ISDN Basic Rate Interface Maintenance
Avaya Communication Server 1000

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NN43001-718
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Contents

Chapter 1: New in this release

The following sections detail what's new in *Avaya ISDN Basic Rate Interface Maintenance, NN43001-718* for Avaya Communication Server 1000 (Avaya CS 1000) Release 7.6:

- Features on page 7
- Other changes on page 7

Features

There are no updates to the feature descriptions in this document.

Other changes

Revision History

March 2013	Standard 06.01. This document is up-issued to support Communication Server 1000 Release 7.6.
November 2010	Standard 05.02. This document is published to support Avaya Communication Server 1000 Release 7.5.
November 2010	Standard 05.01. This document was issued to support Avaya Communication Server 1000 Release 7.5.
June 2010	Standard 04.01. This document is up-issued to support Avaya Communication Server 1000 Release 7.0.
February 2010	Standard 03.02. This document is up-issued to support Avaya Communication Server 1000 Release 6.0.
May 2009	Standard 03.01. This document is up-issued to support Communication Server 1000 Release 6.0.
December 2007	Standard 02.03. This document has been up-issued to support Communication Server 1000 Release 5.5.

June 2007	Standard 01.02. This document was up-issued to remove the Confidential statement.
May 2007	Standard 01.01. This document is issued to support Communication Server 1000 Release 5.0. This document contains information previously contained in the following legacy document, now retired: *ISDN Basic Rate Interface: Maintenance, NN43001-718*. No new content has been added for Communication Server 1000 Release 5.0. All references to Communication Server 1000 Release 4.5 are applicable to Communication Server 1000 Release 5.0.
August 2005	Standard 3.00. This document is up-issued to support Communication Server 1000 Release 4.5.
September 2004	Standard 2.00. This document is up-issued for Communication Server 1000 Release 4.0.
October 2003	Standard 1.00. This document is new for Succession 3.0. It was created to support a restructuring of the Documentation Library, which resulted in the merging of multiple legacy documents. This new document consolidates information previously contained in the following legacy documents, now retired: • *ISDN Basic Rate Interface Maintenance, 553-3901-500* • *Basic Rate Interface, NN43001-718*

Chapter 2: Customer service

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Navigation

- Getting technical documentation on page 9
- Getting product training on page 9
- Getting help from a distributor or reseller on page 9
- Getting technical support from the Avaya Web site on page 10

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Chapter 3: Introduction

This document is a global document. Contact your system supplier or your Avaya representative to verify that the hardware and software described are supported in your area.

Subject

This document describes ISDN Basic Rate Interface (BRI) maintenance tools and procedures to assist in identifying faults, locating defective units, correcting problems by fixing or replacing defective units, and verifying operation after the corrections or replacements have been made.

This document focuses on the maintenance of ISDN BRI equipment installed in Meridian 1 and CS 1000M systems, and requires that non-ISDN BRI functions operate correctly before starting to diagnose ISDN BRI problems.

Please note the following:

- ISDN BRI trunking is not supported in North America.
- The Basic Rate Signaling Concentrator (BRSC) is not supported on Small Systems.
- The integrated Meridian 1 Packet Handler (MPH) is not supported on Small Systems.

Note on legacy products and releases

This document contains information about systems, components, and features that are compatible with Avaya Communication Server 1000 software. For more information on legacy products and releases, click the Technical Documentation link under Support & Training on the Avaya home page: www.avaya.com.

Applicable systems

This document applies to the following systems:

- Communication Server 1000M Single Group (CS 1000M SG)
- Communication Server 1000M Multi Group (CS 1000M MG)
- Communication Server 1000E (CS 1000E)

System migration

When particular Meridian 1systems are upgraded and configured to include a Signaling Server, they become Avaya CS 1000M systems. The following table lists each Meridian 1 system that supports an upgrade path to a CS 1000M system.

Table 1: Meridian 1 systems to CS 1000M systems

This Meridian 1 system...	Maps to this CS 1000M system
Meridian 1 PBX 11C Chassis	CS 1000E
Meridian 1 PBX 11C Cabinet	CS 1000E
Meridian 1 PBX 61C	CS 1000MSingle Group
Meridian 1 PBX 81C	CS 1000MMulti Group

Intended audience

This document is intended for individuals responsible for administering CS 1000 and Meridian 1 systems.

Related information

This section lists information sources that relate to this document.

Documents

The following documents are referenced in this document:

- *Avaya Features and Services Fundamentals, NN43001-106*
- *Avaya Software Input Output Administration, (NN43001-611)*
- *Avaya Software Input Output Reference - Maintenance, (NN43001-711)*

Online

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Chapter 4: Isolate and correct faults

Contents

This section contains information on the following topics:

Introduction

This chapter explains how to identify and clear ISDN BRI faults. It is assumed that readers possess a basic knowledge of fault clearing methods described in *Avaya Communication Server 1000M and Meridian 1 Large System Maintenance (NN43021-700)* and *Meridian 1 Small System Maintenance, NN43011-700*.

Fault detection and correction

Based on whether ISDN BRI is newly installed and not yet operational, or previously installed and not operating properly, try to determine the probable cause of system or card failure.

Problems can occur in the following three areas:

- hardware
- configuration
- software

The types of faults requiring isolation and correction depend on whether faults occur due to incorrect installation or are due to component failure. For example, in a newly installed system, the fault might lie in any or all of the three areas; however, in a mature system, the fault probably lies in the hardware.

Newly installed ISDN BRI equipment

Problems occurring while installing ISDN BRI equipment are usually caused by the following:

- improperly installed cards
- loose or improperly connected cables or improperly wired cross-connect in the DSL

- incorrect software
- incorrect ISDN BRI configuration

Previously operating ISDN BRI equipment

Problems occurring during the normal operation of ISDN BRI equipment are usually caused by the following:

- faulty cards
- accidental cable disconnection
- faulty power supply
- improper environmental conditions

Isolate faults

Figure 1: ISDN BRI fault isolate flowchart on page 18 presents a flowchart that reflects ISDN BRI service problems. Based on the symptoms that these problems exhibit, the flowchart refers to test procedures in this document that can resolve these problems.

If the problem cannot be resolved after exhausting all available diagnostic tools and test procedures, list all the observed symptoms and contact your technical service representative.

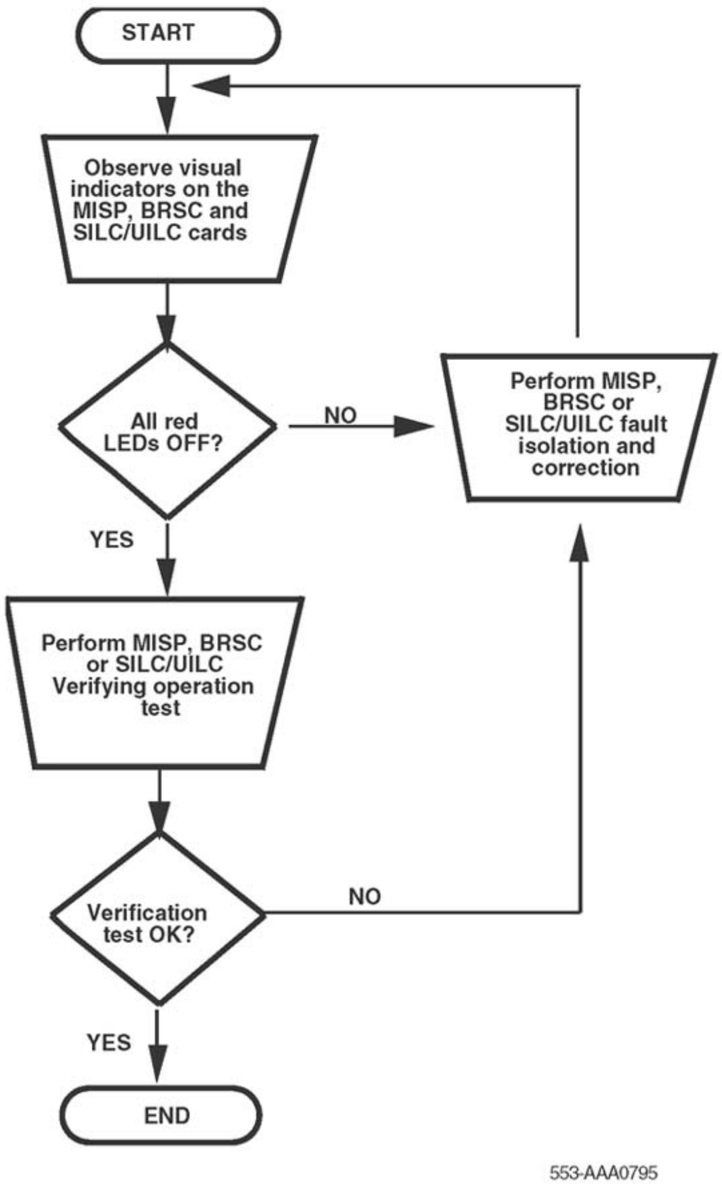

Figure 1: ISDN BRI fault isolate flowchart

Table 2: ISDN BRI equipment problems on page 18 lists the symptoms, diagnoses, and possible solutions to ISDN BRI problems.

Table 2: ISDN BRI equipment problems

Symptoms	Diagnosis	Solution
Red LED on the MISP is permanently on.	The Multi-purpose ISDN Signaling Processor (MISP) is faulty, has not been configured, or is disabled.	Check the MISP status - go to MISP fault isolation and correction on page 20. If all the MISPs in the system show red LED on, check the program

Symptoms	Diagnosis	Solution
	Program software download (PSDL) has failed due to MISP or disk failure.	software download; otherwise, replace the defective MISP.
Automatic recovery routine activates every 30 seconds to enable or disable the MISP as indicated by the MISP LED flashing every 30 seconds.	Incompatibility between the software configuration and the application indicating a missing or incorrectly configured MISP. The MISP is faulty.	Check that the MISP is installed in the correct card slot. To verify the MISP configuration parameters, refer to the *Avaya ISDN Basic Rate Interface Feature Fundamentals (NN43001-580)*. Go to Perform MISP self-test on page 25.
Red LEDs on one or more S/T Interface Linecards (SILCs), U Interface Linecards (UILCs) or Basic Rate Signaling Concentrators (BRSCs) are permanently on.	The SILCs and/or UILCs and/or BRSCs are faulty, disabled, or not configured.	Check the card status - go to SILC or UILC fault isolation and correction on page 41 or Perform BRSC self-test on page 36.
Calls cannot be placed or received on all SILCs and/ or UILCs or BRSCs associated with a specific MISP.	The MISP, BRSC(s), or line cards are faulty, have not been configured, or are disabled.	Check the MISP status - go to MISP fault isolation and correction on page 20. Check the card status - go to "SILC or UILC fault isolation and correction or Perform BRSC self-test on page 36.
Calls cannot be placed or received on some SILCs and/or UILCs or BRSCs associated with a specific MISP.	The SILCs and/or UILCs or BRSCs are faulty or disabled. The loop or the module is disabled. The signaling link between the MISP and the BRSC, SILCs, or UILCs is faulty.	Check the card status - go to SILC or UILC fault isolation and correction on page 41 or Perform BRSC self-test on page 36. Check the continuity of the signaling channel - go to MPH loopback tests on page 53.
Calls cannot be placed or received on some Digital Subscriber Loops (DSLs) on a particular line card.	The DSLs are incorrectly configured, not configured, or disabled. Signaling link between the MISP, the BRSC, or the SILCs or UILCs is faulty. ISDN BRI terminal is faulty or incorrectly configured. Duplicate TEIs may exist on the DSL DSL wiring is faulty.	Check the status of each DSL - go to SILC or UILC fault isolation and correction on page 41 or Perform BRSC self-test on page 36. Check the signaling link between the MISP and the BRSC, and the SILC and/or SILCs - go to MPH loopback tests on page 53. Check the ISDN BRI terminal user guide to ensure the terminal is operating correctly. Perform a Terminal Endpoint Identifier (TEI) check on the DSL.

Symptoms	Diagnosis	Solution
		Check the DSL wiring.
Problems with features on ISDN BRI terminals.	Incorrect DSL and/or Terminal Service Profile (TSP) configuration for the connected ISDN BRI terminals.	Verify the DSL and the TSP parameters, with the configuration procedures found in the *Avaya ISDN Basic Rate Interface Installation and Commissioning (NN43001-318)*.
User reports problems with calls on specific type terminals.	Mismatch between the DSL configuration and the terminal type connected to the DSL, a faulty terminal, or a faulty connection to the DSL.	Go to SILC or UILC fault isolation and correction on page 41 or Perform BRSC self-test on page 36. to check the status of each DSL. Check the DSL wiring. Check the ISDN BRI terminal user manual to determine if the terminal is operating correctly and is configured correctly.

MISP fault isolation and correction

The MISP provides a communication interface between the CPU and the peripheral devices. It communicates with the CPU over the CPU bus. It communicates with the BRSCs, the SILCs, and the UILCs over the Network bus. Both buses are located on the Network module backplane. It uses one network loop to interface with the BRSCs, the SILCs, and the UILCs.

The MISP processes the signaling information received on the D-channels from the DSLs. If a BRSC is not used, the MISP also separates packet data from signaling information and forwards it to the packet handler on the D-channels.

Problems with the MISP may be caused by hardware faults, incorrect configuration, disabled MISP, or continuity problems between the MISP and other network cards connected to the network bus. To isolate and correct the MISP-related problems, use the following procedures.

Check MISP status

To isolate and correct the MISP-related problems, follow the procedures below.

Note:

Throughout this section, on a Small System, lll (loop) should be interpreted as c (card). Similarly, all references to network loops or loop numbers should be interpreted as cards or card slot numbers.

Checking MISP status

1. Log in on the maintenance terminal and load LD 32 (type in LD 32).
2. Enter **STAT lll**, where lll is the MISP loop number.

   If the response is

   ```
   lll : MISP LOOP
   mm  DSBL      nn  BUSY
   MISP lll: ENBL  ACTIVATED  xx/xx/xx xx:x
   BRIL/BRIT :  ENBL
   ```

   then

   The MISP loop is enabled,

   - BRIL or BRIT is the ISDN line or trunk application on the MISP (whichever is configured).
   - mm = the number of disabled network timeslots on the MISP network loop. This should be 0. If mm>0, disabled timeslots are indicated. Go to "Check the SILC or UILC status". If a BRSC is configured, go to "Check the BRSC status".
   - nn = the number of busy network timeslots on the MISP network loop. If a BRSC is not used, this number equals 2 x (number of line cards + 1), where 1 indicates that packet data transmission is configured; that is, there are 2 timeslots for each SILC or UILC and an additional timeslot for packet handling. If a BRSC is used, nn equals 2 x (number of line cards) + number of BRSCs + 1.
   - xx/xx/xx xx:x = date and time the MISP base code was activated.

   If the response is

   ```
   lll=MISP LOOP
   DISABLED RESPONDING
   MISP lll  MAN  DSBL
   ```

   then

   The MISP loop:

   - has been manually disabled by DISL lll;
   - has an overload condition; or
   - has failed the self-test when enabling this loop.

   Enable the MISP loop by typing **ENLL lll**, where lll is the MISP loop number. A message indicating that the MISP is enabled and working is displayed on the console. Observe the red LED on the MISP. If it extinguishes, the MISP is functioning correctly. If the LED stays lit, the MISP probably failed the self-test and a message should be displayed on the maintenance terminal. If the message indicates that the MISP is faulty, If an overload condition exists, the card is also faulty. In either case, replace the card. For Large Systems, refer to the *Avaya ISDN Basic Rate Interface Installation and Commissioning (NN43001-318)*. For Small Systems, refer to the

Avaya ISDN Basic Rate Interface Installation and Commissioning (NN43001-318).

If the self-test fails, refer to Perform MISP self-test on page 25 for corrective action.

If the response is

```
BRIL/BRIT: MAN  DSBL
```

then the BRIL/BRIT application is manually disabled.

Enable the MISP loop by typing **ENLL lll**, where lll is the MISP loop number. A message indicating that the MISP is enabled and working is displayed on the console. Observe the red LED on the MISP. If it extinguishes, the MISP is functioning correctly. If the LED stays lit, the MISP probably failed the self-test and a message should be displayed on the maintenance terminal. If the message indicates that the MISP is faulty, replace it.

If the response is

```
BRIL/BRIT:SYS DSBL
```

then the BRIL/BRIT application is system-disabled.

Enable the MISP loop by typing **ENLL lll**, where lll is the MISP loop number. A message indicating that the MISP is enabled and working is displayed on the console. Observe the red LED on the MISP. If it extinguishes, the MISP is functioning correctly. If the LED stays lit, the MISP probably failed the self-test and a message should be displayed on the maintenance terminal. If the message indicates that the MISP is faulty, replace it.

If the response is

```
NO APPLICATION CONFIGURED
```

then the BRIL/BRIT application is not configured on the MISP. Configure the BRIL/BRIT application. Refer to *Avaya ISDN Basic Rate Interface Feature Fundamentals (NN43001-580)*.

If the response is

```
lll=MISP LOOP
DISABLED RESPONDING
MISP lll  SYS  DSBL - xxxxxxxx
```

then the MISP is responding, but the MISP loop:

- has been system-disabled
- an overload condition exists on the loop, or
- the self-test failed when enabling the MISP loop

- xxxxxxxx may indicate one of the following:
    - SELF TESTING - the card is performing self-test.

- SELFTEST PASSED - the card successfully completed self-test.
- BOOTLOADING - the base code is downloading to the MISP.
- SELFTEST FAILED - the self-test failed. Refer to Perform MISP self-test on page 25.
- FATAL ERROR - the MISP has a serious problem. Perform an MISP self-test or loopback test as detailed in Perform MISP self-test on page 25 and Perform MISP loopback tests on page 26.
- SHARED RAM TEST FAILED - the card has a memory problem. Check the memory allocation on the MISP card.
- OVERLOAD - the card is faulty and experienced an overload. Replace the card.
- RESET THRESHOLD - the card reached the specified threshold, which must be reset.
- STUCK INTERRUPT - hardware failure, interrupt is permanently ON.

If the response is

```
lll=MISP LOOP
DISABLED NOT RESPONDING
MISP lll  MAN  DSBL
```

then the MISP loop is manually disabled, and the MISP is:

- not responding
- missing
- installed in an incorrect slot, or
- faulty

Check for these conditions and refer to the appropriate test procedure.

When the NOT RESPONDING condition is cleared, enable the MISP loop by typing ENLL lll, where lll is the MISP loop number. A message indicating that the MISP is enabled and working is displayed on the console. Observe the red LED on the MISP. If it extinguishes, the MISP is functioning correctly. If the LED stays lit, the MISP probably failed the self-test and a message should be displayed on the maintenance terminal. If the message indicates that the MISP is faulty, replace it.

If the response is

```
lll=MISP LOOP
DISABLED NOT RESPONDING
MISP lll  SYS  DSBL  -  NOT RESPONDING
```

then the MISP is system-disabled and:

- not responding
- missing
- installed in an incorrect slot, or

- faulty

The MISP loop is system-disabled.

Check for these conditions and refer to the appropriate test procedure.

A background routine tries to enable the MISP as soon as the NOT RESPONDING condition is cleared.

3. To obtain the ISDN BRI application status, enter **STAT BRIL/MPH lll** (for a line) or **STAT BRIT lll** (for a trunk) and observe the response.

   If the response is

```
lll:MISP LOOP
APPLICATION   ENBL   ACTIVATED - xx/xx/xx xx:xx
```

   then the application has been activated at the date and time specified by xx/xx/xx xx:xx.

   If the response is

```
lll:MISP LOOP
APPLICATION   NOT CONFIGURED
```

   then the application is not configured for the specified MISP. Configure the BRIL/BRIT application. Refer to *Avaya ISDN Basic Rate Interface Feature Fundamentals (NN43001-580)*.

   If the response is

```
lll:MISP LOOP
DISABLED  NOT RESPONDING
```

   then the application status is not displayed because the MISP running the application is disabled or faulty and is not responding. Check for these conditions and refer to the appropriate test procedure.

   Enable the MISP as soon as the cause of NOT RESPONDING is cleared, by typing **ENLL lll**, where lll is the MISP loop number. A message indicating that the MISP is enabled and working is displayed on the console. Observe the red LED on the MISP. If it extinguishes, the MISP is functioning correctly. If the LED stays lit, the MISP probably failed the self-test and a message should be displayed on the maintenance terminal. If the message indicates that the MISP is faulty, replace it.

   If the response is

```
lll:MISP LOOP
DISABLED  RESPONDING
```

   then the application status is not displayed because the MISP running the application is responding but is disabled. Check for these conditions and refer to the appropriate test procedure.

If the response is

```
lll:MISP LOOP
APPLICATION  MAN  DISABLED
```

then the application is manually disabled using LD 32. Enable the MISP loop by typing **ENLL lll**, where lll is the MISP loop number. A message indicating that the MISP is enabled and working is displayed on the console. Observe the red LED on the MISP. If it extinguishes, the MISP is functioning correctly. If the LED stays lit, the MISP probably failed the self-test and a message should be displayed on the maintenance terminal. If the message indicates that the MISP is faulty, replace it.

If the response is

```
lll:MISP LOOP
APPLICATION  SYS  DISABLED
```

then the application is system-disabled; the background routine will attempt to enable it again.

Perform MISP self-test

Note:

Throughout this section, for a Small System, lll (loop) should be interpreted as c (card). Similarly, all references to network loops or loop numbers should be interpreted as cards or card slot numbers.

If the MISP status indicates that the MISP is faulty, conduct the self-test to verify that this MISP is faulty before replacing it. This test verifies the basic MISP functions and outputs a fail or pass message after the test is completed. To run the self-test, perform the following steps:

Performing an MISP self-test

1. Log in on the maintenance terminal and load LD 32 (type in **LD 32**).
2. Type **DISL lll** and press the ENTER key to disable the MISP loop, where lll is the MISP loop number. If the MISP is already disabled, go to step 4 on page 25.
3. Exit LD 32 by typing **** at the prompt.
4. Type **LD 30** and press the ENTER key to access the Network and Signaling Diagnostic Program to perform the self-test.
5. Type **SLFT lll type** and press the ENTER key to start the self-test, where lll is the MISP network loop number and type is 1 for a detailed self-test and 2 for a minimal test.

   If the response is

   ```
   NWS637
   ```

then the MISP card passed the self-test and is functional but must be enabled to turn off the red LED and to start processing calls. It can take up to 20 seconds to display this response.

If the MISP passed the self-test but the problem persists, the loop or other cards interfacing with the MISP may be faulty. To verify the integrity of the network buses and the links between the MISP and other network and intelligent peripheral equipment cards interfacing with the MISP, go to Perform MISP loopback tests on page 26.

If the response is

```
NWS632
```

then the MISP card failed the self-test and is faulty. Replace the MISP. Other NWSxxx messages may display as a result of a command-activated self-test if the MISP is missing or not configured.

Perform MISP loopback tests

Note:

Throughout this section, for a Small System, l l l (loop) should be interpreted as c (card). Similarly, all references to network loops or loop numbers should be interpreted as cards or card slot numbers. Also, l s c should read c (card). Note that the BRSC is not supported on Small System.

If the MISP self-test indicates that the MISP is not faulty, conduct loopback tests to isolate the problems that may exist on the network cards, network buses, or connections between the MISP and the SILCs and/or UILCs.

Two types of MISP loopback tests can be performed. These are:

1. MISP loopback at a DSL interface
2. MISP loopback at the SILC or UILC DS30X peripheral bus interface

Note:

If a BRSC is configured, the MISP-to-line card DSL loopback through the BRSC tests the entire D-channel signaling path. The MISP BRI line application generates and verifies the data through the path. The ISDN BRI application on the BRSC passes the data transparently. The MISP-to-line card loopback through the BRSC tests the path from the MISP application through the BRSC to the line card. The ISDN BRI application on the BRSC passes the data transparently.

MISP loopback at a DSL interface

The loopback at a DSL interface checks the continuity of the D-channel signaling path between the MISP and an individual SILC or UILC port. This procedure also tests the connections between the MISP and the DSL through the Network Superloop Card and the Peripheral Controller Card.

Figure 2: MISP loopback at a DSL interface on page 27 illustrates a DSL loopback path and the MISP as a test pattern generator and detector.

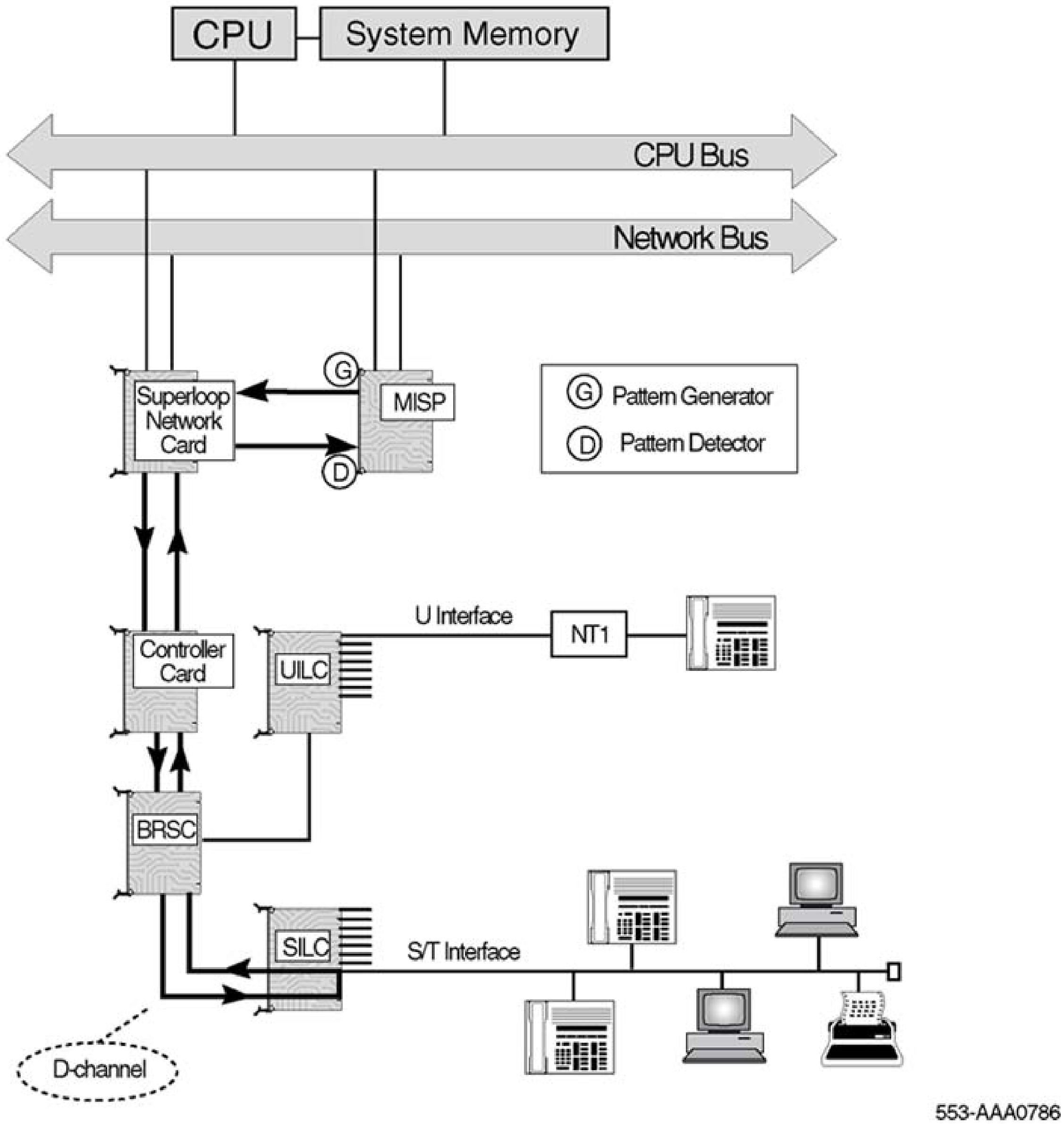

Figure 2: MISP loopback at a DSL interface

Test the MISP loopback at a DSL interface

To start the loopback test, follow the steps in Testing the MISP loopback at a DSL interface on page 28.

Testing the MISP loopback at a DSL interface

1. Log in on the maintenance terminal, and load LD 45 (type in **`LD 45`**).
2. Select test condition.
3. Enter **`XCON 0`** and press the `ENTER` key to perform only one loopback test.
4. Enter one test period shown in **`XCON H 0-182, M 0-59, S 0-60`** and press the `ENTER` key to select continuous loopback testing for a selected time span, where H 0-182 is 0 to 182 hours, M 0-59 is 0 to 59 minutes, and S 0-60 is 0 to 60 seconds.
5. Example: XCON M 5 specifies a five minute duration for the test.
6. At the TEST prompt, type **`9`** and press the `ENTER` key. Continue responding to the prompts to configure the loopback test as follows.

Prompt	Response	Description
TEST	9	Selects loopback at the DSL.
PATT	x	x is the selected pattern, where x is 0 -7. Refer to Table 3: Patterns for loopback test configuration on page 29.
TYPG	5	MISP is generating and transmitting the pattern.
LOOP	lll	MISP network loop number, where lll is 0-158 and must be an even number.
LBTY	3	DSL is requested to loopback.
LBTN	l s c dsl#	The address of the looped back DSL, where l is network loop, s is shelf (module), c is an SILC or UILC card, and dsl# is DSL.
TAG	xx	TAG is automatically assigned by the system. If the loopback test is continuous, the system tags the test with a number from 0 to 15 to keep track of the tests.

7. Check the loopback test results. The result automatically displays if XCON 0 test conditions are specified; otherwise, specify XSTA or XSTP with the test TAG number to check the status. XSTA gets the status of the manual continuity test and XSTP stops the manual continuity test. If the results show BSDxxx messages, refer to the list and description of these messages in *Avaya Software Input Output Reference - System Messages (NN43001-712)*. The BSDxxx messages indicate the possible problem causes, which must be checked to isolate the problem.

If the loopback test passes, the problem may be somewhere in the DSL or the ISDN BRI terminal.

If the loopback test fails, go to Test the MISP loopback at the SILC or UILC bus interface on page 31.

Table 3: Patterns for loopback test configuration

PATT	Pattern
0	11001100
1	10101010
2	01110111
3	01010101
4	10100101
5	01011010
6	11111111
7	00000000

MISP loopback at the SILC or UILC bus interface

The loopback at the SILC or UILC peripheral bus interface checks the continuity between the MISP and the SILC or UILC and its ability to communicate with the MISP over the multiplexed D-channels.

Figure 3: MISP loopback at the SILC or UILC peripheral bus interface on page 30 illustrates the SILC or UILC loopback path and the MISP as a test pattern generator and detector.

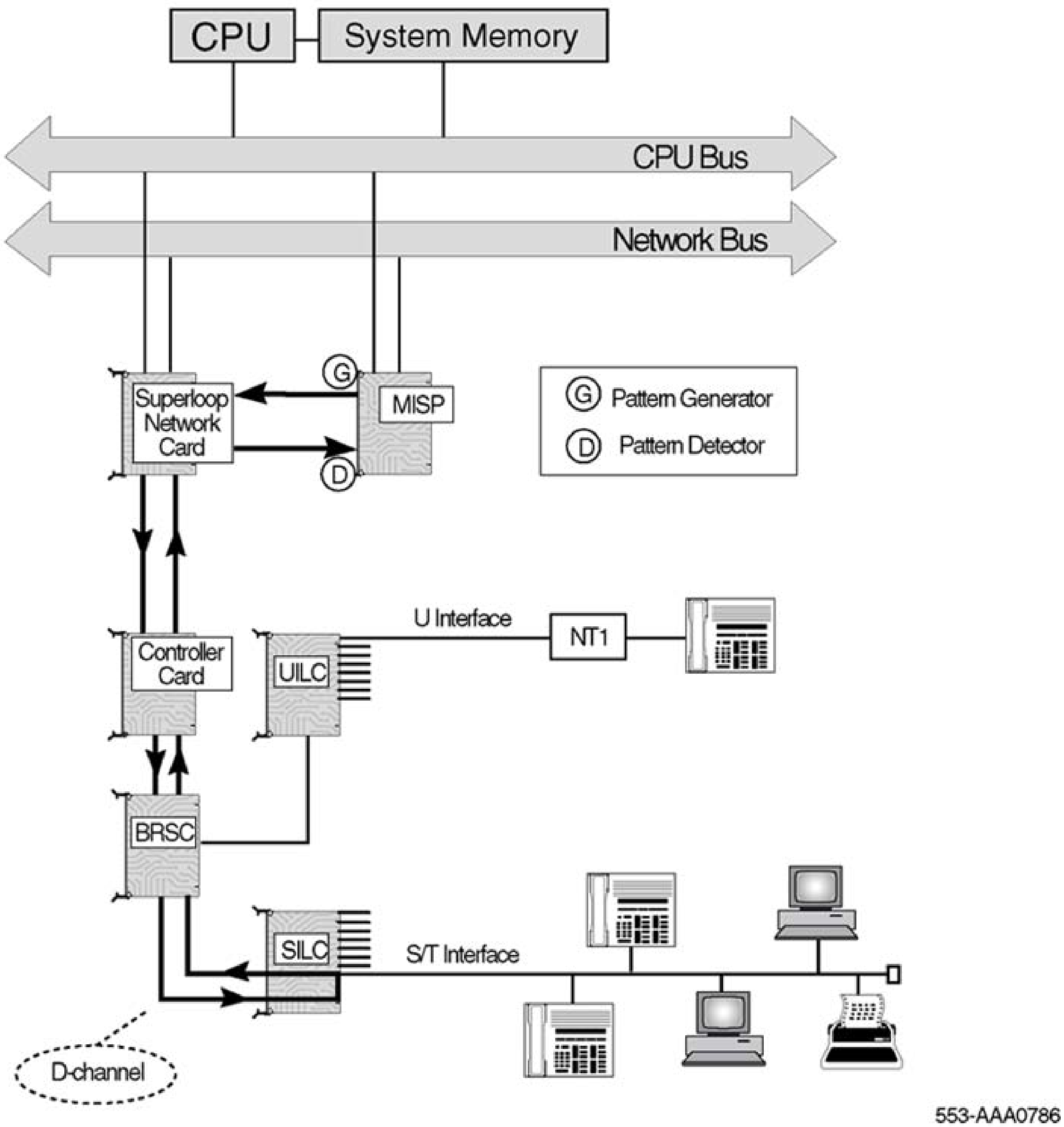

Figure 3: MISP loopback at the SILC or UILC peripheral bus interface

Before starting loopback testing at the SILC or UILC, disable the card to be tested; when the card is disabled, the system disconnects all the calls handled at the time by that card.

Test the MISP loopback at the SILC or UILC bus interface

Follow the steps in Testing the MISP loopback at the SILC or UILC bus interface on page 31 to test the MISP loopback at the SILC or UILC bus interface.

Testing the MISP loopback at the SILC or UILC bus interface

1. Log into the system on a maintenance terminal, if not already logged on, and load LD 32 (type in **LD 32**).
2. Type **DISC l s c** and press the ENTER key to disable the SILC or UILC, where l is the superloop number, s is the shelf (module) number, and c is the card slot number in the module.
3. Exit LD 32 by typing **** at the prompt, and load LD 45 (type in **LD 45**).
4. Select test conditions:

   Enter **XCON 0** and press the ENTER key to perform only one loopback test.

   Enter one test period shown in **XCON H 0-182, M 0-59, S 0-60** and press the ENTER key to select continuous loopback testing for a selected time span where H 0-182 is 0 to 182 hours, M 0-59 is 0 to 59 minutes, and S 0-60 is 0 to 60 seconds.

   For example: XCON H 1 conducts the test for one hour.
5. At the TEST prompt, enter **9** and press the ENTER key. Respond to the prompts to configure the loopback test as follows:

Prompt	Response	Description
TEST	9	Selects loopback at the SILC/UILC.
PATT	x	x is the selected pattern, where x =0 – 7. Refer to Table 3: Patterns for loopback test configuration on page 29.
TYPG	5	MISP is generating and transmitting the pattern.
LOOP	lll	MISP network loop number, where lll=0 – 158 and must be an even number.
LBTY	4	Card is requested to loopback.
LBTN	l s c dsl#	The address of the looped back card, where: l = network loop s = shelf (module) c = SILC/UILC card dsl# = port
TAG	xx	If the loopback test is continuous, the system tags the test with a number from 0 – 15.

6. Check the loopback test results. The result automatically displays if XCON 0 test conditions are specified; otherwise, specify XSTA or XSTP with the test TAG

number to check the status. If the results show BSDxxx messages, refer to the list and description of these messages in *Avaya Software Input Output Reference - System Messages (NN43001-712)*. The BSDxxx messages indicate the possible causes to check to isolate the problem.

If the line card loopback test fails, the problem may be between the MISP and the line cards in the Superloop Network Card or Peripheral Controller Card.

Perform ISDN BRI trunk remote loopback test

Note:

ISDN BRI trunking is not supported in North America. For a Small System, l s c should be interpreted as c (card). Similarly, all references to network loops or loop numbers should be interpreted as cards or card slot numbers.

Figure 4: ISDN BRI trunk DSL remote loopback on page 32 illustrates a remote loopback test for an ISDN BRI trunk DSL provisioned as an Meridian Customer Defined Network (MCDN) TIE configuration; the TIE trunk connection is achieved by connecting two systems through an NT1 device.

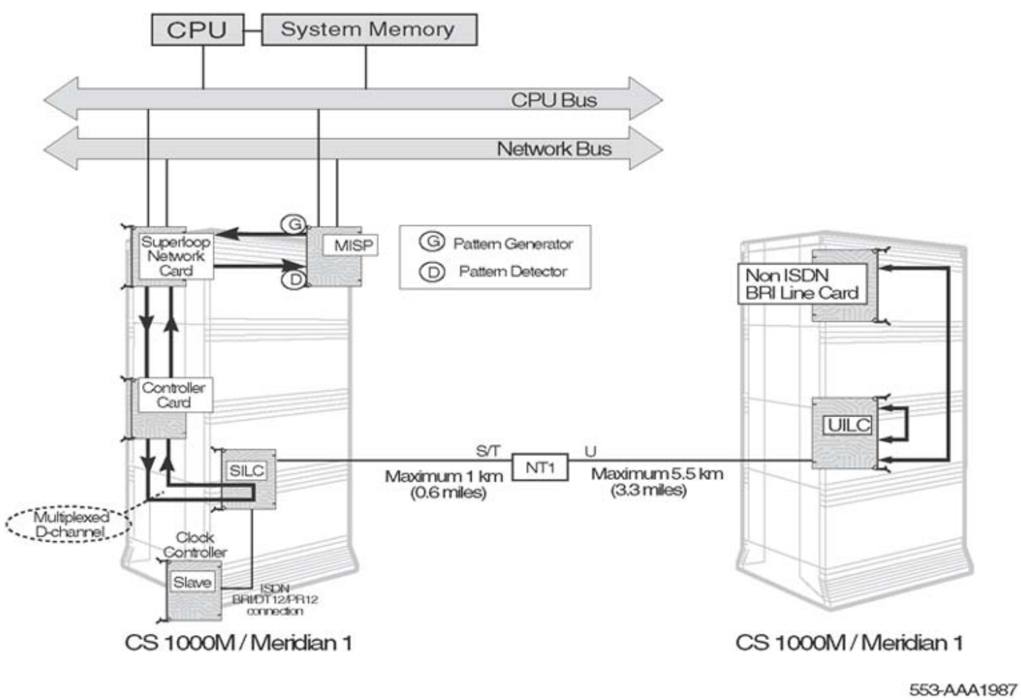

Figure 4: ISDN BRI trunk DSL remote loopback

Follow the steps in Performing an ISDN BRI trunk remote loopback test on page 33 to perform the remote loopback test for a ISDN BRI trunk DSL provisioned as an MCDN TIE configuration.

Performing an ISDN BRI trunk remote loopback test

1. Log in on the maintenance terminal and load LD 32 (type **LD 32**).
2. Put the far end and near end of the ISDN BRI trunk in the test mode by entering the **ENTS L S C D** command and pressing the ENTER key.

   Note:

   The ISDN BRI trunk DSL must be configured for the ISDN BRI trunk application, and must be either in the release or enabled state.

   If the reference clock source is configured on the DSL, the prompt "CLOCK SOURCE ON DSL # OF SILC L S C, PROCEED?" is displayed to ensure that necessary precautions have been taken for uninterrupted clock reference for the system.
3. Put the far-end ISDN BRI trunk DSL in the remote loopback mode by entering the **ENRB L S C D** command and pressing the ENTER key.
4. Run the remote loopback test by entering the **RLBT L S C D** command and pressing the ENTER key.

   The result of the test is displayed as follows:

   ```
   DSL: L S C / C      RLB TEST      TIME: xx:xx
   TEST: PASS
   TEST: FAIL - NO DATA RCV FAR END
   TEST: FAIL - CORPT DATA RCV FAR END
   TEST: FAIL - REASON UNKNOWN
   ```
5. If the test failed because no data or corrupt data was received from the far end, verify that proper test data is being used; if the test failed for unknown reasons, make sure that the ISDN BRI trunk DSL has been properly configured for the ISDN BRI trunk application and perform the test again.
6. Take the far-end ISDN BRI trunk DSL out of remote loopback mode by entering the **DSRB L S C D** command and pressing the ENTER key. The far-end and near-end ISDN BRI trunk DSLs are placed in the test mode.
7. Take the far-end and near-end ISDN BRI trunk DSLs out of test mode by entering the **DSTS L S C D** command, and pressing the ENTER key. The ISDN BRI trunk DSLs are reset in their release or established state.
8. Enable the ISDN BRI trunk DSL by entering the **ENLU** command.

BRSC fault isolation and correction

Note:

The BRSC is not supported on Small Systems.

The BRSC processes the signaling information received on the D-channels from the DSLs. It sends the resulting network messages to an MISP by means of a single channel. The BRSC also filters out D-channel Packet Switched Data (DPSD) from the line cards, and it routes this information to an internal or external packet handler.

Problems with the BRSC may be caused by hardware faults, incorrect configuration, disabled BRSC or MISP, or continuity problems between the MISP and other network cards connected to the network bus.

Check BRSC status

The first step in identifying any problem is to verify the status of the BRSC. To obtain the status of a BRSC and the ISDN BRI application, execute this command in the Network and IPE Diagnostic, LD 32:

`STAT lll s cc`

A possible response is:

```
APPLICATION     MAIN STATE     SUB STATE/ACTIVATION
TIME
BASECODE          ENABLED            xx/xx/xx x:xx
BRI                   ENABLED          xx/xx/xx x:xx
IDLE 0     BUSY 0      DISABLED 8         MBSY 0
TOTAL DSLS     CONFIGURED   8
```

For this example, the BRSC is servicing eight DSLs that are all disabled.

Table 4: BRSC maintenance states on page 34 shows the maintenance states for the BRSC.

Table 4: BRSC maintenance states

BRSC status	Description	Comments
ENABLED	BRSC and MISP enabled.	No action required.
SYSTEM DISABLED	BRSC basecode disabled and ready to be enabled.	Enable BRSC using ENLC lll s cc in LD 32.
MANUALLY DISABLED	Craftsperson has disabled the card, or enabling the BRSC has failed.	Enable the BRSC using ENLC lll s cc in LD 32; perform BRSC self-test.

Table 5: BRSC maintenance sub-states when the BRSC is either in MANUALLY or SYSTEM DISABLED state on page 34 lists the sub-states when the BRSC is either in MANUALLY or SYSTEM DISABLED state.

Table 5: BRSC maintenance sub-states when the BRSC is either in MANUALLY or SYSTEM DISABLED state

BRSC status	Description	Comments
ENABLING	BRSC is being enabled.	No action required.

BRSC status	Description	Comments
DISABLING	BRSC is being disabled.	No action required.
DOWNLOADING S/W	Software download is taking place.	No action required.
WAITING FOR S/W DOWNLOAD	Background audit detected need for software download.	Quit overlay to invoke background peripheral software download.
INVALID STATE	Software error.	Manually disable and manually enable the BRSC.
RESPONDING	An attempt to enable the BRSC is taking place.	No action required.
NOT RESPONDING	The system cannot communicate with the BRSC basecode.	Verify that the BRSC is properly installed; perform the BRSC self-test.
SELFTEST IN PROGRESS	BRSC is placed in this state when: • BRSC is installed in the IPE module • self-test command invoked in LD 30 • self-test command issued at the beginning of the enabling process.	No action required.
SELFTEST FAILED	BRSC card is faulty.	Re-invoke the self-test command in LD 30; replace BRSC.
SIGNALING TEST	BRSC is undergoing signaling test, such as a loopback test in LD 45.	No action required.

Check status of BRSC card identification and loadware versions

To obtain the status of a BRSC card identification base code and the ISDN BRI application version number, execute this command in the Network and IPE Diagnostic, LD 32:

`IDC lll s cc`

If the channel between the MISP and BRSC is up, the response is:

```
=> xxx...x
BOOTCODE      VERSION:      xx:xx
```

```
BASECODE       VERSION:      xx...x (hw_state)
BRI APPL           VERSION:      xx...x (hw_state)
```

hw_stat is the Base Code or the state of the ISDN BRI application in the BRSC.

If the channel between the MISP and BRSC is down, the response is:

```
LOADWARE VERSION NOT AVAIL-MISP CANNOT ACCESS BRSC CARD
```

Check status of Terminal Endpoint Identifiers

The TEIs and their corresponding User Service Identifier (USID) on the specified DSL have established the D-channel data link layer with the MISP.

To obtain the status of the TEIs and USID, execute the **STEI lll s cc dsl#** command in the Network and IPE Diagnostic, LD 30.

The output format is:

```
MISP 111
TEIUSID
=======
nnn nnnn
...  ... .
```

Perform BRSC self-test

If the BRSC status indicates that the BRSC is faulty, conduct the self-test to verify that this BRSC is faulty before replacing it. This test verifies the basic BRSC functions and outputs a fail or pass message after the test is completed.

To run the BRSC self-test, follow the steps in Perform a BRSC self-test on page 36.

Perform a BRSC self-test

1. Log into the system on a maintenance terminal.
2. At the > prompt, type **LD 32** and press the ENTER key to access the Network and IPE Diagnostic Program.
3. Type **DISC lll s cc** and press the ENTER key to disable the BRSC, where lll s cc is the BRSC card number. If the MISP is already disabled, go to step 5.
4. Exit LD 32 by typing ******** at the prompt.
5. Type **LD 30** and press the ENTER key to access the Network and Signaling Diagnostic Program to perform the self-test.
6. Type **SLFT lll s cc** (where lll is the superloop number, s is the shelf number, and cc is the card number). Press the ENTER key to start the self-test.

If the response is

```
NWS637
```

then the BRSC passed the self-test and is functional but must be enabled to turn off the red LED and to start processing calls. It may take up to 20 seconds to display this response.

If the response is

```
NWS632
```

then *Avaya ISDN Basic Rate Interface Installation and Commissioning (NN43001-318)*.

Perform BRSC loopback tests

If the BRSC self-test indicates that the BRSC is not faulty, perform the MISP to BRSC D-channel loopback tests; this tests the signaling channel between the MISP and the BRSC. See Figure 7: MISP to BRSC loopback test on page 40. The BRSC card must be enabled and the BRSC application disabled to invoke this test.

If a BRSC is not configured when performing an MISP-to-line card DSL loopback (as explained in MISP loopback at a DSL interface on page 26) or an MISP-to-line card loopback test (as explained in MISP loopback at the SILC or UILC bus interface on page 29), then also perform the following:

- an MISP-to-line card DSL loopback through the BRSC. See Figure 5: MISP-to-line card DSL loopback through the BRSC on page 38.
- an MISP-to-line card loopback through the BRSC. See Figure 6: MISP-to-line card loopback through the BRSC on page 39.

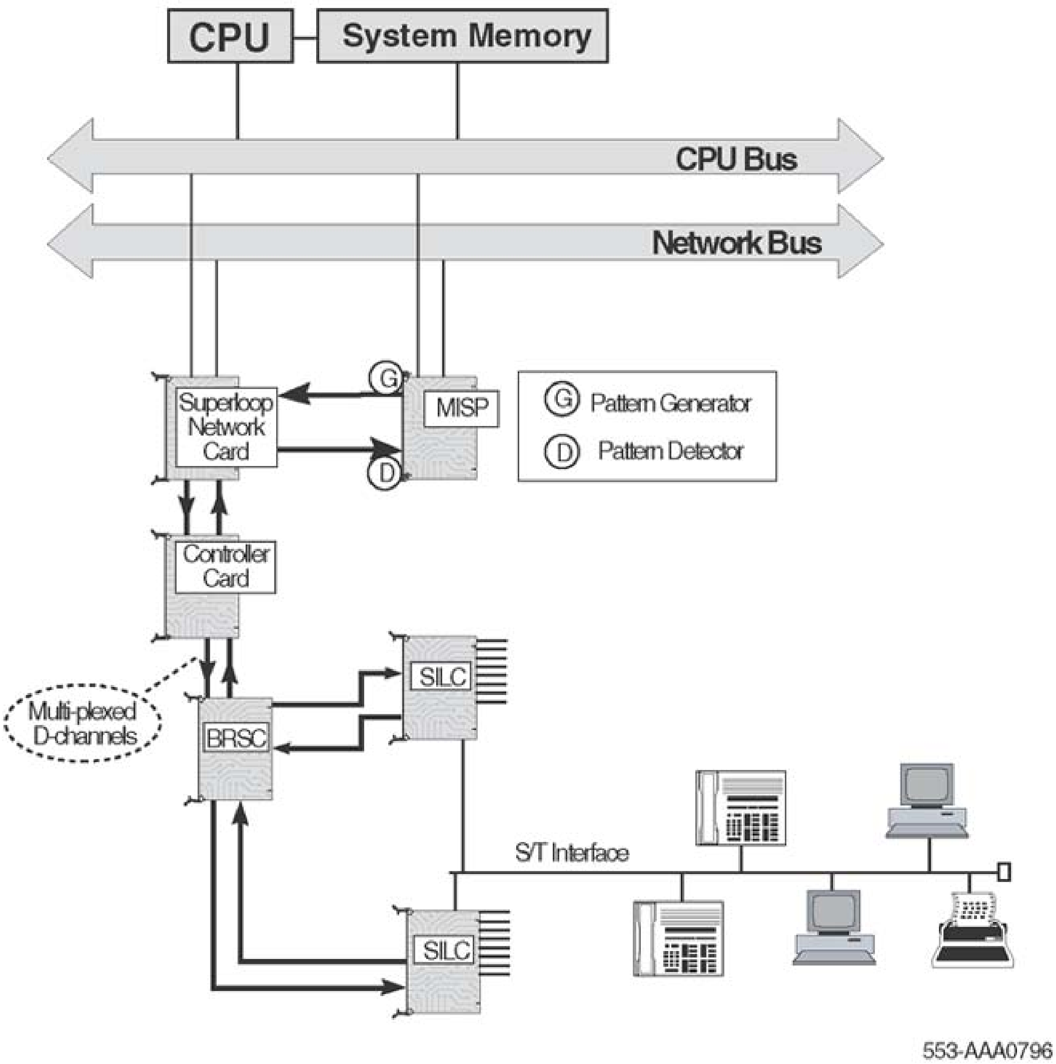

Figure 5: MISP-to-line card DSL loopback through the BRSC

The preceding figure shows you how to test the entire D-channel signaling path. The MISP BRI line application generates and verifies the data through the path. The ISDN BRI application on the BRSC passes the data transparently.

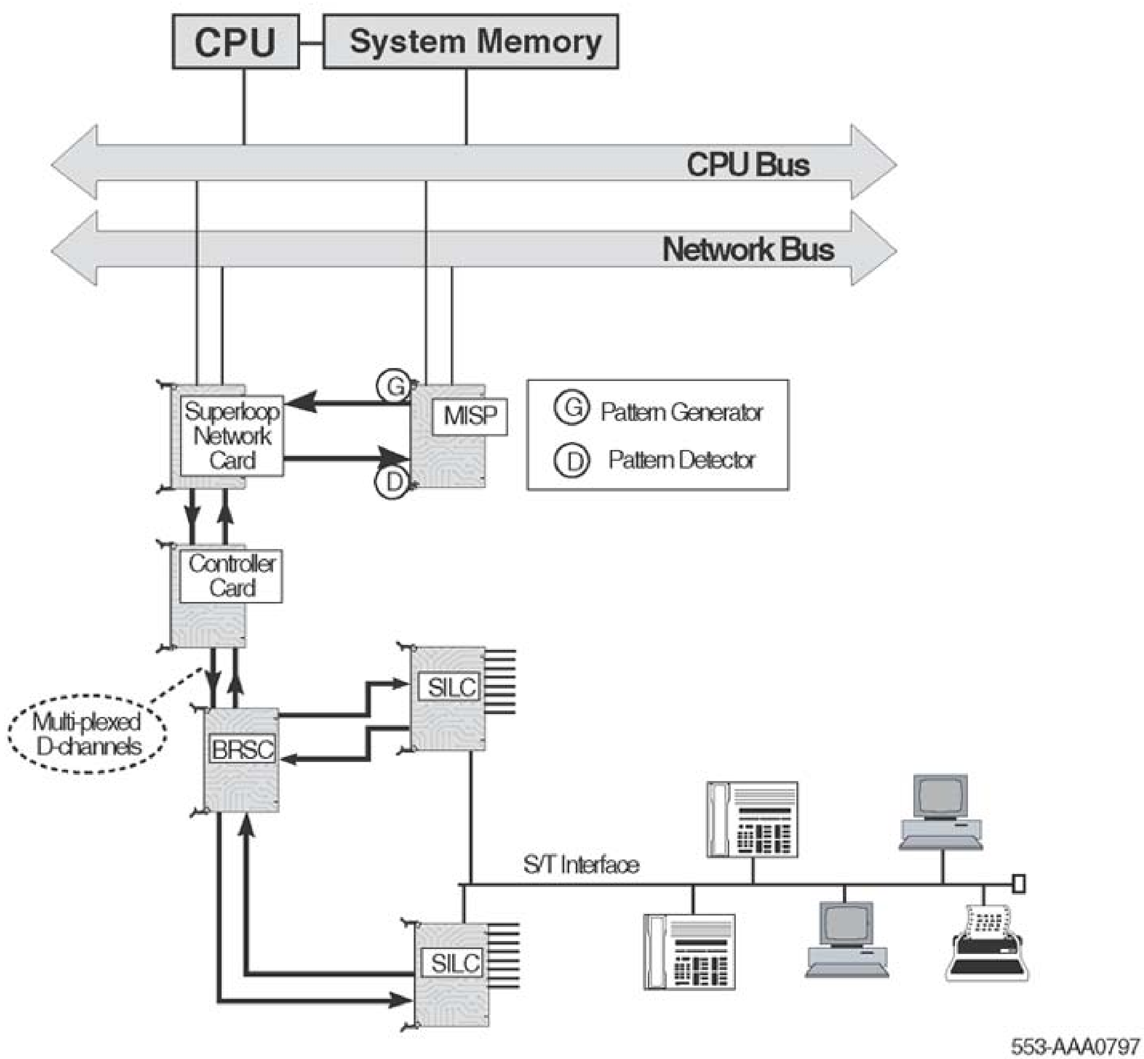

Figure 6: MISP-to-line card loopback through the BRSC

The preceding figure shows you how to test the path from the MISP application through the BRSC to the line card. The ISDN BRI application on the BRSC passes the data transparently.

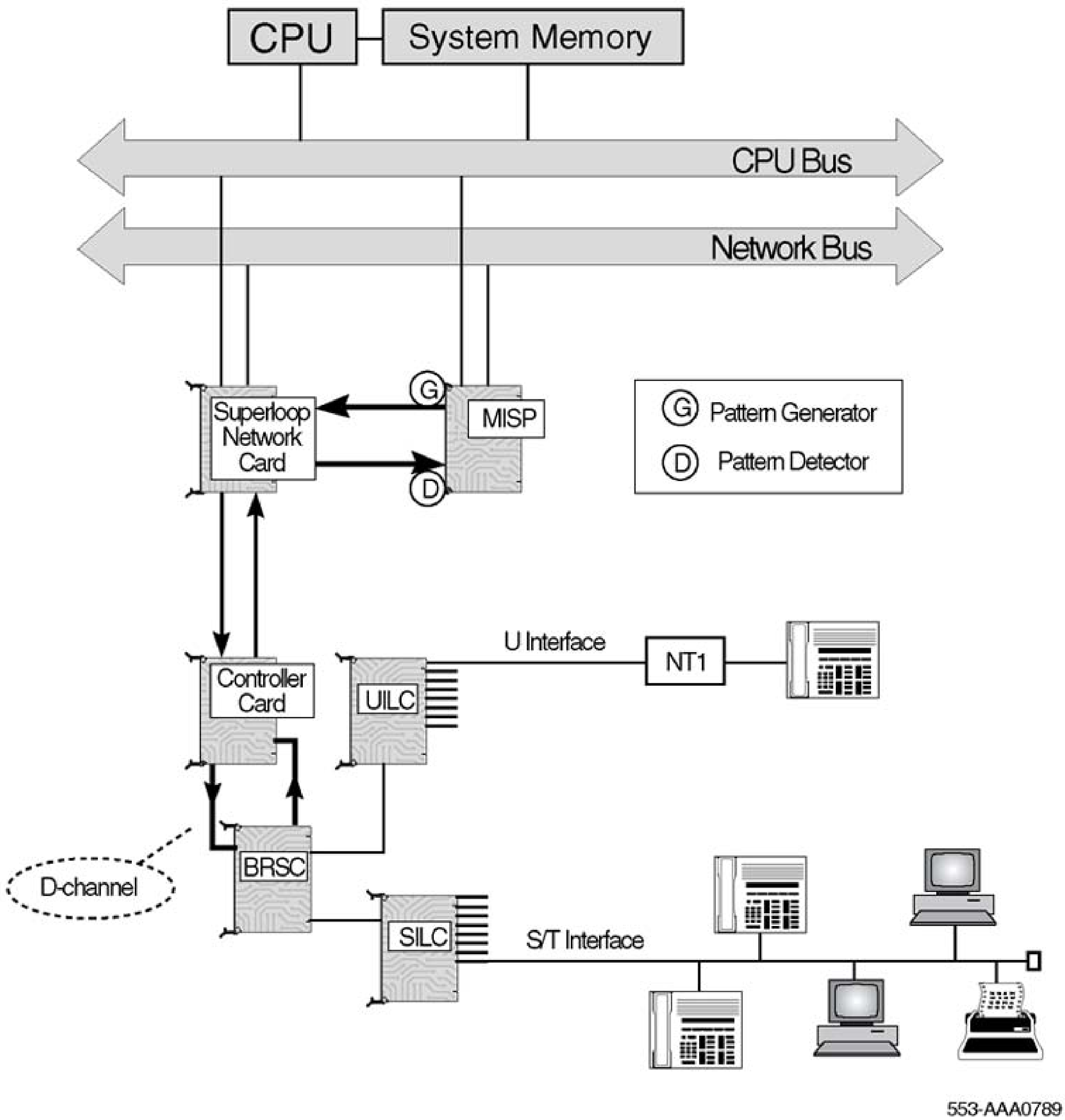

Figure 7: MISP to BRSC loopback test

SILC or UILC fault isolation and correction

Note:

ISDN BRI trunking is not supported in North America. Also, for Small Systems, **`l s c`** (loop shelf card on Large Systems) should be interpreted as **`c`** (card).

The SILC and UILC Intelligent Peripheral Cards provide eight 4-wire full-duplex (S/T) interfaces and eight Central office-to-NT1 Layer1 protocol (U) interfaces respectively, which are used to connect ISDN BRI compatible terminals or trunks over DSLs to the system.

Check SILC or UILC status

The first step in identifying the problem is to verify the status of the SILC or UILC card, by following the steps in Checking SILC or UILC status on page 41.

Checking SILC or UILC status

1. Log in on the maintenance terminal and load LD 32 (type in **`LD 32`**).
2. Type **`STAT l s c`** and press the ENTER key, where **`l`** is the loop number, **`s`** is the shelf (module) number, and **`c`** is the card slot in the module.

   If the response is

   ```
   ll = UNEQ
   ```

   then the card has not been configured for the specified card slot. Make the proper configuration and proceed with the following steps.

For ISDN BRI trunks

The response is:

```
ll = sw_state dsl_type l2_state num_tei l1_state
dch_state clock mode
```

where:

- ll is the DSL/unit number within the line card.
- sw_state is one of the following DSL software states, as perceived by the system (refer to Table 6: DSL status in the system CPU on page 43):
  - IDLE (no active call)
  - BUSY (active call in progress)
  - UNEQ (DSL is not equipped)
  - MBSY (in maintenance busy state)

- dsl_type is the following type:
  - TRNK (ISDN BRI trunk DSL)
- l2_state is one of the following DSL status, as perceived in the MISP call application (refer to Table 7: DSL states according to MISP call application on page 44):
  - UNEQ (unequipped)
  - IDLE (no active calls)
  - BUSY (call is active)
  - MSBY (in maintenance busy mode)
  - DSBL (B Channel is disabled)
  - ESTA (in established state)
  - RLS (in release state)
  - TEST (in test mode)
  - RLBT (in remote loopback mode)
  - APDB (application disabled)
  - MPDB (MISP disabled)
- num_tei is the number of established terminal end-point identifiers

  Note:

  num_tei is not applicable to DSL trunks.
- l1_state is one of the following line card states (to indicate the status of a DSL refer to Table 8: Line card states to indicate DSL status on page 44):
  - UNEQ (unequipped)
  - DOWN (layer 1 is down)
  - UP (layer 1 is up)
  - DSBL (DSL is disabled)
  - LCNR (line card not responding)
  - UNDN (undefined DSL state)
  - XPDB (associated XPEC is disabled)
  - UTSM (unable to send messages to the MISP)
- dch_state is one of the following D-channel states:
  - ESTA (line is established)
  - RLS (link is released)
  - TEST-IDLE (in test mode)
  - TEST-RLBT (in remote loopback test mode)

- clock is one of the following clock mode configurations:
    - DSBL (clock is configured but not active)
    - PREF (primary reference clock is active)
    - SREF (secondary reference clock is active)
- mode is one of the following layer 1 mode configurations:
    - NT (network)
    - TE (terminal)

Example

```
ll =   sw_state  dsl_type  l2_state     num_tei
l1_state  dch_state   clock   mode
00 = IDLE     LINE      ESTA          2           UP
01 = UNEQ
02 = UNEQ
03 = IDLE  TRUNK ESTA  - - - -
TE
04 = IDLE  TRUNK ESTA  - - - -
TE
05 = UNEQ
06 = UNEQ
07 = UNEQ
```

where DSL (unit) 0 is a BRI line, DSLs 3 and 4 are BRI trunks.

Table 6: DSL status in the system CPU on page 43 lists the DSL software states (sw_state), as perceived by the system.

Table 6: DSL status in the system CPU

Software state	Description	Comment
IDLE	No active calls.	No action required.
BUSY	Call is active.	No action required.
UNEQ	DSL is unequipped.	The DSL is not configured. To configure the DSL, refer to *Avaya ISDN Basic Rate Interface Feature Fundamentals (NN43001-580)*, "DSL configuration procedures."
MBSY	DSL is in maintenance busy mode.	No action required. The DSL is being tested.
BBDB	BRSC basecode disabled.	Enable BRSC using ENLC <BASE> lll s cc in LD 32.
BADB	BRSC application is disabled.	Enable BRSC using ENLC lll s cc in LD 32.

Table 7: DSL states according to MISP call application on page 44 lists the DSL states (l2_state) as perceived in the MISP call application.

Table 7: DSL states according to MISP call application

DSL state	Description	Comment
UNEQ	Unequipped.	MISP is not configured. To configure the MISP, refer to *Avaya ISDN Basic Rate Interface Installation and Commissioning (NN43001-318)*, "MISP configuration procedures."
IDLE	No active calls.	No action required.
BUSY	Call is active.	No action required.
MBSY	DSL is in maintenance busy mode.	No action required. The DSL is being tested.
DSBL	B Channel is disabled.	Enable using LD 32.
ESTA	DSL is established.	No action required.
RLS	DSL is in release state.	For Meridian 1, Avaya Communication Server 1000 (Avaya CS 1000), and 1TR6 interfaces, if Layer 2 is in RLS state, an improperly configured or faulty trunk is implied. Check the DSL configuration (refer to *Avaya ISDN Basic Rate Interface Installation and Commissioning (NN43001-318)*, or check the status of the DSL (refer to Checking the DSL status on page 48) For a Numeris interface, if the Layer 1 is down, the trunk is idle; no action is required.
- TEST	DSL in test mode.	No action required.
- RLBT	DSL in remote loopback mode.	Remote loopback test being done on DSL. Wait for test to end.
- APDB	MISP line application is disabled.	Enable MISP application using LD 32.
- MPDB	MISP is disabled.	Enable MISP using LD 32.

Table 8: Line card states to indicate DSL status on page 44 lists line card states (**`ll_state`**) to indicate the status of a DSL.

Table 8: Line card states to indicate DSL status

Line card state	Description	Comment
UNEQ	Not equipped.	DSL is not configured. Refer to *Avaya ISDN Basic Rate Interface Installation and Commissioning (NN43001-318)* to configure the DSL.
DOWN	Link layer is not established.	DSL faulty. Ensure that the link layer is established.

Line card state	Description	Comment
UP	Link layer is established.	No action required.
LCNR	Line card is not responding.	Faulty line card. See Check SILC or UILC status
DSBL	DSL is disabled.	Enable DSL using LD 32.
UNDN	DSL is in an undefined state.	Check the DSL configuration in *Avaya ISDN Basic Rate Interface Installation and Commissioning (NN43001-318)*, "DSL configuration procedures."
UTSM	System CPU is unable to send message to the line card.	Faulty line card or the path between the CPU and the card. Go to Perform MISP loopback tests on page 26.
BBDB	BRSC basecode disabled.	Enable BRSC using ENLC <BASE> lll s cc in LD 32.
BADB	BRSC application is disabled.	Enable BRSC using ENLC lll s cc in LD 32.
SYNC	Synchronized state.	Applies to TE mode DSL only; the S/T interface is in activation process.

For ISDN BRI lines

The response is:

```
ll = software_state (DSL)   (MISP_state  LC_state)
```

the card is configured and the parameters in the response show the status of the DSLs, where:

- ll is a number from 00 to 07 indicating eight card ports (DSLs)
- the software_state (DSL) indicates the status of each DSL on the card. Table 9: DSL software states on page 46 describes the statuses given.
- the MISP_state indicates the status of the MISP associated with the card. Table 7: DSL states according to MISP call application on page 44 describes the statuses given.
- LC_state indicates the status of a DSL on a card. Refer to Table 10: DSL status in the MISP on page 46.

For example, the response may be:

```
00 = UNEQ
01 = BUSY (DSL)   (ESTA  UP)
02 = UNEQ
00 = UNEQ
03 = UNEQ
04 = UNEQ
05 = UNEQ
```

```
06 = UNEQ
07 = MBSY (DSL)  (MBSY  UNDN)
```

Table 9: DSL software states on page 46 lists DSL software states. Software_state is the status of a DSL as perceived by the system.

Table 9: DSL software states

Software State (DSL)	Description	Comment
IDLE	No active calls.	No action required.
BUSY	Call is active.	No action required.
MBSY	DSL is in maintenance busy mode.	No action required. The DSL is being tested.
DSBL	DSL is disabled.	Enable DSL using LD 32.
UNEQ	DSL is unequipped.	The DSL is not configured. To configure the DSL, refer to *Avaya ISDN Basic Rate Interface Installation and Commissioning (NN43001-318)*.

Table 10: DSL status in the MISP on page 46 lists the DSL status as perceived in the MISP call application.

Table 10: DSL status in the MISP

MISP state	Description	Comment
NTAN	DSL is not assigned to an MISP.	DSL is not properly configured. To configure the DSL, refer to *Avaya ISDN Basic Rate Interface Installation and Commissioning (NN43001-318)*.
UNEQ	Unequipped.	MISP is not configured. To configure the MISP, refer to *Avaya ISDN Basic Rate Interface Installation and Commissioning (NN43001-318)*.
MBSY	DSL is in maintenance busy mode.	No action required. The DSL is being tested.
DSBL	DSL is disabled.	Enable DSL using LD 32.
UNDN	DSL is in an undefined state.	To check the DSL configuration, refer to the *Avaya ISDN Basic Rate Interface Installation and Commissioning (NN43001-318)*.
RLS	Link layer is not established.	Terminal not connected to the DSL or faulty. Check the terminal using the terminal user guide.

MISP state	Description	Comment
ESTA	Link layer is established.	No action required.
MPDB	MISP is disabled.	Enable MISP using LD 32.
APDB	MISP line application is disabled.	Enable MISP application using LD 32.
MPNR	MISP is not responding or message is lost.	Refer to Check MISP status on page 20 to check the MISP status.
UTSM	CPU is unable to send message to MISP.	Refer to Check MISP status on page 20 to check the MISP status.

Table 11: DSL status in the line card on page 47 lists line card states to indicate the status of a DSL.

Table 11: DSL status in the line card

Line card state	Description	Comment
UNEQ	Not equipped.	DSL is not configured. Check the DSL configuration in the *Avaya ISDN Basic Rate Interface Feature Fundamentals (NN43001-580)*.
DOWN	Link layer is not established.	DSL faulty or terminal is not connected or is faulty. Use the terminal user guide to check the terminal.
UP	Link layer is established.	No action required.
LCNR	Line card is not responding.	Faulty line card. Refer to Checking SILC or UILC status on page 41 entitled "Check the SILC and UILC status."
DSBL	DSL is disabled.	Enable DSL using LD 32.
UNDN	DSL is in an undefined state.	Check the DSL configuration in the *Avaya ISDN Basic Rate Interface Feature Fundamentals (NN43001-580)*.
UTSM	CPU is unable to send message to the line card.	Faulty line card or the path between the CPU and the card. Refer to Perform MISP loopback tests on page 26.

Note:

After obtaining the status of all the DSLs for a selected card, check the status of individual DSLs or perform the self-test on the SILC or UILC card, following the proper procedures described in this document.

Check the DSL status

Note:

ISDN BRI trunking is not supported in North America. For a Small System, **`l s c`** (loop shelf card) should be interpreted as **c** (card).

If the card status shows that some of the DSLs on the card are undefined, unequipped, down, or unable to send a message to the MISP, follow the steps in Checking the DSL status on page 48 to check the individual DSLs.

Checking the DSL status

1. Type STAT **`l s c dsl#`**, where **`l`** is the loop number, **s** is the shelf (module) number, **c** is the card slot in the module, and **`dsl#`** is one of the eight ports (DSLs) on the card, and press the `ENTER` key.

   For ISDN BRI trunk DSL types

   The response is:

   ```
   ll = sw_state dsl_type l2_state num_tei l1_state
   dch_stateclock mode
   ```

   where:

   - ll is the DSL/unit number within the line card.
   - sw_state is one of the following DSL software states, as perceived by the system (refer to Table 6: DSL status in the system CPU on page 43):
     - IDLE (no active call)
     - BUSY (active call in progress)
     - UNEQ (DSL is not equipped)
     - MBSY (in maintenance busy state)
   - dsl_type is the following type:
     - TRNK (ISDN BRI trunk DSL)
   - l2_state is one of the following DSL status, as perceived in the MISP call application (please refer to Table 7: DSL states according to MISP call application on page 44):
     - UNEQ (unequipped)
     - IDLE (no active calls); BUSY (call is active); MSBY (in maintenance busy mode); DSBL (B Channel is disabled); ESTA (in established state); RLS (in release state); TEST (in test mode); RLBT (in remote loopback mode); APDB (application disabled); MPDB (MISP disabled).
   - num_tei is the number of established terminal end-point identifiers

Note:

num_tei is not applicable to DSL trunks.

- l1_state is one of the following line card states, to indicate the status of a DSL (please refer to Table 11: DSL status in the line card on page 47):
    - UNEQ (unequipped)
    - DOWN (layer 1 is down)
    - UP (layer 1 is up)
    - DSBL (DSL is disabled)
    - LCNR (line card not responding)
    - UNDN (undefined DSL state)
    - XPDB (associated XPEC is disabled)
    - UTSM (unable to send messages to the MISP)
- dch_state is one of the following D-channel states:
    - ESTA (line is established)
    - RLS (link is released)
    - TEST-IDLE (in test mode)
    - TEST-RLBT (in remote loopback test mode)
- clock is one of the following clock mode configurations:
    - DSBL (clock is configured but not active)
    - PREF (primary reference clock is active)
    - SREF (secondary reference clock is active)
- mode is one of the following layer 1 mode configurations:
    - NT (network)
    - TE (terminal)

For ISDN BRI lines

If the response is

```
DSL        UNEQ
```

the DSL is not configured in the system database.

If the response is

```
DSL:  swstate  mstatus  lcstatus
B1  Bstatus        B2  Bstatus
```

the DSL is configured and its status is defined by the parameters in the response, where

- swstate is the status of the DSL as perceived by the system
- mstatus indicates the status of the DSL in the MISP
- lcstatus indicates the DSL status on the card
- Bstatus is the status of the B-channel as perceived by the system.

An example of this response is as follows:

```
DSL:  IDLE   APDB   UP
B1: IDLE    B2: BUSY
```

The possible states for the swstate are listed in Table 9: DSL software states on page 46; for the mstatus in Table 10: DSL status in the MISP on page 46; for the lcstatus in Table 11: DSL status in the line card on page 47. The B status is listed in Table 12: B-channel call status on page 50.

Table 12: B-channel call status

B-channel status	Description	Comment
IDLE	No active calls	No action is required
BUSY	Call is active	No action is required
MBSY	B-channel is in maintenance busy state	No action is required. The channel is being used for maintenance testing
DSBL	B-channel is disabled	Enable DSL using LD 32

2. If the response is similar to

```
DSL:  DSBL   DSBL   UNEQ
B1 DSBL    B2 DSBL
```

Type **ENLU l s c dsl#** and press the ENTER key to enable the DSL, where **l s c dsl#** is the DSL address.

3. If the response is similar to

```
DSL:  DSBL   NTAN   UTSM
B1 DSBL    B2 DSBL
```

Check the DSL configuration. To verify the DSL configuration parameters, refer to the *Avaya ISDN Basic Rate Interface Feature Fundamentals (NN43001-580)*.

4. If the response is similar to

```
DSL:  DSBL   RLS   LCNR
B1 DSBL    B2 DSBL
```

This indicates a hardware problem on this card port (DSL). Before replacing the card, perform the loopback test between the MISP and the SILC or UILC and verify if the path or the Superloop Network Card or Peripheral Controller Card is faulty.

Perform SILC or UILC self-test

Note:

ISDN BRI trunking is not supported in North America. For a Small System, **`l s c`** (loop shelf card) should be interpreted as c (card).

If the card or DSL status indicates that the SILC or UILC is faulty, conduct a self-test to verify that the SILC or UILC is actually faulty before replacing it. This test verifies the basic SILC or UILC functions and outputs a fail or pass message after the test is completed.

Follow the steps in Performing a SILC or UILC self-test on page 51 to perform an SILC or UILC self-test.

Performing a SILC or UILC self-test

1. Log in to the system on a maintenance terminal and load LD 32 (type **`LD 32`**).
2. Type **`DISC l s c`** and press the `ENTER` key to disable the card. Enter the card address, where **`l`** is the loop number, **`s`** is the shelf (module) number, and **`c`** is the card slot number in the module.
3. Exit LD 32 by typing **`****`** at the prompt.
4. Load LD 30 (type **`LD 30`**).
5. Type **`SLFT l s c`** and press the `ENTER` key to start the self-test. Enter the card address, where **`l`** is the loop number, **`s`** is the shelf (module) number, and **`c`** is the card slot number in the module.

   During the self-test, observe the red LED on the front panel. The LED is on during the test. It flashes three times if the MISP loop passes the test; otherwise, the loop failed the test.

   If the response is

   ```
   NWS637
   ```

   the card passed the self-test and is functional, but the problem may be in the DSL cabling or the terminal.

   Check the DSL connections from the I/O Panel on the IPE Module through the distribution frames to ISDN BRI terminals or trunks connected to this DSL. Other NWSxxx messages may appear, indicating different problem causes.

   If the response is

   ```
   NWS632
   ```

the card failed the self-test and is faulty or missing. If the card is faulty, replace it, or install a card into the empty card slot if the card is missing. Refer to *Avaya ISDN Basic Rate Interface Installation and Commissioning (NN43001-318)*.

MPH fault isolation and correction

Note:

The MPH is not supported on Small System.

The XCON TEST 9 command in the Background Signaling and Switching Diagnostics (LD 45) provides a continuity check on the link interface between the MPH and Meridian Communication Unit (MCU), the MISP, the BRSC, or the B-channels and the D-channels of a DSL.

The MPH is usually the originator for the continuity checks, sending a test pattern or a query status command. The response from the other end is then verified by the MPH and passed on to the system.

The test between the MPH and the Packet Switched Data Network (PSDN) through the PRI/MCU is the only exception to this; the PSDN can generate and receive patterns and the MPH loops it back.

Table 13: XCON Test 9 (LD 45) on page 52 illustrates the prompts to use with the MPH continuity check tests.

Table 13: XCON Test 9 (LD 45)

Prompt	Response	Description
TEST	9	CON test number
PATT	X	X = 0 – 7
TYPG	X	X = 5 is the MISP loop X = 8 is the PDNI
LOOP	XX	MISP loop
LBTY	X	X = 8 is the PSDN – MCU loopback X= 9 is the MCU loopback X = 10 is the PDL2 loopback X = 11 is the BCH loopback X = 12 is the BRSC loopback.
LBTN	XXXX	If LBTY = 8, LBTN is the MISP loop and NWIF is 1-3 If LBTY = 9 LBTN is MCU TN If LBTY = 10 LBTN is either BRIL loop or BRSC TN If LBTY = 11 LBTN is the BCH TN

MPH loopback tests

If a particular packet call setup is not working, check the communication links using the corresponding interface loopback test:

- For PSDN packet calls from a network interface, use the MPH and MCU-to-PSDN or the MPH and PRI-to-PSDN continuity test
- For B-channel packet data call setups, use the MPH-to-B-channel continuity test.
- For D-channel packet data call setups, use the MPH-to-MISP or MPH-to-BRSC loopback test.

These tests are described in the following section.

MPH and PSDN through MCU continuity test

Figure 8: MPH-to-PSDN continuity test using MCU on page 54 illustrates this test, which provides loopback testing between the MPH and PSDN through the MCU. The continuity check originates from the MPH through the Superloop network card, the Controller card, the line card, and then responds back at the MCU level. If the MCU was set up originally to operate in transparent mode (64 Kbps or 56 Kbps to the PSDN interface), the connection between the MPH and the MCU must be brought down and then reestablished. To perform this test, the dedicated connection between the MCU and the MPH must be in a manually disabled state.

MPH and PSDN through PRI continuity test

Figure 9: MPH-to-PSDN continuity test using PRI on page 55 also illustrates this test, which provides loopback testing between the MPH and PSDN using a PRI connection.

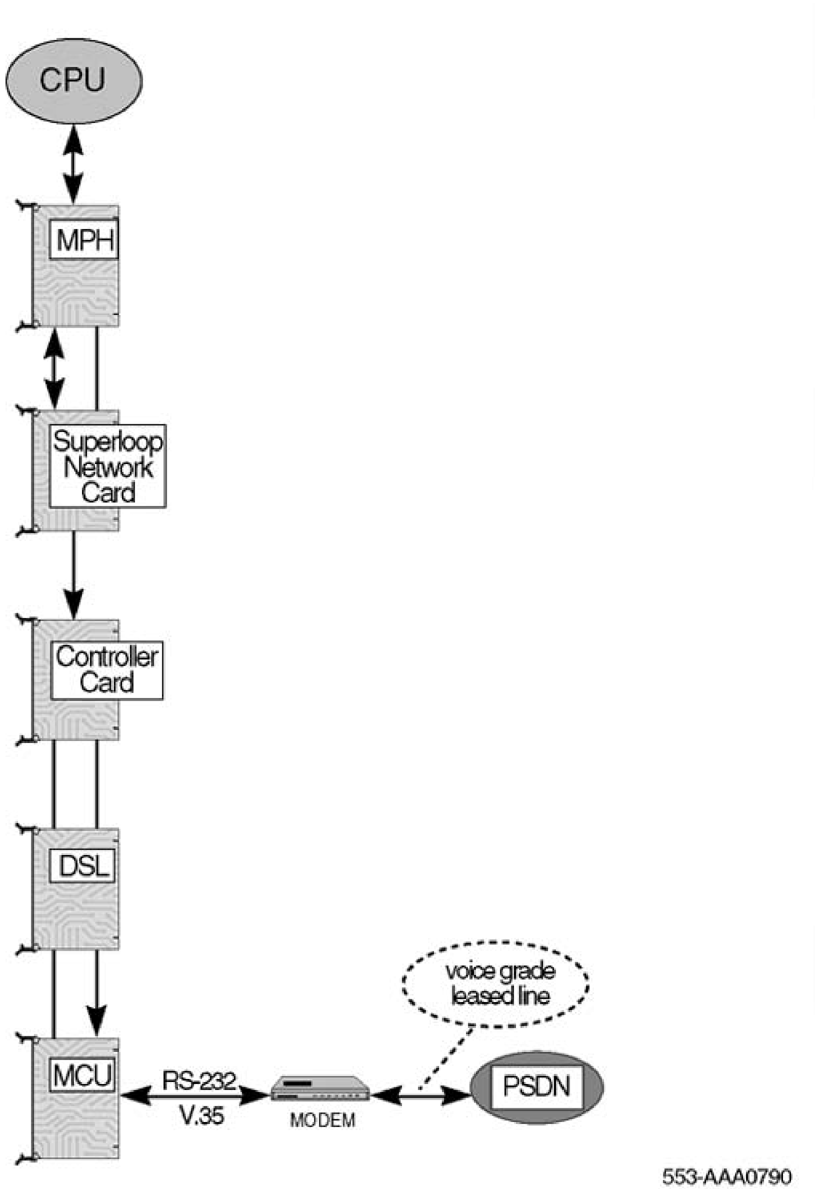

Figure 8: MPH-to-PSDN continuity test using MCU

To perform this loopback test, the dedicated connection between the PRI and the MPH must be in a manually disabled state.

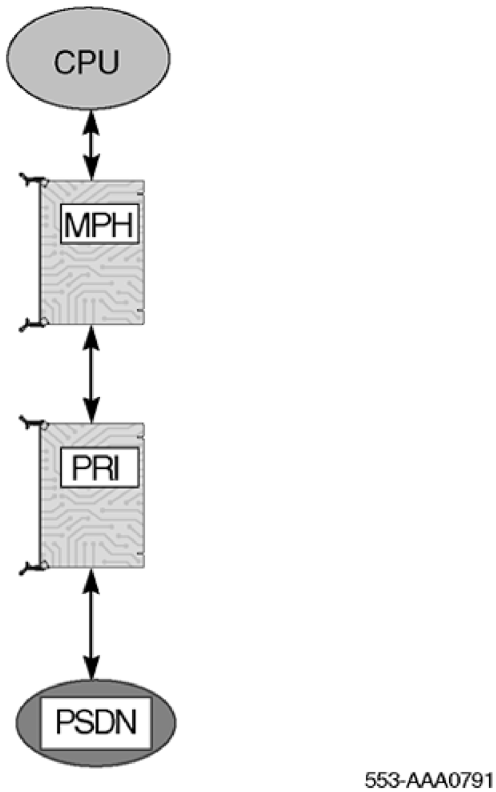

Figure 9: MPH-to-PSDN continuity test using PRI

MPH-to-BRIL continuity test

Figure 10: MPH-to-BRIL continuity test on page 56 shows the MPH-to-BRIL continuity test. The link interface between the MPH and the MISP is a direct path through the network bus without any intervening circuit pack. A test pattern frame is sent from the MPH to the MISP. The MISP, on receiving the test frame, retransmits back to the MPH. To perform this test, the dedicated connection between the BRIL and the MPH must be in a manually disabled state.

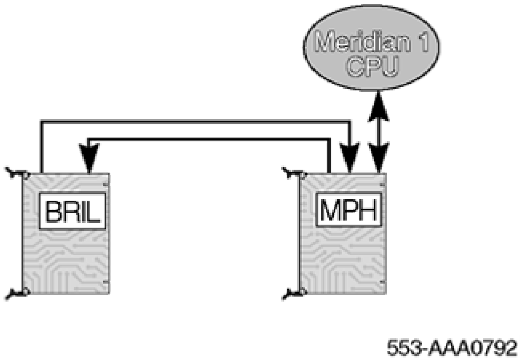

Figure 10: MPH-to-BRIL continuity test

MPH-to-BRSC continuity test

Figure 11: MPH-to-BRSC continuity test on page 56 illustrates the MPH-to-BRSC test. As in the MISP case, a test pattern frame is sent from the MPH through the Superloop network card to the Controller card and then to the BRSC. Upon receiving the frame, the BRSC retransmits it back to the MPH. To perform this test, the dedicated connection between the BRSC and the MPH must be in a manually disabled state.

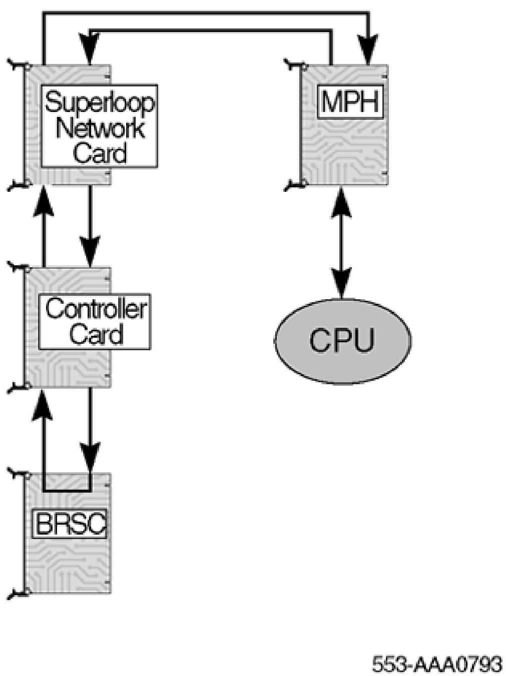

Figure 11: MPH-to-BRSC continuity test

MPH-to-B-channel continuity test

Figure 12: MPH-to-B-channel continuity test on page 57 illustrates the MPH-to-B-channel continuity test. In the MPH-to-B-channel continuity test, the system sends a message to the line card placing the B-channel in loopback mode. The continuity test pattern is then transmitted by the MPH, going through the Superloop network card and the Controller card, then looped back at the line card. For the MPH-to-B-channel test, the dedicated connection between the MPH and the B-channel must be in a manually disabled state.

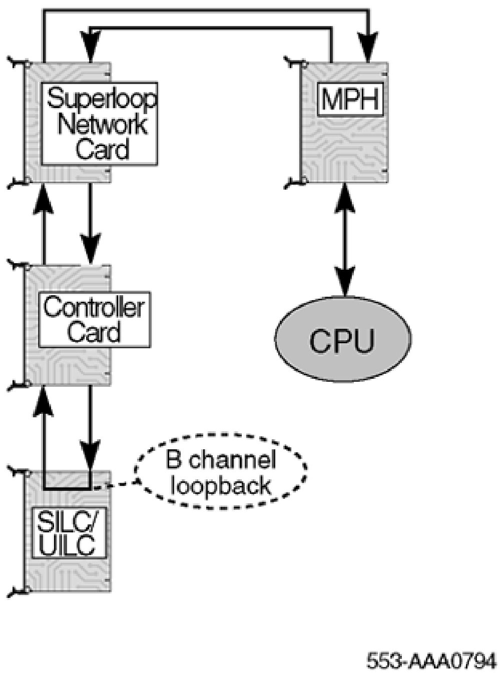

Figure 12: MPH-to-B-channel continuity test

MPH-to-D-channel continuity test

The connection between the MPH and the D-channel is tested in two steps:

1. a continuity test pattern between the MISP/BRSC with the DSL's D-channel
2. a continuity test between the MISP/BRSC with the MPH

If both tests pass, the link between the MPH and the DSL D-channel is good.

ISDN BRI maintenance commands

Throughout this section, please note the following:

- ISDN BRI trunking is not supported in North America
- The BRSC and MPH are not supported on Small System.
- For a Small System, **l s c** should be interpreted as c (card).

MISP maintenance commands

MISP maintenance commands are used to manipulate the operational status and perform diagnostic tests on specific MISPs. These commands are located in different non-resident programs (overlays), which can be accessed using the administration terminal or the maintenance telephone.

Table 14: MISP maintenance commands on page 58 lists these commands and the non-resident diagnostic programs where they can be found.

Table 14: MISP maintenance commands

Command	Description	LD
DISL l	Disables the MISP on network loop l.	32
ENLL l	Enables the MISP on network loop l.	32
DISL BRIL l	Disables the line application on MISP loop l.	32
ENLL BRIL l	Enables the line application on MISP loop l.	32
PERR l	Uploads and prints the error log for MISP on loop l.	32
ENLL l <FDL>	Enables <force downloads trunk applications> for MISP, on loop l.	32
ENLL BRIT l <FDL>	Enables <force downloads> the application loadware for the ISDN BRI trunk application on the MISP, on loop l.	32
DISL BRIT L <REM>	Disables <removes the trunk application loadware for the> ISDN BRI trunk application on the MISP, on loop l.	32
STAT l	Displays the MISP status on MISP loop l.	32
STAT BRIL l	Query the status of ISDN BRI line application on the MISP, loop l.	32

Command	Description	LD
STAT BRIT l	Queries the status of the ISDN BRI trunk application on the MISP on loop l.	32
IDC l	Displays the MISP card ID number, the base code, and the application software version numbers.	32
SLFT lll <1,2>	Performs self-test on the MISP, loop lll, type 1 or 2. Type 1 test is a comprehensive test. Type 2 test is a power-on/reset test. Response NWS632 indicates self-test failed. Response NWS637 indicates self-test passed.	30
XCON0 H (0-182) M (0-59) S (0-60)	Performs loopback test from the MISP to an SILC or UILC that checks the signaling channel. It does not test the SILC or UILC but only the peripheral bus interface and backplane connectors. 0 = performs only one loopback test H, M, S = performs loopback test for the number of hours, minutes, or seconds entered.	45
DWLD MISP xx FDL	Force downloads all BRIT interface tables on the MISP.	32
DWLD MISP DSQI FDL	Force downloads a particular BRIT interface table on the MISP.	32
ENLL BRIE xx FDL	Force downloads all BRIT interface tables and the BRIE application on the MISP.	32
ENLL BRIE xx	Disables the BRIE loadware application.	32

BRSC maintenance commands

BRSC maintenance commands are used to manipulate the operational status and perform diagnostic tests on the cards and their associated MISPs. These commands deactivate the card you plan to test, perform the specified loop test or self-test, and return the card back into service.

These commands are located in different non-resident programs (LDs), which can be accessed using the administration terminal or the maintenance telephone.

Table 15: BRSC maintenance commands on page 60 lists the BRSC maintenance commands and the non-resident diagnostic programs where they can be found.

Table 15: BRSC maintenance commands

Command	Description	LD
DISC <BASE> lll s cc	Disables the BRSC at the specified lll s cc.	32
ENLC lll s cc <FDL/ NST>	Enables the BRSC basecode at lll s cc, and force downloads the basecode at the application.	32
DISC l s cc	Disables ISDN BRI application at l s cc.	32
ENLL lll	Enables the MISP basecode at lll, and enables all associated BRSCs.	32
ENLC (BRI) lll s cc	ENABLES BRSC ISDN BRI application at lll s cc.	32
DISC (BRI) lll s cc	Disables BRSC ISDN BRI application at lll s cc.	32
ENLC lll s cc <FDL>	Enables BRSC ISDN BRI application at lll s cc, and force downloads the basecode at the application.	32
DISL lll	Disables the MISP basecode at lll, and disables all associated BRSCs.	32
ENLL lll	Enables the MISP basecode.	32
ENLL lll <FDL>	Enables the MISP basecode and MISP application at lll, which enables all other configured applications on the MISP.	32
DISL BRIL lll <REM>	Disables the MISP application at lll, which disables the BRSC ISDN BRI application.	32
ENL BRIL lll <FDL>	Enables the MISP application at lll, which enables the BRSC ISDN BRI application.	32
DISS lll s DSXP x	Disables the superloop network card lll at location s. Disables the controller card x, which disables the BRSC at location lll.	32
ENLS lll s ENXP X	Enables the superloop network card lll at location s. Enables the controller card x, which enables the BRSC at location lll.	32
DISS lll s	Disables logical shelf lll at location s. If there is an enabled BRSC at the module, it remains enabled.	45
DISU l s c dsl#	Deactivates DSL# at location l s c.	32
ENLU s c dsl#	Activates DSL# at location l s c.	32
STAT l s c	Displays status of all DSLs on the line card and the version number of the downloaded software at location l s c.	32
STAT l s c dsl#	Displays status of DSL# on the line card at location l s c.	32

Command	Description	LD
IDC lll s c	Checks the BRSC card identification, basecode and the ISDN BRI application version number at location lll s c.	32
STAT lll s c	Displays the status of the BRSC card and the ISDN BRI application at location lll s c.	32
STEI lll s c dsl#	Displays the status of all TEIs and USIDs on DSL# at location lll s c.	30
SLFT lll s cc	Performs self-test on the BRSC at location lll s cc.	32

SILC and UILC maintenance commands

SILC and UILC maintenance commands are used to manipulate the operational status and perform diagnostic tests on specific cards and their DSLs. The main role of these commands is to deactivate the card to be tested, to perform the specified loop test or self-test, and return the card back into service.

These commands are located in different non-resident programs (overlays), which can be accessed using the administration terminal or the maintenance telephone.

Table 16: SILC/UILC maintenance commands on page 61 lists these commands and the non-resident diagnostic programs where they can be found.

Table 16: SILC/UILC maintenance commands

Command	Description	LD
DISC l s c	Disables the SILC/UILC at the specified loop l, shelf s, and card slot c. If the reference clock source is configured on the DSL, the prompt **"CLOCK SOURCE ON DSL # OF SILC L S C, PROCEED?"** is displayed to ensure that necessary precautions have been taken for uninterrupted clock reference for the system.	32
DISI l s c	Disables the SILC/UILC when the card is **idle**, at the specified loop l, shelf s, and card slot c. If the reference clock source is configured on the DSL, the prompt **"CLOCK SOURCE ON DSL # OF SILC L S C, PROCEED?"** is displayed to ensure that necessary precautions have been taken for uninterrupted clock reference for the system.	32
ENLC l s c	Starts the SILC/UILC self-test at a specified loop l, shelf s, card slot c, before enabling the line card. If the line card is not present in the card slot when this command is entered, the enabling process still takes effect. When the line	32

Command	Description	LD
	card is inserted in the card slot at a later time, whichever of the DSLs that are in the enabled state are automatically brought up.	
DISU l s c dsls#	Deactivates the DSL at location l s c dsl#. If the reference clock source is configured on the DSL, the prompt **"CLOCK SOURCE ON DSL # OF SILC L S C, PROCEED?"** is displayed to ensure that necessary precautions have been taken for uninterrupted clock reference for the system.	32
ENLU l s c dsl#	Activates the DSL at location l s c dsl#.	32
STAT l s c	Displays the status of all DSLs on the card and the version number of the downloaded software at location l s c.	32
STAT l s c dsl#	Displays the status of a DSL on a card at location l s c dsl#.	32
IDC l s c	Checks the card identification and the loadware version stored in the card.	32
SLFT l s c	Performs a self-test on the card, loop l, shelf s, card slot c.	30
ESTU l s c d	Enables a D-channel link for a ISDN BRI trunk line, loop l, shelf s, card slot c, dsl#.	32
RLSU l s c d	Releases a D-channel link for a ISDN BRI trunk line, loop l, shelf s, c, dsl#.	32
ENTS l s c d	Puts the far-end and near-end ISDN BRI trunk in test mode, line, loop l, shelf s, card slot c, dsl#. If the reference clock source is configured on the DSL, the prompt **"CLOCK SOURCE ON DSL # OF SILC L S C, PROCEED?"** is displayed to ensure that necessary precautions have been taken for uninterrupted clock reference for the system.	32
ENRB l s c d	Puts the far-end ISDN BRI trunk in remote loopback mode, line, loop l, shelf s, card slot c, dsl#.	32
RLBT l s c d	Runs remote loopback test for an ISDN BRI trunk, line, loop l, shelf s, card slot c, dsl#.	32
DSRB l s c d	Takes the far-end ISDN BRI trunk out of remote loopback mode, line, loop l, shelf s, card slot c, dsl#.	32
DSTS l s c d	Takes the far-end and near-end ISDN BRI trunk DSLs out of test mode, line, loop l, shelf s, card slot c, dsl#.	32
ENLU	Enables the ISDN BRI trunk.	32
PMES l s c d	Uploads and prints layer 3 messages for ISDN BRI trunk DSL, loop l, shelf s, c, dsl#.	32
PCON l s c d	Uploads and prints configuration parameters for ISDN BRI trunk DSL, loop l, shelf s, c, dsl#.	32

Command	Description	LD
PTRF l s c d	Uploads and prints the traffic report for ISDN BRI trunk DSL, loop l, shelf s, c, dsl#.	32
PERR l s c	Uploads and prints the error log for a specified line card, loop l, shelf s, c, dsl#.	32
PERR l	Uploads and prints the error log for a specified MISP, loop l.	32
PTAB l s c d <tabl#>	Uploads and prints layer 3 message configuration table for ISDN BRI trunk DSL, loop l, shelf s, c, dsl#, table#.	32
PLOG l s c d	Uploads and prints the protocol log for ISDN BRI trunk DSL, loop l, shelf s, c, dsl#.	32

MPH maintenance commands

Maintenance and diagnostic commands for the MPH provide the capability of performing fault detection and isolation, query link status, and disabling and enabling an MPH application.

Table 17: MPH maintenance commands on page 63 lists the MPH maintenance commands and the non-resident diagnostic programs where they can be found.

Table 17: MPH maintenance commands

Command	Description	LD
DSIF L PDNI Y	Disables link interface Y (1-3) for type PDNI on loop L.	32
RMIF L PDNI Y	Disables and removes link interface Y (1-3) for type PDNI on loop L.	32
ENIF L PDNI Y <FDL>	Enables link interface Y (1-3) for type PDNI on loop L.	32
DSIF L PDL2 L1	Disables link interface SAPI16 for BRIL on loop L.	32
RMIF L PDL2 L1	Disables and removes link interface SAPI16 for BRIL on loop L.	32
DSIF L PDL2 l s c	Disables link interface SAPI16 for BRSC only s c.	32
RMIF L PDL2 l s c	Disables and removes link interface SAPI16 for BRSC on l s c.	32
ENIF L PDL2 L1 <FDL>	Enables link interface SAPI16 for BRIL on loop L.	32
ENIF L PDL2 l s c <FDL>	Enables link interface SAPI16 for BRSC on l s c.	32
DSIF l s c DSL DCH x	Disables link interface for USID x for D-channel packet data terminal TN l s c DSL.	32
ENIF l s c DSL DCH x <FDL>	Enables link interface for USID x for D-channel packet data terminal TN l s c DSL.	32

Command	Description	LD
DSIF l s c DSL BCH x	Disables link interface for USID x for B-channel packet data terminal TN l s c DSL.	32
RMIF l s c DSL BCH x	Disables and removes link interface for B-channel packet data TN l s c DSL, for B-channel x (x = 1 or 2)	32
ENIF l s c DSL BCH x <FDL>	Enables link interface for USID x for B-channel packet data terminal TN l s c DSL, for B-channel x (x = 1 or 2)	32
STIF L PDNI Y	Displays the link status for interface Y for type PDNI on loop L.	32
STIF L PDL2 L1	Displays the status for link interface SAPI16 for BRIL on loop L.	32
STIF L PDL2 l s c	Displays the status for link interface SAPI16 for BRSC on l s c.	32
STIF l s c DSL DCH x	Display status of link interface D-channel for USID x for packet data terminal TN l s c DSL.	32
STIF l s c DSL BCH x	Display status of link interface B-channel packet data terminal TN l s c DSL, for B-channel x (x = 1 or 2).	32
ERRL L <CLR>	Upload error logs for the MPH application on loop L; if entered, the <CLR> option clears all error log peg counts.	32
ENLL L <FDL>	Enables the MISP.	32
DISL MPH L <REM>	Disables MPH application on loop l.	32
ENLL MPH L <FDL>	Enables MPH application on loop l.	32
STAT L	Displays the status of MISP on loop l.	32
STAT MPH L	Displays status of MPH application.	32
IDC L	Displays MISP basecode and application version number.	32
DISL L	Disables network loop l on which MCU and B-channel/D-channel terminals are defined.	32
ENLL L	Enables network loop l on which MCU and B-channel/D-channel terminals are defined.	32
DSXP X	Disables network card X on which MCU and B-channel/D-channel terminals are defined.	32
ENXP X	Enables network card X on which MCU and B-channel/D-channel terminals are defined.	32
DISC l s c	Disables line cards on which MCU and B-channel/D-channel terminals are defined.	32
ENLC l s c	Enables line cards on which MCU and B-channel/D-channel terminals are defined.	32

Command	Description	LD
DISU l s c u	Disables the unit on which MCU and B-channel/D-channel terminals are defined.	32
ENLU l s c u	Enables the unit on which MCU and B-channel/D-channel terminals are defined.	32
ENLC l s c	Enables the line card on which the MCU is defined.	32
XCON	Invoke MPH link interface loopback test 9.	45

MISP and SILC/UILC message monitoring commands

Link Diagnostic Program LD 48 is used to monitor and print messages sent and received by the MISP, SILC, and UILC cards.

These commands are used to enable the technician to monitor ISDN BRI activity during normal system operation and to facilitate system maintenance.

Table 18: MISP and SILC/UILC LD 48 message monitoring commands on page 65 lists Link Diagnostic Program LD 48 commands and their functions.

Table 18: MISP and SILC/UILC LD 48 message monitoring commands

Command	Description
SETM MISP <loop #> DBG	Turns on the debug option on the MISP.
SETM MISP <loop #> MON	Turns on the printing option for incoming and outgoing messages for the MISP.
SETM MISP <loop #> MNT	Prints status messages for the MISP.
SETM MISP <loop #> AMO	Activates sending audit messages from the CPU to the MISP.
SETM MISP BRIM	Prints input/output messages form the CPU to the MISP and SILCs/UILCs and from these cards back to the CPU (according to the hexadecimal control word xxxx for MISPS or ISDN BRI line cards).
SETM TNx l s c dsl#	Activates printing of messages for a specified DSL.
SETM TNx l s c 31	Activates printing of messages for a specified ISDN BRI card.
RSET MISP <loop #> DBG	Resets the command for debug option.
RSET MISP <loop #> MON	Resets the command for monitor option.

Command	Description
RSET MISP <loop #> MNT	Resets the command for printing maintenance messages.
RSET MISP <loop #> AMO	Resets the command for audit option.
RSET MISP BRIM	Resets the command for printing messages for a DSL or line card.
RSET TNx	Resets the command for printing of messages for a specified DSL.
RSET ALL	Resets the command for a group of commands.

Note:

For SETM BRIM, use bits 1, 2, 3, 4, 5, and 12 of the control word for different types of messages. Table 19: ISDN BRI message types on page 66 lists the bit numbers and their corresponding message types.

Table 19: ISDN BRI message types

Bit Number	Type of Message
0	Input SSD message from ISDN BRI line cards to the system.
1	Output SSD message from a PBX to ISDN BRI line cards.
2	Input expedited message from BRIL/BRIT application on MISP card to the system.
3	Output expedited message from the system to the BRIL/BRIT application on the MISP card.
4	Input ring message from the BRIL/BRIT application on the MISP card to the system.
5	Output ring message from the system to the BRIL/BRIT application on the MISP card.
12	Call processing error message.

MPH message monitoring commands

Link Diagnostic Program **LD 48** is used to monitor and print messages sent and received by the MPH interface. These commands are used to enable the technician to monitor ISDN BRI activity during normal system operation and to facilitate system maintenance.

Table 20: MPH message monitoring commands on page 67 lists Link Diagnostic Program LD 48 commands and their functions, as they pertain to MPH.

Table 20: MPH message monitoring commands

Command	Description	LD
SETM IFx <MPH loop#> PDL2<BRIL loop#>	Monitors the interface messages for BRIL SAPI16 interface type.	48
SETM IFx <MPH loop#> PDL2 <BRSC l s c>	Monitors the interface messages for BRSC SAPI16 interface type.	48
SETM IFx <MPH loop#> PDN1 <NWIF#>	Monitors the interface messages for network interfaces.	48
SETM IFx <L S C D> BCHx	Monitors the interface messages for B-channel terminal x (x = 1 or 2).	48
SETM IFx <L S C D> DCHx	Monitors the interface messages for D-channel terminals (x = USID number).	48
RSET IFx	Resets the interface message monitor per interface.	48
RSET MPHM	Resets the MPH messages to be monitored.	48
SETM MPHM XXXX	Specifies the MPH messages to be monitored.	48

Application download and enable application failure messages

Once the D-channel port is enabled, the enable application or MISP Handler download function may fail. The following tables provide possible reasons for download and application failure, and list corrective actions to take.

Note:

The messages are printed on the TTY terminal.

Table 21: Download fail messages

Message	Action to take
DOWNLD FAIL (FDL NOT ALLOWED)	Check if other D-channel ports are enabled on the MISP.
DOWNLD FAIL (PSDL FAILURE)	Try again. If problem persists, then report it.
DOWNLD FAIL (TX BUF BUSY)	Try again later.
DOWNLD FAIL (MTC IN PROG)	Try again later.
DOWNLD FAIL (NO MTC SID)	Report the problem.
DOWNLD FAIL (****)	Report the problem.

Message	Action to take
	Note: **** is the reason passed from the MISP interface handler.

Table 22: Enable application fail messages

Message	Action to take
ENLAPPL FAIL (CARD SAYS FAIL)	The MISP is not allowing the application to be enabled. Try again. If problem persists, then report it.
ENLAPPL FAIL (APPL TRNSIENT ST - TRY AGAIN)	Try again.
ENLAPPL FAIL (****)	Report the problem. **Note:** **** is the reason passed from the MISP interface handler.

Chapter 5: Replace ISDN BRI cards

Contents

This section contains information on the following topics:

Introduction

Throughout this section, please note the following:

- The BRSC and MPH are not supported on a Small System.
- For a Small System, l s c (loop shelf card on Large Systems) should be interpreted as c (card).

If completion of ISDN BRI troubleshooting determines that the equipment is defective, remove the defective cards and replace them with spares. The procedures in this chapter describe how to unpack replacement cards, remove and replace defective cards, verify the operation of ISDN BRI equipment, and package and ship the defective cards to an authorized repair center.

Unpack replacement cards

Unpack and visually inspect the replacement cards by following the steps in Unpacking replacement cards on page 70.

Unpacking replacement cards

1. Inspect the shipping container for damage. Notify the distributor if the container is damaged.
2. Remove the unit carefully from the container. Do not puncture or tear the container; use a utility knife to open it. Save the container and the packing material for the shipment of the defective card.
3. Visually inspect the replacement card for obvious faults or damage. Report the damage to an Avaya sales representative.
4. Keep cards in their anti-static bags until ready to install them. Do not stack them on top of each other.
5. Install the cards in the system module. When handling the cards, hold them by their non-conductor edges to prevent damage from static discharge.

Remove and replace the MISP

The MISP can be removed from and inserted into the system modules without turning off the power to the module. This allows the system to continue processing calls on the peripheral cards not associated with the defective MISP.

Note:

A clock controller is required for ISDN BRI trunk applications. If the MISP being removed is providing the clock function, the clock must be reassigned to another location.

Removing the MISP

1. Log in on the maintenance terminal or telephone and load LD 32 (type in **`LD 32`**).
2. Check the status of the MISP by entering **`STAT c`** where c is the card slot number of the MISP.
3. Make sure the MISP is idle before proceeding with the next step to avoid interrupting active calls.
4. When the Type **`DISL lll`** and press the `ENTER` key to disable the MISP loop, where **`lll`** is the MISP loop number being disabled.

5. Unlatch the card-locking devices by squeezing the tabs and pulling the card-locking devices away from the card as shown in Figure 13: Unlatch the card-locking devices on a card on page 72.
6. Pull the card out of the module and place it into an anti-static bag away from the work area.
7. Remove the clock controller if there is one, and place it in an anti-static bag away from the work area.
8. Hold the replacement card by the card-locking devices and insert it partially into the card guides in the module.
9. Pull the card-locking devices away from the card faceplate and firmly insert the card into the backplane connector. Press the card-locking devices firmly against the faceplate to latch the card inside the module, as shown in Figure 14: Latch the card-locking devices on a card on page 73. The MISP automatically starts the self-test.
10. Install the clock controller if required.
11. Observe the red LED on the front panel during self-test. The LED is on during the test. If it flashes three times and stays on, it has passed the test. Go to step 9. If it does not flash three times and then stay on, it has failed the test. Pull the MISP partially out of the module and reinsert it firmly into the module and repeat step 8. If the problem persists, go to the previous chapter to troubleshoot the MISP or look for other common or network equipment problem causes.
12. At the **>** prompt in the LD32 program, type **`ENLL lll`** and press the `ENTER` key to enable the MISP loop. If the red LED on the MISP turns off, the MISP is functioning correctly and is ready to process calls. If the LED stays on, go to the procedure "Test the MISP status" in the "Isolate and correct faults" chapter in this document.
13. Tag the defective card with a description of the problem and prepare it for shipment to the equipment supplier's repair depot.

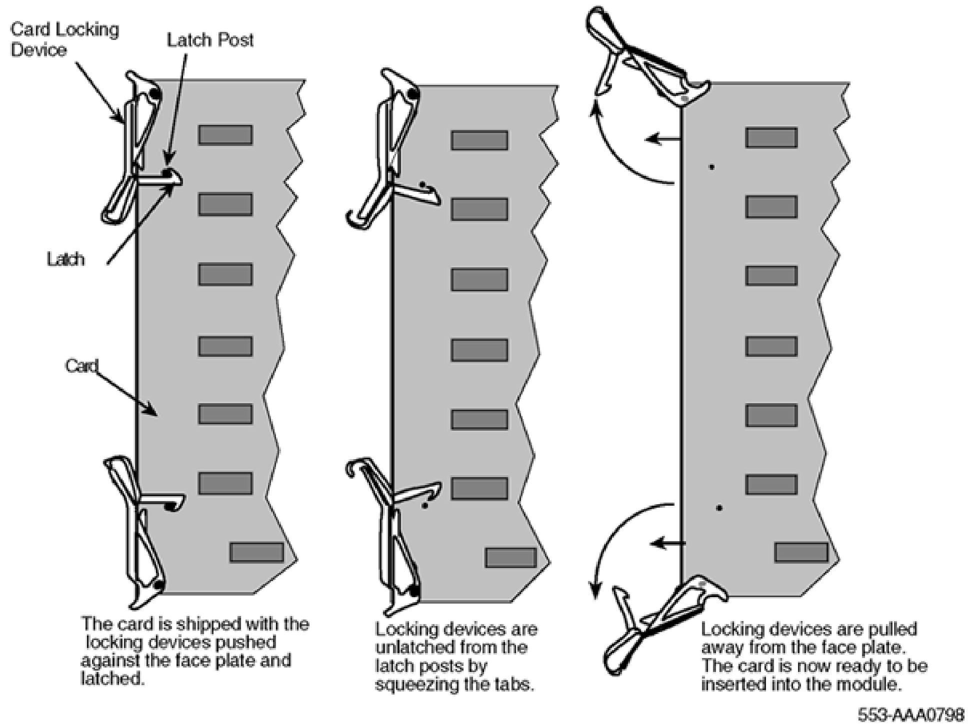

Figure 13: Unlatch the card-locking devices on a card

Squeeze the tabs and pull the card-locking devices away from the card.

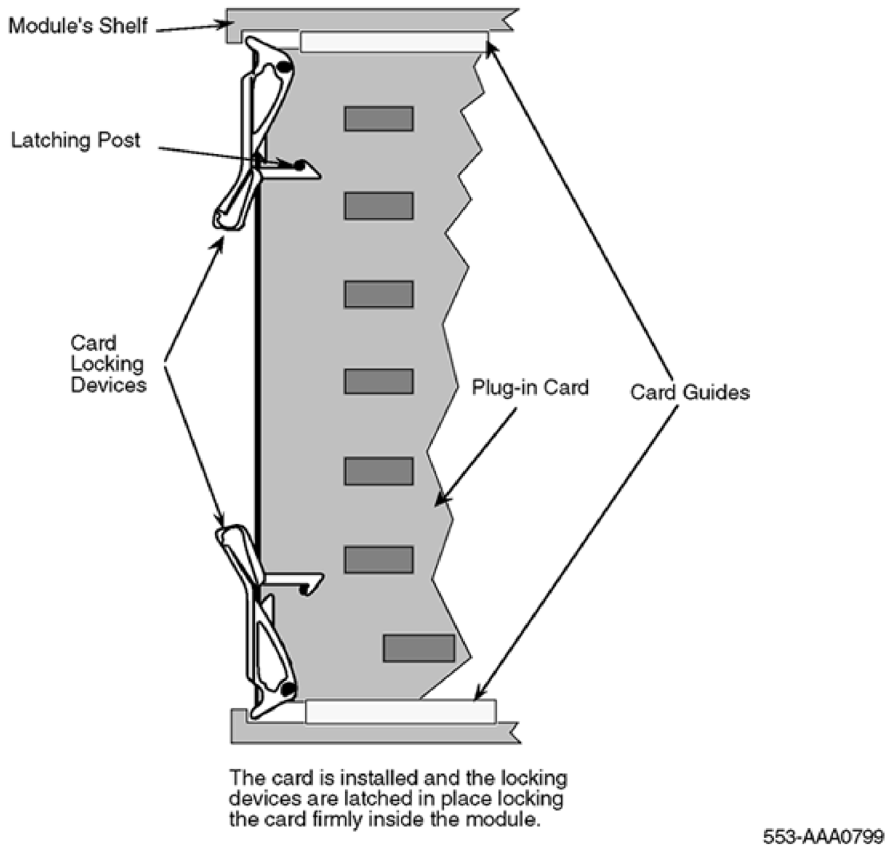

Figure 14: Latch the card-locking devices on a card

Remove and replace the SILC, UILC, or BRSC

The SILCs, UILCs, and BRSCs can be removed from and inserted into the system modules without turning off the power to the module. This allows the system to continue processing calls on functional SILCs, UILCs, and BRSCs.

Note:

If an ISDN BRI trunk connected to the SILC or the UILC is providing a reference clock source to system clock controller, the reference source must be reassigned to another location.

Removing and replacing the SILC or UILC

1. Log in to the system on a maintenance terminal or telephone and load LD 32 (type in **LD 32**).

Note:

Make sure the MISP is idle before proceeding with the next step to avoid interrupting active calls.

2. Type **DISC l s c** and press the ENTER key to disable the SILC or UILC, where **l** is the MISP network loop number, **s** is the shelf (module) number, and **c** is the card slot number in the module. To disable the BRSC, type **DISC lll s c** and press the ENTER key, where **lll** is the superloop number, **s** is the shelf (module) number, and **c** is the card slot number in the module.
3. Unlatch the card-locking devices by squeezing the tabs and pulling the devices away from the card as shown in Figure 13: Unlatch the card-locking devices on a card on page 72.
4. Pull the card out of the module and place it in an anti-static bag away from the work area.
5. Hold the replacement card by the card-locking devices and insert it partially into the card guides in the module.
6. Pull the card-locking devices away from the faceplate on the card and insert the card firmly into the backplane connector. Firmly press the card-locking devices against the faceplate to latch the card in the module, as shown in Figure 14: Latch the card-locking devices on a card on page 73. The card automatically starts the self-test.
7. Observe the red LED on the front panel during the self-test. The LED is on during the test. If the LED flashes three times, the card passes the test. Go to step 8. If the red LED does not flash three times and then stay on, the card fails the test. Pull the card partially out of the module, re-insert it firmly, and repeat step 6. If the problem persists, go to the previous chapter to troubleshoot the card or look for other problem causes.
8. At the > prompt in LD 32, type **ENLC l s c** and press the ENTER key to enable the card. If enabling the BRSC, type **ENCL lll s c** and press ENTER. If the red LED on the card turns off, it is functioning correctly and is ready to process calls; otherwise, go to Check SILC or UILC status on page 41 or Check BRSC status on page 34.
9. Tag the defective card with a description of the problem and prepare it for shipment to the equipment supplier's repair center.

Verify the operation

After replacing a faulty card with a spare and enabling it, some basic functional tests verify that the replacement card has solved the problem.

To verify the operation of an SILC, UILC, or a BRSC card, follow the steps in Verifying the operation of an SILC, UILC, or a BRSC card on page 75.

Verifying the operation of an SILC, UILC, or a BRSC card

1. Place an outgoing voice or data call on an ISDN BRI terminal or trunk connected to a previously faulty card or DSL to verify the outgoing transmission and signaling channels.
2. Place an outgoing voice or data call on an ISDN BRI terminal to the ISDN BRI terminal or trunk used in step 1 to verify the incoming transmission and signaling channels.
3. Repeat these two steps for other previously faulty cards and DSLs.

To verify the operation of an MISP, follow the steps in Verifying the operation of an MISP on page 75.

Verifying the operation of an MISP

1. Place an outgoing voice or data call on an ISDN BRI terminal connected to a DSL associated with a previously faulty MISP to verify its ability to process the signaling information received on D-channels.
2. Disconnect the call after determining that the connection was successful.

Re-install covers

After completing the verification and determining that the system is operating correctly, follow the steps in Re-installing the covers on page 75 to re-install the covers.

Re-installing the covers

1. Re-install covers on the system modules.
2. Terminate the session with the system by logging out of the maintenance terminal. Type LOGO at the > prompt and press the ENTER key.

Pack and ship defective cards

To ship the defective ISDN BRI card to an authorized repair center, perform the steps in Packing and shipping the defective cards on page 76.

Packing and shipping the defective cards

1. Tag the defective card with the description of the problem.
2. Package the defective card for shipment, using the packing material from the replacement card. Place the card in an anti-static bag, then into the box, and securely seal the box with tape.
3. Obtain the shipping and cost information from Avaya and mail the package to an authorized repair center.

Chapter 6: Test and troubleshoot ISDN BRI terminals

Contents

This section contains information on the following topics:

Verify a new M5317T terminal installation

Any problems found during this phase should be corrected before turning equipment over to the customer.

Verifying user operation

1. Examine loop length.
2. If under-carpet cabling is used, evaluate the cables for loss, impedance, crosstalk, and propagation delay.
3. Examine all telephone connections.
4. Set up a communication path to another M5317T.
5. Go through some call routines, using the enabled features. (Refer to the M5317T Voice Features User Guide for procedures to establish and answer telephone calls.)
6. Verify that the display is showing the appropriate responses.

Troubleshoot the M5317T

Trouble conditions may be reported by the telephone user (customer report), by way of automatic routine tests, or during installation procedures.

Isolate switch problems

Follow the steps in Isolating switch problems on page 78 to isolate system problems.

Isolating switch problems

1. Run the LD 32 diagnostic program for the system.
2. Check for error and location codes in the diagnostic output.
3. If the codes indicate a faulty component, replace it. Refer to Replace ISDN BRI cards on page 69.
4. Run the diagnostic programs again to confirm that the error and location codes have been cleared.

Clear error codes

Perform the following steps if the telephone displays error codes after initialization. After each step, check the display. If an error code persists, go to the next step.

Clearing error codes

1. If the static X.25 TEIs in the telephone and the network do not match, datafill the telephone TEIs manually.
2. If the Service Profile IDs (SPIDs) in the telephone and the network do not match, correct the telephone SPIDs.
3. Confirm that a terminating resistor is present in the loop.
4. Perform a loop-back test with the suspect telephone connected to an external shorting jack.
5. Substitute a different telephone, datafilling it with the same information as the suspect telephone.
6. Replace or repair any defective wiring between the telephone and the network termination or line card.
7. Confirm that non-reversing cables are used.
8. Replace the telephone and repeat the installation process.

Restore dial tone

If there is no dial tone or if a telephone call cannot be made, follow the steps in Restoring dial tone on page 79. Check for a dial tone and try to make a call after each step.

Restoring dial tone

1. Check and re-insert any loose Teladapt connectors.
2. Wiggle the line cord or handset cord while listening for sounds from the handset. If crackling or ticking sounds are heard, replace the cords.
3. Check the Teladapt socket for the handset or try another handset.
4. Re-run any defective wiring between the line card, distribution panel, and telephone.
5. Check the switch software to confirm the correct telephone assignment and voice channel operation in the network.
6. Replace the telephone.

Isolate faulty keys

Refer to the M5317T Installation Guide for procedures to follow if faulty key operation is suspected or if the display is behaving strangely.

Verify a new M5209T terminal installation

Procedures are provided for the following tests:

- Running a self-test
- Running a panel test
- Making a test voice call
- Making a test data call (applies to the M5209TDp and M5209TDcp models only)
- Assigning the test display language (M5209TDcp models only)

Run a self-test

⚠ **Warning:**

If changes are made to SPIDs or TEIs, wait 20 seconds for the telephone to update its memory before continuing.

Running a self-test

1. Unplug the RJ-45 line cord from the jack, wait five seconds, then plug it in. The telephone automatically performs a self-test on power up.
2. Check the display for the following message:

   SELF TEST PASSED

   If this message appears, the self-test was completed successfully. If the self-test failed, the display shows the following message:

   code: SELF TEST FAILED V:TWait P:TWait C:TWait

   Where code: refers to a specific code number. Write down the code number(s) and refer to the "Troubleshoot displayed error messages" section of the M5209T Installation Guide.

Run a panel test

Running a panel test

1. Press the Hold and Rls keys simultaneously until the following main menu is displayed:

   MAIN MENU CONFIG
2. Press #. The following prompt is displayed:

   ENTER PASSWORD
3. Dial 4736 (ISDN) and press #. The following message is displayed:

   CONFIGURATION MENU TEI
4. Press * until the following option is displayed:

   CONFIGURATION MENU KEY TEST
5. Press # to begin the key test.

   The M5209T tests the display and indicators by flashing a checkerboard pattern on the display, and by turning on the half-diamonds one at a time.

   After the display test, the following message appears:

   DEPRESS ALL KEYS

   Press the following keys; check that each key is displayed as it is pressed.

   0-9 (dial pad keys) *

   #

   volume up/volume down Hold Rls

   When all keys have been tested, the following should be displayed:

   0123456789*#UDHR
6. Press each feature/line key.

   As each key is pressed, a diamond appears on the associated feature/line indicator. When the last indicator is pressed, a diamond does not appear. Instead, the following message is displayed:

   CONFIGURATION MENU EXIT
7. Note any problems encountered during the test, and refer to the Troubleshooting section of the M5209T Installation Guide.
8. Exit the test by pressing Rls.

Make a test voice call

Make a voice call using a standard test DN. Note any problems encountered during the test.

Make a test data call

Note:

Skip this test if the installed set is an M5209T (voice-only telephone).

If the technician is not trained in making and troubleshooting data calls, contact the customer representative and have them make the data call.

Assign the test display language

Note:

This test applies to the M5209TDcp only.

Assigning the test display language

1. Press the Hold and Rls keys simultaneously until the following main menu is displayed:

   MAIN MENU CONFIG
2. Press * until the following option is displayed:

   MAIN MENU LANGUAGE
3. Press #. The following message is displayed:

   LANGUAGE ENGLISH
4. Press * to select the desired display language.
5. Press #. The following message is displayed:

   MAIN MENU EXIT

Troubleshoot the M5209T

Trouble conditions might be reported by the telephone user (customer report), due to automatic routine tests or during installation procedures. The following are general troubleshooting procedures to follow when problems are found with the M5209T; for more detailed information on troubleshooting the M5209T, refer to the M5209T Installation Guide.

Bring the following spare replacement parts to the installation site to be tested:

- installed set model
- handset
- handset cord
- RJ-45 line cord
- RS-232C interface cable

Power and cable connection problems

When no response is received from the M5209T, check the cable and power connections before proceeding with any other troubleshooting sequence.

Follow the steps in Checking power and cable connections on page 83 to check the cable connections and power supply.

Checking power and cable connections

Ensure the following:

1. The RJ-45 line cord is properly connected to the wall jack or Terminator Resistor (TR) box.
2. If used, the RS-232C interface cable is properly connected to both the DTE port and the M5209 data port.
3. The handset cord is properly connected to both the handset and the handset jack underneath the set.
4. The cable from the wall jack or TR box, to the NT1, is properly connected.
5. The U-loop cable and the NT1 is properly connected.
6. The S-loop cable and the NT1 is properly connected.
7. The NT1 is functioning properly.

   Whether the NT1 is a stand-alone or rack-mount model, both types are functioning properly when the LED status indicators appear as summarized below:

Status Indicator	LED light
Power S/T U-sync Test	On OFF OFF OFF

   If the NT1 indicators are not as shown above, it is not ready for use with the M5209; contact a supervisor for direction.
8. If the cable connections and power supply are checked, and the M5209 is still not responding, unplug the RJ-45 line cord from the wall jack or TR box for five seconds, then plug it back in and perform a power reset on the M5209.

9. If problems still exist, try another M5209T telephone, using the existing cables. If this set works, the problem is with the original telephone; it should be replaced.
10. If the replacement M5209T does not work, replace the existing cables with spare cables; repeat step 8.

    If problems persist, contact a supervisor.

Problems with the telephone components

Problems with the telephone components can include the following:

- The keys are not responding, or responding improperly.
- The feature key indicators are not functional.
- The display is not functional.
- The handset has no audio, or the audio is distorted.
- The speaker has no audio, or the audio is distorted.

Testing the telephone components

1. Check the cable connections using the procedures described in the "Power and cable connection problems" section. For handset problems, try another handset cord or another handset.
2. If cables are not the source of the problem, run a panel test as described in the "Verify a new M5209T terminal installation" chapter.
3. If the panel test fails, replace the telephone.

Troubleshoot displayed error messages

When a self-test is performed and it fails, a code number is displayed to indicate the type of error that is at hand.

Refer to the M5209T Installation Guide for a complete description of these codes, and the steps required to fix the problem situation.

Troubleshoot system error messages

For all ISDN BRI Maintenance Messages, refer to *Avaya Software Input Output Reference - System Messages (NN43001-712)*.