

Lucent Technologies
Bell Labs Innovations



MERLIN LEGEND™
Communications System
Basic Rate Interface
Provisioning Guide and
Planning Forms

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Basic Rate Interface (BRI) Provisioning Guide

Contents

About This Guide	v
■ Intended Audience	v
■ Related Documents	vi
Introduction	2
Central Office Provisioning	4
■ Standard BRI Operation Provisioning	5
■ Optional Features Provisioning	7
Calling Party Number/Billing Number	9
Incoming Calls	9
Outgoing Calls	9
CO Transfer	10
Local Area Signaling System (LASS) Features	11
Multi-Level Precedence and Preemption (MLPP)	12
Multi-Line Hunt Group (MLHG)	12
Dialing Plan	12
System Testing and Verification	14
■ Background	14
■ Requirements	16
■ Testing	16
■ Verification	19
Troubleshooting	27
Appendix A - Planning Form	A-1

About This Guide

This document describes the line and feature parameters that must be provisioned at the central office for basic connectivity and additional calling capabilities for the MERLIN LEGEND® Basic Rate Interface (BRI) system. Also included are the procedures used by system technicians to verify both the service provisioned on the BRI lines and the proper functioning of the MERLIN LEGEND BRI system in supporting BRI. A master copy of the planning form used for the verification process is included as Appendix A.

Intended Audience

This book is intended for use as a reference by anyone needing such information, including support personnel, sales representatives, system managers, and users of the MERLIN LEGEND BRI system. It is also intended for system technicians who are responsible for system installation, maintenance and troubleshooting.

Related Documents

In addition to this book, the documents listed below are part of the documentation set. Within the continental United States, these documents can be ordered from the AT&T GBCS Publication Fulfillment Center by calling 1-800-457-1235.

Document	Title
	System Documents
555-601-111	<i>BRI Supplemental Reference</i>
555-601-112	<i>BRI Provisioning and Planning</i>
555-620-116	<i>Pocket Reference</i>
	Telephone User Support
555-601-110	<i>BRI Access Button Quick Reference</i>

Basic Rate Interface (BRI) Provisioning Guide

This section describes the line and feature parameters that must be provisioned at the central office for basic connectivity and for additional calling capabilities provided by optional BRI features.

Introduction

The MERLIN LEGEND® BRI system is designed to operate with 5ESS Generic 8 (or 9) Custom BRI central office switches. The system presents a U-interface and works with 2 binary, 1 quaternary (2B1Q) line coded Integrated Services Digital Network (ISDN) BRI lines.

The service on each BRI line is specified in a User Service Order Profile (USOP), which is configured on the 5ESS central office at subscription time. The USOP contains information necessary for the 5ESS to provide service to each station connected to the system. Each USOP is identified by a Service Profile Identifier (SPID).

When BRI lines are ordered, the following important information used for MERLIN LEGEND installation is provided by the local telephone company:

- Directory Number (DN)

Each Digital Subscriber Line (DSL) has two 64-Kbps B-channels capable of allowing two separate calls to be placed or received at once. For each DSL, two telephone numbers, also known as DNs, are assigned.

- Service Profile ID (SPID)

One SPID is provided for each DN ordered. The SPID is generally consists of a string of ten digits 0 through 9. The SPID is required for system programming.

- Multiline Hunt Group (MLHG) hunt sequence

The MLHG features allows a customer to publish one telephone number with access to number of lines needed to handle incoming and outgoing call volumes. If the customer orders the MLHG feature, the DNs will hunt in a specific sequence. Normally the sequence is linear, starting with the lowest DN. This information may be used for the following system programming:

- Assigning BRI lines to pools. This ensures that outgoing BRI lines can be selected in reverse order from expected incoming call volume.

Central Office Provisioning

When a MERLIN LEGEND BRI system is installed, certain line and feature parameters must be coordinated with the 5ESS central office to ensure proper operation. Refer to the *MERLIN LEGEND Basic Rate Interface Supplemental Reference* (555-601-111) for the required settings on the MERLIN LEGEND BRI system.

The categories of required parameters that must be provisioned at the 5ESS central office are as follows:

- Standard BRI operation—mandatory for basic connectivity and to support inbound and outbound calling and video configurations.
- Optional—provide additional calling capabilities

In general, the MERLIN LEGEND BRI system supports circuit-switched service only (SAP 0). D-channel data service (SAP16) is not supported and should not be provisioned.

Standard BRI Operation Provisioning

The attributes in the following table **must** be set as indicated for all MERLIN LEGEND BRI system installations. These attributes can be found on screens 2, 3, 4, and 5 of Recent Change view 23.8.

Table 1. Installation: Standard BRI Operation Mandatory Provisioning

Attribute Name	Value	Recent Change	Notes
NT1 TYPE	AULC	23.8 Screen 2	Line Coding is 2B1Q (U interface)
DSL CLS	MP	23.8 Screen 2	Class of Service is multipoint
MTERM	2	23.8 Screen 2	Maximum number of terminals on DSL
MAXB CHL	1	23.8 Screen 3	Maximum number of channels per terminal
ACT USER	Y	23.8 Screen 3	Actual user
CKT LCC	DS1*	23.8 Screen 4	DS1 = Circuit-Switched Service
TERMTYP	TYPED	23.8 Screen 4	Type 'D' terminal being emulated

* The actual name "DS1" for the Line Class Code may be different depending on the central office. The name is not relevant for MERLIN LEGEND BRI system provisioning, but the standard configuration for the Line Class Code used as the parameter for the CKT LCC must be set as follows for proper operation:

Attribute Name	Value	Recent Change
===== Class of Service	==== ISDN	===== 4.1 Screen 1
Terminating Treatment	INDIV	4.1 Screen 1

Table 1. Installation: Standard BRI Operation Mandatory Provisioning, (continued)

Attribute Name	Value	Recent Change	Notes
CSV	1	23.8 Screen 4	1 circuit-switched voice call active**
CSV CHL	ANY	23.8 Screen 4	Either B-channel usable for voice
CSD	1	23.8 Screen 4	1 circuit-switched data call active**
CSD CHL	ANY	23.8 Screen 4	Either B-channel usable for data
DISPLAY	N	23.8 Screen 4	No display messages to be sent
CA	1	23.8 Screen 4	First call appearance is at button 1
CA QTY	2	23.8 Screen 4	2 call appearance per DN
CA PREF	R	23.8 Screen 5	Assert Ringing Line Preference
AUTO HOLD	N	23.8 Screen 5	Assert 'Auto Drop'
ONE TOUCH	N	23.8 Screen 5	Defeat 'One Touch' feature
SAR QTY	1	23.8 Screen 5	Set a sub-address reservation to 1
SAR ORIG	Y	23.8 Screen 5	Allocate the reserved CA for origination

** Up to one call active on each BRI line. Each DSL supports two BRI line thus two simultaneous calls.

Optional Features Provisioning

The MERLIN LEGEND BRI system supports several optional BRI features offered by the 5ESS central office. The following features can be provisioned at the customer's request and used individually or in combination:

- Calling Party Number (CPN)/Billing Number (BN)
- CO Transfer
- Local Area Signaling Service (LASS) features:
 - Automatic Callback
 - Automatic Recall
 - Customer Originated Trace
- Multi-Level Precedence and Preemption (MLPP)
- Multi-Line Hunt Group (MLHG)
- Dialing Plan

The following table contains attributes and the settings required for proper operation of the optional feature on the MERLIN LEGEND BRI system.

Table 2. Features: Standard BRI Operation Mandatory Provisioning

Feature Name	Attribute Name	Value	Recent Change	Notes
Calling Party Number /Billing Number	/CPCPFA	N/A	23.8 Screen 6	Calling Party Number Preference, Auto Activate
	or /CPBPFA	N/A	23.8 Screen 6	Billing Number Preference, Auto Activate
CO Transfer	/MWICTIA		23.8 Screen 6	Multiway Calling
LASS Features: Automatic Callback			23.8 Screen 6	
Automatic Recall			23.8 Screen 6	
Customer Originated Trace			23.8 Screen 6	
Multi-Line Hunt Group	CKT LCC	DS2*	23.8 Screen 4	DS2 = Circuit-Switched Service
	SAR QTY	0	23.8 Screen 5	
	SAR ORIG	N	23.8 Screen 5	

NOTE:

The forward slash before an attribute name indicates a "preconstructed" feature. In some central offices, a preconstructed feature is indicated by an asterisk (*).

The optional features are further described on the following pages.

* The actual name "DS2" for the Line Class Code may be different depending on the central office. The name is not relevant for MERLIN LEGEND BRI system provisioning, but the standard configuration for the Line Class Code used as the parameter for the CKT LCC must be set as follows for proper operation:

Attribute Name	Value	Recent Change
===== Class of Service	==== ISDN	===== 4.1 Screen 1
Terminating Treatment	MLHG	4.1 Screen 1

Calling Party Number/Billing Number

The Calling Party Number/Billing Number feature allows an MLX display telephone user to see the caller's calling party number (CPN) or billing number (BN) on the display. The CPN is the number specified by the caller to be delivered for self-identification. The BN is the number provided by the central office and is used for billing information. The caller can specify if the CPN/BN should be private and if CPNs should be screened.

Incoming Calls

The CPN/BN feature is provisioned by setting either the /CPCPFA or /CPBPFA attribute as indicated in Table 2. For incoming calls, the attribute chosen results in the following information sent by the central office:

- /CPCPFA—CPN is the preference and is displayed, if available; otherwise, BN is displayed, if available
- /CPBPFA—BN is the preference and is displayed, if available; otherwise, CPN is displayed, if available

The /CPCPFA is the most commonly used attribute because most customers want the CPN displayed, if available.

Outgoing Calls

For outgoing calls, the MERLIN LEGEND BRI system sends the calling party information to the central office to allow display at the destination station. The default setting is that the calling party information is sent on all calls placed on BRI lines.

Privacy features are available from the central office that control delivery of the CPN/BN:

- All-Call Privacy (ACP)
- Per-Call Privacy (PCP)

The All-Call Privacy (ACP) feature capability allows or prevents the delivery of the calling party number/billing number (CPN/BN) associated with each BRI line to the destination station. The All-Call Privacy feature should be ordered for each BRI line and specified as either activated or not activated. The Per-Call Privacy (PCP) feature is used to override the All-Call Privacy feature.

NOTE:

It is highly recommended that the same privacy configuration be provisioned for all BRI lines ordered to reduce customer confusion and prevent difficulties in future moves and changes.

All-Call Privacy Activated

When the All-Call Privacy feature has been activated at subscription time, the CPN/BN for the BRI line **is not** sent to the destination station when the BRI line is used to place an outside call. Using the Per-Call Privacy feature causes the CPN/BN for the BRI line to be sent for the next call only.

All-Call Privacy Not Activated

If the All-Call Privacy feature has not been activated, the CPN/BN for the BRI line is sent to the destination station when the BRI line is used to place an outside call. Using the Per-Call Privacy feature prevents the CPN/BN for the BRI line from being sent for the next call only.

NOTE:

Different central offices may offer various options and option packages depending on local needs and regulations. Contact the local operating company to obtain complete information on options and option packages available in each central office.

CO Transfer Feature

If the CO Transfer feature is ordered, the parameters must be set as shown in Table 2.

CO Transfer is not tariffed separately and must be ordered as part of the Multiway Calling (/MWICTIA) package consisting of the following CO features:

- Hold
- Transfer
- Conference
- Drop

The MERLIN LEGEND BRI system does not support the use of central office-based features — Conference, Drop, or Hold (except as a sub-function of the CO Transfer feature). This is because users will most likely use the MERLIN LEGEND equivalents of these features.

Various options and option packages are available for special operation required by the customer. For example, options to restrict transfer destinations, to restrict transfer completion, or to vary the procedure used to transfer a call.

Contact the local operating company to obtain complete information on options and option packages available in each central office.

Local Area Signaling System (LASS) Features

Three LASS features are supported on the MERLIN LEGEND BRI system and are optioned on Recent Change 23.8, screen 6:

- Automatic Callback (AC)
- Automatic Recall (AR)
- Customer Originated Trace

LASS features should be used only on Personal Line buttons. Refer to the *MERLIN LEGEND Basic Rate Interface Supplemental Reference (555-601-111)* for complete information on considerations and operation of LASS features on the MERLIN LEGEND BRI system.

NOTE:

Depending on the local central office, LASS features may be available under a different names. Contact the local operating company to obtain complete information on feature names in each central office.

Some LASS global parameter settings at the central office may affect the Automatic Callback and/or the Automatic Recall feature operation. The MAX RINGBK and RINGBK WAIT options on Form 8.21 indicate the maximum number of ringback attempts and the time interval (in minutes and seconds) between ringbacks after an unanswered attempt. MAX RINGBK can be set in the range of 1 to 12 attempts and RINGBK WAIT can be set in the range of 3 to 12 minutes (in increments of 15 seconds).

These parameters can be used to have the Automatic Callback or Automatic Recall feature attempt to deliver the callback multiple times at specified time intervals. Unless these parameters are programmed, the default setting will cause Automatic Callback or Automatic Recall ringbacks to be attempted only once. If the ringback is not answered after that one attempt (for example, if the user is on another call), the Automatic Callback or Automatic Recall feature is canceled for that call.

The maximum setting (12) for MAX RINGBK is recommended for the MERLIN LEGEND BRI system. However, these parameters are generally global settings at the central office and the local telephone company may not be willing to change them for MERLIN LEGEND BRI system customers.

NOTE:

Settings may vary in different central offices. Contact the local telephone company for information about ranges and recommended settings.

Multi-Level Precedence and Preemption (MLPP)

Numerous options can be set for MLPP, but these options are not addressed in this document. In general, options are provisioned for MLPP for a MERLIN LEGEND BRI system in the same manner as those assigned for directly connected terminals. Refer to the *MERLIN LEGEND Basic Rate Interface Supplemental Reference* (555-601-111) for details on the MLPP feature.

Multi-Line Hunt Group (MLHG)

The following information must be provided to the central office at subscription time when some or all of the BRI lines are included in a Multi-Line Hunt Group (MLHG):

- Number of lines included in the MLHG
- Hunt type—linear or circular

The central office provides a main (starting) number and the line hunting order.

The CKT LCC, SAR QTY, and SAR ORIG attributes must be set differently from the standard BRI configurations settings as shown in Table 2.

Dialing Plan

In general, the MERLIN LEGEND BRI system does not require connection of Centrex lines. The need for Centrex service is determined by specialized business needs for services offered by Centrex, or in some areas, local tariffing or availability issues may require that BRI lines connected to the MERLIN LEGEND BRI system be Centrex-based. For example, in one geographic area, mandatory Subaddress (SAR) option is available only as a Centrex feature.

An example of a business need requiring a specialized dialing plan is the customer who wants an arrangement where branch offices can be dialed using a less-than-seven-digit number. This capability is made possible by ordering Centrex lines and making use of Centrex groups and Individualized Dialing Plan (IDP).

The cost for Centrex services varies depending on local tariffs.

When an outgoing call is placed on a non-Centrex BRI line, the dialing sequence is the same as on other types of lines (optional 1 + area code, followed by a seven-digit number).

When an outgoing call to a destination not included in the Centrex group is placed on a Centrex BRI line, the above mentioned dialing sequence must be preceded by a "9." Branch offices or other organizations included in the Centrex group can be reached by dialing an "extension number."

System Testing and Verification

This section contains procedures used by systems technicians to verify both the service provisioned on the BRI lines and the proper functioning of the MERLIN LEGEND BRI system in supporting BRI. Refer to the *MERLIN LEGEND Communications System Installation* manual (555-620-141) and the *MERLIN LEGEND Basic Rate Interface Supplemental Reference* (555-601-111) for complete installation instructions and cautions.

Background

BRI lines from the 5ESS central office connect to the MERLIN LEGEND BRI system through the 800 CO-BRI module installed on the carrier. Each module has eight ports. Each port can be connected a Digital Subscriber Line (DSL) line via a D8W cord. Each DSL supports two BRI lines, each with its own Directory Number (DN), that is, the telephone number for the line. Each 800 CO-BRI module can be used to connect 16 BRI lines.

The MERLIN LEGEND BRI system internally maps each BRI line to a system line identified by a unique line number (801 through 880). Lines can be assigned to stations as Personal Lines or can be assigned to pools. Each station with a BRI line assigned as a Personal Line button has full use of BRI features provisioned for the BRI line at the 5ESS central office.

Figure 1 illustrates the physical connection of a DSL from the 5ESS central office to the MERLIN LEGEND, the internal mapping of lines, and the assignment of lines to stations.

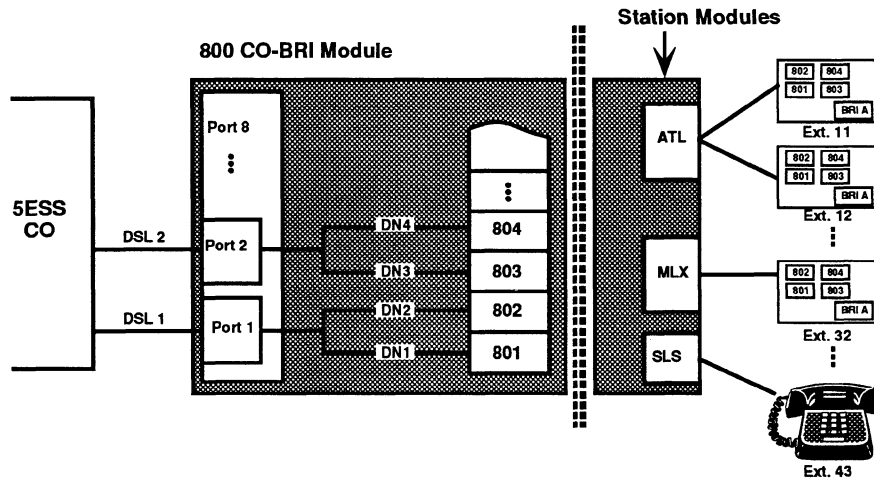


Figure 1. Mapping of Lines from the 5ESS Central Office to MERLIN LEGEND Stations

Requirements

Prior to installation of the system, the systems technician or consultant must acquire the following information:

- Letter of Agency from the customer
- Contact number at the central office for troubleshooting
- MERLIN LEGEND and MERLIN LEGEND BRI System Planning forms

The following equipment is necessary for testing BRI lines:

- MERLIN LEGEND BRI system with the BRI Feature module
- Three MLX display telephones
- A telephone with existing access to the central office
- One or more 800 CO-BRI modules (a maximum of five can be installed depending on the power supply)
- BRI lines with SPIDs and DNs provided by the 5ESS central office and USOP configuration parameters
- A Tektronix Craftek Model CT100 (recommended) for troubleshooting lines
- ISDN telephone with an NT1 interface

Testing

To ensure ease of programming and minimize human error, it is recommended that testing for correct operation of the BRI line and the system be performed on the MERLIN LEGEND BRI system in its default state with minimal system programming. After completion of testing, the system can be configured to meet customer needs as indicated by the system planning forms with the assurance that the BRI lines will function reliably.

Use the following steps as a guideline to install and test the MERLIN LEGEND BRI system. Refer to the *MERLIN LEGEND Communications System Installation* manual (555-620-141) and the *MERLIN LEGEND Basic Rate Interface Supplemental Reference* (555-601-111) for complete installation instructions and cautions.

1. If upgrading an existing MERLIN LEGEND system, back up the current customer translations on a diskette.
2. Turn the system off.
3. Install the 800 CO-BRI modules (maximum of five, three per carrier) in the system leaving no empty slots before the last module.
4. Turn the system on.
5. Wait for the red LED on the processor module to go off.
6. Frigid start the system.

7. Wait for the red LED on the processor module to go off. (The red LED on each 800 CO-BRI module should be on indicating no service on each port.)
8. Perform diagnostic tests on each module:
 - Internal loopback test
 - Board controller test
 - B-channel loopback test
- a. Put the module out-of-service by busy-ing it out:
 - (1). Press **Menu** → Maintenance.
 - (2). Press **Slot**.
 - (3). Enter the slot number of the module.
 - (4). Press **Enter** → Busy-Out → Yes.
 - (5). Wait for the busy-out to complete.
 - (6). Press **Exit**.
- b. Execute the tests:
 - (1). Press **Demand Test** → IntLoopback → Test Once.
 - (2). Wait for the test to complete.
 - (3). If the test passes, press **Exit** → Exit and continue with the next test. If the test fails, follow the procedure in step 8d below to remove the module.
 - (4). Press **BoardCntrlr** → Test Once.
 - (5). Wait for the test to complete.
 - (6). If the test passes, press **Exit** → Exit and continue with the next test. If the test fails, follow the procedure in step 8d below to remove the module.
 - (7). Press **BchLoopback**.
 - (8). Wait for the test to complete.
 - (9). If the test passes, press **Exit** → Exit and continue with the next test. If the test fails, follow the procedure in step 8d below to remove the module.
 - (10). Press **Exit**.
- c. Put the module back in service:
 - (1). Press **Restore** → Yes.
 - (2). Wait for the restore to complete.
 - (3). If more modules require testing, press **Exit** → Exit and repeat from step 8a(3) above. When all modules have been tested, press **Home**.

- d. A module that fails a test should usually be removed. Remove the module from the module as follows:
 - (1). Put the module back in service:
Press **Menu** → Maintenance → Slot.
Enter the number of the module.
Press Enter → Restore → Yes.
Wait for the restore to complete.
 - (2). Turn the system off.
 - (3). Remove the module.
 - (4). Shift the modules to remove any resulting empty slots between modules.
 - (5). Turn the system on.
 - (6). Wait for the red LED on the processor module to go off.
 - (7). Continue testing each module.
9. Plug BRI DSLs into the ports on the 800 CO-BRI modules, starting with the bottom port on the first module, continuing sequentially toward the top port. Proceed to the next module, and plug BRI DSLs into the ports in the same order. It is recommended that you plug in the DSLs sequentially in order of their respective DNs.
10. Program the SPID for each BRI line. Once the SPID is programmed, the BRI line is activated. (Press **Exit** at any time to leave system programming without saving the current changes.)
 - a. Press **Menu** → SysProgram → Exit → LinesTrunks → **More** → BRI → ServProfid.
 - b. Enter the line number of the BRI line.
 - c. Press Enter.
 - d. Enter the ten-digit SPID for the BRI line.
 - e. If more BRI lines require SPID programming, press **Next** and repeat from step 13d above. When the SPID is programmed for all BRI lines, press Enter → **Home**.

Verification

Once installation testing is completed, the serviceability of the BRI lines must be verified. For this procedure, duplicate one planning form from Appendix A of this guide for each 800 CO-BRI module installed in the carrier. Since it is unlikely that a test can continue if a subtest fails, it is very important that you record both the basic results and unexpected conditions (those that differ from the expected results described) of each test on the planning form. This will help in troubleshooting should a BRI line fail a test and further testing cannot be performed. Refer to the "Troubleshooting" section that follows for information on suggested causes and corrective actions for lines that fail one or more tests.

Follow these steps to verify each BRI line:

1. Using the completed "Control Unit Diagram" from *System Form 1*, write the slot number for each 800 CO-BRI module in the space provided at the top of the planning form.
2. Using the "Log. ID" and "Trunk No." columns on *System Form 2c, System Numbering — Trunk Jacks*, write the logical IDs and line numbers for each BRI line connected to an 800 CO-BRI module. "Unequipped" in the "Incoming Trunk Type" column indicates a port not used at this time.
3. Using the "Directory Number" and "Service Profile Identifier" columns on *System Form 3e, Outside Lines — BRI Options*, write the Directory Number (DN) and Service Profile Identifier (SPID) for each BRI line.
4. Locate the three MLX display telephones to be used for verification. One station must have a minimum of three blank buttons. One of the buttons must be in the first ten and is used to program a BRI Access button. The other buttons are used to assign a pair of BRI lines from the same DSL. This station is referred to as station **A** in this procedure.

The other two stations must have one blank button. These stations are referred to as stations **B** and **C** in this procedure.

In addition, locate a fourth telephone with access to the central office. Any type of telephone can be used. This station is referred to as station **D** in this procedure.

5. Set up stations **B** and **C** by assigning the first two BRI lines starting from the last DSL that can be used to place and receive calls:
 - a. Assign a line from the last DSL to station **B**:
 - (1). Press **Menu** → SysProgram → Exit → Extensions → LinesTrunks.
 - (2). Enter the extension of the station.
 - (3). Press Enter.
 - (4). Press the range corresponding to the logical ID for the BRI line being assigned to the button or select **Entry Mode**.

- (5). Press the button corresponding to the logical ID to turn on the LED (if assigning a line) or turn off the LED (if removing a line), or if you selected `Entry Mode`, enter the line number.
 - (6). Repeat from 5a(4) to assign more lines to the station or from 5a(2) to assign lines to another station or press `Enter`. When programming is complete, press **Home**.
- b. Verify that the lines were assigned to the buttons:
- (1). Exit ADMIN.
 - (2). Press **Inspect** to enter the inspect mode.
 - (3). Press the button on which the line was assigned:
 - If a line is assigned to the button, the "Line 8xx - I" is shown on the display (8xx is the line number for the BRI line assigned to the button).
 - If the button is a BRI Access button, the "BRI Access" is shown on the display.
 - (3). Press **Home** to exit the inspect mode.
- c. Place a test call from station **B** to station **D**:
- (1). Pre-select the button for the line.
 - The red LED next to the button is steadily lit.
If not, check that this line has been assigned to the button using the procedure in steps 5a and 5b above.
 - (2). Lift the receiver.
 - The red and green LEDs next to the button are steadily lit and you hear dial tone.
If not, (the red LED goes off), and this is the first call attempt, verify that the SPID is entered correctly for the line and try the call again after about a minute. If the call fails again, unplug and replug the corresponding DSL and try the call again after about a minute. If this final call fails once again, write "n" in the "Outgoing Call" column of the planning form and write the type of tone, if any, that you hear at the calling and destination stations in the "Comments" column.

- (3). Dial the directory number for the BRI line assigned to the station you are calling. If Centrex lines are connected dial a "9" before the telephone number.
 - Dial tone goes off after the first digit is dialed.
 - After the last digit has been dialed, you hear ringback at the calling station and ringing at the station being called.

If either is missing, verify that the dialed digits are correct for the BRI line assigned to the button at the destination station. Redial if necessary. If the test fails again, write "n" in the "Outgoing Call" column of the planning form and write the type of tone, if any, that you hear at the calling and destination stations in the "Comments" column of the planning form.

- (4). Answer the call at the destination station.
 - (5). Verify connectivity.
- d. Using the procedure in 5c above, place a test call from station **D** to station **B**. When you answer the call on station **B**, check for station **D**'s calling party information on the station **B**'s display. Record the results of the test on the planning form. If the test fails, assign another line to station **B** and repeat the procedure in step 5c above.
 - e. Using the procedure in 5c above, place a test call from station **D** to station **C**. When you answer the call on station **C**, check for station **D**'s calling party information on the station **C**'s display. Record the results of the test on the planning form. If the test fails, assign another line to station **C** and repeat the procedure in step 5c above.

NOTE:

Calling Party Number/Billing Number (CPN/BN) information may not be sent or displayed if All Call Privacy is activated.

6. Program the BRI Access button on station **A**:
 - a. Press **Menu** → SysProgram → Exit → **More** → Cntr-Prg → Program Ext.
 - b. Enter the station's extension.
 - c. Press Enter → Start.
 - d. Select a blank button within the first ten buttons.
 - e. Press ListFeature → BRIAccess → **Home**.
 - f. Verify that the BRI Access button has been programmed using the Inspect procedure in step 5b above.
 - g. Press **Home**.
7. Select the number of sequential pairs (part of the same DSL) of BRI lines corresponding to the number of blank buttons on station **A**. Remember to skip the lines assigned to stations **B** and **C**. Assign the BRI lines to buttons on station **A** using the procedure in step 5a and verify button assignment using the procedure in step 5b above.

8. Test an **outgoing call** by placing a call from station **A** to station **B** on line 1 of a DSL:

- (1). Pre-select the button on station **A** for the line.
 - The red LED next to the button is steadily lit.

If not, check that this line has been assigned to the button using the procedure in step 5b above.
- (2). Lift the receiver.
 - The red and green LEDs next to the button are steadily lit and you hear dial tone.

*If not (the red LED goes off), and this is the first call attempt, verify whether the SPID is entered correctly for the line and try the call again after about a minute. If the call fails again, unplug and replug the corresponding DSL and try the call again after about a minute. If this final call fails once more, write "n" in the "Outgoing Call" column of the planning form and write the type of tone, if any that you hear at stations **A** and **B** in the "Comments" column.*
- (3). Dial the directory number for the BRI line assigned to the button on station **B**. If Centrex lines are connected dial a "9" before the telephone number.
 - Dial tone goes off after the first digit is dialed.
 - After the last digit has been dialed, you hear ringback at station **A** and ringing at station **B**.

*If either is missing, verify that the dialed digits are correct for the BRI line assigned to the button at station **B**. Redial if necessary. If the test fails again, write "n" in the "Outgoing Call" column of the planning form and write the type of tone, if any, that you hear at station **A** and/or station **B** in the "Comments" column of the planning form.*
 - Station **A**'s calling party information is shown on station **B**

If incomplete or incorrect information is shown, describe the results in the "Comments" column of the planning form.
- (4). Answer the call at station **B**.
- (5). Verify connectivity.
- (6). Hang up at station **A**.
 - The green LED on station **A** is off.

If not, select the line and lift the receiver to determine if the call has been disconnected. If the call is still connected, hang up again. If the test fails again, write "n" in the "Outbound Disc" of the planning form. Record the number of tries to disconnect the call in the "Comments" column of the planning form.
- (7). Hang up at station **B**.
 - The green LED on station **A** is still off.

9. Perform Test 1 for an **incoming call** by placing a call from station **B** to station **A** on a BRI line:

- (1). Dial the directory number for the BRI line assigned to the button on station **A**. If Centrex lines are connected dial a "9" before the telephone number.

- Dial tone goes off after the first digit is dialed.
- Station **A** rings and the green LED next to the button on station **A** is flashing.

*If either is missing, verify that the dialed digits are correct for the BRI line assigned to the button at station **A**. Redial if necessary. If the test fails again, write "n" in the "Incoming Call Test 1" column of the planning form and describe the failure in the "Comments" column. Be sure to record what type of tone/signal you received (busy, reorder, ringback, etc.).*

- Station **B**'s calling party information is shown on station **A**

If incomplete or incorrect information is shown, describe the results in the "Comments" column of the planning form.

- (2). Answer the call at station **A**.

- The green LED on station **A** is steadily lit

- (3). Verify connectivity.

- (4). Hang up at station **B**.

- The green LED on station **A** is off after a few moments.

If not, write "n" in the "Incoming Call Test 1" column of the planning form.

- (5). Hang up at station **A**.

- The green LED on station **A** is still off.

10. If a line on station **A** fails the incoming call test, perform Test 2 on that line for an **incoming call** using the instructions in step 8 above. This test determines if the first outgoing call attempt is successful on the line failing Test 1 for an incoming call.

If the line fails, write "n" in Incoming Call Test 2 column

11. If the line failed both incoming call Test 1 and Test 2, perform Test 3 to determine if the calling party hears a busy tone when the line is busy:
 - (1). Place a call from station **B** to station **A** on the BRI line failing both tests.
 - Station **A** does not ring on this line.
 - You hear ringback at Station **B**.
 - (2). Place a call on this line from station **A** to station **B**.
 - (3). Allow the call to ring at station **B**.
 - (4). Place a call to this line from station **C** to station **A**.
 - You hear a busy tone on station **C**.

If not, write "n" in the "Incoming Call Test 3" column and write "no busy tone when line is busy" and the type of tone you hear at station C in the "Comments" column of the planning form.

Repeat steps 8 and 9 for all other BRI lines on station **A**. If the line fails Test 1, repeat step 10. If a line fails both Test 1 and Test 2, repeat step 11.

12. Test **two active calls on a DSL**. (This test is valid only if outgoing calls can be placed from both lines of a DSL.)
 - a. Place a call from line 1 on station **A** to station **B**. Answer the call at station **B**.
 - b. Press **Hold** to put the call on local hold.
 - The green LED on station **A** is fluttering.
 - c. Place a call on line 2 on station **A** to station **C**. Answer the call at station **C**.

If the test fails, write "n" in the "2 Active Calls" column of the planning form.
 - d. Hang up on station **A** to disconnect the call.
 - e. Retrieve the first call on station **A** by selecting the button and lifting the receiver.
 - The green LED for the first call is steadily lit.
 - The green LED for the second call is off.
 - f. Hang up at all stations.
 - g. Repeat this test for all other BRI lines on station **A**.

13. Test **One-Touch provisioning**. (This test is valid only if a line can receive incoming calls.)
- Pre-select line 1 on station **A** and lift the receiver (go off-hook) and then hang up.
 - Place a call from station **B** to line 1 on station **A**.
 - Allow the call to ring at station **A** but do not answer the call.
 - Hang up at station **B**.
 - Place another call from station **B** to line 1 on station **A**.
 - You can hear ringback on station **B** and ringing at station **A**.
*If you hear a busy signal at station **B** and station **A** does not ring, write "n" in the "One Touch" column of the planning form and record the audio results in the "Comments" column.*
 - Repeat this test for all other BRI lines on station **A**.
14. Test **CO Transfer**. (This test is valid only if calls can be placed and received from the line, and if service is subscribed from the local central office.)
- Place a call from station **B** to line 1 on station **A**. Answer the call at station **A**. The transfer source is an incoming call to station **A**.
 - Press **Transfer**.
 - The green LED on station **A** is fluttering.
 - Press the BRI Access button.
 - The red and green LEDs next to the BRI Access button are steadily lit and you hear dial tone.
If the test fails, write "Inactive" in the "BRI Acc" column on the planning form and describe the status of the LEDs.
 - Dial the digits for station **C**'s DN.
 - You hear ringback at station **A** and ringing at station **C**.
 - Answer the call at station **C**.
 - Press Transfer on station **A**.
 - Stations **B** and **C** are connected.
*If not, the transfer was not completed. Write "n" in the "Inbound Source" column. Check that station **A** is still connected to station **C**. Then reconnect to station **B** by selecting the button next to the fluttering green LED. Check that station **A** is now disconnected from station **C** (the green LED is off) and connected to station **B** (the green LED is on).*
 - Station **A** is disconnected from both **B** and **C**. The green LEDs next to the BRI Access button and next to the button used to call station **B** are off.
If not, write "n" in the "A Disconnected from B and C" column of the planning form.

- g. Repeat this test for the same line by placing a call from that line on station **A** to station **B**. The transfer source is an outbound call.

If the test fails, write "n" in the "Outbound Source" column of the planning form.

- h. Repeat steps 13a through 13g for all other BRI lines on station **A**.
14. When all lines assigned to station **A** are tested and more BRI lines are untested, repeat step 7 above and remove the BRI lines from station **A** and assign the untested lines. When all lines are tested, remove the lines from stations **B** and **C** and assign any of the tested lines to those stations then assign the untested lines from stations **B** and **C** to station **A**. Repeat the above tests for the remaining pairs.

Troubleshooting

Use the information in the following table to take corrective action for any problems encountered during testing and verification. The information shown in brackets in the Corrective Actions column is the attribute setting in the central office using Screens 2, 3, 4, or 5 of Recent Change view 23.8. Contact the central office representatives for more information on programming using these screens.

Table 3. Troubleshooting

Symptoms	Possible CO Causes	Corrective Actions
<ul style="list-style-type: none"> ■ No outgoing calls on the line ■ No incoming calls on the line 	<p>Incorrect SPID provided by the CO</p> <p>Point-to-point service (if the other line cannot receive incoming calls)</p> <p>Either this line or the other line on this DSL is not an active user</p> <p>First virtual call appearance is not at button 1</p> <p>Packet-switched service on both B-channels (far-end hears reorder tone)</p>	<p>Obtain correct SPID from the CO</p> <p>Provision for multipoint service (DSL CLS = MP)</p> <p>Provision both lines with active user (ACT USER = Y)</p> <p>Provision first virtual call appearance at button 1 (CA = 1)</p> <p>Provision circuit-switched service on both B-channels</p>
<ul style="list-style-type: none"> ■ No incoming calls on the line ■ Far-end hears ringback when line is idle ■ First outgoing call attempt on that line unsuccessful after failed incoming call on that line when it is idle ■ Other line cannot do any call handling 	<p>Point-to-point service</p> <p>Only one B-channel usable for voice. This provisioning requires point-to-point service</p>	<p>Provision for multipoint service (DSL CLS = MP)</p> <p>Provision either B-channel usable for voice (CSV CHL = ANY)</p>

Table 3. Troubleshooting, continued

Symptoms	Possible CO Provisioning Causes	Corrective Actions
<ul style="list-style-type: none"> ■ No incoming calls on the line ■ Far end always hears ringback ■ First outgoing call attempt on that line unsuccessful after failed incoming call on either line of that DSL when it is idle ■ Other line cannot do any call handling 	<p>Either this line or the other line on this DSL is not an active user</p>	<p>Provision lines with active user (ACT USER = Y)</p>
<ul style="list-style-type: none"> ■ No incoming calls on the line ■ Far-end hears ringback when line is idle ■ First outgoing call attempt on that line unsuccessful after failed incoming call on that line when it is idle 	<p>Type A emulation</p> <p>Circuit-switched voice is 2</p>	<p>Provision for type D emulation (TERMTYP = TYPED)</p> <p>Provision for one circuit-switched voice (CSV = 1)</p>
<ul style="list-style-type: none"> ■ No incoming calls ■ Far-end always hears busy tone 	<p>All call appearances are origination only</p>	<p>Provision for two call appearances per DN with the first one allowing incoming and outgoing calls and the second one permitting outgoing calls only (CA QTY = 2, SAR QTY = 1, SAR ORIG = Y)</p>
<ul style="list-style-type: none"> ■ Incoming calls possible on the line ■ Far end hears busy tone on the second incoming call attempt 	<p>One-touch provisioned</p>	<p>Provision for no one touch (ONE TOUCH = N)</p>

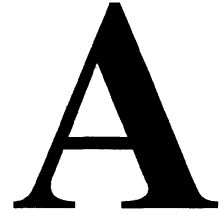
Table 3. Troubleshooting, continued

Symptoms	Possible CO Provisioning Causes	Corrective Actions
BRI Access button inactive (red LED stays off)	Circuit-switched voice is provisioned with a value of 2	Provision circuit-switched voice with a value of 1 (CSV = 1)
BRI Access button inactive (red LED goes on then off)	One call appearance Type A or C emulation	Provision for two call appearances per DN (CA QTY = 2) Provision for type D emulation (TERMTYP = TYPED)
CO Transfer failure on both inbound and outbound transfer source	CO Transfer not provisioned	Provision for CO Transfer
CO Transfer failure on an outgoing transfer source only	A provisioning error is preventing CO Transfer of an outgoing transfer source	Correct the provisioning error
Station not disconnected after CO Transfer	Auto-Hold provisioned	Provision for Auto-DROP (AUTO HOLD = N)
No incoming calling party number is displayed	Incoming calling party number is not provision for the destination station Privacy provisioned for calling station	
Calling party number shown on the destination station is the directory number that of the other line in the DSL pair	The line used to make the call is not an active user	Provision this line with active user (ACT USER = Y)
None of the above		Describe the problem to the central office representative

Table 3. Troubleshooting, continued

Symptoms	Possible CO Provisioning Causes	Corrective Actions
CO Transfer failure on an outbound transfer source only	Provisioning problem	A provisioning error is preventing CO Transfer of an outbound transfer source
Station not disconnected after CO Transfer	Auto-Hold provisioned	Auto-Drop should be provisioned
No incoming calling party number shown when call placed from station A to station B	Incoming calling party number not provisioned for station A Privacy provisioned for station B	
None of the above		Describe the problem to the central office representative

Planning Form



This appendix contains a master copy of the planning form you need to verify serviceability and feature operation of BRI lines connected to the system.

Duplicate the master and work on the copy.

Planning Form for 800 CO-BRI Module in Slot _____

Port	Logical ID/Line Number	SPID	DN	Port	Logical ID/Line Number	SPID	DN
1				5			
1				5			
2				6			
2				6			
3				7			
3				7			
4				8			
4				8			

Port	Outgoing Call		Calling Party Number	2 Active Calls	One Touch
	(y/n)	Comments (tone, connectivity, etc.)	(y/n/number) (A->B)	(y/n)	(y/n)
1 (DN 1)					
1 (DN 2)					
2 (DN 1)					
2 (DN 2)					
3 (DN 1)					
3 (DN 2)					
4 (DN 1)					
4 (DN 2)					
5 (DN 1)					
5 (DN 2)					
6 (DN 1)					
6 (DN 2)					
7 (DN 1)					
7 (DN 2)					
8 (DN 1)					
8 (DN 2)					

Planning Form for 800 CO-BRI Module in Slot _____ (continued)

Incoming Call Tests

Port	Calling Party Number (y/n/number)	Incoming Call Test 1		Incoming Call Test 2 (y/n)	Incoming Call Test 3 (y/n)
		(y/n)	Comments (tone, connectivity, etc.)		
1 (DN 1)					
1 (DN 2)					
2 (DN 1)					
2 (DN 2)					
3 (DN 1)					
3 (DN 2)					
4 (DN 1)					
4 (DN 2)					
5 (DN 1)					
5 (DN 2)					
6 (DN 1)					
6 (DN 2)					
7 (DN 1)					
7 (DN 2)					
8 (DN 1)					
8 (DN 2)					

Planning Form for 800 CO-BRI Module in Slot _____ (continued)

CO Transfer Test

Port	BRI Acc	Inbound Source	Outbound Source	A Disconnected from B and C	
	(Active, Flash, Inactive)	(y/n)	Comments (tone, connectivity, etc.)	(y/n)	Comments
1 (DN 1)					
1 (DN 2)					
2 (DN 1)					
2 (DN 2)					
3 (DN 1)					
3 (DN 2)					
4 (DN 1)					
4 (DN 2)					
5 (DN 1)					
5 (DN 2)					
6 (DN 1)					
6 (DN 2)					
7 (DN 1)					
7 (DN 2)					
8 (DN 1)					
8 (DN 2)					

