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DACS II
Release 8.2.6, MML
Feature Guide

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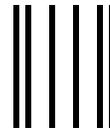
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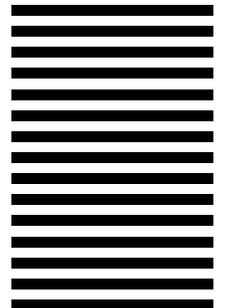
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Release 8.2.6 Features

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Background

Introduction

This chapter describes the DACS II features incorporated into Release 8.2.6. The two features included in this release are:

■ Remote Loopback - the looping of individual DS1/E1 tributaries embedded in an HDS3 signal for path maintenance and troubleshooting.

■ RAI Alarm Suppression - the suppression of RAI alarm messages generated by the individual DS1/E1 tributaries embedded in an HDS3 signal in response to a DS3 "yellow alarm" (RAI).

Objectives

This chapter provides information to perform the following:

1. Understand the Remote Loopback process

2. Perform the Remote Loopback test

3. Understand RAI Alarm Suppression operation

4. Change the DS3 alarm reporting delay

5. Retrieve a report listing the DS3 alarm reporting delay.

Related tasks

For related tasks, refer to the following tasks in this chapter:

■ Activating a Remote Loopback Test   GT 1.1
■ Deactivating a Remote Loopback Test   GT 1.2
■ Changing the Delay for DS3 Alarm Messages   GT 1.3
■ Querying the Delay for DS3 Alarm Messages   GT 1.4

Related information

For related information, refer to the:

■ *DACS II Operation and Maintenance Manual Release 8.2.3*

■ *DACS II Command and Message Manual Release 8.2.3*

■ *DACS II Software Release Description Release 8.2.6.*

Remote Loopback Feature

Overview

The Remote Loopback feature provides a way to loopback the signals for individual DS1/E1 tributaries in a hybrid DS3 signal. This functionality can be used to verify the operation of each section (multiplexers and facility) of a data path.

The HMXR circuit pack, located in the HDS3 unit, can perform both the local and remote multiplexer functions regardless of its position in the network. It is capable of sending a remote Loopback signal to a remote multiplexer, and it can loopback a specified DS1/E1 signal to a remote loopback request from a remote multiplexer.

Remote Loopback Operation

The activation of a loopback signal at the local multiplexer (the DACS II KCR8 HMXR circuit pack) will cause a DS1/EI facility to loopback at the remote multiplexer (far end equipment). A test signal is applied to the local multiplexer. This test signal is compared to the signal sent to the local multiplexer by the remote multiplexer. If differences are detected between the two signals, then the cause of the fault lies with either the remote multiplexer, the local multiplexer, or the facility between them. If no differences are detected, then both multiplexers and the facility between them are operating normally.

Remote Loopback Feature (Continued)

Remote Loopback Process

The following process, illustrated in Figure 1-1, is used to set up the Remote Loopback test:

1. The local multiplexer activates the Remote Loopback signal.

2. The remote multiplexer detects the loopback signal.

3. The remote multiplexer activates the loopback.

4. A test signal is sent through the local multiplexer and over the specified DS1/E1 tributary. This signal will be sent back towards the local multiplexer.

5. The looped back test signal is received by the local multiplexer and a comparison is made between the sent and received signals to determine the condition of each multiplexer and facility between them.
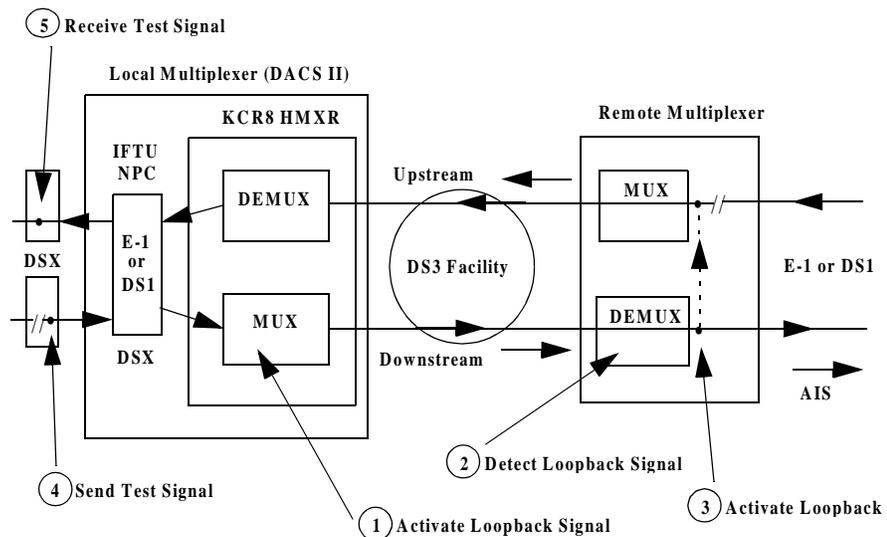
MUX = Multiplexer

DEMUX = Demultiplexer

DSX = DS1 or E-1 tributary of Hybrid DS3 signal

Figure 1-1.   Remote Loopback Process

GT 1.1: Activating a Remote Loopback Test

When to use

Use this task to activate a remote loopback test for DS1/E1 tributaries within a Hybrid DS3 signal. A test signal is sent from the local multiplexer to the remote multiplexer, and looped back to the local multiplexer to check the multiplexers at both ends and the facility between them.

Before you begin

The DS1/E1 NPC under test should be grown and restored.

Related Tasks

For related tasks, refer to GT 1.2: Deactivating a Remote Loopback Test.

Task

To activate a remote loopback, enter the following command:

`OPR-LPBK-{T1|E1}::npcNo.::loop:locn;`

Where:

`OPR-LPBK-{T1|E1}`	Operate loopback for a:	
	T1	1.544 Mb/s signal
	E1	2.048 Mb/s signal
`loop`	Loopback type:	
	loop	*Explanation*
	LINE	Line
`npcNo.`	NPC number	
`locn`	Loopback location:	
	locn	*Explanation*
	FEND	Far-end

Stop! End of Task.

GT 1.2: Deactivating a Remote Loopback Test

When to use   Use this task to deactivate a remote loopback test.

Before you begin   You must have an existing remote loopback test in progress.

Related Tasks   For related tasks, refer to GT 1.1: Activating a Remote Loopback Test.

Task   To deactivate a remote loopback, enter the following command:

`RLS-LPBK-{T1|E1}::npcNo.::loop:locn;`

Where:

`RLS-LPBK-{T1|E1}`	Release loopback for a:	
	T1	1.544 Mb/s signal
	E1	2.048 Mb/s signal
`loop`	Loopback type:	
	loop	*Explanation*
	LINE	Line
`npcNo.`	NPC number	
`locn`	Loopback location:	
	locn	*Explanation*
	FEND	Far-end

Stop! End of Task.

RAI Alarm Suppression Feature

Overview

The Remote Alarm Indicator (RAI) Alarm Suppression feature provides a way of suppressing the individual DS1/E1 tributary alarms when a DS3 "Yellow Alarm" is detected by the DS3 HMXR card. These individual alarm messages add no new information and quite frequently overload the system with redundant messages. A DS3 failure message is typically sufficient.

With this added functionality, the HMXR suppresses individual DS1/E1 alarm messages when any of the following DS3 failures are detected:

- Loss of Signal (LOS)

- Loss of Frame (LOF)

- Excessive Bit Error Rate (BER)

- Alarm Indication Signal (AIS or IDLE)

- RAI.

Alarm Suppression Operation

When a DS3 failure is detected, the HDS3U will issue the alarm message and an subsequent idle message for the DS3 itself. DS1/E1 messages (PBA, CGA, and performance monitoring threshold messages) created as a result of the DS3 failure are always suppressed.

DS1/E1 messages will be issued if a DS1/E1 remains in alarm after the DS3 is idled and was not in alarm previous to the DS3 going in alarm. In this case, the DS1/E1 failure most likely is a result of something other than the DS3.

GT 1.3: Changing the Delay for DS3 Alarm Messages

When to use   Use this task to change the delay (alarm activate integration) time for issuing DS3 alarms. This delay is the duration between the onset of the DS3 failure and the time when the alarm is displayed.

This command can be completed even if the HDS3U is unequipped or Out-of-Service.

⇒ **NOTE:**
This command can only be performed by the Frame Administrator or by a user with Frame Administration privileges.

⇒ **NOTE:**
This command sets the DS3 alarm delay for the entire frame.

Related Tasks   For related tasks, refer to:

■   GT 1.4: Querying the Delay for DS3 Alarm Messages

Task   To change the delay time of DS3 alarm message reporting, enter the following command:

`ED-PRMTR-T3:::::DS3ALMDLY:[x]x;`

Where:

`ED-PRMTR-T3`	Change
`DS3ALMDLY`	Delay time for DS3 alarm message output
`[x]x`	Delay time; any whole number between 2 and 10 seconds. Default: 10 seconds

Stop! End of Task.

GT 1.4: Querying the Delay for DS3 Alarm Messages

When to use   Use this task to request the DS3 alarm delay time.

Related Tasks   For related tasks, refer to:

■   GT 1.3: Changing the Delay for DS3 Alarm Messages.

Task   To query the DS3 alarm delay time, enter the following command:

`RTRV-ALM-T3:::::DS3ALM;`

Where:

`RTRV-ALM-T3`	Retrieve alarm information
`DS3ALM`	DS3 alarm delay time

Stop! End of Task.

Release 8.2.6 Commands and Messages

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Contents

FACILITY LOOPBACK ACTIVATE

Explanation of Command

For DA and TA type NPCs

ANSI (American National Standards Institute) T1.403 is a DS1 interfacespecification, which among other things, specifies the use of the4kb/s ESF data link for network maintenance. The data link is usedto communicate between network elements which transport the DS1 facility.

This command is used to initiate near-end (at the DACS II) and far-end (at the terminal on the other end of the DS1 facility) loopbacks for ESF formatted facilities as defined by ANSI T1.403.

DACS II will execute a near-end payload loopback by transmitting the received information bits of each frame back onto the DS1 facility. The framing bit position is regenerated by DACS II during a payload loopback.

DACS II will also send payload and line loopback commands on the ESF data link to far-end equipment, ordering the equipment on the other end of the DS1 facility to execute the respective loopbacks.

For TE and TH type NPCs on HDS3Us

This command can be used to request DS1 or E1 line loopbacks toward the facility (toward a remote multiplexer) (LOCN NEND), as well as remote line loopbacks (from a remote multiplexer) toward the HMXR (LOCN FEND) for all TE and TH type NPCs provisioned on HMXRs (KCR8s) within a Hybrid DS3U.

LOCN FEND loopbacks will only work if the far end multiplexer is equipped for Remote Loopbak functionality, and additionally, is provisioned to allow Remote Loopback requests.

Note that the command for LOCN FEND loopback will complete whether or not the far-end equipment is capable of or permits Remote Loopback requests.

This set of loopbacks (for TE and TH types) employs the "C bits" (stuff bits") within the M12 frame of the DS3 signal, unlike the DA and TA type loopbacks which use the ESF datalink to send the Loop Up and Loop Down requests.

Line loopbacks for TE type NPCs provisioned on MXR/EMXR circuit packs (KCR1s/KCR5s), even though provisioned within a Hybrid DS3U, are not supported.

An E1 or DS1 line loopback on an HDS3U will be activated without regard to whether a DS3 loopback is already active. If a DS3 line loopback is active (see command I.26161), the DS1 or E1 line loopback will have no effect until the DS3 line loopback is removed.

If a DS3 equipment loopback is active, the DS1 or E1 (LOCN NEND) line loopback will be operating, but it results in a circular transmission path for the DS1 or E1, which is most likely undesirable.

If a loopback is active another loopback request to the same NPC will be denied.

Local and far-end loopbacks are dropped during a system reset or a system reboot.

Command   **Nonhierarchical**

[I.26141]

```
OPR-LPBK-T1:[<xy>]:[s]abc:[ww]:loop[t]:locn;
```

The following applies to E1 circuits multiplexed within a Hybrid DS3 only:

[I.26141]

```
OPR-LPBK-E1:[<xy>]:[s]abc:[ww]:loop[t]:locn;
```

Hierarchical

[I.26141]

```
OPR-LPBK-T1:[<xy>]:uv-m-np:[ww]:loop[t]:locn;
```

The following applies to E1 circuits multiplexed within a Hybrid DS3 only:

```
[I.26141]
OPR-LPBK-E1:[<xy>]:uv-m-np:[ww]:loop[t]:locn;
```

Completion Message

1.544 Mbit/s Termination

Nonhierarchical

[O.26141]

```
   <xy> yy-mm-dd hh:mm:ss LINK-n[vv]
M  OPR LPBK {T1|E1}::[s]abc:[ww]:loop[t]:locn COMPLD
;
```

Hierarchical

[O.26141]

```
   <xy> yy-mm-dd hh:mm:ss LINK-n[vv]
M  OPR LPBK {T1|E1}::uv-m-np:[ww]:loop[t]:locn COMPLD
;
```

Denial Message

Nonhierarchical

[O.26141.01]

```
   <xy> yy-mm-dd hh:mm:ss LINK-n[vv]
M  OPR LPBK {T1|E1}::[s]abc:[ww]:loop[t]:locn DENY
   mmmm
   /* [O.26141.01] */
   /* <explanation of error condition code> */
;
```

Hierarchical

[O.26141.01]

```
   <xy> yy-mm-dd hh:mm:ss LINK-n[vv]
M  OPR LPBK {T1|E1}::uv-m-np:[ww]:loop[t]:locn DENY
   mmmm
   /* [O.26141.01] */
   /* <explanation of error condition code> */
;
```

Explanation of Parameters

LPBK   Loopback

loop   Loopback Type

loop	*Explanation*
LINE	Line
PYLD	Payload

⇒ **NOTE:**
For TE and TH type NPCs on an HMXR, LINE is the only option available.

t   Loopback signal transmission specifier

t	*Explanation*
N	Do not send AIS downstream

For TE and TH type NPCs on an HDS3U, AIS is always sent downstream.

NPC   Network processing circuit

[s]abc   The 3- or 4-digit nonhierarchical NPC number

The valid values are as follows, except that for TH type NPCs that carry E1s within a Hybrid DS3U all NPC numbers that are divisible by 4 as well as all NPC numbers that end with a "D" or "H" are invalid:

If NPC numbers are expressed in three digits, the valid values are:

DA type NPC numbers listed by unit number, Unit Type FT (FTU):

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	481-640	801-960

If NPC numbers are expressed in four digits, the valid values are:

DA type NPC numbers listed by unit number, Unit Type FT (FTU):

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

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

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

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

If NPC numbers are expressed in three digits, the valid values are:

TA type NPC numbers listed by unit number, Unit Type DT (DS3U):

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

If NPC numbers are expressed in four digits, the valid values are:

TA type NPC numbers listed by unit number, Unit Type DT (DS3U):

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

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

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

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

If NPC numbers are expressed in three digits, the valid values are:

TE type NPC numbers listed by unit number, HT (HDS3U):

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

If NPC numbers are expressed in four digits, the valid values are:

TE type NPC numbers listed by unit number, Unit Type HT (HDS3U):

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

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

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

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

If NPC numbers are expressed in three digits, the valid values are:

TH type NPC numbers listed by unit number, Unit Type HT (HDS3U):

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

If NPC numbers are expressed in four digits, the valid values are:

TH type NPC numbers listed by unit number, Unit Type HT (HDS3U):

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

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

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

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

uv-m-np   Hierarchical NPC number

uv   Unit number

m   Module number

np   NPC number within the module

The valid values are as follows, except that for TH type NPCs that carry E1s within a Hybrid DS3U all NPC numbers that are divisible by 4 as well as all NPC numbers that end with a "D" or "H" are invalid:

DA type NPC numbers listed by unit, module, and NPC Number Unit Type FT (FTU)

Unit	**Module**	**NPC**
1 - 16	1 - 40	1 - 40

TA NPC numbers listed by unit, module, and NPC Number Unit Type DT (DS3U)

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

TE NPC numbers listed by unit, module, and NPC Number Unit Type HT (HDS3U)

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

TH NPC numbers listed by unit, module, and NPC Number Unit Type HT (HDS3U)

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

⇒ NOTE:
The valid TH NPC numbers are: 01-03, 05-07, 09-11, 13-15, 17-19, 21-23, 25-27.

LOCN	Location
locn	Loopback Location

locn	*Explanation*
NEND	Near-end
FEND	Far-end

mmmm Error condition code

mmmm	*Explanation*
ENEQ	Subject entity is not equipped
SAOS	Subject entity is out of service
ENEQ	Unit is not equipped
SAOS	UC is out of service
SNVS	UC is in service but failed
ENEQ	FTMI is not equipped
SAOS	FTMI is out of service
SNVS	NPC type error
ENEQ	The MXR is not grown
SAOS	MXR is out of service
IPNV	Invalid parameter combination
SNVS	Another signal already active prevents this signal from being sent
SAOP	This signal is already being sent
SNVS	No signals active
IPNV	NPC is non-channelized
IPNV	NPC number out of range

FACILITY LOOPBACK RELEASE

Explanation of Command

For TA type NPCs on DS3Us

ANSI (American National Standards Institute) T1.403 is a DS1 interface specification, which among other things, specifies the use of the4kb/s ESF data link for network maintenance. The data link is used to communicate between network elements which transport the DS1 facility.

This command is used to deactivate near-end (at the DACS II) and far-end (at the terminal on the other end of the DS1 facility) loopbacks on ESF formatted facilities as defined by ANSI T1.403.

This command can be used to deactivate a DACS II near-end payload loopback or to cause DACS II to transmit payload or line loopback deactivate commands on the ESF data link to far-end equipment, ordering the equipment on the other end of the DS1 facility to deactivate the respective loopbacks.

For TE and TH type NPCs on Hybrid DS3Us

This command can also be used to release a line loopback towards the facility of a DS1 circuit of type TE or of an E1 circuit of type TH within a Hybrid DS3. In addition, it can be used to release a remote line loopback on a distant multiplexer. (See command I.26141 to activate such loopbacks.)

Command

Nonhierarchical

[I.26151]

```
RLS-LPBK-T1:[<xy>]:[s]abc:[ww]:loop[t]:locn;
```

The following applies to E1 circuits multiplexed within a Hybrid DS3 only

[I.26151]

```
RLS-LPBK-E1:[<xy>]:[s]abc:[ww]:loop[t]:locn;
```

Hierarchical

[I.26151]

```
RLS-LPBK-T1:[<xy>]:uv-m-np:[ww]:loop[t]:locn;
```

The following applies to E1 circuits multiplexed within a Hybrid DS3 only

[I.26151]

```
RLS-LPBK-E1:[<xy>]:uv-m-np:[ww]:loop[t]:locn;
```

Completion Message

Nonhierarchical

[O.26151]

```
<xy> yy-mm-dd hh:mm:ss LINK-n[vv]
M  RLS LPBK {T1|E1}::[s]abc:[ww]:loop[t]:locn COMPLD
;
```

Hierarchical

[O.26151]

```
   <xy> yy-mm-dd hh:mm:ss LINK-n[vv]
M  RLS LPBK {T1|E1}::uv-m-np:[ww]:loop[t]:locn COMPLD
;
```

Denial Message

Nonhierarchical

[O.26151.01]

```
   <xy> yy-mm-dd hh:mm:ss LINK-n[vv]
M  RLS LPBK {T1|E1}::[s]abc:[ww]:loop[t]:locn DENY
   mmmm
   /* [O.26151.01] */
   /* <explanation of error condition code> */
;
```

Hierarchical

[O.26151.01]

```
   <xy> yy-mm-dd hh:mm:ss LINK-n[vv]
M  RLS LPBK {T1|E1}::uv-m-np:[ww]:loop[t]:locn DENY
   mmmm
```

```
       /* [O.26151.01] */
       /* <explanation of error condition code> */
;
```

Explanation of Parameters

LPBK   Loopback

loop   Loopback type

        loop   *Explanation*

        LINE   Line

        PYLD   Payload

⇒ **NOTE:**
loop=PAYLD is not valid for TE and TH type NPCs.

1.544 Mbit/s Termination

t   Loopback signal transmission specifier

        value   Explanation

        N   Do not send AIS downstream

        For TE and TH type NPCs on an HDS3U, AIS is sent downstream as a default.

1.544 and 2.048 Mbit/s Termination

NPC   Network processing circuit

[s]abc   The 3- or 4-digit nonhierarchical NPC number

        The valid values are in chapter 2, except that for TH type NPCs that carry E1s within a Hybrid DS3U all NPC numbers that are divisible by 4 as well as all NPC numbers that end with a "D" or "H" are invalid.

        For a listing of the nonhierarchical numbering scheme, refer to Chapter 2, "NPC Numbering and XYZ Parameters."

uv-m-np   Hierarchical NPC number

        uv   Unit number

        m   Module number

        np   NPC number within the module

        The valid values are in chapter 2, except that for TH type NPCs that carry E1s within a Hybrid DS3U all NPC numbers that are

divisible by 4 as well as all NPC numbers that end with a "D" or "H" are invalid.

For a listing of the hierarchical numbering scheme, refer to Chapter 2, "NPC Numbering and XYZ Parameters."

LOCN   Location

locn   Loopback Location

locn	*Explanation*
NEND	Near-end
FEND	Far-end

mmmm Error condition code

mmmm	*Explanation*
ENEQ	Subject entity is not equipped
SAOS	Subject entity is out of service
ENEQ	Unit is not equipped
SAOS	UC is out of service
SNVS	UC is in service but failed
ENEQ	FTMI is not equipped
SAOS	FTMI is out of service
SNVS	NPC type error
ENEQ	The MXR is not grown
SAOS	MXR is out of service
IPNV	Invalid parameter combination
SNVS	Another signal already active prevents this signal from being sent
SAOP	This signal is already being sent
SNVS	No signals active
IPNV	NPC is non-channelized
IPNV	NPC number out of range

UTILITY QUERY LOOPBACK

Explanation of Command

1.544 Mbit/s Termination

This command requests a report indicating which Network Processing Circuits are in the loopback state. The message applies to DA and TA type NPCs or to TE and TH type NPCs on Hybrid DS3Us. If the first NPC in a range of NPCs is a DA or TA type NPC, then only DA and TA type NPCs are reported on. If the first NPC in a range of NPCs is a TE or TH type NPC on a Hybrid DS3U, then only Hybrid DS3U NPC types are reported on.

For DA and TA type NPCs, loopbacks being executed by far-end equipment as well as loopbacks being executed by DACS II are reported.

For TE and TH type NPCs on Hybrid DS3Us, local and remote line loopbacks are the only type of loopbacks that are supported.

2.048 Mbit∕ s Termination

This command requests a report indicating which Network Processing Circuits are in the loopback state. The message applies to PA, PB, and PC type NPCs. If other NPC types are encountered in a range of NPCs, these other NPC types will be skipped.

Command

Nonhierarchical

[I.53131]

```
RTRV-STATE-EQPT:[<xy>]:NPC-[s]abc[&&-[t]def]:[ww]:LPBK;
```

Hierarchical

[I.53131]

```
RTRV-STATE-EQPT:[<xy>]:NPC-uv-m-np[&&&-wx-k-qr]:[ww]:LPBK;
```

Completion Message

1.544 Mbit/s Termination

Nonhierarchical

Output for DA and PA type NPCs

[O.53133]

```
   <xy> yy-mm-dd hh:mm:ss LINK-n[vv]
M  RTRV STATE EQPT::NPC-[s]abc&&-[t]def:[ww]:LPBK COMPLD
   /* [O.53133] */
   /* Loopback state of NPC */
   "spp,spp,spp,spp,spp,spp,spp[,spp,spp,spp]"
   "spp,spp,spp,spp,spp,spp,spp[,spp,spp,spp]"
   "spp,spp,spp,spp,spp,spp,spp[,spp,spp,spp]"
   "spp,spp,spp,spp,spp,spp,spp[,spp,spp,spp]"
   /* MODULE'S FIRST NPC:MODULE'S LAST NPC */
   "[u]ghi:[u]jkl"
   /* Total Number of NPCs in the FTM in loopback state */
   "nnn"
>
.
.
.
>
   <xy> yy-mm-dd hh:mm:ss LINK-n[vv]
M  RTRV STATE EQPT::NPC-[s]abc&&-[t]def:[ww]:LPBK COMPLD
   /* [O.53133] */
   /* Loopback state of NPC */
   "spp,spp,spp,spp,spp,spp,spp[,spp,spp,spp]"
   "spp,spp,spp,spp,spp,spp,spp[,spp,spp,spp]"
   "spp,spp,spp,spp,spp,spp,spp[,spp,spp,spp]"
   "spp,spp,spp,spp,spp,spp,spp[,spp,spp,spp]"
   /* MODULE'S FIRST NPC:MODULE'S LAST NPC */
   "[v]mno:[v]pqr"
   /* Total Number of NPCs in the FTM in loopback state */
   "nnn"
>
   <xy> yy-mm-dd hh:mm:ss LINK-n[vv]
M  RTRV STATE EQPT::NPC-[s]abc&&-[t]def:[ww]:LPBK COMPLD
;
```

[O.53134]

```
   <xy> yy-mm-dd hh:mm:ss LINK-n[vv]
M  RTRV STATE EQPT::NPC-[s]abc:[ww]:LPBK COMPLD
   /* [O.53134] */
   /* Loopback state of NPC */
   "spp"
;
```

Output for TE and TH type NPCs on Hybrid DS3Us

[O.53135]

```
   <xy> yy-mm-dd hh:mm:ss LINK-n[vv]
M  RTRV STATE EQPT::NPC-[s]abc&&-[t]def:[ww]:LPBK COMPLD
   /* [O.53135] */
   /* Loopback state of NPC */
   "opq opq opq opq"
   "opq opq opq opq"
   "opq opq opq opq"
   "opq opq opq opq"
   "opq opq opq opq"
   "opq opq opq opq"
   "opq opq opq opq"
   /* MODULE'S FIRST NPC:MODULE'S LAST NPC */
   "[u]ghi:[u]jkl"
   /* Total Number of NPCs in the FTM in loopback state */
   "nnn"
>
.
.
.
.
.
>
   <xy> yy-mm-dd hh:mm:ss LINK-n[vv]
M  RTRV STATE EQPT::NPC-[s]abc&&-[t]def:[ww]:LPBK COMPLD
   /* [O.53135] */
   /* Loopback state of NPC */
   "opq opq opq opq"
   "opq opq opq opq"
   "opq opq opq opq"
   "opq opq opq opq"
   "opq opq opq opq"
   "opq opq opq opq"
   "opq opq opq opq"
   /* MODULE'S FIRST NPC:MODULE'S LAST NPC */
   "[v]mno:[v]pqr"
   /* Total Number of NPCs in the FTM in loopback state */
   "nnn"
>
   <xy> yy-mm-dd hh:mm:ss LINK-n[vv]
M  RTRV STATE EQPT::NPC-[s]abc&&-[t]def:[ww]:LPBK COMPLD
;
```

[O.53136]

```
   <xy> yy-mm-dd hh:mm:ss LINK-n[vv]
M  RTRV STATE EQPT::NPC-[s]abc:[ww]:LPBK COMPLD
   /* [O.53136] */
   /* Loopback state of NPC */
   "opq"
;
```

Hierarchical

Output for DA and TA type NPCs

[O.53133]

```
   <xy> yy-mm-dd hh:mm:ss LINK-n[vv]
M  RTRV STATE EQPT::NPC-uv-m-np&&&-wx-k-qr:[ww]:LPBK COMPLD
   /* [O.53133] */
   /* Loopback state of NPC */
   "spp,spp,spp,spp,spp,spp,spp[,spp,spp,spp]"
   "spp,spp,spp,spp,spp,spp,spp[,spp,spp,spp]"
   "spp,spp,spp,spp,spp,spp,spp[,spp,spp,spp]"
   "spp,spp,spp,spp,spp,spp,spp[,spp,spp,spp]"
   /* MODULE'S FIRST NPC:MODULE'S LAST NPC */
   "uv-m-aa:uv-m-bb"
   /* Total Number of NPCs in the FTM in loopback state */
   "nnn"
>
.
.
.
>
   <xy> yy-mm-dd hh:mm:ss LINK-n[vv]
M  RTRV STATE EQPT::NPC-uv-m-np&&&-wx-k-qr:[ww]:LPBK COMPLD
   /* [O.53133] */
   /* Loopback state of NPC */
   "spp,spp,spp,spp,spp,spp,spp[,spp,spp,spp]"
   "spp,spp,spp,spp,spp,spp,spp[,spp,spp,spp]"
   "spp,spp,spp,spp,spp,spp,spp[,spp,spp,spp]"
   "spp,spp,spp,spp,spp,spp,spp[,spp,spp,spp]"
   /* MODULE'S FIRST NPC:MODULE'S LAST NPC */
   "wx-k-aa:wx-k-bb"
   /* Total Number of NPCs in the FTM in loopback state */
   "nnn"
>
   <xy> yy-mm-dd hh:mm:ss LINK-n[vv]
M  RTRV STATE EQPT::NPC-uv-m-np&&&-wx-k-qr:[ww]:LPBK COMPLD
;
```

[O.53134]

```
   <xy> yy-mm-dd hh:mm:ss LINK-n[vv]
M  RTRV STATE EQPT::NPC-uv-m-np:[ww]:LPBK COMPLD
   /* [O.53134] */
   /* Loopback state of NPC */
   "spp"
;
```

Output for TE and TH type NPCs on Hybrid DS3Us

[O.53135]

```
    <xy> yy-mm-dd hh:mm:ss LINK-n[vv]
M   RTRV STATE EQPT::NPC-uv-m-np&&&-wx-k-qr:[ww]:LPBK COMPLD
    /* [O.53135] */
    /* Loopback state of NPC */
    "opq opq opq opq"
    "opq opq opq opq"
    "opq opq opq opq"
    "opq opq opq opq"
    "opq opq opq opq"
    "opq opq opq opq"
    "opq opq opq opq"
    /* MODULE'S FIRST NPC:MODULE'S LAST NPC */
    "uv-m-aa:uv-m-bb"
    /* Total Number of NPCs in the FTM in loopback state */
    "nnn"
>
.
.
.
.
.
>
    <xy> yy-mm-dd hh:mm:ss LINK-n[vv]
M   RTRV STATE EQPT::NPC-uv-m-np&&&-wx-k-qr:[ww]:LPBK COMPLD
    /* [O.53135] */
    /* Loopback state of NPC */
    "opq opq opq opq"
    "opq opq opq opq"
    "opq opq opq opq"
    "opq opq opq opq"
    "opq opq opq opq"
    "opq opq opq opq"
    "opq opq opq opq"
    /* MODULE'S FIRST NPC:MODULE'S LAST NPC */
    "wx-k-aa:wx-k-bb"
    /* Total Number of NPCs in the FTM in loopback state */
    "nnn"
>
    <xy> yy-mm-dd hh:mm:ss LINK-n[vv]
M   RTRV STATE EQPT::NPC-uv-m-np&&&-wx-k-qr:[ww]:LPBK COMPLD
;
```

[O.53136]

```
    <xy> yy-mm-dd hh:mm:ss LINK-n[vv]
M   RTRV STATE EQPT::NPC-uv-m-np:[ww]:LPBK COMPLD
    /* [O.53136] */
    /* Loopback state of NPC */
    "opq"
;
```

2.048 Mbit∕s Termination

Nonhierarchical

[O.53131]

```
    <xy> yy-mm-dd hh:mm:ss LINK-n[vv]
M   RTRV STATE EQPT::NPC-[s]abc&&-[t]def:[ww]:LPBK COMPLD
    /* [O.53131] */
    /* Loopback state of NPC */
[   /* d=F - Facility loopback type */]
[   /* d=E - Equipment loopback type */]
[   /* d=N - NPC not in loopback state */]
[   /* d="-" - NPC not equipped */]
[   /* d=0 - NPC not specified in the input command */]
    /* t=A - loopback with AIS and fpa is off */
[   /* t=B - loopback with AIS and fpa is on */]
[   /* t=C - transparent loopback without AIS and fpa is off */]
    /* t=T - transparent loopback without AIS and fpa is on */
    /* t=N - NPC not in loopback state */
    /* t="-" - NPC not equipped */
    /* t=0 - NPC not specified in the input command */
    "[d]t,[d]t,[d]t,[d]t,[d]t,[d]t,[d]t,[d]t"
    "[d]t,[d]t,[d]t,[d]t,[d]t,[d]t,[d]t,[d]t"
    "[d]t,[d]t,[d]t,[d]t,[d]t,[d]t,[d]t,[d]t"
    "[d]t,[d]t,[d]t,[d]t,[d]t,[d]t,[d]t,[d]t"
    /* MODULE'S FIRST NPC:MODULE'S LAST NPC */
    "[u]ghi:[u]jkl"
    /* Total Number of NPCs in the FTM in loopback state */
    "nnn"
>
.
.
.
>
    <xy> yy-mm-dd hh:mm:ss LINK-n[vv]
M   RTRV STATE EQPT::NPC-[s]abc&&-[t]def:[ww]:LPBK COMPLD
    /* [O.53131] */
    /* Loopback state of NPC */
[   /* d=F - Facility loopback type */]
[   /* d=E - Equipment loopback type */]
[   /* d=N - NPC not in loopback state */]
[   /* d="-" - NPC not equipped */]
[   /* d=0 - NPC not specified in the input command */]
    /* t=A - loopback with AIS and fpa is off */
[   /* t=B - loopback with AIS and fpa is on */]
[   /* t=C - transparent loopback without AIS and fpa is off */]
    /* t=T - transparent loopback without AIS and fpa is on */
    /* t=N - NPC not in loopback state */
    /* t="-" - NPC not equipped */
    /* t=0 - NPC not specified in the input command */
    "[d]t,[d]t,[d]t,[d]t,[d]t,[d]t,[d]t,[d]t"
```

```
    "[d]t,[d]t,[d]t,[d]t,[d]t,[d]t,[d]t,[d]t"
    "[d]t,[d]t,[d]t,[d]t,[d]t,[d]t,[d]t,[d]t"
    "[d]t,[d]t,[d]t,[d]t,[d]t,[d]t,[d]t,[d]t"
    /* MODULE'S FIRST NPC:MODULE'S LAST NPC */
    "[v]mno:[v]pqr"
    /* Total Number of NPCs in the FTM in loopback state */
    "nnn"
>
    <xy> yy-mm-dd hh:mm:ss LINK-n[vv]
M   RTRV STATE EQPT::NPC-[s]abc&&-[t]def:[ww]:LPBK COMPLD
;
```

[O.53132]

```
    <xy> yy-mm-dd hh:mm:ss LINK-n[vv]
M   RTRV STATE EQPT::NPC-[s]abc:[ww]:LPBK COMPLD
    /* [O.53132] */
    /* Loopback state of NPC */
[   /* d=F - Facility loopback type */]
[   /* d=E - Equipment loopback type */]
[   /* d=N - NPC not in loopback state */]
[   /* d="-" - NPC not equipped */]
[   /* d=0 - NPC not specified in the input command */]
    /* t=A - loopback with AIS and fpa is off */
[   /* t=B - loopback with AIS and fpa is on */]
[   /* t=C - transparent loopback without AIS and fpa is off */]
    /* t=T - transparent loopback without AIS and fpa is on */
    /* t=N - NPC not in loopback state */
    /* t="-" - NPC not equipped */
    /* t=0 - NPC not specified in the input command */
    "[d]t"
;
```

Hierarchical

[O.53131]

```
    <xy> yy-mm-dd hh:mm:ss LINK-n[vv]
M   RTRV STATE EQPT::NPC-uv-m-np&&&-wx-k-qr:[ww]:LPBK COMPLD
    /* [O.53131] */
    /* Loopback state of NPC */
[   /* d=F - Facility loopback type */]
[   /* d=E - Equipment loopback type */]
[   /* d=N - NPC not in loopback state */]
[   /* d="-" - NPC not equipped */]
[   /* d=0 - NPC not specified in the input command */]
    /* t=A - loopback with AIS and fpa is off */
[   /* t=B - loopback with AIS and fpa is on */]
[   /* t=C - transparent loopback without AIS and fpa is off */]
    /* t=T - transparent loopback without AIS and fpa is on */
    /* t=N - NPC not in loopback state */
    /* t="-" - NPC not equipped */
```

```
                    /* t=0 - NPC not specified in the input command */
                    "[d]t,[d]t,[d]t,[d]t,[d]t,[d]t,[d]t,[d]t"
                    "[d]t,[d]t,[d]t,[d]t,[d]t,[d]t,[d]t,[d]t"
                    "[d]t,[d]t,[d]t,[d]t,[d]t,[d]t,[d]t,[d]t"
                    "[d]t,[d]t,[d]t,[d]t,[d]t,[d]t,[d]t,[d]t"
                    /* MODULE'S FIRST NPC:MODULE'S LAST NPC */
                    "uv-m-aa:uv-m-bb"
                    /* Total Number of NPCs in the FTM in loopback state */
                    "nnn"
         >
         .
         .
         .
         >
            <xy> yy-mm-dd hh:mm:ss LINK-n[vv]
      M  RTRV STATE EQPT::NPC-uv-m-np&&&-wx-k-qr:[ww]:LPBK COMPLD
            /* [O.53131] */
            /* Loopback state of NPC */
      [  /* d=F - Facility loopback type */]
      [  /* d=E - Equipment loopback type */]
      [  /* d=N - NPC not in loopback state */]
      [  /* d="-" - NPC not equipped */]
      [  /* d=0 - NPC not specified in the input command */]
            /* t=A - loopback with AIS and fpa is off */
      [  /* t=B - loopback with AIS and fpa is on */]
      [  /* t=C - transparent loopback without AIS and fpa is off */]
            /* t=T - transparent loopback without AIS and fpa is on */
            /* t=N - NPC not in loopback state */
            /* t="-" - NPC not equipped */
            /* t=0 - NPC not specified in the input command */
            "[d]t,[d]t,[d]t,[d]t,[d]t,[d]t,[d]t,[d]t"
            "[d]t,[d]t,[d]t,[d]t,[d]t,[d]t,[d]t,[d]t"
            "[d]t,[d]t,[d]t,[d]t,[d]t,[d]t,[d]t,[d]t"
            "[d]t,[d]t,[d]t,[d]t,[d]t,[d]t,[d]t,[d]t"
            /* MODULE'S FIRST NPC:MODULE'S LAST NPC */
            "wx-k-aa:wx-k-bb"
            /* Total Number of NPCs in the FTM in loopback state */
            "nnn"
      >
            <xy> yy-mm-dd hh:mm:ss LINK-n[vv]
      M  RTRV STATE EQPT::NPC-uv-m-np&&&-wx-k-qr:[ww]:LPBK COMPLD
      ;
```

[O.53132]

```
            <xy> yy-mm-dd hh:mm:ss LINK-n[vv]
      M  RTRV STATE EQPT::NPC-uv-m-np:[ww]:LPBK COMPLD
            /* [O.53132] */
            /* Loopback state of NPC */
      [  /* d=F - Facility loopback type */]
      [  /* d=E - Equipment loopback type */]
      [  /* d=N - NPC not in loopback state */]
```

```
[   /* d="-" - NPC not equipped */]
[   /* d=0 - NPC not specified in the input command */]
    /* t=A - loopback with AIS and fpa is off */
[   /* t=B - loopback with AIS and fpa is on */]
[   /* t=C - transparent loopback without AIS and fpa is off */]
    /* t=T - transparent loopback without AIS and fpa is on */
    /* t=N - NPC not in loopback state */
    /* t="-" - NPC not equipped */
    /* t=0 - NPC not specified in the input command */
    "t[g]"
;
```

Denial Message   **Nonhierarchical**

[O.53131.01]

```
    <xy> yy-mm-dd hh:mm:ss LINK-n[vv]
M   RTRV STATE EQPT::NPC-[s]abc[&&-[t]def]:[ww]:LPBK DENY
    mmmm
    /* [O.53131.01] */
    /* <explanation of error condition code> */
;
```

Hierarchical

[O.53131.01]

```
    <xy> yy-mm-dd hh:mm:ss LINK-n[vv]
M   RTRV STATE EQPT::NPC-uv-m-np[&&&-wx-k-qr]:[ww]:LPBK DENY
    mmmm
    /* [O.53131.01] */
    /* <explanation of error condition code> */
;
```

Explanation of Parameters

LPBK	Loopback
NPC	Network processing circuit

If an NPC range is specified in the input command, the following floating window rules apply:

1. Unequipped NPCs within the requested range will be skipped.

2. If the first NPC in the range is a DA or TA type NPC, only those NPC types will be reported on.

	3.	If the first NPC in the range is a TE or TH type NPC on a Hybrid DS3U, then only those type of NPCs will be reported on.
	4.	If the first NPC in the range is a PA, PB, or PC type NPC, then only those NPC types will be reported on.

nnn   Total Number of NPCs in the module that are in the loopback state

COND   Condition

[s]abc   The 3- or 4-digit nonhierarchical NPC number, start of NPC range

[t]def   The 3- or 4-digit nonhierarchical NPC number, end of NPC range

[u]ghi   Lowest numbered NPC in the FTM that contains NPC [s]abc

[v]mno   Lowest numbered NPC in the FTM that contains NPC [t]def

[u]jkl   Highest numbered NPC in the FTM that contains NPC [s]abc

[v]pqr   Highest numbered NPC in the FTM that contains NPC [t]def

FTM is an acronym for Facility Terminating Module.

For FTMs in FTUs or IFTUs, each row contains 10 values of output.

For FTMs within DS3Us each row contains 7 values.

For FTMs within HDS3Us each row contains 4 values.

If NPC numbers are expressed in three digits, the valid values are:

DA type NPC numbers listed by unit number, Unit Type FT (FTU):

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	481-640	801-960

If NPC numbers are expressed in four digits, the valid values are:

DA type NPC numbers listed by unit number, Unit Type FT (FTU):

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

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

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

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

If NPC numbers are expressed in three digits, the valid values are:

TA type NPC numbers listed by unit number, Unit Type DT (DS3U):

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

If NPC numbers are expressed in four digits, the valid values are:

TA type NPC numbers listed by unit number, Unit Type DT (DS3U):

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

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

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

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

If NPC numbers are expressed in three digits, the valid values are:

TE type NPC numbers listed by unit number, HT (HDS3U)::

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

If NPC numbers are expressed in four digits, the valid values are:

TE type NPC numbers listed by unit number, Unit Type HT (HDS3U):

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

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

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

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

If NPC numbers are expressed in three digits, the valid values are:

TH type NPC numbers listed by unit number, Unit Type HT (HDS3U):

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

If NPC numbers are expressed in four digits, the valid values are:

TH type NPC numbers listed by unit number, Unit Type HT (HDS3U):

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

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

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

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

If NPC numbers are expressed in three digits, the valid values are:

PA, PB, and PC type NPC numbers listed by unit number, Unit Type FT (IFTU2/IFTU/FTU):

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

If NPC numbers are expressed in four digits, the valid values are:

PA, PB and PC type NPC numbers listed by unit number, Unit Type FT (IFTU2/IFTU/FTU):

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

uv-m-np   Hierarchical NPC number for beginning of NPC range

wx-k-qr   Hierarchical NPC number for end of NPC range

uv-m-aa   Lowest numbered NPC in the FTM that contains NPC uv-m-np

FTM is an acronym for Facility Terminating Module.

The parameter value for NPC aa is in the first position, first line of the message.

uv-m-bb   Highest numbered NPC in the FTM that contains NPC uv-m-np

The parameter value for NPC bb is just before EOM or COMPL.

wx-k-aa   Lowest numbered NPC in the FTM that contains NPC wx-k-qr

The parameter value for NPC aa is in the first position, first line of the message.

wx-k-bb   Highest numbered NPC in the FTM that contains NPC wx-k-qr

The parameter value for NPC bb is just before EOM or COMPL.

For FTMs in FTUs or IFTUs, each row contains 10 values of output.

For FTMs within DS3Us each row contains 7 values.

For FTMs within HDS3Us each row contains 4 values.

uv,wx   Unit number

m,k   Module number

np,qr,
aa,bb   NPC number within the module

The valid values are:

DA type NPC numbers listed by unit, module, and NPC Number Unit Type FT (FTU)

Unit	Module	NPC
1 - 16	1 - 40	1 - 40

TA NPC numbers listed by unit, module, and NPC Number Unit Type DT (DS3U)

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

TE NPC numbers listed by unit, module, and NPC Number Unit Type HT (HDS3U)

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

TH NPC numbers listed by unit, module, and NPC Number
Unit Type HT (HDS3U)

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

⇒ **NOTE:**
The valid TH NPC numbers are: 01-03, 05-07, 09-11, 13-15, 17-19, 21-23, 25-27.

PA, PB, and PC type numbers listed by unit, module, and NPC Number Unit Type FT (IFTU2/IFTU/FTU)

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

The range of NPCs in the denial messages will be given either as module or unit boundaries depending upon the reason for the denial.

1.544 Mbit/s Termination

spp   Loopback Type

Values of "spp" are presented in NPC order, grouped within messages by Facility Terminating Module (FTM). For FTMs in Facility Terminating Units, each row of output contains 10 values. For FTMs in DS3 Units, each row of output contains 7 values.

s	*Explanation*
*	Loopback enabled
' '	Loopback disabled (The "s" character is a "space".)

pp	*Explanation*
NP	Near-end payload loopback active (ANSI - DA/TA type NPCs)
FP	ANSI Far-end payload loopback active
FL	ANSI Far-end line loopback active
NN	No loopback active

	00	NPC not specified in input range command
	--	NPC not equipped, or non-ANSI type
opq	Loopback Type	

Values of "opq" are presented in NPC order, grouped within messages by DS2s. Since there are 7 DS2s within a Hybrid DS3, seven rows are generated in the output message, one for each DS2. Each DS2 may either carry four DS1 circuits or three E1 circuits. If a DS2 carries E1 circuits, then the fourth position in each row will not show any data. It will show dashes instead.

o	*Explanation*
D	This is an NPC that carries a DS1 circuit.
E	This is an NPC that carries an E1 circuit.
-	This is the fourth position of a DS2 carrying E1s.
-	This NPC is not equipped or provisioned.
-	This NPC is not in input range.

pq	*Explanation*
FA	Line loopback towards facility active with AIS insertion
FN	Line loopback towards facility active without AIS insertion
RA	Remote (far-end) line loopback is active with AIS insertion
NN	No loopback active
00	NPC not specified in input range command
--	NPC not equipped or provisioned.

2.048 Mbit∕s Termination

d   Loopback direction specifier

The optional "d" will only be output for PA NPCs. For PDS output, a "blank" space in the "d" position will be used for PB/PC NPCs to line-up the output if at least one PA type NPC is within the specified range. Otherwise, no "blank" space at the "d" position will be used for PB/PC NPCs. No "blank" space is used in the MML output format.

d   *Explanation*

F   Facility loopback, the F type loops the incoming 2 Mbit/s bipolar signal back to the facility.

E   Equipment loopback, the E type loops the outgoing 2 Mbit/s signal back to DACS II equipment. This type is not applicable to PB or PC type NPCs.

N   Not in a loopback state

-   NPC not equipped

0   NPC not specified in the input command, valid for range commands only

t   Signal transmission and PM processing specifier for loopback

Values of "t" are presented in NPC order, grouped within messages by Facility Terminating Module

t   *Explanation*

A   Loopback with AIS downstream/upstream and facilityPerformance Monitoring (PM) turned off.

B   Loopback with AIS downstream/upstream and PM turned on.

C   Loopback with pass-through and PM turned off.

T   Loopback with pass-through and PM turned on.

N   Not in a loopback state

-   NPC not equipped

0   NPC not specified in the input command, valid for range commands only

mmmm   Error condition code

mmmm	*Explanation*
ENEQ	Unit is not equipped
ENEQ	FTMI is not equipped
SNVS	FTMI type error
SNVS	NPC type error
IDNV	Invalid CEPT NPC

Glossary

A

AIS
: Alarm Indication Signal (also known as all 1s signal).

Alarm Indication Signal (AIS)
: A signal transmitted downstream to indicate that network transmission line failures were detected upstream.

All Ones Signal
: Another name for DS1 Alarm Indication Signal (AIS). It is defined to contain all ones in the terminal-to-terminal mode.

B

BER
: Bit Error Rate.

Byte
: Usually refers to a group of eight consecutive binary digits, but sometimes used for bit groups of other sizes.

C

CEF
: Capacity Expansion Frame.

CEPT
: Conference of European Postal Telecommunications (standard E1signal: 2.048 Mb/s).

CGA
: Carrier Group Alarm.

Cross-Connect
: A piece of hardware used to interconnect line-terminating equipment, multiplexers, and other equipment.

Cross-Connection
: An interconnection between two specified NPC channels.

D

DACS
  Digital Access and Cross-Connect System.

Default
  A value the system automatically uses for a parameter if you do not specify a value.

Demultiplexer
  A device used with a multiplexed signal for recovering signals contained within it and restoring the
  distinct individual channels of these signals.

DS0
  Digital Signal Level 0 (64-kb/s).

DS1
  Digital Signal Level 1 (1.544-Mb/s).

DS1 Data Rate
  The DS1 Data Rate is calculated as follows: DS1 = (24 Channels x 8 bit/sample + 1 frame bit) x 8000
  samples/sec DS1 = 193 x 8000 = 1.544 Mb/s.

DS1 Port
  A DS1 port in either a DS1 interface module or a DS3 interface module.

DS3
  Digital Signal Level 3.

DS3U
  DS3 Unit.

E

E1 Data Rate
   The E1 Data Rate is calculated as follows:
  E1 = (32 Channels x 8 bit/sample) x 8000 samples/sec
  E1 = 256 x 8000 = 2.048 Mb/s

  With this data rate, 30 channels carry traffic and two channels are reserved; one channel contains
  framing information and the other channel contains signaling information.

H

HDS3
   Hybrid DS3.

HDS3U
   Hybrid DS3 Unit.

HMXR
   Hybrid Multiplexer.

I

IDLD
   Idled.

Idle
   An output port is idle if it is not cross-connected to an input port.

Idle Channel
   A channel on an NPC that has not been cross-connected.

K

kb/s or kbit/s
   Kilobit Per Second.

L

LOF
   Loss of Frame.

Loopback
   A circuit arrangement that causes a received signal to be returned to its source.

LOS
   Loss of Signal.

M

Mb
   Megabit

Mb/s or Mbit/s
   Megabit Per Second.

MIU
   Multipoint Interface Unit.

MMFG
   Multiplexer-MIU Functional Group or HMXR-MIU Functional Group.

MML
   HuMan-Machine Language (a language used by the DACS II).

MXR
   Mutliplexer.

N

NPC
   Network Processing Circuit.

P

PBA
   Primary Block Alarm.

PDS
   Program Documentation Standards (a language used by the DACS II).

R

R16
Remote Alarm Indication in TS16.

RAI
Remote Alarm Indication.

RAIS
Remote Alarm Indication Signal.

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