit/s circuit number 02 occupies multiplex position 02 and 03. 19.2 kbit/s circuit number 04 occupies multiplex position 04 and 05.

DS0A channels have only one subrate circuit that is "stuffed" to fill out a 64 kbit/s channel. The subrate circuit number for a DS0A channel is 01. This subrate circuit number need not be specified in the commands referring to a DS0A channel.

Command

[I.94171]

```
DSPC:[FRM xy,SEQ ww]:{<p_npc>|<p_npc>-<q_npc>|SD411}:\
UTL:QRY,ASTREAM,{MPTM <f_npc>ddd[/ff]|ALL}!
```

Completion Message

Output when no MJU trees are present:

[O.94171]
```
M hh:mm:ss xy,ww n[vv] DSPC <z_npc> \
UTL QRY ASTREAM {MPTM <f_npc>ddd[/ff]|ALL}  2 LN MSG:
NO MJU TREES PRESENT  COMPL
```

Output when single MJU tree is specified:

[O.94171]
```
M hh:mm:ss xy,ww n[vv] DSPC <z_npc> \
UTL QRY ASTREAM MPTM <f_npc>ddd[/ff] e LN MSG:
MPTM <f_npc>ddd/ff  {OFF|ss}
[MJU ssss BRi <b_npc>jjj/kk]
          .
          .
[MJU ssss BRi <b_npc>jjj/kk]  COMPL
```

Output when keyword ALL is used:

[O.94171]
```
M hh:mm:ss xy,ww n[vv] DSPC <z_npc> \
UTL QRY ASTREAM ALL  e LN MSG:
MPTM <f_npc>ddd/ff  {OFF|ss}
[MJU ssss BRi <b_npc>jjj/kk]
          .
          .
[MJU ssss BRi <b_npc>jjj/kk]  {EOM|COMPL}
          .
          .
          .
[M hh:mm:ss xy,ww n[vv] DSPC <z_npc> \
UTL QRY ASTREAM ALL  e LN MSG:]
[MPTM <f_npc>ddd/ff  {OFF|ss}]
[MJU ssss BRi <b_npc>jjj/kk]
          .
          .
[MJU ssss BRi <b_npc>jjj/kk  COMPL]
```

Denial Message

[O.94171.01]

```
M hh:mm:ss xy,ww n[vv] DSPC <z_npc> UTL QRY ASTREAM \
{MPTM <f_npc>ddd[/ff]|ALL}  2 LN MSG:
<explanation of error>   DNY
```

Autonomous Message

For the case when exactly one branch is streaming:

[O.94171]

```
I hh:mm:ss xy,ww  ALM DSPC <p_npc>  4 LN MSG
MPTM <f_npc>ddd/ff  ss
MJU ssss BRi <b_npc>jjj/kk
1 MJU BRANCH IS STREAMING  COMPL
```

For the case when more than one branch is streaming and the message refers to the last branch that started streaming:

[O.94171]

```
I hh:mm:ss xy,ww  ALM DSPC <p_npc>  4 LN MSG
MPTM <f_npc>ddd/ff  ss
MJU ssss BRi <b_npc>jjj/kk
n MJU BRANCHES ARE STREAMING  COMPL
```

Explanation Of Parameters

UTL:QRY,ASTREAM
- Query for MJU anti-streaming information

MPTM - Multipoint master, points to subrate circuit that identifies the MJU tree

<f_npc>
- Number of facility terminating NPC
  Carries the subrate circuit for the MJU master control leg

ddd - Channel on that NPC that carries that subrate circuit

ff - Number of subrate circuit for the master control leg on that channel
  This subrate circuit number has the value 01 for DS0A
  circuits and may be omitted for those DS0A circuits.

ALL - Information is to be obtained for all MJU trees on that circuit pack.

MJU - Multipoint Junction Unit block

ssss - number of MJU block

BRi - Branch i (1 through 4) on MJU block ssss

<b_npc>
- Number of facility terminating NPC that carries the subrate circuit for the streaming branch

jjj - Channel on that NPC

kk - Subrate circuit on that channel

e - Number of lines in message

OFF - Anti-streaming feature is off for this MJU tree

ss - Anti-streaming time-out value in seconds for this MJU tree

n - Number of branches that are currently streaming

Explanation of Error

CIRCUIT <f_npc>ddd/ff IS NOT A VALID MULTIPOINT MASTER LEG
NPC <t_npc> IS NOT VALID
CHANNEL ddd IS OUT OF RANGE FOR NPC TYPE SPECIFIED
SD411 PREFIX NOT ALLOWED FOR THIS COMMAND
INITIALIZATION OF APPLICATION IS IN PROGRESS, RETRY COMMAND LATER
NPC IS BEING ROLLED
SUBRATE APPLICATION FAILED

DSPC,UTL,QRY,CAPAC

UTILITY QUERY, CAPACITY

Explanation Of Command

This DDS subrate application command requests a list of how many circuits of a particular type may be added. The particular types are:

1. The number of DS0B or 19.2 kbit/s DS0A circuits that may be multiplexed and demultiplexed.
2. The number of Multipoint Junction Unit (MJU) blocks of the different rates that may be processed.
3. The number of parity error correction operations that may be done.
4. The number of majority vote error correction operations that may be done.

The number in each category is calculated as if the application circuit pack would be provisioned with additional operations of **only** that type. In other words, the user should interpret the output that there is capacity on the circuit pack for "x" DS0B circuits, or "y" parity error correction operations, or "z" majority vote error correction operations, or "a" 2.4 kbit/s MJU block operations, or "b" 4.8 kbit/s MJU block operations, etc., but **not** "x" + "y" + "z" + "a" + "b" + "c" + "d" + "e" operations together.

Note on NPC 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 Section. The messages below 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 section for this information. On DACS II ISX, only sequential NPC numbers in 3-digit form are used.

Note: In PDS, when NPC number and channel number are specified together, the NPC number must be of fixed length; that is, for a three digit NPC number the NPC number must always be specified as a three digit number with leading zeros if necessary, and a four digit NPC number must always be specified as a four digit number with leading zeros if necessary.

Command

[I.94181]

```
DSPC:[FRM xy,SEQ ww]:{<p_npc>|<p_npc>-<q_npc>|SD411}:UTL:QRY,CAPAC!
```

Completion Message

[O.94181]

```
M hh:mm:ss xy,ww n[vv] DSPC <z_npc> UTL QRY CAPAC   2 LN MSG:
DS0B x  PCH y  SEC z
MJU(24) a  MJU(48) b  MJU(96) c  MJU(19) d  MJU(56) e  COMPL
```

Denial Message

[O.94181.01]

```
M hh:mm:ss xy,ww n[vv] DSPC <z_npc> UTL QRY CAPAC   2 LN MSG:
<explanation of error> DNY
```

Autonomous Message

Not applicable.

Explanation Of Parameters

UTL:QRY,CAPAC
- Utility to show remaining capacity of application circuit pack

DS0B x
- Number of DS0B type or 19.2 kbits/ DS0A type multiplex and demultiplex operations

PCH y - Number of parity error correction operations for 56 kbit/s or DS0B circuits.

SEC z - Number of majority vote error correction operations for 2.4, 4.8, and/or 9.6 kbit/s circuits.

MJU(24) a - Number of 2.4 kbit/s MJU block processes

MJU(48) b - Number of 4.8 kbit/s MJU block processes

MJU(96) c - Number of 9.6 kbit/s MJU block processes

MJU(19) d - Number of 19.2 kbit/s MJU block processes

MJU(56) e - Number of 56 kbit/s MJU block processes

Explanation of Error

SD411 PREFIX NOT ALLOWED FOR THIS COMMAND
INITIALIZATION OF APPLICATION IS IN PROGRESS, RETRY COMMAND LATER
NPC IS BEING ROLLED
SUBRATE APPLICATION FAILED

DSPC,UTL,QRY,LOAD

UTILITY QUERY, LOAD

Explanation Of Command

This subrate application command requests resource allocation information for DSP Platform circuit packs that run the DDS subrate and multipoint junction unit 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.

Note on NPC 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 Section. The messages below 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 section for this information. On DACS II ISX, only sequential NPC numbers in 3-digit form are used.

Note: In PDS, when NPC number and channel number are specified together, the NPC number must be of fixed length; that is, for a three digit NPC number the NPC number must always be specified as a three digit number with leading zeros if necessary, and a four digit NPC number must always be specified as a four digit number with leading zeros if necessary.

Note on Channel Numbering

Channels in NPCs that terminate T1 facilities are numbered from 001 through 024. However, channels in SLC 96 or SLC Series 5 carriers have a more complex channel numbering scheme that is documented in the Introduction part of this Section. (Only DACS II supports SLC 96 or SLC 5.) The user should also note that channel 24 in a T1 provisioned with T1DM framing cannot be used because it is reserved for framing.

Command

[I.94141]

```
DSPC:[FRM xy,SEQ ww]:{<p_npc>|<p_npc>-<q_npc>|SD411}:UTL:QRY,LOAD!
```

Completion Message

[O.94141]

```
M hh:mm:ss xy,ww n[vv] DSPC <z_npc> UTL QRY LOAD   2 LN MSG:
TIME SLOTS FOR <z_npc>:  ALLOC DS0A/DS0B ttt  ALLOC TEST ACCESS uuu \
FREE vvv COMPL
```

Denial Message

[O.94141.01]

```
M hh:mm:ss xy,ww n[vv] DSPC <z_npc> UTL QRY LOAD   2 LN MSG:
<explanation of error> DNY
```

Autonomous Message

Not applicable.

Explanation Of Parameters

UTL:QRY,LOAD
- Obtain load information for DSP Platform circuit pack

<z_npc>
- NPC number of DSPP circuit pack to which data refers

ttt - Number of channels (time slots) that are allocated for subrate circuits

uuu - Number of channels (time slots) that are allocated for test access

vvv - Number of free channels (time slots) on circuit pack

DS0A/DS0B
- Defines the allocated channels as being used by DS0A or DS0B circuits

Explanation of Error

SD411 PREFIX NOT ALLOWED FOR THIS COMMAND
INITIALIZATION OF APPLICATION IS IN PROGRESS, RETRY COMMAND LATER
NPC IS BEING ROLLED
SUBRATE APPLICATION FAILED

DSPC,UTL,QRY,SCON,CH,TO

UTILITY QUERY FOR ALL SUBRATE CIRCUITS IN CHANNEL

Explanation Of Command

This command requests the FROM channel connectivity information for all subrate circuits in the established channel or range of established channels.

Only one subrate circuit will be reported for a DS0A channel.

In addition, the channel number of the subrate application circuit pack that the channel <t_npc>ddd is established (cross-connected) to is shown.

If the user would like a circuit trace for an MJU tree the command I.94131 should be considered.

Note on NPC 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 Section. The messages below 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 section for this information. On DACS II ISX, only sequential NPC numbers in 3-digit form are used.

Note: In PDS, when NPC number and channel number are specified together, the NPC number must be of fixed length; that is, for a three digit NPC number the NPC number must always be specified as a three digit number with leading zeros if necessary, and a four digit NPC number must always be specified as a four digit number with leading zeros if necessary.

Note on Channel Numbering

Channels in NPCs that terminate T1 facilities are numbered from 001 through 024. However, channels in SLC 96 or SLC Series 5 carriers have a more complex channel numbering scheme that is documented in the Introduction part of this Section. (Only DACS II supports SLC 96 or SLC 5.) The user should also note that channel 24 in a T1 provisioned with T1DM framing cannot be used because it is reserved for framing.

Note on Subrate Circuit Numbering

Individual subrate circuits within a DS0B multiplex are referred to by subrate circuit number. The table below shows the range of subrate circuit numbers for the three different types of DS0B channels.

DS0B Type	Subrate Circuit Number Range	Maximum Rate of Circuit
20-channel	01 through 20	2.4 kbit/s
10-channel	01 through 10	4.8 kbit/s
5-channel	01 through 05	19.2 kbit/s

Note: 5-channel DS0Bs are normally used for either 9.6 kbit/s or 19.2 kbit/s circuits. For a 19.2 kbit/s circuit, only circuit number 02 and 04 are allowed. 19.2 kbit/s circuits occupy two positions within the 5-channel DS0B multiplex. 19.2 kbit/s circuit number 02 occupies multiplex position 02 and 03. 19.2 kbit/s circuit number 04 occupies multiplex position 04 and 05.

DS0A channels have only one subrate circuit that is "stuffed" to fill out a 64 kbit/s channel. The subrate circuit number for a DS0A channel is 01. This subrate circuit number need not be specified in the commands referring to a DS0A channel.

Command

[I.94121]
```
DSPC:[FRM xy,SEQ ww]:{<p_npc>|<p_npc>-<q_npc>|SD411}:UTL:QRY,SCON,CH,\
TO <t_npc>ddd[-eee]!
```

Completion Message

For a DS0A channel

[O.94121]
```
M hh:mm:ss xy,ww n[vv] DSPC <z_npc> UTL QRY SCON CH <t_npc>hhh  \
2 LN MSG:
<from-inf>  SR CHANNEL ttt   {COMPL|EOM}
```

For a DS0B channel with 5 subrate circuits

[O.94121]
```
M hh:mm:ss xy,ww n[vv] DSPC <z_npc> UTL QRY SCON CH <t_npc>hhh  \
3 LN MSG:
<from-inf>  <from-inf>  <from-inf>  <from-inf>  <from-inf>
SR CHANNEL ttt  DS0B 05  {COMPL|EOM}
```

For a DS0B channel with 10 subrate circuits

[O.94121]
```
M hh:mm:ss xy,ww n[vv] DSPC <z_npc> UTL QRY SCON CH <t_npc>hhh  \
4 LN MSG:
<from-inf>  <from-inf>  <from-inf>  <from-inf>  <from-inf>
<from-inf>  <from-inf>  <from-inf>  <from-inf>  <from-inf>
SR CHANNEL ttt  DS0B 10  {COMPL|EOM}
```

For a DS0B channel with 20 subrate circuits

[O.94121]
```
M hh:mm:ss xy,ww n[vv] DSPC <z_npc> UTL QRY SCON CH <t_npc>hhh  \
6 LN MSG:
<from-inf>  <from-inf>  <from-inf>  <from-inf>  <from-inf>
<from-inf>  <from-inf>  <from-inf>  <from-inf>  <from-inf>
<from-inf>  <from-inf>  <from-inf>  <from-inf>  <from-inf>
<from-inf>  <from-inf>  <from-inf>  <from-inf>  <from-inf>
SR CHANNEL ttt  DS0B 20  {COMPL|EOM}
```

Denial Message

[O.94121.01]

```
M hh:mm:ss xy,ww n[vv] DSPC <z_npc> UTL QRY SCON CH <t_npc>ddd[-eee]\
  2 LN MSG:
<explanation of error>   DNY
```

Autonomous Message

Not applicable.

Explanation Of Parameters

UTL:QRY,SCON,CH,TO
- Query for all FROM circuits connected to a particular channel.

<t_npc>
- Number of NPC that has the channel(s) the user wants to display all the subrate circuits for

ddd - Channel number on that facility terminating NPC

eee - Highest channel number in range of channel numbers if entered in command

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), which is on <z_npc>.

DS0B - This is a DS0B channel

nn - The number of subrate circuits in the DS0B multiplex

nn	*explanation*
05	accommodates five 9.6 or two 19.2 kbit/s subrate circuits plus one 9.6 kbit/s circuit
10	accommodates ten 4.8 kbit/s subrate circuits
20	accommodates twenty 2.4 kbit/s subrate circuits

from-inf

- information on FROM circuit, which has one of the following forms:

where:

SECOND 19.2	Second component of a 19.2 kbit/s circuit
IDLE	This subrate circuit is idle
MPT MA	From circuit is a multipoint master control leg
MPT BR	From circuit is an MJU branch
NOT ESTABLISHD	Channel is not established
PCH ddd	This is a parity channel for channel ddd (only appears for 56 kbit/s or DS0B circuits)

<f_npc>jjj/ll/rr

where:

<f_npc>	FROM circuit facility terminating NPC
jjj	FROM channel in that NPC
ll	FROM subrate circuit in that channel
rr	Subrate circuit rate value (24, 48, 96, 19, 56)

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
56	stands for 56 kbit/s

Explanation of Error

NPC <t_npc> IS NOT VALID
CHANNEL ddd IS OUT OF RANGE FOR NPC TYPE SPECIFIED
SD411 PREFIX NOT ALLOWED FOR THIS COMMAND
ddd-eee IS AN INVALID RANGE OF CHANNELS
INITIALIZATION OF APPLICATION IS IN PROGRESS, RETRY COMMAND LATER
SPECIFIED CHANNEL IS A TEST ACCESS POINT
NPC IS BEING ROLLED
SUBRATE APPLICATION FAILED

DSPC,UTL,QRY,SECH,TO

UTILITY QUERY FOR TYPE OF ESTABLISHED CHANNELS

Explanation Of Command

This command requests the type of channel and the error correction method that is being used with a channel. The following are the possible types and the associated error correction methods that may be output by the command:

1. The channel may not be established. No error correction will be displayed for this case, because there can be no error correction. The command does not deny this case, rather it simply states that a particular channel is not established.
2. The channel may be a DS0A channel of rate 2.4, 4.8, 9.6, 19.2, or 56 kbit/s. For the rates of 2.4, 4.8 and 9.6 kbit/s, majority vote error correction may be displayed in the error correction column of the output by displaying the keyword SEC. For the 19.2 kbit/s case, the error correction column may indicate parity error correction with the keyword PEC. For 56 kbit/s circuits, the error correction column may indicate parity error correction with the PCH keyword as well as the identity of the parity channel itself.
3. The channel may be a DS0B channel of 05, 10, or 20 subrate circuit capacity. Parity error correction may be indicated with the PCH keyword in the error correction column as well as the number of the error correction channel.
4. The channel may be a parity error correction channel in which case the keyword DCH must appear in the error correction column indicating the data channel that corresponds to it.
5. The channel may be a connection to another application, in which case the channel number shown is the pseudo channel number and not the actual channel number used by the other application. (Channels to another application are always DS0A channels.)

The actual channel number used by the application is typically not useful, but if you would like to know what is, use command UTL::QRY,APPL (I.51201) on DACS II or DACS II ISX to find the relationship between pseudo channels and actual channels used on the application.

6. It may not be very useful, but this command will look at its own channels, i.e. the NPC parameter points to the application NPC itself. In this case only test port connections will appear; this is because the command is looking for channels connected to the application, but only test port connections fall into that category, because they are initially started as connections between two channels on the application; thus one channel will always point to the other application channel that it was originally connected to, before it was split by the connected test port.

   All other channels on an application that are connected to facility terminating NPC channels or channels on other applications are, of course, not connected to the application itself, and therefore, are shown as unconnected. (Remember, this command asks the question whether a channel is connected to the application itself and not whether one of its own channels is connected to some other channel.)

7. The channel may be subrate test port channel, in which case the error correction column must indicate no error correction.

Note on NPC 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 Section. The messages below 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 section for this information. On DACS II ISX, only sequential NPC numbers in 3-digit form are used.

Note: In PDS, when NPC number and channel number are specified together, the NPC number must be of fixed length; that is, for a three digit NPC number the NPC number must always be specified as a three digit number with leading zeros if necessary, and a four digit NPC number must always be specified as a four digit number with leading zeros if necessary.

Note on Channel Numbering

Channels in NPCs that terminate T1 facilities are numbered from 001 through 024. However, channels in SLC 96 or SLC Series 5 carriers have a more complex channel numbering scheme that is documented in the Introduction part of this Section. (Only DACS II supports SLC 96 or SLC 5.) The user should also note that channel 24 in a T1 provisioned with T1DM framing cannot be used because it is reserved for framing.

Note on Subrate Circuit Numbering

Individual subrate circuits within a DS0B multiplex are referred to by subrate circuit number. The table below shows the range of subrate circuit numbers for the three different types of DS0B channels.

DS0B Type	Subrate Circuit Number Range	Maximum Rate of Circuit
20-channel	01 through 20	2.4 kbit/s
10-channel	01 through 10	4.8 kbit/s
5-channel	01 through 05	19.2 kbit/s

Note: 5-channel DS0Bs are normally used for either 9.6 kbit/s or 19.2 kbit/s circuits. For a 19.2 kbit/s circuit, only circuit number 02 and 04 are allowed. 19.2 kbit/s circuits occupy two positions within the 5-channel DS0B multiplex. 19.2 kbit/s circuit number 02 occupies multiplex position 02 and 03. 19.2 kbit/s circuit number 04 occupies multiplex position 04 and 05.

DS0A channels have only one subrate circuit that is "stuffed" to fill out a 64 kbit/s channel. The subrate circuit number for a DS0A channel is 01. This subrate circuit number need not be specified in the commands referring to a DS0A channel.

Command

[I.94161]

```
DSPC:[FRM xy,SEQ ww]:{<p_npc>|<p_npc>-<q_npc>|SD411}:UTL:QRY,SECH,TO \
<t_npc>ddd[-eee]!
```

Completion Message

For a single channel request

[O.94161]

```
M hh:mm:ss xy,ww n[vv] DSPC <z_npc> UTL QRY SECH <t_npc>ddd  3 LN MSG:
channel   SECH Type   Error Correction
ddd       <es_type>   <err_cor>        COMPL
```

For a range of channels

[O.94161]

```
M hh:mm:ss xy,ww n[vv] DSPC <z_npc> UTL QRY SECH <t_npc>ddd  e LN MSG:
channel   SECH Type   Error Correction
ddd       <es_type>   <err_cor>
hhh       <es_type>   <err_cor>
hhh       <es_type>   <err_cor>       EOM
                                  .
                                  .
                                  .
M hh:mm:ss xy,ww n[vv] DSPC <z_npc> UTL QRY SECH <t_npc>ddd  e LN MSG:
channel   SECH Type   Error Correction
hhh       <es_type>   <err_cor>
                                  .
                                  .
                                  .
eee       <es_type>   <err_cor>       COMPL
```

Denial Message

[O.94161.01]

```
M hh:mm:ss xy,ww n[vv] DSPC <z_npc> UTL QRY SECH <t_npc>ddd[-eee] \
 2 LN MSG:
<explanation of error>   DNY
```

Autonomous Message

Not applicable.

Explanation Of Parameters

UTL:QRY,SECH,TO
- Query for the type and error correction method for a particular channel.

<t_npc>
- Number of NPC that has the channel(s) for which the user wants to display information.

ddd - Channel number on that facility terminating NPC or beginning of range of channels

eee - Highest channel number in a range of channel numbers if entered in command

hhh - Intermediate channel number in a range of channels

e - Number of lines in output message

<es_type>
- Type of established channel

es_type	*Explanation*
NOT_EST	Channel is not established
DS0A rr	DS0A channel established at rate (24, 48, 96, 19, 56)
DS0B nn	DS0B channel of capacity nn (05, 10, 20 subrate circuits)
PCH	Parity channel (for 56 kbit/s DS0A circuits or DS0B circuits)
TP	Subrate test port channel

<err_cor>
- Error correction method

err_cor	*Explanation*
SEC	Majority vote error correction used for 2.4, 4.8, and 9,6 kbit/s circuits
PEC	Parity error correction (for 19.2 kbit/s DS0A circuit)
PCH ppp	Parity error correction for 56 kbit/s DS0A or DS0B circuit with parity channel ppp
DCH ggg	Data channel for this parity error correction channel is ggg
---	No error correction

Explanation of Error

NPC <t_npc> IS NOT VALID
CHANNEL ddd IS OUT OF RANGE FOR NPC TYPE SPECIFIED
SD411 PREFIX NOT ALLOWED FOR THIS COMMAND
ddd-eee IS AN INVALID RANGE OF CHANNELS
INITIALIZATION OF APPLICATION IS IN PROGRESS, RETRY COMMAND LATER
NPC IS BEING ROLLED
SUBRATE APPLICATION FAILED

DSPC,UTL,QRY,SRHDW,TO

UTILITY QUERY SUBRATE CIRCUIT TRACE

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 DS0B circuits; it is an optional parameter for DS0A 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.
2. The channel number of the DDS subrate application circuit pack that the FROM channel is connected to.
3. If error correction is being used for the FROM circuit, a keyword designating the error correction method is shown. The parity error correction channel is also shown, if it applies (56 kbit/s circuits).
4. The channel number of the DDS subrate application circuit pack that the TO channel is connected to.
5. If error correction is being used for the TO circuit, a keyword designating the error correction method is shown. The parity error correction channel is also shown, if it applies (56 kbit/s circuits).
6. The rate of the circuit.
7. Whether the circuit is terminated and which side is terminated.

---

* This has also been called a hardware trace in the older DACS II implementation, which is why the keyword is SRHDW.

8. Whether the circuit is under test access and the state of the test access.
9. The identity of the test port for the TO circuit, if the TO circuit is in monitor or split mode.
10. If the circuit is not cross-connected, the command will still complete, but data for the FROM side will say NOT CROSS-CONNECTED.
11. If the TO circuit is either the master control leg or one of the branches for an MJU tree, then data for the entire MJU tree on that application card is generated. The format of this data is the same regardless of whether the master control leg or one of the branches has been specified as the TO circuit. The rate of the MJU tree is also included in the message. For the master control leg as well as for each branch, the following is specified in the output message:
    - The terminate and leave state.
    - The test port state.
    - The test port number, if a test access connection exists.
    - The error correction method if provisioned and the number of the parity error correction channel, if applicable (56 kbit/s).
    - The channel number on the subrate application circuit pack.

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 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 Section. The messages below 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 section for this information. On DACS II ISX, only sequential NPC numbers in 3-digit form are used.

Note: In PDS, when NPC number and channel number are specified together, the NPC number must be of fixed length; that is, for a three digit NPC number the NPC number must always be specified as a three digit number with leading zeros if necessary, and a four digit NPC number must always be specified as a four digit number with leading zeros if necessary.

Note on Channel Numbering

Channels in NPCs that terminate T1 facilities are numbered from 001 through 024. However, channels in SLC 96 or SLC Series 5 carriers have a more complex channel numbering scheme that is documented in the Introduction part of this Section. (Only DACS II supports SLC 96 or SLC 5.) The user should also note that channel 24 in a T1 provisioned with T1DM framing cannot be used because it is reserved for framing.

Note on Subrate Circuit Numbering

Individual subrate circuits within a DS0B multiplex are referred to by subrate circuit number. The table below shows the range of subrate circuit numbers for the three different types of DS0B channels.

DS0B Type	Subrate Circuit Number Range	Maximum Rate of Circuit
20-channel	01 through 20	2.4 kbit/s
10-channel	01 through 10	4.8 kbit/s
5-channel	01 through 05	19.2 kbit/s

Note: 5-channel DS0Bs are normally used for either 9.6 kbit/s or 19.2 kbit/s circuits. For a 19.2 kbit/s circuit, only circuit number 02 and 04 are allowed. 19.2 kbit/s circuits occupy two positions within the 5-channel DS0B multiplex. 19.2 kbit/s circuit number 02 occupies multiplex position 02 and 03. 19.2 kbit/s circuit number 04 occupies multiplex position 04 and 05.

DS0A channels have only one subrate circuit that is "stuffed" to fill out a 64 kbit/s channel. The subrate circuit number for a DS0A channel is 01. This subrate circuit number need not be specified in the commands referring to a DS0A channel.

Command

[I.94131]

```
DSPC:[FRM xy,SEQ ww]:{<p_npc>|<p_npc>-<q_npc>|SD411}:UTL:QRY,SRHDW,\
TO <t_npc>ddd[/ff]!
```

Completion Message

For two-point cross-connections not involving MJU trees:

[O.94131]

```
M hh:mm:ss xy,ww n[vv] DSPC <z_npc> UTL QRY SRHDW TO <t_npc>ddd[/ff] \
 4 LN MSG:
FROM {NOT CROSS-CONNECTED|<f_npc>jjj/ll} SR CHANNEL vvv [{SEC|PEC|PCH ppp}]
TO  SR CHANNEL ttt [{SEC|PEC|PCH ppp}]
[RATE rr][ TL {R|F|T|B}] TA {NONE|MON|SPL|TPR} [TP kk] COMPL
```

For an entire MJU tree:

[O.94132]

```
M hh:mm:ss xy,ww n[vv] DSPC <z_npc> UTL QRY SRHDW TO <t_npc>ddd[/ff] \
 7 LN MSG:
MPTM <k_npc>hhh/qq RATE rr TL {R|F|T|B} TA {NONE|MON|SPL} [TP kk] \
SR CHANNEL uuu [{SEC|PEC|PCH ppp}]
MJU 0001
BR1 {<mju_br_data>|MJU vvvv|IDLE}
BR2 {<mju_br_data>|MJU vvvv|IDLE}
BR3 {<mju_br_data>|MJU vvvv|IDLE}
BR4 {<mju_br_data>|MJU vvvv|IDLE}  {EOM|COMPL}
          .
          .
          .
[M hh:mm:ss xy,ww n[vv] DSPC <z_npc> UTL QRY SRHDW TO <t_npc>ddd[/ff] \
 6 LN MSG:]
[MJU ssss MA tttt,u]
[BR1 {<mju_br_data>|MJU vvvv|IDLE}]
[BR2 {<mju_br_data>|MJU vvvv|IDLE}]
[BR3 {<mju_br_data>|MJU vvvv|IDLE}]
[BR4 {<mju_br_data>|MJU vvvv|IDLE}  COMPL]
```

Denial Message

[O.94131.01]

```
M hh:mm:ss xy,ww n[vv] DSPC <z_npc> UTL QRY SRHDW <t_npc>ddd[/ff] \
 2 LN MSG:
<explanation of error>    DNY
```

Autonomous Message

Not applicable.

Explanation Of Parameters

UTL:QRY,SRHDW,TO - Obtain information on individual subrate circuit

<t_npc>
- Number of NPC (TO side) containing circuit for which information is to be obtained

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.

ff - Subrate circuit number in that channel
(A required parameter except for DS0A circuits)

<f_npc>
- Number of "FROM" facility terminating NPC to be retrieved

jjj - Channel number on that facility terminating NPC to be retrieved

ll - Customer circuit number in that channel to be retrieved

vvv - Subrate application channel number (FROM side), which is on NPC <z_npc>.

ttt - Subrate application channel number (TO side), which is on NPC <z_npc>.

SEC - Majority vote error correction is used
(only applicable for 2.4, 4.8, or 9.6 kbit/s DS0A channels)

PEC - Parity error correction for a 19.2 kbit/s channel is used

PCH - Parity channel error correction for a 56 kbit/s channel is used

ppp - The number of the parity error correction channel

RATE - Subrate circuit rate

rr - Subrate circuit rate value (24, 48, 96, 19, 56)

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
56 stands for 56 kbit/s

If the subrate circuit is not cross-connected and is a DS0A circuit, the rate will be the established rate for that DS0A circuit. The rates for subrate circuits multiplexed within DS0B circuits that are not cross-connected are tabulated below.

Rate	*Circuit type*
24	DS0B for 20 circuits
48	DS0B for 10 circuits
96	DS0B for 05 circuits

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 port connected to this circuit

MON - Test port is in Monitor mode

SPL - Test port is in Split mode

TPR - Test port is released

TP - Subrate test port for the TO circuit

kk - Number of test port

For MJU trees for both the master control leg and the individual branches connecting to facility terminations, the lower test access channel always faces the facility termination, while the upper test access channel always faces the appropriate MJU block.

MPTM - Multipoint master

This keyword always appears in the second line of the first output message for an MJU tree. This line defines all the parameters for the master control leg connecting to MJU block 0001, which is the multipoint master block.

<k_npc>
- Number of NPC to which the master control leg is connected.

hhh - Number of channel on that NPC to which the master control leg is connected.

qq - Subrate circuit number on that channel to which the master control leg is connected.

uuu - Subrate application channel number for master control leg, which is on NPC <z_npc>.

MJU - Multipoint Junction Unit block

ssss - Block number of MJU block to which this message refers

vvvv - Number of MJU block to which this branch is connected (cascaded).

MA - This keyword points to the block number and branch number that this MJU block is connected to

tttt - Block number to which the control leg of this MJU block is connected.

u - Branch number (1 through 4) on MJU block tttt to which this MJU block is connected.

<mju_br_data>
- which is of the form:

<b_npc>bbb/aa TL {R|F|T|B} TA {NONE|MON|SPL} [TP kk] SR CHANNEL sss \ [{SEC|PEC|PCH ppp}]

where:

<b_npc>
- Number of NPC to which this branch is connected.

bbb - Number of channel on that NPC to which this branch is connected.

aa - Number of subrate circuit within that channel to which this branch is connected.

sss - Channel number on subrate application NPC <z_npc>.

Explanation of Error

CHANNEL <t_npc>ddd IS A PARITY CHANNEL
NPC <t_npc> IS NOT VALID
SUBRATE CIRCUIT NUMBER MUST BE SPECIFIED FOR DS0B CHANNEL <f_npc>ddd
CHANNEL ddd IS OUT OF RANGE FOR NPC TYPE SPECIFIED
SD411 PREFIX NOT ALLOWED FOR THIS COMMAND
INITIALIZATION OF APPLICATION IS IN PROGRESS, RETRY COMMAND LATER
CHANNEL <t_npc>ddd IS NOT SUBRATE ESTABLISHED TO THIS TG193
NPC IS BEING ROLLED
SUBRATE APPLICATION FAILED

DSPC,UTL,QRY,SROOF,TO

UTILITY QUERY FOR SUBRATE FRAMING STATUS

Explanation Of Command

The purpose of this command is to request the framing status of the subrate de-multiplexer associated with:

1. a single DS0B channel searched for on a single subrate application NPC, or a range of subrate NPCs, or the entire frame,
2. a range of DS0B channels searched for on a single subrate application NPC, or a range of subrate NPCs, or the entire frame,
3. all DS0B channels on a single subrate application NPC,
4. all DS0B channels on a range of subrate application NPCs,
5. all DS0B channels in the frame.

The following three 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 DS1 Framing (LOF), or Alarm Indication Signal on the incoming signal.
3. --- The channel is in Frame.

The DS0B channels that are reported in the output message must be established and have active cross-connections.

The scope of the command is controlled by how the DSP Application cards running the DDS subrate application are addressed. The following are the choices:

1. A single DSP Platform circuit pack running the subrate application.
2. A range of DSP Platform circuit packs running the subrate application.
3. All DSP Platform circuit packs running a particular subrate application.

For each of the choices above, a single subrate channel or a range of subrate channels may have their framing status queried.

Note on NPC 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 Section. The messages below 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 section for this information. On DACS II ISX, only sequential NPC numbers in 3-digit form are used.

Note: In PDS, when NPC number and channel number are specified together, the NPC number must be of fixed length; that is, for a three digit NPC number the NPC number must always be specified as a three digit number with leading zeros if necessary, and a four digit NPC number must always be specified as a four digit number with leading zeros if necessary.

Note on Channel Numbering

Channels in NPCs that terminate T1 facilities are numbered from 001 through 024. However, channels in SLC 96 or SLC Series 5 carriers have a more complex channel numbering scheme that is documented in the Introduction part of this Section. (Only DACS II supports SLC 96 or SLC 5.) The user should also note that channel 24 in a T1 provisioned with T1DM framing cannot be used because it is reserved for framing.

Command

[I.94151]

DSPC:[FRM xy,SEQ ww]:{<p_npc>|<p_npc>-<q_npc>|SD411}:UTL:QRY,SROOF
[,TO <t_npc>ddd[-eee]]!

Completion Message

Message responding to single channel request:

[O.94151]

```
M hh:mm:ss xy,ww n[vv] DSPC <z_npc> UTL QRY SROOF \
<t_npc>ddd   3 LN MSG:
CHANNEL         Subrate STATUS
<t_npc>ddd          <mux_stat>      COMPL
```

Message responding to a request for a range of channels (optional), an entire subrate NPC, range of subrate NPCs, or the whole frame:

[O.94152]

```
M hh:mm:ss xy,ww n[vv] DSPC <z_npc> UTL QRY SROOF \
[<t_npc>ddd-eee]  e LN MSG:
CHANNEL         Subrate STATUS
[<t_npc>ddd         <mux_stat>]
[<t_npc>ddd         <mux_stat>]
<t_npc>ddd          <mux_stat>   {EOM|COMPL}

                        .
                        .
                        .

[M hh:mm:ss xy,ww n[vv] DSPC <z_npc> UTL QRY SROOF \
[<t_npc>ddd-eee]  e LN MSG:]
[<t_npc>ddd         <mux_stat>]
[<t_npc>ddd         <mux_stat>]
[<t_npc>ddd         <mux_stat>]
[<t_npc>eee         <mux_stat>  COMPL]
```

Message response when no problems were found:

[O.94153]

```
M hh:mm:ss xy,ww n[vv] DSPC <z_npc> UTL QRY SROOF  2 LN MSG:
NO SUBRATE CHANNELS ARE OUT-OF-FRAME  COMPL
```

Denial Message

[O.94151.01]

```
M hh:mm:ss xy,ww n[vv] DSPC <z_npc> UTL QRY SROOF \
[<t_npc>ddd[-eee]]   2 LN MSG:
<explanation of error>   DNY
```

Autonomous Message

Not applicable.

Explanation Of Parameters

UTL:QRY,SROOF
- Obtain information on subrate out-of-frame conditions

TO - Points to facility terminating NPC to be queried

<t_npc>
- Number of facility terminating NPC

ddd - Channel number on that facility terminating NPC or beginning of range of channels

eee - Channel number at high end of range of channel numbers

e - The number of lines in the segment

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 0f Signal (LOS), Loss of DS1 Framing (LOF), or Alarm Indication Signal (AIS) on the incoming signal.
---	In Frame

Explanation of Error

NPC <t_npc> IS NOT VALID
CHANNEL ddd IS OUT OF RANGE FOR NPC TYPE SPECIFIED
SD411 PREFIX NOT ALLOWED FOR THIS COMMAND
ddd-eee IS AN INVALID RANGE OF CHANNELS
INITIALIZATION OF APPLICATION IS IN PROGRESS, RETRY COMMAND LATER
CHANNEL <t_npc>ddd IS NOT SUBRATE ESTABLISHED TO THIS TG193
NPC IS BEING ROLLED
SUBRATE APPLICATION FAILED

DSPC,UTL,QRY,TPS

UTILITY QUERY FOR TEST PORTS

Explanation Of Command

This command reports on any test ports that are connected to the application. For each test port that is connected, 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,

Command

[I.94111]
DSPC:[FRM xy,SEQ ww]:{<p_npc>|<p_npc>-<q_npc>|SD411}:UTL:QRY,TPS!

Completion Message

If there is at least one test port established, the message looks like this:

[O.94111]
M hh:mm:ss xy,ww n[vv] DSPC <z_npc> UTL QRY TPS nn e LN MSG:
[kk <state> <t_abc>ddd/ff]
kk <state> <t_abc>ddd/ff COMPL

If there is **no** test port established to the application, the message looks like this:

[O.94111]
M hh:mm:ss xy,ww n[vv] DSPC <z_npc> UTL QRY TPS 0 COMPL

Denial Message

Not applicable.

Autonomous Message

Not applicable.

Explanation Of Parameters

TPS - Invoke a report on test ports.

<z_npc>
- The NPC number of the application to which the data refers

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_abc>
- number of facility terminating NPC that defines the circuit under test

ddd - channel on that NPC

ff - subrate circuit number in that channel that is under test

Explanation of Error

SD411 PREFIX NOT ALLOWED FOR THIS COMMAND
INITIALIZATION OF APPLICATION IS IN PROGRESS, RETRY COMMAND LATER
NPC IS BEING ROLLED
SUBRATE APPLICATION FAILED

Command Denials

8

Contents

Command Denials

8

Denial Messages

The DDS Subrate and MJU application displays a denial message when the DACS II or DACS II ISX parser has difficulty interpreting an issued command or finds conflicting conditions preventing execution of the command.

This chapter contains a listing of denial messages displayed by the DDS Subrate and MJU application, along with an explanation of their possible meanings. For additional information on denial messages, refer to Chapter 7.

Application Generated Error Messages

ACTIVE SUBRATE CROSS-CONNECTS ARE PRESENT ON THE CHANNEL
ANTI-STREAMING WAS ALREADY OFF FOR THIS MJU TREE
ATTEMPTING TO DELETE MORE THAN 12 MJU BLOCKS
ATTEMPTING TO DISESTABLISH MORE THAN 12 DS0B CHANNELS
ATTEMPTING TO DISESTABLISH MORE THAN 32 CHANNELS
BRANCH IS CONNECTED TO CONTROL LEG OF CASCADED MJU BLOCK
BRANCH MUST BE SPECIFIED FOR MJU ssss
BRANCH NUMBER i IS OUT OF RANGE
BRANCHES ARE CURRENTLY STREAMING
BRi IS ALREADY ASSIGNED TO ANOTHER CHANNEL OR MJU
BRi IS CONNECTED TO A DOWNSTREAM MJU
BRi IS NOT CONNECTED AS SPECIFIED
BRi IS SPECIFIED MORE THAN ONCE
BRi IS UNASSIGNED
CHANNEL <f_npc>ddd IS A PARITY CHANNEL

CHANNEL <f_npc>ddd IS A TEST ACCESS CHANNEL
CHANNEL <f_npc>ddd IS NOT SUBRATE ESTABLISHED TO THIS TG193
CHANNEL <f_npc>ddd IS UNDER TEST
CHANNEL <f_npc>ddd IS UNDER TEST
CHANNEL <f_npc>ddd, PCH ERROR CORRECTION ONLY ALLOWED WITH RATE 56
CHANNEL <f_npc>ddd, PEC ERROR CORRECTION AND DS0B NOT ALLOWED
CHANNEL <f_npc>ddd, PEC ERROR CORRECTION ONLY ALLOWED WITH RATE 19
CHANNEL <f_npc>ddd, SR ERROR CORRECTION AND DS0B NOT ALLOWED
CHANNEL <f_npc>ddd, SR ERROR CORRECTION AND RATE 19 NOT ALLOWED
CHANNEL <f_npc>ddd, SR ERROR CORRECTION AND RATE 56 NOT ALLOWED
CHANNEL <f_npc>ddd/ff IS ASSIGNED
CHANNEL <f_npc>ddd/ff IS CONNECTED BUT NOT AS MULTIPOINT MASTER LEG
CHANNEL <f_npc>ddd/ff IS NOT ASSIGNED
CHANNEL <f_npc>ddd/ff IS SPECIFIED MORE THAN ONCE
CHANNEL SR MULTIPLEXER RATE CANNOT SUPPORT CIRCUIT RATE
CHANNEL ddd IS OUT OF RANGE FOR NPC TYPE SPECIFIED
CHANNELS ARE NOT CONNECTED TO EACH OTHER
CIRCUIT <f_npc>ddd/ff IS NOT A VALID MULTIPOINT MASTER LEG
CIRCUIT IS ALREADY IN RELEASED STATE
CIRCUIT IS ALREADY IN TERMINATED STATE
CIRCUIT RATE MUST BE SPECIFIED
CONNECTED BRANCHES ARE PRESENT AND THE ALL KEYWORD IS NOT SPECIFIED
CONNECTION EXCEEDS REMAINING CAPACITY
FROM SIDE NPC <f_npc> IS FAILED
FROM SIDE NPC <f_npc> IS OUT-OF-SERVICE
HUBID NOT SET
INITIALIZATION OF APPLICATION IS IN PROGRESS, RETRY COMMAND LATER
INVALID RANGE FOR CROSS-CONNECTION
INVALID SUBRATE CIRCUIT NUMBER FOR CHANNEL <f_npc>ddd
MA FIELD MUST BE SPECIFIED FOR A NEW MJU
MA FIELD NOT ALLOWED WHEN MJU 1 IS SPECIFIED
MA FIELD POINTS TO MJU NOT PREVIOUSLY CREATED
MJU NUMBERS IN MJU AND MA FIELDS CANNOT BE THE SAME
MJU ssss ALREADY EXISTS IN THE CIRCUIT
MJU ssss DOES NOT EXIST IN THE CIRCUIT
MPTM MUST BE SPECIFIED TO CHANGE MASTER CONTROL LEG
MUST POINT TO LOWER CHANNEL WHEN LOOPING TEST ACCESS CHANNELS

NEW CHANNEL <t_npc>ddd IS A TEST ACCESS CHANNEL
NEW CHANNEL HAS ACTIVE SR CROSS-CONNECTS
NEW CHANNEL IS ALREADY ESTABLISHED DIFFERENTLY THAN OLD
NEW CIRCUIT <t_npc>ddd/ff IS ALREADY SR CROSS-CONNECTED
NO MJU TREES EXIST ON THIS CIRCUIT PACK
NPC <f_npc> IS FAILED
NPC <f_npc> IS NOT VALID
NPC <t_npc> IS NOT EQUIPPED
NPC <t_npc> IS OUT-OF-SERVICE
NPC IS BEING ROLLED
NUMBER OF SUBRATE CIRCUITS ff IS INVALID
OLD AND NEW CHANNELS ARE THE SAME
OLD AND NEW CHANNELS PARTIALLY OVERLAP
OLD CHANNEL <f_npc>ddd IS NOT SUBRATE ESTABLISHED TO THIS TG193
OLD CHANNEL <f_npc>ddd OR A SUBRATE CIRCUIT IS UNDER TEST
OLD CHANNEL HAS NO ACTIVE SR CROSS-CONNECTS
RANGE OF CHANNELS AND PCH ERROR CORRECTION NOT ALLOWED
RANGE OF CHANNELS NOT ALLOWED IN THIS COMMAND
RATE <rate> IS INVALID
RATE OF NEW SUBRATE CIRCUIT DOES NOT MATCH RATE OF MJU TREE
SD411 PREFIX NOT ALLOWED FOR THIS COMMAND
SPECIFIED ACCESS POINT IS ALREADY UNDER TEST
SPECIFIED ACCESS POINT IS UNDER TEST
SPECIFIED CHANNEL IS A TEST ACCESS POINT
SPECIFIED FACILITY TERMINATION IS CONNECTED TO AN MJU
SPECIFIED RATE DOES NOT MATCH EXISTING CIRCUIT RATE
SPECIFIED TEST PORT IS ALREADY BEING USED
SPECIFIED TEST PORT IS ALREADY IN MONITOR MODE
SPECIFIED TEST PORT IS ALREADY IN SPLIT MODE
SPECIFIED TEST PORT IS NOT ASSIGNED
SUBRATE APPLICATION FAILED
SUBRATE CIRCUIT NUMBER MUST BE SPECIFIED FOR DS0B CHANNEL <f_npc>ddd
SUBRATE CIRCUIT NUMBER ff IS OUT OF RANGE FOR DS0A CHANNEL <f_npc>ddd
SUBRATE CIRCUIT NUMBER ff IS OUT OF RANGE FOR DS0B CHANNEL <f_npc>ddd
TEST ACCESS CHANNELS CAN ONLY BE LOOPED TO THEMSELVES
TEST PORT <kk> APPEARS NOT TO BE CONNECTED TO APPLICATION
TEST PORT <kk> IS FAILED
THE CIRCUIT UNDER TEST IS A 64K CHANNEL
THE CIRCUIT UNDER TEST IS LOOPED
THE CIRCUIT UNDER TEST IS UNMAPPED
THE FROM SIDE NPC <t_npc> IS NOT EQUIPPED
THE SPECIFIED ACCESS POINT IS A PARITY CHANNEL

THE SPECIFIED ACCESS POINT IS NOT SUBRATE ESTABLISHED
TO THIS TG193
THE SPECIFIED FACILITY TERMINATION IS NOT A MASTER
CONTROL LEG
THE SPECIFIED SUBRATE CIRCUIT NUMBER ff IS NOT VALID
THE SPECIFIED TEST PORT <kk> IS NOT EQUIPPED
THE SPECIFIED TEST PORT IS NOT CONNECTED TO THIS TG193
THE TEST PORT <kk> IS OUT-OF-SERVICE
THE TO SIDE NPC <f_npc> IS NOT EQUIPPED
TLA CANNOT BE SPECIFIED FOR A LOOPED CHANNEL
TLA CANNOT BE SPECIFIED FOR AN UNMAPPED CIRCUIT
TLR CANNOT BE SPECIFIED FOR AN UNMAPPED CIRCUIT
TO SIDE NPC <f_npc> IS OUT-OF-SERVICE
TO SIDE NPC <t_npc> IS FAILED
UPSTREAM BRANCH SPECIFIED IN MA FIELD IS ASSIGNED
UPSTREAM BRANCH SPECIFIED IN MA FIELD IS OUT OF RANGE
ddd-eee IS AN INVALID RANGE OF CHANNELS
ff-mm IS AN INVALID RANGE OF CIRCUITS

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
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

Quick Reference Guide

9

Contents

Quick Reference Guide

9

Numeric List of Keywords

94011 **DSPC,BADVERB,CMD**
94021 **ALM,DSPC,CHANNEL,SUBRATE,STATUS,OOF**
94111 **DSPC,UTL,QRY,TPS**
94121 **DSPC,UTL,QRY,SCON,CH,TO**
94131 **DSPC,UTL,QRY,SRHDW,TO**
94141 **DSPC,UTL,QRY,LOAD**
94151 **DSPC,UTL,QRY,SROOF,TO**
94161 **DSPC,UTL,QRY,SECH,TO**
94171 **DSPC,UTL,QRY,ASTREAM,MPTM,ALL**
94181 **DSPC,UTL,QRY,CAPAC**
94211 **DSPC,STST,MON,TO,TP**
94221 **DSPC,STST,SPL,MON,TP**
94231 **DSPC,STST,TLA,TLR,F,T,B,TP**
94241 **DSPC,STST,TPR,TP**
94251 **DSPC,STST,TPR,ALL,LINKS**
94261 **DSPC,STST,MON,TO,MJU,TP**
94311 **DSPC,SECH,TO,DS0A,DS0B,SEC,PEC,PCH**
94321 **DSPC,SDCH,TO,DCC**
94331 **DSPC,SCON,RATE,FROM,TO**
94341 **DSPC,SCNT,RATE,FROM,TO**
94351 **DSPC,SDIS,RATE,FROM,TO**
94361 **DSPC,CHG,SECH,OLD,NEW,PCH,DCC**
94381 **DSPC,CHG,TLA,TLR,TO**
94411 **DSPC,SCON,RATE,MPTM,MJU,MA**
94421 **DSPC,SCNT,RATE,MPTM,MJU,MA**
94431 **DSPC,SDIS,RATE,MPTM,MJU**

94441 **DSPC,SDIS,RATE,MPTM,MJU,ALL**
94461 **DSPC,CHG,SCON,OLD,NEW,MPTM**
94471 **DSPC,CHG,ASTREAM,MPTM,OFF**

Alphabetic Command Summary

[I.94471]
DSPC:[FRM xy,SEQ ww]:<p_npc>:CHG:ASTREAM,MPTM <f_npc>ddd[/ff],{ss|OFF}!

[I.94461]
DSPC:[FRM xy,SEQ ww]:<p_npc>:CHG:SCON,
OLD <f_npc>ddd[/ff],NEW <t_npc>jjj[/ll][,MPTM]!

[I.94361]
DSPC:[FRM xy,SEQ ww]:<p_npc>:CHG:SECH,
OLD <f_npc>ddd[-eee],NEW <t_npc>jjj[-kkk][,PCH ppp][,DCC]!

[I.94381]
DSPC:[FRM xy,SEQ ww]:<p_npc>:CHG:{TLA|TLR} m,
TO <t_npc>ddd[/ff]!

[I.94341]
DSPC:[FRM xy,SEQ ww]:<p_npc>:SCNT:RATE rr,FROM <f_npc>ddd[/ff],
TO <t_npc>jjj[/ll]!

[I.94341]
DSPC:[FRM xy,SEQ ww]:<p_npc>:SCNT:RATE rr,FROM <f_npc>ddd-eee[/01],
TO <t_npc>jjj-kkk[/01]!

[I.94341]
DSPC:[FRM xy,SEQ ww]:<p_npc>:SCNT:RATE rr,FROM <f_npc>ddd/ff-mm,
TO <t_npc>jjj/ll-nn!

[I.94421]
DSPC:[FRM xy,SEQ ww]:<p_npc>:SCNT:[RATE rr,]MPTM <f_npc>ddd[/ff],
MJU ssss[,MA(tttt,u)],<branch>[,<branch>][,<branch>][,<branch>]!

[I.94331]
DSPC:[FRM xy,SEQ ww]:<p_npc>:SCON:RATE rr,FROM <f_npc>ddd[/ff],
TO <t_npc>jjj[/ll]!

[I.94331]
DSPC:[FRM xy,SEQ ww]:<p_npc>:SCON:RATE rr,FROM <f_npc>ddd-eee[/01],
TO <t_npc>jjj-kkk[/01]!

[I.94331]
DSPC:[FRM xy,SEQ ww]:<p_npc>:SCON:RATE rr,FROM <f_npc>ddd/ff-mm,
TO <t_npc>jjj/ll-nn!

[I.94411]
DSPC:[FRM xy,SEQ ww]:<p_npc>:SCON:[RATE rr,]MPTM <t_npc>ddd[/ff],
MJU ssss[,MA(tttt,u)][,<branch>][,<branch>][,<branch>][,<branch>]!

[I.94321]
DSPC:[FRM xy,SEQ ww]:<p_npc>:SDCH:TO <t_npc>ddd[-eee][,DCC]!

[I.94351]
DSPC:[FRM xy,SEQ ww]:<p_npc>:SDIS:[RATE rr,]
FROM <f_npc>ddd[/ff],TO <t_npc>jjj[/ll]!

[I.94351]
DSPC:[FRM xy,SEQ ww]:<p_npc>:SDIS:[RATE rr,]
FROM <f_npc>ddd-eee/[01],TO <t_npc>jjj-kkk/[01]!

[I.94351]
DSPC:[FRM xy,SEQ ww]:<p_npc>:SDIS:[RATE rr,]
FROM <f_npc>ddd/ff-mm,TO <t_npc>jjj/ll-nn!

[I.94431]
DSPC:[FRM xy,SEQ ww]:<p_npc>:SDIS:[RATE rr,]MPTM <f_npc>ddd[/ff],
MJU ssss,<branch>[,<branch>][,<branch>][,<branch>]!

[I.94441]
DSPC:[FRM xy,SEQ ww]:<p_npc>:SDIS:[RATE rr,]MPTM <f_npc>ddd[/ff],
MJU ssss[,ALL]!

[I.94311]
DSPC:[FRM xy,SEQ ww]:<p_npc>:SECH:
TO <t_npc>ddd[-eee],{DS0A rr|DS0B nn}[,{SEC|PEC|PCH[ppp]}]!

[I.94261]
DSPC:[FRM xy,SEQ ww]:<p_npc>:STST:MON,TO <t_npc>ddd[/ff],
MJU ssss,[BRi,]TP kk!

[I.94211]
DSPC:[FRM xy,SEQ ww]:<p_npc>:STST:MON,TO <t_npc>ddd[/ff],TP kk!

[I.94221]
DSPC:[FRM xy,SEQ ww]:<p_npc>:STST:{SPL|MON},TP kk!

[I.94231]
DSPC:[FRM xy,SEQ ww]:<p_npc>:STST:{TLA|TLR} {F|T|B},TP kk!

[I.94251]
DSPC:[FRM xy,SEQ ww]:<p_npc>:STST:TPR,{ALL|LINKS}!

[I.94241]
DSPC:[FRM xy,SEQ ww]:<p_npc>:STST:TPR,TP kk!

[I.94171]
DSPC:[FRM xy,SEQ ww]:{<p_npc>|<p_npc>-<q_npc>|SD411}:
UTL:QRY,ASTREAM,{MPTM <f_npc>ddd[/ff]|ALL}!

[I.94181]
DSPC:[FRM xy,SEQ ww]:{<p_npc>|<p_npc>-<q_npc>|SD411}:UTL:QRY,CAPAC!

[I.94141]
DSPC:[FRM xy,SEQ ww]:{<p_npc>|<p_npc>-<q_npc>|SD411}:UTL:QRY,LOAD!

[I.94121]
DSPC:[FRM xy,SEQ ww]:{<p_npc>|<p_npc>-<q_npc>|SD411}:UTL:QRY,SCON,CH,
TO <t_npc>ddd[-eee]!

[I.94161]
**DSPC:[FRM xy,SEQ ww]:{<p_npc>|<p_npc>-<q_npc>|SD411}:UTL:QRY,SECH,TO **
<t_npc>ddd[-eee]!

[I.94131]
DSPC:[FRM xy,SEQ ww]:{<p_npc>|<p_npc>-<q_npc>|SD411}:UTL:QRY,SRHDW,
TO <t_npc>ddd[/ff]!

[I.94151]
DSPC:[FRM xy,SEQ ww]:{<p_npc>|<p_npc>-<q_npc>|SD411}:UTL:QRY,SROOF
[,TO <t_npc>ddd[-eee]]!

[I.94111]
DSPC:[FRM xy,SEQ ww]:<p_npc>:UTL:QRY,TPS!

Glossary

A

ATM
Automatic Teller Machine.

B

BCH
Bose-Chaudhuri-Hocquenghem error code.

C

Channel
A 64 kbit/s portion of a T1 or E1 transmission line.

CMI
Control Mode Idle code (11111110) — a code sent by MJU branches that are in idle mode.

Control Bit
The eighth bit in a byte of a DS0 channel used for transmitting subrate data. If the control bit is "1," then the byte contains data information. If the control bit is "0," then the byte contains control information.

Control Leg
Master leg of an MJU block. (See also: Master Leg.)

Cross-connection
A data transmission path set up between two NPCs.

D

D4-Type Framing
A particular type of framing used by DS1 signals.

DACS II
Digital Access and Cross-connect System II.

DACS II ISX
Digital Access and Cross-connect System II - Integral Shelf Cross-connect.

DDS
Digital Data Services — used for data transmission.

Digroup
A circuit pack containing two Network Processing Circuits.

DMI
Data Mode Idle code (11111111) — a code sent by MJU branches that are idling in data mode.

DS0
Digital Signal Level Zero — a signal with a data rate of 64 kbit/s.

DS0A
Digital Signal Level Zero A — a channel that carries a single subrate circuit. Framing is not needed for a DS0A signal.

DS0B
Digital Signal Level Zero B — a channel that carries several subrate circuits embedded, or multiplexed, in a 64 kbit/s channel. Framing is needed to demultiplex an incoming DS0B channel.

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.

Error Correction
A method of data correction used to correct transmission errors. (See also: Parity Error Correction, Majority Vote Error Correction.)

Establish (a cross-connection)
To set up a data transmission path between (in the case of the DDS Subrate and MJU application) facility terminating NPC and the application on the DSP TG193B circuit pack.

F

Facility Terminating NPC
A Network Processing Circuit on the DACS II or DACS II ISX that terminates either T1 or E1 signals.

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 (except for 56 kbit/s circuits).

G

Grow (a circuit pack)
To place a circuit pack on the DACS II or DACS II ISX equipment list.

H

HUBID
HUB IDentification number (ranging from 00 to 77 octal) — the number used to identify an MJU tree during test access.

I

Inband Signalling
A method of sending information or signals within a transmission channel.

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.

M

Majority Vote Error Correction
One of two error corrections used by the DDS Subrate and MJU application which uses the repeated byte patterns in a DS0A channel to determine the correct data byte.

Master Leg
The leg of the MJU block which transmits data downstream to the MJU branches.

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.

MJU Tree
Cascaded MJU blocks by connecting a branch to the master leg of another MJU block.

MJU/MJU Block
Multipoint Junction Unit.

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.

Multiplexing
A method of transmitting multiple channels on a single transmission medium such that the individual channels can be separated out at the end of the transmission medium.

MUX
Multiplexer-out-of-Synch code (00011010) — an insertion word sent if the application detects a failure on a data circuit.

N

NPC
Network Processing Circuit.

NPM
Network Processing Module.

NPSM
Network Processing Sub-Module.

P

Parity Error Correction
One of two error correction methods used by the DDS Subrate and MJU application which uses the BCH algorithm to correct transmission errors.

PCMCIA
Personal Computer Memory Card International Association — memory cards used by the DACS II and DACS II ISX in memory slots PMEM and SMEM (DACS II) or MEMA and MEMB (DACS II ISX), 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.

Primary Channel
The main data path through an MJU block.

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

Released (Test Access)
One of four test access states in which the test access connection (in either monitor or split mode) is removed.

Restore (a circuit pack)
To place a circuit pack in service.

S

Secondary Channel
A secondary method of transmitting data from an MJU branch to the master leg; it uses every third bit in bit position 8 to send information.

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.

Subrate Cross-connection
A subrate data transmission path on the TG193B application circuit pack, not on the DACS II or DACS II ISX cross-connection network. Subrate cross-connections are performed for data rates below 64 kbit/s.

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.)

Test Port
Two test access channels allocated on a facility terminating NPC used for testing both sides of a cross-connection on a DSP application card.

TG193B
The Digital Signal and Processing Platform circuit pack used to run the DDS Subrate and MJU application and perform the subrate cross-connections.

U

UMC

Unassigned Multiplexer Channel code (F0011000), where F is the framing bit if a DS0B channel — a code used as an idle bit pattern when no customer data is present because the circuit is not yet assigned.

Z

ZCS

Zero Code Suppression code (00011000) — a code used as a substitute for data bytes that are all zeros.

Index

I

L

P

Q

R

S

T

U

V