i-Series
ISDN - PRI

Technical Support Web Site:
ws1.necii.com (registration is required)
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Section 1: ISDN PRI Features
!! Important !!

**ISDN is an emerging technology on the leading edge of international digital communication’s networking.** Always check with your NEC Unified Solutions, Inc. Technical Service Representative before setting up your ISDN application. Working together will ensure maximum compatibility and reliable ISDN performance.

This manual describes programs required for the PRI feature. Make sure to refer to the i-Series Software Manual, P/N 92000SWG**, for complete programming information for all other i-Series features.
ISDN Features
Primary Rate Interface (PRI)

Description

Your system is compatible with ISDN Primary Rate Interface (PRI) services. The PRI services currently supported include:

- Basic PRI Call Control (BCC).
- Display of incoming caller's number (depending on system software level and when allowed by the telco).
- Routing in the system based on the number the caller dialed (Called Number Information element).
- ISDN maintenance functions (such as In Service/Out of Service Messaging).
- Speech and 3.1KHz audio.

Conditions

- Each T1/PRI Interface PCB is switch selectable between T1 and PRI operation. For more on T1 trunking, refer to the T1 Trunking feature in your system's Software Manual (P/N 92000SWG**).

Installing the 124i T1/PRI Interface PCB (P/N 92060A)

System Requirements:

- T1/PRI Interface PCB, P/N 92060A (P/N 92060 does not support PRI)
- System software: Commonized 6.xx.xx or higher or 124i Enhanced 1.xx.xx or higher
- Advanced Features Module (EXCPRU)
- For DTMF receivers with such options as ANI/DNIS, a Tone Detector (DTDU) PCB
- CSU/DSU Unit and interconnecting cables (see below)

The T1/PRI PCB has a single 24 channel circuit which you can configure for either T1 trunking or PRI. When set for PRI, each T1/PRI PCB provides 24 PRI (23 B & 1 D) channels.

The T1/PRI Interface PCB requires the CSU or CSU/DSU equipment and interconnecting cable. The available kits are listed below:

<table>
<thead>
<tr>
<th>T-Serve II CSU (P/N 92070):</th>
<th>Satellite 931 T1 CSU (P/N 92079):</th>
</tr>
</thead>
<tbody>
<tr>
<td>T-Serve II CSU (P/N 85950)</td>
<td>Satellite 931 CSU (P/N 85945)</td>
</tr>
<tr>
<td>T-Serve II Power Supply (P/N 85951)</td>
<td>DB-15F-to-8 Pin RJ48 Connector (P/N 85944)</td>
</tr>
<tr>
<td>CSU/DSU RJ48-DB15 Cable (P/N 85953)</td>
<td>124i T1/PRI Installation Cable (P/N 92067)</td>
</tr>
<tr>
<td>124i T1 Installation Cable (P/N 92067)</td>
<td>T1/PRI Interface PCB (P/N 92060A)</td>
</tr>
<tr>
<td>T1/PRI Interface PCB (P/N 92060A)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Quad Datasmart DSU (P/N 92072):</th>
<th>Dual Datasmart DSU (P/N 92071):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quad Datasmart DSU (P/N 85956)</td>
<td>Datasmart DSU w/Dual Add/Drop (P/N 85955A)</td>
</tr>
<tr>
<td>CSU/DSU RJ48-DB15 Cable (P/N 85953)</td>
<td>T1 Installation Cable (P/N 92067)</td>
</tr>
<tr>
<td>124i T1/PRI Installation Cable (P/N 92067)</td>
<td>CSU/DSU RJ48-DB15 Cable (P/N 85953)</td>
</tr>
<tr>
<td>T1/PRI Interface PCB (P/N 92060A)</td>
<td>T1/PRI Interface PCB (P/N 92060A)</td>
</tr>
</tbody>
</table>
ISDN Features

Primary Rate Interface (PRI)

The T1/PRI PCB’s must be installed in the third slot of any cabinet and a maximum of 2 PCB’s are allowed per system. When installed, the T1/PRI Interface PCB uses the first block of 24 consecutive trunks. For example, if you have 3 4ATRU PCBs installed for trunks 1-12, the T1/PRI Interface PCB will automatically use trunks 13-36. If you have 4ATRU PCBs installed for trunks 1-4 and 13-16, the T1/PRI PCB will use trunks 17-40. The T1/PRI Interface PCB cannot use trunks 5-12 (even if available) since they are not part of a consecutive block of 24 trunks.

1. Attach a grounded wrist strap to your wrist and a grounded metal object (such as CEU ground).
2. Remove the cover from the common equipment cabinet by unscrewing the two captive screws on the right side of the cover. Lift up the right side of the cover -- then slide it to the left to remove it.
3. Before proceeding further, make sure the CPRU Mode Switch is set to Hot in order to retain the current system programming.
4. Unplug the AC power cords for Expansion Cabinets 1 and 2 (if installed) from their surge protectors.
5. Unplug the AC power cord for the Main Cabinet from its surge protector.
6. Set switches on the T1/PRI Interface PCB for either PRI Mode or T1 Mode (refer to the PCB installation graphic).
7. Plug the T1/PRI Interface PCB into the system cabinet.
8. Connect the T1/PRI Installation Cable (P/N 92067) to the 4-wire DDK connector on the T1/PRI Interface PCB.

9. **If connecting a T-Serve II CSU (P/N 85950):**
   - Connect the opposite end of the T1/PRI cable to the DB-15 female connector (J4) on the CSU.
   - Connect the DB-15 female connector on the RJ48-DB15 Cable (P/N 85953) to the DB-15 male connector (P2) on the CSU.
   - Connect the opposite end of the RJ48-DB15 cable to the telco connection.

   **OR**

   **If connecting a Satellite 931 CSU (P/N 85945):**
   - Connect the opposite end of the T1/PRI cable to the DB-15 female-to-8-Pin RJ48C connector (P/N 85944). (Refer to the pin-out information which follows when creating a connector.)
   - Create an RJ48C-to-RJ48C 8-pin modular cord using the pin-out information which follows. The length depends on the distance between your system cabinet and the CSU. Connect the 8-pin modular cord to one end of the DB-15 female-to-8-Pin RJ48C connector (P/N 85953). Connect the opposite end to the ‘LOCAL EQUIPMENT’ connector on the back panel of the CSU.
   - Using the 8-pin RJ48C-RJ48C modular cable that was shipped in the box with the Satellite 931 CSU, connect the cable to the ‘T1 NETWORK’ connector on the back panel of the CSU.
   - Connect the opposite end of the NETWORK cable to the telco connection.

   **OR**

   **If connecting a Dual or Quad DSU (P/N 85956):**
   - Connect the opposite end of the T1/PRI cable to the DB-15 female connector (TERMINAL) on the DSU.
   - Connect the DB-15 female connector on the RJ48-DB15 Cable (P/N 85953) to the DB-15 male connector (NETWORK) on the DSU.
   - Connect the opposite end of the RJ48-DB15 cable to the telco connection.

10. Plug the AC power cords for Expansion Cabinets 1 and 2 into their surge protectors.
11. Plug the AC power cord for the Main Cabinet into its surge protector.
12. Replace the cover and tighten the two captive screws on the right side of the cabinet cover.
ISDN Features

Primary Rate Interface (PRI)

Figure 1: T-Serve II CSU Connection

T-Serve II CSU

or Dual or Quad DSU
Pinout for DB-15 to CN3 Connector

<table>
<thead>
<tr>
<th>Pin</th>
<th>Pin</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>TX Tip 1</td>
</tr>
<tr>
<td>3</td>
<td>RX Tip 3</td>
</tr>
<tr>
<td>9</td>
<td>TX Ring 1</td>
</tr>
<tr>
<td>11</td>
<td>RX Ring 4</td>
</tr>
</tbody>
</table>

Pin 1 = TX Tip 1
Pin 2 = TX Ring 1
Pin 3 = RX Tip
Pin 4 = RX Ring

T1/PRI Installation Cable P/N 92067

P/N 92000PRI04
ISDN Features

Primary Rate Interface (PRI)

Figure 2: Satellite CSU Connection

Satellite 931 CSU
Terminal Interface Pinout for 8-Pin RJ48C Connector

<table>
<thead>
<tr>
<th>Pin #</th>
<th>Circuit Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>RxD data (R)</td>
</tr>
<tr>
<td>2</td>
<td>RxD data (T)</td>
</tr>
<tr>
<td>3, 6</td>
<td>No connection</td>
</tr>
<tr>
<td>4</td>
<td>TxD data (R1)</td>
</tr>
<tr>
<td>5</td>
<td>TxD data (T1)</td>
</tr>
<tr>
<td>7, 8</td>
<td>No connection</td>
</tr>
</tbody>
</table>

Satellite 931 CSU
Network Interface Pinout for 8-Pin RJ48C Connector

<table>
<thead>
<tr>
<th>Pin #</th>
<th>Circuit Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>RxD data (R1)</td>
</tr>
<tr>
<td>2</td>
<td>RxD data (T1)</td>
</tr>
<tr>
<td>3, 6</td>
<td>No connection</td>
</tr>
<tr>
<td>4</td>
<td>TxD data (R)</td>
</tr>
<tr>
<td>5</td>
<td>TxD data (T)</td>
</tr>
<tr>
<td>7, 8</td>
<td>No connection</td>
</tr>
</tbody>
</table>

See Pin-Out Information
(For connection to T1 Network, use AT&T Type ABAM cable or equivalent)
(individually-shielded twisted pair, rated at 100 ohms at 1 Mhz).
Installing the 384i/704i T1/PRI Interface PCB (P/N 92190)

System Requirements:

- T1/PRI Interface PCB, P/N 92190 or 92190A
- System software: 384i software version 4.00.24 or higher or any version of 704i
- T1/PRI PCB firmware 3.1 or later. If your T1/PRI PCB is P/N 92190A (series CL or 4.0), there is no firmware upgrade required.
- For DTMF receivers with such options as ANI/DNIS, a Tone Detector (CDTU A/B) PCB
- CSU/DSU Unit and interconnecting cables (see below)

The T1/PRI PCB has a single 24 channel circuit which you can configure for either T1 trunking or PRI. When set for PRI, each PCB (also called a PRI circuit) provides 24 PRI channels (23B + D) with 64K Clear Channel response. The T1/PRI Interfaces PCB uses a single universal slot. The 384i allows a maximum of five PCBs per system (for a maximum of 120 PRI channels [115 B channels, 5 D channels]) - the 704i allows a maximum of eight PCBs (for a maximum of 192 PRI channels [184 B channels, 8 D channels]). For DTMF tie line service, make sure the system also has a CDTU A/B PCB installed.

When installed, the T1/PRI Interface PCB uses the first block of 24 consecutive trunks. For example, if you have an ATRU PCB installed for trunks 1-8, the T1/PRI Interface PCB will automatically use trunks 9-32. If you have ATRU PCBs installed for trunks 1-8 and 17-24, the T1/PRI PCB will use trunks 25-48. The T1/PRI Interface PCB cannot use trunks 9-16 (even if available) since they are not part of a consecutive block of 24 trunks.

The T1/PRI Interface PCB requires the CSU or CSU/DSU equipment and interconnecting cable. The available kits are listed below:

<table>
<thead>
<tr>
<th>T-Serve II CSU (P/N 92310):</th>
<th>Satellite 931 T1 CSU (P/N 92313):</th>
</tr>
</thead>
<tbody>
<tr>
<td>T-Serve II CSU (P/N 85950)</td>
<td>Satellite 931 CSU (P/N 85945)</td>
</tr>
<tr>
<td>T-Serve II Power Supply (P/N 85951)</td>
<td>DB-15F-to-8 Pin RJ48 Connector (P/N 85944)</td>
</tr>
<tr>
<td>CSU/DSU RJ48-DB15 Cable (P/N 85953)</td>
<td>T1/PRI Installation Cable (P/N 92197)</td>
</tr>
<tr>
<td>T1 Installation Cable (P/N 92197)</td>
<td>T1/PRI Interface PCB (P/N 92190A)</td>
</tr>
<tr>
<td>T1/PRI Interface PCB (P/N 92190A)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Quad Datasmart DSU (P/N 92312):</th>
<th>Dual Datasmart DSU (P/N 92311):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quad Datasmart DSU (P/N 85956)</td>
<td>Datasmart DSU w/Dual Add/Drop (P/N 85955A)</td>
</tr>
<tr>
<td>CSU/DSU RJ48-DB15 Cable (P/N 85953)</td>
<td>T1 Installation Cable (P/N 92197)</td>
</tr>
<tr>
<td>T1/PRI Installation Cable (P/N 92197)</td>
<td>CSU/DSU RJ48-DB15 Cable (P/N 85953)</td>
</tr>
<tr>
<td>T1/PRI Interface PCB (P/N 92190A)</td>
<td>T1/PRI Interface PCB (P/N 92190A)</td>
</tr>
</tbody>
</table>
ISDN Features

Primary Rate Interface (PRI)

1. Attach a grounded wrist strap to your wrist and a grounded metal object (such as CEU ground).
2. Remove the cover from the common equipment cabinet by unscrewing the front panel retaining screws.
3. Before proceeding further, make sure the switch SW1 on the CPRU is set to OFF in order to retain the current system programming.
4. Set the run/block switch on the T1/PRI PCB to be installed to the DOWN position.
5. Set the switches on the T1/PRI Interface PCB for either PRI Mode (refer to Figure 3:T-Serve II CSU Connection (page 11)).
6. Plug the T1/PRI Interface PCB into the system cabinet.
   
   Note: PRI requires Program 0307 to be set before proceeding to the next step.
7. Set the run/block switch UP.
   
   Before proceeding to Step 8, wait 30 seconds and verify that the LED starts to flash.
   
   This indicates that the board is operating normally.
8. Connect the T1/PRI Installation Cable (P/N 92197) to the CN2 connector on the T1/PRI Interface PCB.
9. If connecting a T-Serve II CSU (P/N 85950):
   
   • Connect the opposite end of the T1/PRI cable to the DB-15 female connector (J4) on the CSU.
   • Connect the DB-15 female connector on the RJ48-DB15 Cable (P/N 85953) to the DB-15 male connector (P2) on the CSU.
   • Connect the opposite end of the RJ48-DB15 cable to the telco connection.

OR

If connecting a Satellite 931 CSU (P/N 85945):

• Connect the opposite end of the T1/PRI cable to the DB-15 female-to-8-Pin RJ48C connector (P/N 85944). (Refer to the pin-out information that follows when creating a connector.)
• Create an RJ48C-to-RJ48C 8-pin modular cord using the pin-out information that follows. The length depends on the distance between your system cabinet and the CSU. Connect the 8-pin modular cord to one end of the DB-15 female-to-8-Pin RJ48C connector (P/N 85944). Connect the opposite end to the ‘LOCAL EQUIPMENT’ connector on the back panel of the CSU.
• Using the 8-pin RJ48C-RJ48C modular cable that was shipped in the box with the Satellite 931 CSU, connect the cable to the ‘T1 NETWORK’ connector on the back panel of the CSU.
• Connect the opposite end of the NETWORK cable to the telco connection.

OR

If connecting a Dual or Quad DSU (P/N 85956):

• Connect the opposite end of the T1/PRI Installation Cable to the DB-15 female connector (TERMINAL) on the DSU.
• Connect the DB-15 female connector on the RJ48-DB15 Cable (P/N 85953) to the DB-15 male connector (NETWORK) on the DSU.
• Connect the opposite end of the RJ48-DB15 Cable to the telco connection.

10. Replace the front cover and tighten the four front panel retaining screws.
11. Refer to the system software manual for additional feature information and required programming.
ISDN Features
Primary Rate Interface (PRI)

<table>
<thead>
<tr>
<th>T-Serve II CSU or Dual or Quad DSU Pinout for DB-15 to CN2 Connector</th>
<th>Satellite 931 CSU Terminal Interface Pinout for 8-Pin RJ48C Connector</th>
<th>Satellite 931 CSU Network Interface Pinout for 8-Pin RJ48C Connector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pin to Pin</td>
<td>Pin #</td>
<td>Circuit Name</td>
</tr>
<tr>
<td>1 TX Tip 1 to 5</td>
<td>1</td>
<td>RxD data (R)</td>
</tr>
<tr>
<td>3 RX Tip to 7</td>
<td>2</td>
<td>RxD data (T)</td>
</tr>
<tr>
<td>9 TX Ring 1 to 6</td>
<td>4</td>
<td>TxD data (R1)</td>
</tr>
<tr>
<td>11 RX Ring to 8</td>
<td>5</td>
<td>TxD data (T1)</td>
</tr>
<tr>
<td>3, 6</td>
<td>No connection</td>
<td>3, 6</td>
</tr>
<tr>
<td>7, 8</td>
<td>No connection</td>
<td>7, 8</td>
</tr>
</tbody>
</table>

Figure 3: T-Serve II CSU Connection
ISDN Features

Primary Rate Interface (PRI)

Figure 4: Satellite 931 CSU Connection

Cable P/N 92197

Status LED (Normally Flashing)

Switch Up-PCB On Line
Switch Down-PCB Off Line (Blocked)

Sync LED (Normally On)

DB-15 Male Connector

DB-15 Female-to-8-pin RJ48 Connector (P/N 85944)

See Pin-Out Information
(For connection to T1 Network, use AT&T Type ABAM cable or equivalent)
(individually-shielded twisted pair, rated at 100 ohms at 1 Mhz).

Satellite 931 CSU

RJ48C-to-RJ48C Cable (ships with Satellite 931 CSU)

Telco Line

RJ48 Jack

T1/PRI Interface PCB

PRI Mode Enabled

T1 Mode Enabled

POWER INPUT: 24-48 VDC

INPUT: 2A MAX.

Status LED (Normally Flashing)

Sync LED (Normally On)

Switch Up-PCB On Line
Switch Down-PCB Off Line (Blocked)
ISDN Features

Primary Rate Interface (PRI), Answering Calls

Description
The system provides flexible routing of incoming PRI calls to help meet the exact site requirements. This allows PRI calls to ring and be answered at any combination of system extensions. Many of the options available to incoming analog trunk calls are also available to incoming PRI calls.

Delayed Ringing
Extensions in a Ring Group can have delayed ringing for PRI trunks - just like other types of trunks. If the PRI trunk is not answered at its original destination, it rings the DIL No Answer Ring Group. This could, for example, help a secretary that covers calls for their boss. If the boss doesn’t answer the call, it rings the secretary’s phone after a programmable time.

Caller ID
With Caller ID enabled, the system will provide information for ISDN calls that do not contain the Caller ID information. For this option, you need 384i system software 4.00.19 or higher, Commonized software 6.00.06 or higher, or any version of the 124i Enhanced and 704i systems. If the Caller ID information is restricted, the telephone display will show “PRIVATE”. If the system is not able to provide Caller ID information because the telco information is not available, then the display will show “OUT OF AREA”.

Calling Name Delivery
If provided by the telco, and depending on the version of your system software, the system can support calling name delivery in the Facility Information Element. This option requires Commonized software 6.00.16 or higher, 384i software 4.00.32 or higher and the 124i Enhanced and 704i systems require software 1.01.10 or higher. With this information available, display telephone users can see the name of the calling party.

How the Telco Handles PRI Trunks
In many cases, the telco will route an incoming PRI call to any of the available 23 circuits on the PRI PCB. This makes it difficult to determine the type of call by the trunk that is ringing. It also prevents using Direct Inward Lines to route incoming calls, since any call sent to the PRI PCB can appear on any circuit. During programming, set up all trunks on the same PRI PCB in the same way. Refer to Programming below.

To provide more precise routing of PRI trunks, set up PRI Direct Inward Dialing (DID). With DID, the system uses the last three or four digits of the Called Number Information Element to route an incoming call via the system’s DID translation tables. When programming PRI trunks for DID, refer to the i-Series Software Manual (P/N 92000SWG**) for additional DID programming.

In addition, in areas where ISDN is not uniformly implemented, many ISDN calls may route to the 3.1 Khz Audio Ring Group. This can occur if the telco automatically designates a call as 3.1 KHz when it is from a non-ISDN telephone. To provide uniform treatment of incoming PRI calls, consider having the Ring Group assignments for both normal PRI calls and 3.1KHz Audio calls. Refer to Programming below for more information.

How the Telephone System Handles PRI Trunks
With 384i software prior to 3.08.01, any version of 124i EXCPRU, Commonized, 124i Enhanced, or 704i software, there is a fixed relationship between the trunk port numbers indicated on the PRI and the physical ISDN channels. Channel 1 is the first trunk, channel 2 is the second trunk, etc. All setup messages sent from the system contain a Channel ID Information element which contains exclusive CH number data. If a call collision occurs between telco and the telephone system, the system will yield to the telco and select another channel for the outgoing call, or depending on the timing of the call, the user may receive a busy signal.

With 384i software 3.08.01, the system is changed so there is no association with channel and line numbers. The system assigns the first available channel on the PRI card. This can occur if the central office sends an incoming call on channel 3, because the system assigns the lowest available channel, the call could actually be received on channel 1 (if it’s available). Calls are handled based on the programming for the logical port. This means that all the trunks for an ISDN line must be programmed the same. When placing outgoing calls
ISDN Features

Primary Rate Interface (PRI), Answering Calls

Using a loop key, the telephone’s display will indicate the line number the call is using, but the channel is independent of the line number and will not necessarily be the same. The setup messages from the system will no longer contain a Channel ID Information element. All calls from the system will wait until they receive a Channel ID Information element from the CO as part of a Call Proceeding, Alerting, or Setup Acknowledge before determining a channel number.

With 384i software 3.08.07 or higher for outgoing calls and 3.08.12 or higher for incoming calls, the Channel ID of an incoming SETUP message on a PRI line is related to the trunk group number (Program 0905). The system creates the trunk line number as the lowest trunk port number in the range of the same trunk group related to the channel number of the Channel ID information element of an incoming call’s SETUP message.

For example, with prior software, an incoming call to channel 6 translated as being trunk port 1 (the lowest available port). Referring to the chart below, with this software change, the system translates the call as being trunk port 4.

<table>
<thead>
<tr>
<th>Trunk Number</th>
<th>Trunk Group</th>
<th>Channel Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>3</td>
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<td>4</td>
</tr>
<tr>
<td>5</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>2</td>
<td>6</td>
</tr>
</tbody>
</table>

 ← Incoming Call

Conditions

- PRI requires the installation of a T-Serve II CSU (P/N 85950) or Quad Datasmart DSU (P/N 85956). Consult your sales representative for more information.

- An incoming analog or 3.1 Khz type data call to the i-Series system will follow the settings in Program 0915 - Incoming ISDN (3.1Khz Audio) Ring Group first. If this program is not set, the system will then follow the settings in Program 0910 - Incoming Trunk Ring Group Assignment. This does not apply when the trunks are configured as DID trunks.

All 23 circuits on the PRI PCB must be identically programmed since any call sent to the PRI PCB can appear on any circuit.

Default Setting

- Once set, PRI trunks ring extension 301 and flash at all other extensions just like other trunk calls.
ISDN Features

Primary Rate Interface (PRI), Answering Calls

Programming

Start

In 0307 select the slot into which the ISDN PCB is plugged; Enter the number of B-Channels assigned to the ISDN PCB (enter '23' for PRI's); Select the connection mode to PRI Point-to-Point Mode (2).

Are you using a 384i system with software 3.08.12 or higher?

Yes

In 0905, assign PRI lines to trunk groups (determines available channels for PRI lines).

No

In 0901 Items 14-17 and 32-35, enter 3. Refer to the i-Series Software Manual for DID programming.

Should all PRI Trunks ring the same extensions?

Yes

In 0910, assign all the trunks on a PRI PCB to the same Ring Group.

No

In 0901 Items 14-17 and 32-35, enter 0. Refer to the i-Series Software Manual for additional trunk programming.

In 0911 and 0912, set up the trunk Access Maps for PRI trunks.

In 0909, assign extension to PRI trunk's Ring Group and enter 0 (no ringing).

No

Should extension ring for incoming calls on PRI trunk?

Yes

In 0909, assign extension to PRI trunk's Ring Group and enter 1 (ringing).

In 0903, assign names to trunks to make identification easier.

In 0909, assign extension to PRI trunk's Ring Group and enter 0 (no ringing).

No

Do you want unanswered PRI calls to reroute if unanswered?

Reroute

In 0405 Item 62, enter the DIL No Answer Time (>0).

Do not reroute

In 0919, enter the no-answer Ring Group for unanswered PRI calls.

Continued on the following page.
ISDN Features

Primary Rate Interface (PRI), Answering Calls

Programming (Cont’d)

In 0901:18, enable (1) this option for each PRI trunk to be used for outgoing calls.

In 0124, customize the ISDN Layer 2 Timers T200-T203, if required.

In 0126:1-21, customize the ISDN Layer 3 timers, if required.

In 0137:1-11, customize the ISDN Layer 2 options, if required.

In 0138:1-9, customize the ISDN Layer 3 options, if required.

In 0405:30, enter the interval for the trunk interdigit timer.

Is the amount of time the system waits before placing the call in a talk state sufficient?

Yes

In 0414:27, set the timer to ‘0’.

Do you wish to have the Caller ID Name displayed for incoming calls?

Yes

In 0414:27, set the timer to at least ‘10’ seconds.

No

In 0915, enter 0. All 3.1KHz Audio calls follow the settings in Program 0910.

Route Not Specified

Do you want to specify the route of 3.1KHz Audio calls?

Yes

In 0915, assign the destination Ring Group for 3.1KHz Audio calls.

No

Continued on next page.
ISDN Features

Primary Rate Interface (PRI), Answering Calls

Programming (Cont’d)

Continued from the previous page.

If a PRI call rings longer than a specified interval, should the ring cadence change to a unique “alarm” sound?

In 0401 Item 3, enter 0. No → In 0401 Item 3, Enter 1. Also, set the interval in 0405 Item 7. Yes

Do you want to change the way PRI calls ring keysets?

Do you want to change the way PRI calls ring single line sets?

In 0306, enter 0 to disable pre-ringing for trunk calls. No

Wait for ring cycle

Assign a different CODEC Gain Type in 0901:3. If required, change the CODEC gains in 0117.

Consider using loop keys, Multiple Directory Numbers, or Ring Groups for PRI trunks instead of line keys.

For ringing extensions, should extension ring when line key starts flashing or wait for the system ring cycle?

When line key flashes

Do you want to adjust the gain (volume) for trunks or telephones?

Trunks

Phones

Change the settings in 1001:4.

Do you want line keys or loop keys for incoming PRI trunks?

In 1006, program function keys as line keys (001-192), loop keys (1078) or line group keys (1012). No

Stop

Yes
ISDN Features

Primary Rate Interface (PRI), Answering Calls

Programming (Cont’d)

➻ 0111 - Trunk Ring Tone
Customize the ring tones within each Ring Tone Range. Assign Ring Tone Ranges to trunks in 0902. Trunks ring extensions according to the Ring Tone Range selected in 0902 and the user settings made with Service Code 820. Refer to Program 0111 in the i-Series Software Manual for more information.

Default Setting: Refer to Table 7 in the Software Manual.

➻ 0117 - Trunk CODED Gain Type Setting
If required, adjust the CODEC gains for the trunks.

Default Setting: Refer to the individual timer settings.

➻ 0124 - ISDN Layer 2 Timer Setup
If required, customize the Layer 2 Timer Setup for timers T200-T203 (0-255 in 100 mS steps).

Default Setting: Refer to the individual timer settings.

➻ 0126 - ISDN Layer 3 Timer Setup, Items 1-21
Set the duration of the ISDN Layer 3 timers, if needed.

Default Setting: Refer to the individual timer.

➻ 0137 - ISDN PRI Layer 2 SAPI Options, Items 1-11
If required, customize the Layer 2 options for the PRI trunks.

Default Setting: Refer to the individual item.

➻ 0138 - ISDN PRI Layer 3 Options, Items 1-9
Set the various options for ISDN Layer 3 (Call Control) operation, if needed.

Default Setting: Refer to the individual item.

➻ 0306 - Pre-ringing Enable
Enable (1) or disable (0) pre-ringing for outside calls. Refer to the i-Series Software Manual for more information.

Default Setting: Pre-ringing enabled (1).

➻ 0307 - ISDN PCB Setup, Item 1: Connection Mode
Use this option to select the connection mode for each ISDN circuit (1, 3-5 are used for BRI only / PRI must be set to 2=Point-to-Point, [T-Bus]).

Default Setting: 1 (BRI Point-to-Multipoint [T-Bus])

➻ 0401 - System Options (Part A), Item 3: Incoming Call Ring No Answer Alarm
Enable (1) or disable (0) the Incoming Call RNA Alarm. If enabled, the ring cadence will change for a call that rings longer than the interval set in Program 0405 Item 7.

Default Setting: Incoming Ring No Answer Alarm disabled (0).

➻ 0404 - SMDR Options, Item 6: Print Item #10 Print Trunk Name or Received Dialed Number
If SMDR is used, this option allows you to determine how the SMDR should print incoming calls on ANI/DNIS or DID trunks (0=print trunk port name assigned in Program 0903, 1=print received dialed number). On ANI/DNIS trunks, if enabled, the DNIS digits can be printed instead of the trunk name. If a call is received on a DID trunk, the received number can be printed. If the received number is not in the DID Translation Table (Program 1806), then no number is printed. On ISDN trunks, the called party number can be printed for DID’s, if desired.

Default Setting: Print Trunk Port Name (0).

➻ 0405 - System Timers (Part A), Item 7: Ring No Answer Alarm Time
Set the Ring No Answer Alarm interval (0-64800 seconds). If a trunk rings a keyset longer than this interval, the system changes the ring cadence.

Default Setting: Ring No Answer Alarm Time = 60 seconds.
ISDN Features
Primary Rate Interface (PRI), Answering Calls

Programming (Cont’d)

➻ 0405 - System Timers (Part A), Item 30: Trunk Interdigit Timer
Set the amount of time the system must wait before placing the call in a talk state (call isn’t timed until
then, Voice Over and Barge-In are not allowed until after timer expires) (0-64800 seconds).
Default Setting: Trunk Interdigit = 5 seconds.

➻ 0405 - System Timers (Part A), Item 62, DIL No Answer Time
If an incoming trunk call rings longer than this interval, it reroutes to the Ring Group set in Program 0919.
Default Setting: DIL No Answer Time disabled (0). Calls do not reroute.

➻ 0414 - System Timers (Part B), Item 27, Wait Facility IE Timer
This option sets how long the system will wait for the Caller ID name (0-64800 seconds). If set to ‘0’
no name is provided.
Default Setting: 10 Seconds

➻ 0901 - Basic Trunk Port Setup (Part A), Item 3: CODEC Gain Type
If required, adjust the CODEC gains for the trunks.
Default Setting: 1 (0 dB transmit and receive gain)

➻ 0901 - Basic Trunk Port Setup (Part A), Items 14-17: Trunk Service Type
Use this option to set the service type for PRI trunks using. Enter 0 (for normal operation) or 3 (to have
the PRI trunk use the DID tables and route on the last three digits a caller dials). There is one item for
each of the Night 1 Service Mode.
Default Setting: All trunk service types set for normal (0).

➻ 0901 - Basic Trunk Port Setup (Part A), Item 18: Outgoing Calls
Enable this option (1) for each PRI trunk you want to use for outgoing calls. Disable this option (0) if
the trunk will not be used for outgoing calls.
Default Setting: Outgoing calls allowed (1).

➻ 0901 - Basic Trunk Port Setup (Part A), Items 32-35: Trunk Service Type
Use this option to set the service type for PRI trunks. Enter 0 (for normal operation) or 3 (to have the
PRI trunk use the DID tables and route on the last three digits a caller dials). There is one item for each
of the Night 2 Service Mode.
Default Setting: All trunk service types set for normal (0).

➻ 0902 - Trunk Ring Tone Range
Assign Ring Tone Ranges to trunks. Customize the tones within each Ring Tone Range in Program
0111. Trunks ring extensions according to the Ring Tone Range selected in 0902 and the user settings
made with Service Code 820. You may want your ISDN trunks to ring with a unique ring tone.
Default Setting: Pattern 0. Refer to Table 7 in the Software Manual for more.

➻ 0903 - Trunk Names
Assign names to trunks to make identifying incoming calls easier. Keep in mind that with certain
telco’s you may not be able to correlate the type of PRI call with specific trunk.
Default Setting: Trunk names are the same as the line number.

➻ 0905 - Trunk Groups
Assign the PRI trunks to trunk groups. For 384i, this determines the channels available for PRI lines.
Default Setting: All trunks assigned to Trunk Group 1.
ISDN Features

Primary Rate Interface (PRI), Answering Calls

Programming (Cont’d)

✶ 0909 - Extension Ring Group Assignment
To have PRI trunks ring extensions, use this program to assign extensions to Ring Groups (124i: Ring Groups=1-14, VAU=15, Voice Mail=16; 124i Enhanced: Ring Groups=1-24, VAU=25, Voice Mail=26; 384i: Ring Groups=1-126, VAU=127, Voice Mail=128; 704i: Ring Groups=1-94, VAU=95, Voice Mail=96). For each extension in the Ring Group, indicate if trunks should ring (1) or not ring (0). You must also assign the PRI trunks to the Ring Groups in Program 0910 below. See How the Telco Handles PRI Trunks on page 13 for more.

Default Setting: All extensions are in Ring Group 1, extension 301 rings for trunk calls and all other extensions only flash.

✶ 0910 - Trunk Ring Group Assignment
To have PRI trunks ring extensions, assign trunks to Ring Groups (124i: Ring Groups=1-14, VAU=15, Voice Mail=16; 124i Enhanced: Ring Groups=1-24, VAU=25, Voice Mail=26; 384i: Ring Groups=1-126, VAU=127, Voice Mail=128; 704i: Ring Groups=1-94, VAU=95, Voice Mail=96). Normally, you should assign a trunk on a PRI PCB to the same Ring Group. You must also assign extensions to Ring Groups in Program 0909 above. See How the Telco Handles PRI Trunks on page 13 for more.

Default Setting: All trunks are in Ring Group 1.

✶ 0911 - Trunk Access Map Setup
Set up Trunk Access Maps (124i: 52; 384i: 128; 704i: 192) for PRI trunks. You must also assign extensions to Trunk Access Maps in Program 0912 below. Note that for incoming calls, Ring Group programming overrides Access Map programming. See How the Telco Handles PRI Trunks on page 13 for more.

Default Setting: All trunks in Access Map 1 have full access (7). All trunks in the other Access Maps have no access (0).

✠ 0912 - Extension Access Map Assignment
Assign Trunk Access Maps (124i: 52; 384i: 128; 704i: 192) to extensions. You must set up the Trunk Access Maps in Program 0911 above. See How the Telco Handles PRI Trunks on page 13 for more.

Default Setting: All extensions use Access Map 1.

✶ 0915 - Incoming ISDN Trunk (3.1KHz Audio) Ring Group
Assign the destination Ring Group for 3.1 KHz Audio calls. These calls include G3 (ISDN) fax calls, modem calls and ISDN calls that are not “end-to-end” ISDN. In areas where ISDN is not uniformly implemented, many ISDN calls may route to the 3.1 Khz Audio Ring Group. This can occur if the telco automatically designates a call as 3.1 KHz when it is not certain of the call type. This does not apply if the trunks are configured as DID trunks.

Default Setting: There is no 3.1Khz Audio Ring Group assignment (0). These types of calls follow the settings in Program 0910 - Incoming Trunk Ring Group Assignment.

✠ 0919 - DIL No Answer Destination
If an incoming PRI trunk call rings longer than the DIL No Answer Time (Program 0405 Item 62), it routes to the Ring Group you specify in this option (124i: Ring Groups=1-14, VAU=15, Voice Mail=16; 124i Enhanced: Ring Groups=1-24, VAU=25, Voice Mail=26; 384i: Ring Groups=1-126, VAU=127, Voice Mail=128; 704i: Ring Groups=1-94, VAU=95, Voice Mail=96).

Default Setting: No assignment (0). Calls do not reroute.

✠ 1001 - Basic Extension Port Setup (Part A): Item 2: Trunk Ring Tone Pitch
Use this option to change the ringing pitch of incoming trunk calls to keysets.

Default Setting: Midrange (2)
ISDN Features

Primary Rate Interface (PRI), Answering Calls

Programming (Cont’d)

✶ 1001 - Basic Extension Port Setup (Part A): Item 4: CODEC Gain Type
Use this option to change the CODEC Gain Type (signal amplification) for keysets (types 1-5).

Default Setting: 5

✷ 1001 - Basic Extension Port Setup (Part A): Item 6: Incoming Ring for 500/2500 Sets
Use this option along with Program 1008 Item 4 to change the way calls ring single line keysets. Keep in mind that changing this option affects all types of trunk calls - not just PRI calls.

Default Setting: Outside calls ring single line telephones one second on followed by one second off (1).

✷ 1006 - Programmable Function Keys
To have incoming PRI calls ring specific keys, assign trunks to line keys (codes 001-192). You can also have loop keys (code 1078) and Trunk Group keys (code 1012 + Trunk Group).

Default Setting: Function keys 1-16 are line keys for trunks 1-16.

✷ 1008 - Basic Extension Port Setup (Part B), Item 4: Ring Cycle for Keysets
Use this option to change the way calls ring keysets. Using this option along with Program 1001 Item 6 changes the way calls ring single line telephones. Keep in mind that changing this option affects all types of trunk calls - not just PRI calls.

Default Setting: Outside calls ring keysets with two short rings followed by a pause (0).

Related Features

Direct Inward Dialing
Use DID to control the inbound routing of PRI trunks. With DID, the system will use the last three or four digits of the Called Number Information Element to route an incoming call via the DID translation tables. When programming PRI lines for DID, refer to the i-Series Software Manual (P/N 92000SWG**) for further programming information.

Night Service
If enabled, an extension user can dial the Universal Answer code to pick up a ringing PRI trunk.

Operation

To answer an incoming trunk call:
1. Lift handset.
2. At keyset, press flashing line key.

If you don’t have a line or loop key for a PRI call ringing your phone, it rings an idle CALL key. If you have Ringing Line Preference, lifting the handset answers the call.
ISDN Features

Primary Rate Interface (PRI), Answering Calls

- For Your Notes -
ISDN Features

Primary Rate Interface (PRI), Placing Calls

Description

The system provides 23 high-speed state-of-the-art digital trunks on a double pair of wires.

With Commonized, 124i Enhanced, or 704i software, additional options have been added for sending Calling Party Number information. Refer to Programming below for details.

!! Important !!

Primary Rate Interface (PRI) requires additional programming. Refer to the Programming section for more information.

Conditions

PRI requires the installation of a T-Serve II CSU (P/N 85950) or Quad Datasmart DSU (P/N 85956). Consult with your sales representative for more information.

Default Setting

- Once set, users can place calls over PRI trunks.
ISDN Features
Primary Rate Interface (PRI), Placing Calls

Programming

Start

In 0307 select the slot into which the ISDN PCB is plugged; Enter the number of B-Channels assigned to the ISDN PCB (enter ‘23’ for PRI’s); Select the connection mode to PRI Point-to-Point Mode (2).

In 0901 Items 14-17 and 32-35, enter 0. Refer to the i-Series Software Manual for additional trunk programming.

Yes

Should all PRI Trunks ring the same extensions?

No

In 0901 Items 14-17 and 32-35, enter 3. Refer to the i-Series Software Manual for DID programming.

In 0406:62, enter 0 to disable outgoing calls.

No

Should system users be able to place outgoing calls on trunks?

Yes

In 0406:62, enter 1 to enable outgoing calls.

Stop

In 0406:80, enter 0 to disable calling number display by telco.

No

Should telco display the calling number for outgoing calls?

Yes

In 0406:80, enter 1 to enable calling number display by telco.

In 0406:58, enter 0 to disable trunk ID display by telco.

No

Should telco display the trunk identification for outgoing calls the extension places?

Yes

In 0406:58, enter 1 to enable trunk ID display by telco.

Continued on next page.
Programming (Cont’d)

In 0406:83, enter 0 to disable sub-address display by telco.

Should telco display the calling number’s sub-address?

- No
- Yes

In 0406:83, enter 1 to enable sub-address display by telco.

In 0925, program the calling party number data (15 digits max.) for each trunk.

In 1005, assign Class of Service to extensions.

In 0406:83, enter 0 to disable sub-address display by telco.

Are outgoing calls allowed on specific trunks?

- No
- Yes

In 0406:83, enter 1 to allow outgoing calls.

In 0901:18, enter 0 to prevent outgoing calls.

In 0905 assign PRI trunks to trunk groups (In 384i software 3.08.07 or higher, this determines available channels for PRI trunks).

In 0901:18, enter 1 to allow outgoing calls.

In 0901:18, enter 1 to allow outgoing calls.

Do you need to restrict certain extensions from placing calls on certain trunks?

- Yes
- No

In 0911 for each Access Map, select the access options for each trunk.

In 0925, program the calling party number data (15 digits max.) for each trunk.

In 1031, program the calling party number data (15 digits max.) for each extension.

In the default program, extensions have full access to all trunks.

In 0911 for each Access Map, select the access options for each trunk.

In 0912, assign extensions to Access Maps.

Build an outgoing restriction matrix.
Programming (Cont’d)

(Skip this decision for 384i)

In 0901:29, enter 0.  No  Yes  In 0901:29, enter 1.

Should caller hear DTMF confirmation tones as they are dialing a trunk call?

If a user preselects a line, how long should the system remember the preselection?

Yes  In 0405:15, enter the preselection interval.

No

Is the amount of time the system waits before placing the call in a talk state sufficient?

No  In 0405:30, enter the interval for the trunk interdigit timer.

Yes

Should extension users have one-button placing of outside calls?

Yes  In 1006, assign function keys as line keys (codes 0001-0192).

No

In 1006, do not assign function keys as line keys (codes 0001-0192).

In 1006, do not assign Trunk Group Access or trunk group keys.

Should extension users have one-button access to trunk groups for placing calls?

Yes  See “Loop Key” in the software manual for more details.

No

In 1006, assign Trunk Group Routing/dial 9 keys (code 1011) and/or Trunk Group/loop keys (1012 + group number/1078 + 1 for outgoing only or 2 for incoming and outgoing).

In 0124, customize the ISDN Layer 2 Timers T200-T203, if required.

In 0126:1-21, customize the ISDN Layer 3 timers, if required.

Continued on next page.
Programming (Cont’d)

In 0137:1-11, customize the ISDN Layer 2 options, if required.

In 0138:1-9, customize the ISDN Layer 3 options, if required.

Assign a different CODEC Gain Type in 0901:3. If required, change the CODEC gains in 0117.

Do you want to adjust the gain (volume) for trunks or telephones?

Yes → Change the settings in 1001:4.

No → Check the Analog Trunk Timers in 0114 and 0135 for compatibility with the telco.

If desired, assign names to trunks in 0903.

No → Stop

Trunks

Yes → Do you want to set up an Alternate Trunk Route Access Code?

Yes → In 0501, set up a Service Code for Alternate Trunk Route Access.

No → In 0518, assign the Service Code set up in the previous step for Alternate Trunk Route Access.

In 0922, enter the extension’s port number and enter the Trunk Group Routing route number.

Should extension be able to use Alternate Trunk Route Access?

Yes → Refer to the Trunk Group Routing feature and set up Trunk Group Routing.

No → Is Trunk Group Routing defined?

No → Stop

Yes → Stop
ISDN Features

Primary Rate Interface (PRI), Placing Calls

Programming (Cont’d)

- 0114 - Analog Trunk (ATRU PCB) Timers (Part A)
  0135 - Analog Trunk (ATRU PCB) Timers (Part B)
  Review the Analog Trunk Timers for compatibility with the connected telco.

- 0117 - Trunk CODEC Gain Type
  Settings Customize the transmit and receive levels of the CODEC Gain Types assigned in 0901 Item 3.

- 0124 - ISDN Layer 2 Timer Setup
  If required, customize the Layer 2 Timer Setup for timers T200-T203 (0-255 in 100 mS steps).
  Default Setting: Refer to the individual timer settings.

- 0126 - ISDN Layer 3 Timer Setup, Items 1-21
  Set the duration of the ISDN Layer 3 timers, if needed.
  Default Setting: Refer to the individual timer.

- 0137 - ISDN PRI Layer 2 SAPI Options, Items 1-11
  If required, customize the Layer 2 options for the PRI trunks.
  Default Setting: Refer to the individual item.

- 0138 - ISDN PRI Layer 3 Options, Items 1-9
  Set the various options for ISDN Layer 3 (Call Control) operation, if needed.
  Default Setting: Refer to the individual item.

- 0307 - ISDN PCB Setup, Item 1: Connection Mode
  Use this program to:
  - Select the slot into which the ISDN PCB is plugged.
  - Enter the number of B-Channels assigned to the ISDN PCB (enter ‘23’ for PRI’s).
  - Select the connection mode for each ISDN circuit (1, 3-5 are used for BRI only / PRI must be set to 2=Point-to-Point, [T-Bus]).
  Default Setting: 1 (BRI Point-to-Multipoint [T-Bus])

- 0405 - System Timers (Part A), Item 15: Preselection Time
  Set the preselection interval (0-64800 seconds). When a keyset user preselects a line key, the system remembers the preselection for this interval.
  Default Setting: Preselection time is five seconds.

- 0405 - System Timers (Part A), Item 30: Trunk Interdigit Timer
  Set the amount of time the system must wait before placing the call in a talk state (call isn’t timed until then, Voice Over and Barge-In are not allowed until after timer expires) (0-64800 seconds).
  Default Setting: Trunk Interdigit = 5 seconds

- 0405 - System Timers (Part A), Item 58: Busy Tone for Repeat Dial Busy Timer
  Set the length of the time the system should send a busy tone after detecting the called party is busy (by receiving either a 'RELease complete’ or 'DISConnect’ message from the CO). After this timer’s expires, the keyset will go to an idle status (0-64800 seconds). If ‘0’ is entered, a caller will not hear a busy tone when the ISDN trunk detects a busy state. It will immediately go the an idle status.
  Default Setting: 0 (caller does not hear busy tone)

- 0406 - COS Options, Item 58: ISDN Connected Line Identification
  This item is currently not used in the U.S.
  Enable (1) or disable (0) the telco’s ability to display trunk identification for outgoing calls the extension places.
  Default Setting: ISDN Connected Line Identification disabled (0).
ISDN Features

Primary Rate Interface (PRI), Placing Calls

Programming (Cont’d)

- **0406 - COS Options, Item 62: Trunk Calls**
  In an extension’s Class of Service, enable (1) or disable (0) trunk calling.
  Default Setting: Trunk calling enabled (1).

- **0406 - COS Options, Item 80: Send ISDN Calling Party Number**
  Enable (1) or disable (0) the telco’s ability to display the calling number for outgoing calls the extension places.
  Default Setting: ISDN Calling Party Number disabled (0).

- **0406 - COS Options, Item 83: Send ISDN Calling Sub-Address**
  Enable (1) or disable (0) the telco’s ability to display the calling number’s sub-address.
  Default Setting: ISDN Calling Party Number disabled (0).

- **0501 - System Numbering**
  Set up a Service Code for Alternate Trunk Route Access. You may want to use an alternate access code for your outgoing PRI trunks. Also see programs 0518 and 0922.
  Default Setting: No Alternate Trunk Route Access code programmed.

- **0518 - Alternate Trunk Route Access Code**
  Assign the Service Code set up in 0501 for Alternate Trunk Route Access. You may want to use an alternate access code for your outgoing PRI trunks. Also see programs 0501 and 0922.
  Default Setting: No Alternate Trunk Route Access code programmed.

- **0901 - Basic Trunk Port Setup (Part A), Item 3: CODEC Gain Type**
  Set the CODEC Gain Type for each trunk. Use 0117 to customize the transmit and receive levels of each CODEC Gain Type.

- **0901 - Basic Trunk Port Setup (Part A), Items 14-17: Trunk Service Type**
  Use this option to set the service type for PRI trunks. Enter 0 (for normal operation) or 3 (if the PRI trunk has DID type operation for incoming calls).
  Default Setting: All trunks have Service Type 0.

- **0901 - Basic Trunk Port Setup (Part A), Item 18, Outgoing Calls**
  Enable this option (1) for each PRI trunk you want to use for outgoing calls. Disable this option (0) if the trunk will not be used for outgoing calls.
  Default Setting: Outgoing calls allowed (1).

- **0901 - Basic Trunk Port Setup (Part A), Item 29: DTMF Tones for Outgoing Calls**
  For each trunk, enable (1) or disable (0) DTMF tones for outgoing trunk calls.

- **0901 - Basic Trunk Port Setup (Part A), Items 32-35: Trunk Service Type**
  Use this option to set the service type for PRI trunks. Enter 0 (for normal operation) or 3 (if the PRI trunk has DID type operation for incoming calls).
  Default Setting: All trunks have Service Type 0.

- **0903 - Trunk Names**
  To make identifying PRI trunks easier, consider assigning unique trunk names.
  Default Setting: Trunk names are LINE 001, LINE 002, etc.

- **0905 - Trunk Groups**
  Assign the PRI trunks to trunk groups. For 384i, this determines the channels available for PRI lines.
  Default Setting: All trunks assigned to Trunk Group 1.
ISDN Features
Primary Rate Interface (PRI), Placing Calls

Programming (Cont’d)

❖ 0911 - Trunk Access Map Setup
Set up Trunk Access Maps (124i: 52; 384i: 128; 704i: 192) for PRI trunks. Access Maps set the access options for trunks.

Default Setting: All trunks in map 1 have full access (7). All trunks in other maps have no access (0).

❖ 0912 - Extension Access Map Assignment
Assign Trunk Access Maps (124i: 52; 384i: 128; 704i: 192) to extensions. This allows you to control extension access to the PRI trunks.

Default Setting: All extensions use Access Map 1.

❖ 0922 - Alternate Trunk Route For Extensions
To better control placing calls over PRI trunks, consider setting up Alternate Trunk Route Access. Use this option to specify the Alternate Trunk Route for each extension. Also see programs 0501 and 0518.

Default Setting: No routes assigned (00).

❖ 0925 - ISDN Calling Party Number Data for Trunk Ports
For each trunk, program the calling party number data (maximum 15 digits per entry). The calling number is the subscriber number of the dial-in number. When a call is made by an extension which does not have an Extension Calling Number assigned (Program 1031), the system sends the calling number for the ISDN trunk defined in Program 0925.

Default Setting: No digits assigned.

❖ 1001 - Basic Extension Port Setup (Part A), Item 4: CODEC Gain Type
If necessary, adjust the gain settings for single line telephones for best results with the PRI trunks.

Default Setting: No additional gain set (1 [0dB]).

❖ 1005 - Class of Service
Assign a Class of Service (1-15) to each extension. Use this option in conjunction with Program 0406 Item 62 above.

Default Setting: Extension 301 has COS 15. All other extension have COS 1.

❖ 1006 - Programming Function Keys
To simplify placing PRI calls, assign function keys as line keys (code 001-192), loop keys (code 1078) and Trunk Group keys (code 1012 + Trunk Group).

Default Setting: Function keys 1-16 are line keys for trunks 1-16.

❖ 1031 - ISDN Calling Party Number Data for Extension Ports
For each extension, program the calling party number data (maximum 15 digits per entry). The calling number is the subscriber number of the dial-in number. When a call is made by an extension which does not have an Extension Calling Number assigned (Program 1031), the system sends the calling number for the ISDN trunk defined in Program 0925.

Default Setting: No digits assigned.
ISDN Features

Primary Rate Interface (PRI), Placing Calls

Related Features

Handsfree
With Automatic Handsfree, an extension user can press a line key to place a trunk call without first lifting the handset or pressing SPK. Users without Automatic Handsfree can preselect a line key before lifting the handset or pressing SPK.

Repeat Redial
Repeat Dial on ISDN trunks do not use the system timer 0405, Item 37: Repeat Dial Enable Time. The ISDN trunks can detect whether the call was busy or answered.
Repeat Dial on an analog trunk does not use this system timer 0405, Item 58: Busy Tone for Repeat Dial Busy Timer.

Tenant Service
An extension user cannot place calls on another tenant’s trunks. The user can, however, receive trunk calls transferred from another Tenant Group.

Operation

To place a PRI call over a trunk group:
1. At keyset, press idle CALL key.
   OR
   At single line set, lift handset.
2. Dial 804.
3. Dial PRI trunk group number (1-9, 01-99 or 001-192).
4. Dial number.

   OR
1. At keyset, press trunk group key (PGM 1006 or SC 851: 1012 + group).
   Also see the “Loop Keys” feature in the Software Manual.
2. Dial number.
   Dialing # after the telephone number will speed up the dialing on PRI lines.

To place a PRI call using Trunk Group Routing:
1. At keyset, press idle CALL key.
   OR
   At single line set, lift handset.
   If your system has an Alternate Trunk Route Access code for PRI trunks, you may dial that instead.
3. Dial number.

   OR
1. At keyset, press Trunk Group Routing key (PGM 1006 or SC 851: 1011).
   Also see the “Loop Keys” feature in the Software Manual.
2. Dial number.
ISDN Features

Primary Rate Interface (PRI), Placing Calls

Operation (Cont’d)

To place a call over a specific PRI trunk:

1. At keyset, press idle CALL key.
   OR
   At single line set, lift handset.
2. Dial #9.
3. Dial line PRI line number (e.g., 005 for line 5).
4. Dial number.

OR

1. At keyset, press line key (PGM 1006 or SC 851: 0001 to 0192).
   Also see the “Loop Keys” feature in the Software Manual.
2. Dial number.
Section 2:
ISDN PRI Programming
Before Reading This Section

This section provides you with detailed information about the system programs. By changing a program, you change the way the feature associated with that program works. In this section, you’ll find out about each program, the features that the program affects and how to enter the program data into system memory.

Do not start customizing your system without first reading “Section 1, ISDN PRI Features”.

When you want to customize a feature, find it in Section 1 and learn about it. Section 1 will tell you what programs you have to change to get the operation you want. Make a note of the changes on the Program Record Forms provided with your system. Then, look the program up in this section if you have any questions about how to enter the data.

Unique Programming Considerations

When entering data, there are three characteristics of a program you must consider: if the program Sorts Data, Updates the CEU or Can beCopied. The check boxes below each program heading indicate when these options apply. If the option applies, there is a check in the appropriate box. If the option doesn’t apply, the box is empty. Following is a more detailed explanation of each option.

- **Sorts Data** - After you enter data for a program, the system spends several seconds sorting the system’s database. Program 1012 (Call Pickup Group) is an example of a program that sorts data. You can continue programming normally after the sort completes. Sorting may momentarily affect the system’s performance.

- **Updates CEU** - The system updates PCBs in the CEU after you change the program’s data. The update may occur a minute or so after you change the data, depending on system traffic. Updating may briefly affect the normal operation of the system.

- **Can be Copied** - You can use Program 2001 to copy the program’s data. For example, you can copy many of the trunk (0900 series) and extension (1000 series) programs. This will save you a lot of time during initial system programming.
Programming
Before You Start Programming

How to Enter the Programming Mode

To enter the programming mode:
1. Go to any working display telephone.
   *In a newly installed system, use extension 301 (port 1).*
2. Do not lift the handset.
4. # * # *
5. Dial the system password + HOLD.
   *Refer to the table below for the default system passwords. To change the passwords, use Program 0201.*

<table>
<thead>
<tr>
<th>Password</th>
<th>Level</th>
<th>Tenant</th>
</tr>
</thead>
<tbody>
<tr>
<td>12345678</td>
<td>2 (IN)</td>
<td>0</td>
</tr>
<tr>
<td>0000</td>
<td>3 (SA)</td>
<td>1</td>
</tr>
<tr>
<td>9999</td>
<td>4 (SB)</td>
<td>1</td>
</tr>
</tbody>
</table>

How to Exit the Programming Mode

To exit the programming mode:
1. Press DIAL.
   *In the 124i, the system stores your entries and you exit the programming mode (skipping the next step).*
2. Dial 1 + HOLD to save and exit.
   *OR*
   Press HOLD to exit without saving.
To back up your data to a second disk (384i only):

1. Replace the system disk in your CPU with your backup system disk.
2. Enter the programming mode (using the procedure above).
3. Press DIAL
4. 01 + HOLD to save and exit.
5. Replace the backup disk in the CPU with the system disk.

Using Keys to Move Around in the Programs

Once you enter the programming mode, use the keys in the following chart to enter data, edit data and move around in the menus.

<table>
<thead>
<tr>
<th>Keys for Entering Data</th>
<th>Use this key . . .</th>
<th>When you want to . . .</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-9, * and #</td>
<td>Enter data into a program.</td>
<td></td>
</tr>
<tr>
<td>HOLD</td>
<td>Complete the programming step you just made (like pressing ENTER on a PC keyboard). When a program entry displays, press HOLD to bypass the entry without changing it.</td>
<td></td>
</tr>
<tr>
<td>CONF</td>
<td>Delete the entry to the left (like pressing BACKSPACE on a PC keyboard).</td>
<td></td>
</tr>
<tr>
<td>CLEAR</td>
<td>Erase the entire command line you just entered - or erase an entry in a table (e.g., a Permit Code entry).</td>
<td></td>
</tr>
<tr>
<td>FLASH</td>
<td>The FLASH key is used to enter a “Don’t Care” (wild card) digit.</td>
<td></td>
</tr>
<tr>
<td>MIC</td>
<td>Program a pause into an Abbreviated Dialing bin.</td>
<td></td>
</tr>
<tr>
<td>VOLUME ▲</td>
<td>Scroll forward through a list of programs (e.g., from 0503 to 0504), through a list of items (e.g., from Program 0405 Item 15 to Item 16) or through entries in a table (e.g., Common Permit Table). If you enter data and then press this key, the system accepts the data before scrolling forward.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>If you see the &amp; character when programming, the entered data is longer than 20 characters. Press this key to see the remainder of the entry.</td>
<td></td>
</tr>
<tr>
<td>VOLUME ▼</td>
<td>Scroll backward through a list of programs (e.g., from 0504 to 0503), through a list of items (e.g., from Program 0405 Item 16 to Item 15) or through entries in a table (e.g., Common Permit Table). If you enter data and then press this key, the system accepts the data before scrolling backward.</td>
<td></td>
</tr>
</tbody>
</table>
Programming

Before You Start Programming

Programming Names and Text Messages

Some programs may require you to enter text. Use the following chart when entering and editing text. When using the DSS keys, press the key once for the first character, twice for the second character, etc. For example, to enter a C, press DSS1 three times.

<table>
<thead>
<tr>
<th>Keys for Entering Data</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Use this key . . .</strong></td>
</tr>
<tr>
<td>DSS1</td>
</tr>
<tr>
<td>DSS2</td>
</tr>
<tr>
<td>DSS3</td>
</tr>
<tr>
<td>DSS4</td>
</tr>
<tr>
<td>DSS5</td>
</tr>
<tr>
<td>DSS6</td>
</tr>
<tr>
<td>DSS7</td>
</tr>
<tr>
<td>DSS8</td>
</tr>
<tr>
<td>DSS9</td>
</tr>
<tr>
<td>DSS10</td>
</tr>
<tr>
<td>CHECK</td>
</tr>
<tr>
<td>CLEAR</td>
</tr>
<tr>
<td>Dialpad digits 0-9, # and *.</td>
</tr>
</tbody>
</table>
### What the Display Prompts Mean

You can tell the type of data the system wants you to enter by looking at the display prompts (see the following chart).

<table>
<thead>
<tr>
<th>Display Prompts</th>
<th>When you see this prompt . . .</th>
<th>The system wants you to enter . . .</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;</td>
<td>Enter a program number (e.g., 0405).</td>
<td>You can press VOLUME ▲ or VOLUME ▼ to scroll forwards or backwards through a list of commands.</td>
</tr>
<tr>
<td>-</td>
<td>Enter data.</td>
<td>If the program has multiple item numbers, you can press VOLUME ▲ or VOLUME ▼ to scroll forwards or backwards through the items.</td>
</tr>
<tr>
<td>&amp;</td>
<td>Press VOLUME ▲ to see the rest of the entry. This prompt only appears when the entire entry cannot fit in the display window.</td>
<td></td>
</tr>
<tr>
<td>?</td>
<td>Select a category (e.g., Tenant Group, extension port number, Class of Service) you want to program.</td>
<td></td>
</tr>
</tbody>
</table>
Use Program 0124 - ISDN Layer 2 Timer Setup to set the duration of timers T200-T203 for Service Access Point Identifiers (SAPI) 0, 16, and 63. The tables below describe the available SAPI access points, timers and system options.

### ISDN System Access Point Identifiers (SAPI)

<table>
<thead>
<tr>
<th>SAPI</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Access point SAPI 0 allows layer 3 (Call Control) to receive layer 2 (Data Link) call control procedure data. In this option, SAPI 0 applies to both PRI and BRI.</td>
</tr>
<tr>
<td>16</td>
<td>Access point SAPI 16 is for packet communications conforming to X.25 Level 3 procedures (also called D-channel packet service). <strong>In this option, SAPI 16 applies only to BRI.</strong></td>
</tr>
<tr>
<td>63</td>
<td>Access point SAPI 63 is for layer 2 management procedures. In this option, SAPI 63 applies to both PRI and BRI.</td>
</tr>
</tbody>
</table>

### ISDN Layer 2 Timers

<table>
<thead>
<tr>
<th>Timer</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>T200</td>
<td>T200 sets the maximum interval between the transmission of a frame by the system and the receipt of the telco's acknowledgement of that frame. Retransmission of the frame can occur after T200 times out.</td>
</tr>
<tr>
<td>T201</td>
<td>T201 sets the maximum interval between the transmission of a Terminal Endpoint Identifier (TEI) Check Request and a TEI Check Response from the telco. After this interval, the system will not accept TEI Check Responses. <strong>This timer only applies to BRI.</strong></td>
</tr>
<tr>
<td>T202</td>
<td>T202 sets the minimum time between transmission of Terminal Endpoint Identifier (TEI) Identity Request messages. <strong>This timer only applies to BRI.</strong></td>
</tr>
<tr>
<td>T203</td>
<td>T203 sets the maximum period of inactivity allowed during a multiple frame operation. When T203 expires, the system queries the telco to determine if the connection is still valid.</td>
</tr>
</tbody>
</table>

Note that the entry you make for timer T203 (Item 4 for each SAPI) is dependent on the entry in Program 0123 - ISDN BRI Layer 2 SAPI Options; Item 17, T203 Timer Step Size (default set to 2 [1 second]).
Refer to the following chart for a description of each option, its range and default setting.

<table>
<thead>
<tr>
<th>SAPI</th>
<th>Timer</th>
<th>Description</th>
<th>Range</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>T200</td>
<td>Item 1</td>
<td>This option sets the maximum interval between transmission and receipt of frames containing SAPI 0 address field data.</td>
<td>0-255 (0-25.5 secs. in 100 mS steps)</td>
</tr>
<tr>
<td></td>
<td>T201</td>
<td>Item 2</td>
<td>This option sets the maximum interval between TEI Check Request transmission and telco's Check Response for frames containing SAPI 0 address field data.</td>
<td>0-255 (0-25.5 secs. in 100 mS steps)</td>
</tr>
<tr>
<td></td>
<td>T202</td>
<td>Item 3</td>
<td>This option sets the minimum time between transmission of TEI Identity Request messages for frames containing SAPI 0 address field data.</td>
<td>0-255 (0-25.5 secs. in 100 mS steps)</td>
</tr>
<tr>
<td>16</td>
<td>T200</td>
<td>Item 1</td>
<td>This option sets the maximum interval between transmission and receipt of frames containing SAPI 16 address field data.</td>
<td>0-255 (0-25.5 secs. in 100 mS steps)</td>
</tr>
<tr>
<td></td>
<td>T201</td>
<td>Item 2</td>
<td>This option sets the maximum interval between TEI Check Request transmission and telco's Check Response for frames containing SAPI 16 address field data.</td>
<td>0-255 (0-25.5 secs. in 100 mS steps)</td>
</tr>
<tr>
<td></td>
<td>T202</td>
<td>Item 3</td>
<td>This option sets the minimum time between transmission of TEI Identity Request messages for frames containing SAPI 16 address field data.</td>
<td>0-255 (0-25.5 secs. in 100 mS steps)</td>
</tr>
<tr>
<td>16</td>
<td>T203</td>
<td>Item 4</td>
<td>This option sets the maximum period of inactivity allowed during a multiple frame operation containing SAPI 0 address field data.</td>
<td>0-255 (see 0123:17)</td>
</tr>
</tbody>
</table>
Programming

0124 - ISDN Layer 2 Timer Setup

### ISDN Layer 2 Timers

<table>
<thead>
<tr>
<th>SAPI</th>
<th>Timer</th>
<th>Description</th>
<th>Range</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>63 (Kind 3)</td>
<td>T200 (Item 1)</td>
<td>This option sets the maximum interval between transmission and receipt of frames containing SAPI 63 address field data.</td>
<td>0-255 (0-25.5 secs. in 100 mS steps)</td>
<td>10 (1 second)</td>
</tr>
<tr>
<td></td>
<td>T201 (Item 2)</td>
<td>This option sets the maximum interval between TEI Check Request transmission and telco’s Check Response for frames containing SAPI 63 address field data.</td>
<td>0-255 (0-25.5 secs. in 100 mS steps)</td>
<td>10 (1 second)</td>
</tr>
<tr>
<td></td>
<td>T202 (Item 3)</td>
<td>This option sets the minimum time between transmission of TEI Identity Request messages for frames containing SAPI 63 address field data.</td>
<td>0-255 (0-25.5 secs. in 100 mS steps)</td>
<td>20 (2 seconds)</td>
</tr>
<tr>
<td></td>
<td>T203 (Item 4)</td>
<td>This option sets the maximum period of inactivity allowed during a multiple frame operation containing SAPI 63 address field data.</td>
<td>0-255 (see 0123:17)</td>
<td>20 (20 seconds) Prior to 3.08.05.02, default is 30 (30 seconds)</td>
</tr>
</tbody>
</table>

### Conditions

None

### Default Setting

Refer to the chart above.
Programming

0124 - ISDN Layer 2 Timer Setup

Telephone Programming Instructions

To enter data for Program 0124 (ISDN Layer 2 Timer Setup):

1. Enter the programming mode.
2. 0124 + HOLD.

3. For SAPI 0 timers, enter 1 + HOLD.
   OR
   For SAPI 16 timers, enter 2 + HOLD.
   OR
   For SAPI 63 timers, enter 3 + HOLD.

4. For Timer T200, enter 1 + HOLD.
   OR
   For Timer T201, enter 2 + HOLD.
   OR
   For Timer T202, enter 3 + HOLD.
   OR
   For Timer T203, enter 4 + HOLD.

5. Enter data for the timer selected + HOLD.
6. Repeat from step 4 to program another timer.
   OR
   HOLD + Repeat from step 3 to select another SAPI option.
   OR
   HOLD + HOLD to exit.
**Description**

Use Program 0126 - ISDN Layer 3 Timer Setup to set the duration of ISDN timers. The chart below briefly describes each timer and shows the timer's range and default setting. The timers are user-side (phone system timers) unless specified as network-side (telco) timers. Refer to the ISDN specifications for additional information on each of the timers.

<table>
<thead>
<tr>
<th>ISDN Layer 3 Timers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>4</td>
</tr>
<tr>
<td>5</td>
</tr>
</tbody>
</table>
### ISDN Layer 3 Timers

**T306**

**Call State: Progress Request**

- Description: T306 starts after the system sends a *PROG*ress message for an unsuccessful call. T306 stops when the system initiates clearing. If T306 times out, the system sends a *DISC*onnect message. (Network Side)
- Range: 1-254 seconds
- Default: 30 seconds

**T307**

**Call State: Null**

- Description: T307 starts after the system sends a *SUSP*end *ACK*nowledge message. T307 stops after the system sends a *RES*ume message. If T307 times out (i.e., *RES*ume never sent), the network connection is cleared and the call identity is released. (Network Side)
- Range: 1-254 seconds
- Default: 180 seconds

**T308**

**Call State: Release Request**

- Description: T308 starts after the system sends a *RELE*ase message. T308 stops when the system receives a *RELE*ase *COM*plete or *RELE*ase message from the telco. If T308 times out, the system resends the *RELE*ase message and restarts T308. If T308 times out a second time, the system clears the call.
- Range: 1-254 seconds
- Default: 4 seconds

**T309**

**Call State: An active call state**

- Description: T309 starts if the data link becomes disconnected. T309 stops if the data link becomes reconnected. (Any calls that were in an active state when T309 started are not lost.) If T309 times out, the system clears the network connection, releases the B-channel and releases the call reference.
- Range: 1-254 seconds
- Default: 60 seconds

**T310**

**Call State: Outgoing Call Proceeding**

- Description: T310 starts if the *CALL PROC*eeding message is received without a Progress Indicator element. T310 stops if the system receives an *ALERT*ing, *CONN*ect, *DISC*onnect or *PROG*ress message from the telco. If T310 times out, the system will send a *DISC*onnect message.
- Range: 1-180 seconds
- Default: 30 seconds

**T312**

**Call State: Call Present, Abort, etc.**

- Description: T312 starts after *SETUP* message is sent or resent on the broadcast data line. T312 stops after it times out. If the system is in the call abort state, the call reference is released. Otherwise, no action is taken. (Network Side)
- Range: 1-254 seconds
- Default: 12 seconds

**T313**

**Call State: Connect Request**

- Description: T313 starts after the system sends a *CONN*ect message. In BRI, T313 stops when the system receives a *CONN*ect *ACK*nowledge, *DISC*onnect or *RELE*ase message from the telco. If T313 times out, the system will send a *RELE*ase message. In PRI, T313 stops when the system receives a *CONN*ect *ACK*nowledge message from the telco. If T313 times out, the system will send a *DISC*onnect message.
- Range: 1-254 seconds
- Default: 4 seconds
### ISDN Layer 3 Timers

<table>
<thead>
<tr>
<th>Item</th>
<th>Timer</th>
<th>Description</th>
<th>Range</th>
<th>Default</th>
</tr>
</thead>
</table>
| 13   | T314  | *Call State: Receiving Segmented Message*  
T314 starts after the system receives a message segment. T314 stops after the system receives the last message segment. If 314 times out (i.e., last message segment not received), the system discards the message. | 1-254 seconds | 4 seconds |
| 14   | T316¹ | *Call State: Restart Request*  
T316 starts after the system sends a RESTart message. T316 stops when the system receives a RESTart ACKnowledge message from the telco. If T316 times out, the system may resend the RESTart message. | 1-254 seconds | 30 seconds |
| 15   | T317¹ | *Call State: Restart*  
T317 starts when the system receives a RESTart message from the telco. T317 stops when the system clears out the call references for the call. If T317 times out, the system begins maintenance procedures. T317 should be less than the value set for T316. | 1-(T316-1) | 25 seconds |
| 16   | T318  | *Call State: Resume Request*  
T318 starts after the system sends a RESume message. T318 stops after the system receives a RESume ACKnowledge or REJ message. If T318 times out, the internal connection is cleared, the call reference is released, and a null state is entered. | 1-254 seconds | 4 seconds |
| 17   | T319  | *Call State: Suspend Request*  
T319 starts after the system sends a SUSPend message. T319 stops after the system receives a SUSPend ACKnowledge or SUSPend REJ message. If T319 times out (i.e., the system does not receive SUSPend ACKnowledge message), the system enters an active state and notifies the user application. | 1-254 seconds | 4 seconds |
| 18   | T320  | *Q.931 Clearing on B-Channel*  
T320 starts when the last X.25 call is cleared on B-channel. With either Conditional or Unconditional Notification, the system will initiate Q.931 clearing when no X.25 calls are active on a B-channel for a time that exceeds T320’s setting. | 1-254 seconds | 30 seconds |
| 19   | T321¹ | *Call State: Any Call State*  
T321 starts when there is a failure in the D-channel. T321 stops when the system receives a response from the telco to any system layer 3 message. When T321 times out, the system sends a DL-Establish-Request to layer 2. | 1-254 seconds | 30 seconds |
Telephone Programming Instructions

To enter data for Program 0126 (ISDN Layer 3 Timer):

1. Enter the programming mode.
2. 0126 + HOLD.

   Item No?

3. Enter the number of the timer you want to program + HOLD.
   
   When selecting a timer, enter the last two digits of the timer number (e.g., 01=T301, 02=T302 etc.).

   Tnnn:nnn

   The previously programmed value displays.

4. Enter data for the selected timer + HOLD.

   Item No?

5. Repeat from step 3 to select another timer.
   
   OR
   
   HOLD to exit.
Use Program 0137 - ISDN PRI Layer 2 Options to set selected parameters for PRI System Access Point Identifiers (SAPI) 0, 16, and 63. The tables below describe the available SAPI access points and system options.

### ISDN System Access Point Identifiers (SAPI)

<table>
<thead>
<tr>
<th>SAPI</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Access point SAPI 0 allows layer 3 (Call Control) to receive layer 2 (Data Link) call control procedure data.</td>
</tr>
<tr>
<td>16</td>
<td>Access point SAPI 16 is for packet communications conforming to X.25 Level 3 procedures.</td>
</tr>
<tr>
<td>63</td>
<td>Access point SAPI 63 is for layer 2 management procedures.</td>
</tr>
</tbody>
</table>

Also use this option (Item 11) to set the timer T203 increment. The system uses the value you set in Item 17 when configuring T203 in Program 0124.

Refer to the following chart for a description of each option, its range and default setting.

### ISDN PRI Layer 2 Options

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Range</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item 1</td>
<td><strong>System Access Point Identifier (SAPI) 0 N200 Data</strong>&lt;br&gt;This option sets the maximum number of times the system will allow retransmission of a frame that contains SAPI 0 address field data.</td>
<td>1-15</td>
<td>3</td>
</tr>
<tr>
<td>Item 2</td>
<td><strong>System Access Point Identifier (SAPI) 16 N200 Data</strong>&lt;br&gt;This option sets the maximum number of times the system will allow retransmission of a frame that contains SAPI 16 address field data.</td>
<td>1-15</td>
<td>3</td>
</tr>
<tr>
<td>Item 3</td>
<td><strong>System Access Point Identifier (SAPI) 63 N200 Data</strong>&lt;br&gt;This option sets the maximum number of times the system will allow retransmission of a frame that contains SAPI 63 address field data.</td>
<td>1-15</td>
<td>3</td>
</tr>
<tr>
<td>Item 4</td>
<td><strong>System Access Point Identifier (SAPI) 0 N201 Data</strong>&lt;br&gt;This option sets the maximum number of octets (bytes) the system will allow in the Information field for a frame that contains SAPI 0 address field data.</td>
<td>1-511</td>
<td>260</td>
</tr>
</tbody>
</table>
### ISDN PRI Layer 2 Options

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Range</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item 5</td>
<td><strong>System Access Point Identifier (SAPI) 16 N201 Data</strong></td>
<td>1-511</td>
<td>260</td>
</tr>
<tr>
<td></td>
<td>This option sets the maximum number of octets (bytes) the system will allow in the Information field for a frame that contains SAPI 16 address field data.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Item 6</td>
<td><strong>System Access Point Identifier (SAPI) 63 N201 Data</strong></td>
<td>1-511</td>
<td>260</td>
</tr>
<tr>
<td></td>
<td>This option sets the maximum number of octets (bytes) the system will allow in the Information field for a frame that contains SAPI 63 address field data.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Item 7</td>
<td><strong>System Access Point Identifier (SAPI) 63 N202 Data</strong></td>
<td>1-15</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>This option sets the maximum number of times the system will transmit an Identity Request message (to obtain a Terminal Endpoint Identifier [TEI]) for a frame that contains SAPI 63 address field data.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Item 8</td>
<td><strong>System Access Point Identifier (SAPI) 0 Max. Transmission Frame Number</strong></td>
<td>0-127</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>This option sets the maximum allowed number of unacknowledged sequentially numbered information (I) frames containing SAPI 0 data.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Item 9</td>
<td><strong>System Access Point Identifier (SAPI) 16 Max. Transmission Frame Number</strong></td>
<td>0-127</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>This option sets the maximum allowed number of unacknowledged sequentially numbered information (I) frames containing SAPI 16 data.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Item 10</td>
<td><strong>System Access Point Identifier (SAPI) 63 Max. Transmission Frame Number</strong></td>
<td>0-127</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>This option sets the maximum allowed number of unacknowledged sequentially numbered information (I) frames containing SAPI 63 data.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Item 11</td>
<td><strong>T203 Timer Step Size</strong></td>
<td>1=100 mS, 2=1 second</td>
<td>2 (1 second)</td>
</tr>
<tr>
<td></td>
<td>This option sets the Timer T203 increment. You set this timer in Program 0124. If this option is 1, the range for T203 in 0124 is 0-25.5 seconds. If set at 2, the T203 range in 0124 is 0-255 seconds.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Conditions

None
Programming

0137 - ISDN PRI Layer 2 Options

---

Default Setting

Refer to the chart above.

---

Telephone Programming Instructions

To enter data for Program 0137 (ISDN Layer 2 PRI SAPI Options):

1. Enter the programming mode.
2. 0137 + HOLD.
3. Enter the number of the item (1-11) you want to program + HOLD.
   
   The previously programmed value for the item selected displays.
4. Enter data for the item selected + HOLD.
5. Repeat from step 3 to program another item.
   
   OR
   
   HOLD to exit.
Use **Program 0138 - ISDN PRI Layer 3 Options** to set various options for ISDN layer 3 (Call Control) operation. Refer to the following chart for a description of each option, its range and default setting.

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Range</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item 1</td>
<td><strong>Release Response</strong> &lt;br&gt;Use this option to set the message the system sends in response to the receipt of an unexpected or unrecognized message while in the null state (i.e., no call exists). The choices are <strong>RELEASE</strong> or <strong>RELEASE COMPLETE</strong>. &lt;br&gt;<strong>RELEASE</strong> &lt;br&gt;This message indicates that the system intends to release and that the telco should release and send a <strong>RELEASE COMPLETE</strong> message. &lt;br&gt;<strong>RELEASE COMPLETE</strong> &lt;br&gt;This message indicates that the system has released the call and that the call reference number is available for use.</td>
<td>1 (RELEASE) 2 (RELEASE COMPLETE)</td>
<td>2 (RELEASE COMPLETE)</td>
</tr>
<tr>
<td>Item 2</td>
<td><strong>CONNECT Message Response</strong> &lt;br&gt;Use this option to set the system’s response to a <strong>CONNECT</strong> message received from the telco. The response choices are either <strong>CONNECT ACKNOWLEDGE</strong> or no response.</td>
<td>1 (CONNECT ACKNOWLEDGE) 2 (No response)</td>
<td>1 (CONNECT ACKNOWLEDGE)</td>
</tr>
<tr>
<td>Item 3</td>
<td><strong>Status Enquiry</strong> &lt;br&gt;Use this option to set the message the system sends in response to the receipt of an unexpected or unrecognized message while in the non-null state (i.e., while a call exists). The choices are <strong>STATUS</strong> and <strong>STATUS ENQUIRY</strong>. &lt;br&gt;<strong>STATUS</strong> &lt;br&gt;The system will send for a <strong>STATUS</strong> message with the cause and the call’s state information. &lt;br&gt;<strong>STATUS ENQUIRY</strong> &lt;br&gt;The system will send a <strong>STATUS ENQUIRY</strong> message to the telco and wait for a <strong>STATUS</strong> message response.</td>
<td>1 (STATUS ENQUIRY) 2 (STATUS)</td>
<td>2 (STATUS)</td>
</tr>
<tr>
<td>Item 4</td>
<td><strong>B-Channel Maintenance</strong> &lt;br&gt;This PRI option is currently not used.</td>
<td>N/A</td>
<td>2</td>
</tr>
</tbody>
</table>
**ISDN Layer 3 Options**

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Range</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item 5</td>
<td><strong>Cause Information Element</strong></td>
<td>1 (Cause 101)</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>The system generates the <em>Cause</em> information element in response to an unexpected or unrecognized message. Choose either of two Cause responses (called Cause Numbers): <em>Cause 98</em> or <em>Cause 101</em>.</td>
<td>2 (Cause 98)</td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>Cause 98</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cause 98 means that the message received was:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Not compatible with the call state, or</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- A nonexistent (invalid) message type, or</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- A message type that is not implemented.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>Cause 101</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cause 101 indicates that the received message is not compatible with the call state. In other words, according to the ISDN procedures, this is not a permissible message to receive at this time.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Item 6</td>
<td><strong>Reset Response</strong></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>This PRI option is currently not used.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Item 7</td>
<td><strong>Reset Acknowledge</strong></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>This PRI option is currently not used.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Item 8</td>
<td><strong>Response to Layer 2 Data Link (DL) Establish Message</strong></td>
<td>1 (STATUS)</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>When Layer 2 (<em>Data Link</em>) receives a Data Link Establish Message, Layer 3 (<em>Call Control</em>) can respond to the telco with a STATUS or STATUS ENQUIRY message. Optionally, Layer 3 can send no response instead.</td>
<td>2 (STATUS ENQUIRY)</td>
<td>(No response)</td>
</tr>
<tr>
<td></td>
<td><strong>STATUS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The system will send for a STATUS message with the cause and the call’s state information for all existing calls.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>STATUS ENQUIRY</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The system will send a STATUS ENQUIRY message to the telco and wait for a STATUS response for all existing calls.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Item 9</td>
<td><strong>Response to Layer 2 Data Link (DL) Release Message</strong></td>
<td>1 (DATA LINK ESTABLISH)</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>With DATA LINK ESTABLISH, the system retains all existing calls and attempt to restore the line. With NO RESPONSE, the system clears all existing calls and sends a NO RESPONSE message.</td>
<td>2 (No response)</td>
<td></td>
</tr>
</tbody>
</table>
Conditions

None

Default Setting

Refer to the table above.

Telephone Programming Instructions

To enter data for Program 0138 (ISDN PRI Layer 3 Options):

1. Enter the programming mode.
2. 0138 + HOLD.
3. Enter the number of the item you want to program (1-10) + HOLD.
   
   The previously programmed value displays.

   OR

4. Repeat from step 3 to program another item.

   HOLD to exit.
Use Program 0307 - ISDN PCB Setup to set up the system’s ISDN PCBs.

Refer to the following chart for the PCB capacities allowed by each system.

<table>
<thead>
<tr>
<th>Description</th>
<th>28i</th>
<th>124i</th>
<th>384i</th>
<th>704i</th>
</tr>
</thead>
<tbody>
<tr>
<td>2BRI PCB</td>
<td>3</td>
<td>124i Enhanced: 15 (when used as S-Bus)</td>
<td>16</td>
<td>24</td>
</tr>
<tr>
<td>4BRI PCB</td>
<td>3</td>
<td>6 (as T-Bus)</td>
<td>-</td>
<td>24</td>
</tr>
<tr>
<td>8BRI PCB</td>
<td>-</td>
<td>-</td>
<td>8 (as S-Bus)</td>
<td></td>
</tr>
<tr>
<td>T1/PRI PCB</td>
<td>-</td>
<td>2</td>
<td>5</td>
<td>8</td>
</tr>
</tbody>
</table>

The programming should be entered before plugging in the PCB. Refer to the following chart for a description of each option, its range and default setting. When entering the program, INDEX refers to the slot number into which the card will be inserted.
### ISDN Operating Mode Options

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Range</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>B-Channel Maximum</td>
<td>1-24</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Use this option to assign the number of B-channels to each ISDN PCB. For BRI PCBs, always set this option for 2. For PRI PCBs, always set this option for 23. The default option must be changed to 23 for PRI PCBs.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Item 1</td>
<td>Connection Mode</td>
<td>1-5 (See options at left)</td>
<td>1 (Point-to-Multipoint BRI)</td>
</tr>
<tr>
<td></td>
<td>Use this option to select the connection mode for each ISDN circuit. There are five connection mode options:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1) BRI Point-to-Multipoint Mode [T-Bus]</td>
<td>Select this option for BRI PCBs that use common D-channel signalling.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(2) PRI Point-to-Point Mode [T-Bus]</td>
<td>As select this option for PRI PCBs. Note that this is the only PRI option supported.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(3) BRI Point-to-Multipoint Mode [S-Bus] (Extended Passive Bus)</td>
<td>Select this option for BRI PCBs configured for Point-to-Multipoint (Extended Passive Bus) operation. With an Extended Passive Bus, the terminal equipment is concentrated at one end of a bus that generally does not exceed 1500 feet.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(4) BRI Point-to-Multipoint Mode [S-Bus] (Short Passive Bus)</td>
<td>Select this option for BRI PCBs configured for Point-to-Multipoint (Short Passive Bus) operation. With a Short Passive Bus, the terminal equipment is equally distributed along a bus that generally does not exceed 600 feet.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(5) BRI Point-to-Point Mode [S-Bus]</td>
<td>Select this option for BRI PCBs configured for Point-to-Point operation.</td>
<td></td>
</tr>
<tr>
<td>Item 2</td>
<td>Calling Party Number</td>
<td>1 (Disabled) 2 (Enabled)</td>
<td>2 (Enabled)</td>
</tr>
<tr>
<td></td>
<td>Use this option to set the ISDN circuit’s ability to provide the caller’s number to telco for outgoing calls. If enabled (2), the system provides the Calling Party Information Element to the telco. If disabled (1), the system does not provide this element.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Item 3</td>
<td>SP DDI Digit</td>
<td>0-4</td>
<td>0 (Disabled)</td>
</tr>
<tr>
<td></td>
<td>If this is programmed with data 1-3, ISDN terminals connected to the S-Bus will be accessed by dialing the extension number plus additional digit(s) due to DN numbers on each ISDN terminal connected to the S-Bus.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
ISDN Operating Mode Options

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Range</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item 4</td>
<td><strong>Circuit Number</strong>&lt;br&gt;Since PRI channel 2 is currently not applicable, always leave this selection at 1.</td>
<td>1 or 2</td>
<td>1</td>
</tr>
<tr>
<td>Item 5</td>
<td><strong>TEI Assignment</strong>&lt;br&gt;For the PRI PCB selected (1-5), indicate the TEI assigned by telco when Non-Facility Associated Signaling (NFAS) is provided. This is used to identify calls on each PRI line.</td>
<td>0-63</td>
<td>1</td>
</tr>
<tr>
<td>Item 6</td>
<td><strong>Common D-Channel</strong>&lt;br&gt;For the selected PRI PCB (1-5), indicate if it uses common D-channel signaling. Since common D-channel signaling is currently not supported, leave this option at 1.</td>
<td>1 = No&lt;br&gt;2 = Yes</td>
<td>1 (No)</td>
</tr>
</tbody>
</table>

**Conditions**

None

**Default Setting**

Refer to the chart above.
Programming
0307 - ISDN PCB Setup

Telephone Programming Instructions

To enter data for Program 0307 (ISDN PCB Setup):
1. Enter the programming mode.
2. 0307 + HOLD.
3. Enter the number of the ISDN PCB (1-16) you want to program + HOLD.
4. Enter the number of the slot into which the ISDN PCB is plugged + HOLD.
5. Enter the number of B-channels assigned to the ISDN PCB + HOLD.
   For PRI PCBs, enter 23.
6. For the PCB selected in step 3 above, enter the number of the ISDN circuit you want to program + HOLD.
   For PRI PCBs, always enter 1.
7. Select the item number (1 or 2) you want to program + HOLD.
   Items 3-6 are currently not used.
8. Enter data for the item selected + HOLD.
9. Repeat from step 7 and select another item.
   OR
   HOLD + Repeat from step 6 to select another ISDN circuit.
   OR
   HOLD + HOLD + Repeat from step 3 to select another ISDN PCB.
   OR
   HOLD + HOLD + HOLD to exit.
Use Program 0405 - System Timers (Part A) to set the value for the system timers. Each tenant group can have different timer settings. Refer to the following chart for a description of each option, its range and default setting.

<table>
<thead>
<tr>
<th>Timer</th>
<th>Description</th>
<th>Range</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>Timer 30</td>
<td>PRI/Trunk Interdigit Time</td>
<td>0-64800 seconds</td>
<td>5 seconds</td>
</tr>
<tr>
<td></td>
<td>The system waits for this timer to expire before placing the call in a talk state (call isn't timed until then, Voice Over and Barge-In are not allowed until after timer expires).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Timer 58</td>
<td>Busy Tone for Repeat Dial Busy</td>
<td>0-64800 seconds</td>
<td>0 (caller does not hear busy tone)</td>
</tr>
<tr>
<td></td>
<td>This timer is the length of the time the system should send a busy tone after detecting the called party is busy (by receiving either a 'RELlease complete' or 'DISConnect' message from the CO). After this timer's expires, the keyset will go to an idle status.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Conditions**

**Using Repeat Redial**

- Repeat Dial on ISDN trunks do not use the system timer 0405, Item 37: Repeat Dial Enable Time. The ISDN trunks can detect whether the call was busy or answered.
- Repeat Dial on an analog trunk does not use the system timer 0405, Item 58: Busy Tone for Repeat Dial Busy (ISDN).
- If '0' is programmed in 0405, Item 58: Busy Tone for Repeat Dial Busy (ISDN), a caller will not hear a busy tone when the ISDN trunk detects a busy state. It will immediately go the an idle status.

**Default Setting**

Refer to the chart above.
Telephone Programming Instructions

To enter data for Program 0405 (System Timers [Part A]):

1. Enter the programming mode.
2. 0405 + HOLD.

   Tenant No?

3. Enter the number of the Tenant Group you want to program + HOLD.

   Timer No?

4. Enter the number of the timer you want to program + HOLD.

   Timer_nn:

5. Enter data for the timer you selected + HOLD

   Timer No?

6. Repeat from step 4 to program another timer.

   OR

   HOLD to return to the Tenant No? prompt.
Use Program 0406 - Class of Service Options (Part A) to set the Extension Class of Service (COS) options. Assign Class of Service to extensions in Program 1005 - Class of Service. The 124i has 10 Classes of Service; the 384i has 15 Classes of Service in each of four Tenant Groups; the 124i Enhanced and 704i have 15 Classes of Service with one Tenant Group. Refer to the following chart for each COS option, its range and default setting.

<table>
<thead>
<tr>
<th>Item</th>
<th>Name</th>
<th>This Option</th>
<th>Is Used With . . .</th>
<th>Range</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>58</td>
<td>ISDN Connected Line Identification</td>
<td>- This item is currently not used in the U.S. Enables/disables the telco's ability to display trunk identification for outgoing calls the extension places.</td>
<td>Central Office Calls, Placing</td>
<td>0=disabled l=enabled</td>
<td>0 (disabled)</td>
</tr>
<tr>
<td>80</td>
<td>ISDN Calling Party Number</td>
<td>Enables/disables the telco's ability to display the calling number for outgoing calls the extension places.</td>
<td>Central Office Calls, Placing</td>
<td>0=disabled l=enabled</td>
<td>0 (disabled)</td>
</tr>
<tr>
<td>83</td>
<td>Send ISDN Calling Sub-Address</td>
<td>Enables/disables the telco's ability to display the calling number's sub-address.</td>
<td>Central Office Calls, Answering</td>
<td>0=disabled l=enabled</td>
<td>0 (disabled)</td>
</tr>
</tbody>
</table>

**Conditions**

None

**Default Setting**

Refer to the chart above.
Telephone Programming Instructions

To enter data for Program 0406 (System Timers [Part A]):

1. Enter the programming mode.
2. 0406 + HOLD.

3. Enter the number of the Tenant Group you want to program (1-4) + HOLD.

4. Enter the number of the Class of Service (1-15) you want to program + HOLD.

5. Enter the COS item number you want to program + HOLD.

6. Enter the data for the item selected + HOLD.
7. Repeat from step 5 to program another timer.

OR

HOLD to return to the Class No? prompt.
Use Program 0901 - Basic Trunk Port Setup (Part A) to assign the Trunk Service Type for each ISDN trunk. An entry must be made for each channel (trunk) to be used. Refer to the chart below for a description of each option, its range and default setting.

### Description

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Range</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>Items 14-17</td>
<td><strong>Trunk Service Type</strong></td>
<td>0 (Normal) 3 (DID)</td>
<td>0 (for Items 14-17)</td>
</tr>
<tr>
<td></td>
<td>Use this option to set the service type for the ISDN trunk you are programming. For PRI trunks, enter 0 (for normal operation) or 3 (to have the PRI trunk use the DID tables and route on the last three digits a caller dials). There is one item for each of the Night Service Mode: Item 14 = Day Mode Item 15 = Night Mode Item 16 = Midnight Mode Item 17 = Rest Mode</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Item 32-35</td>
<td><strong>Trunk Service Type</strong></td>
<td>0 (Normal) 3 (DID)</td>
<td>0 (for Items 32-35)</td>
</tr>
<tr>
<td></td>
<td>Use this option to set the service type for the trunk you are programming. For PRI trunks, enter 0 (for normal operation) or 3 (to have the PRI trunk use the DID tables and route on the last three digits a caller dials). There is one item for each of the Night Service modes: Item 32 = Day 2 Mode Item 33 = Night 2 Mode Item 34 = Midnight 2 Mode Item 35 = Rest 2 Mode</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Conditions

All channels on the same PRI line must be programmed the same.

### Default Setting

Refer to the chart above.
Telephone Programming Instructions

To enter data for Program 0901 (Basic Trunk Port Setup [Part A]):

1. Enter the programming mode.
2. 0901 + HOLD.

3. Enter the number of the trunk that corresponds to the ISDN channel you want to program + HOLD.

4. Enter the number of the item you want to program + HOLD.

   Select only items 14-17 or 32-35. The previously programmed data displays.

5. Enter data for the item selected + HOLD.

   For PRI trunks, enter 0 (for normal operation) or 3 (to have the PRI trunk use the DID tables (Program 1806) and route on the last three or four digits a caller dials).

6. Repeat from step 4 to select another item number + HOLD.

   OR
   HOLD + Repeat from step 3 to select another trunk.

   OR
   HOLD + HOLD to exit.
Programming

0915 - Incoming ISDN Trunk (3.1KHz Audio) Ring Group

Use **Program 0915 - Incoming ISDN Trunk (3.1KHz Audio) Ring Group** to assign the destination Ring Group for 3.1 KHz Audio calls. These calls include G3 (ISDN) fax calls, modem calls and ISDN calls that are not “end-to-end” ISDN. All 3.1 KHz ISDN calls are identified in the *Bearer Capability* information element contained in the call’s Layer 3 (Call Control) *Setup Message*. The telco provides the full 64K bandwidth for 3.1KHz calls.

An incoming analog or 3.1 KHz type data call to the i-Series system will follow the settings in **Program 0915 - Incoming ISDN (3.1 KHz Audio) Ring Group** first. If this program is not set, the system will then follow the settings in **Program 0910 - Incoming Trunk Ring Group Assignment**.

! Important !

- **In areas where ISDN is not uniformly implemented, many ISDN calls may route to the 3.1 Khz Audio Ring Group.** This can occur if the telco automatically designates a call as 3.1 KHz when it is not certain of the call type.
- **To avoid routing to the 3.1 KHz Ring Group, designate ISDN trunks as DID (Program 0901 Items 14-17 = 3 or Items 32-35 = 3).** This will cause the system to use the DID tables and route the call based on the last three digits in the *Called Number Information Element*.

**Conditions**

None

**Default Setting**

0 (No Assignment). *With the default setting, the system follows the settings in Program 0910 - Incoming Trunk Ring Group Assignment.*
To enter data for Program 0915 (Incoming ISDN Trunk (3.1 KHz Audio) Ring Group):

1. Enter the programming mode.
2. 0915 + HOLD.
3. Enter the number of the ISDN trunk you want to program (1-192) + HOLD.
4. Enter the number of the Day 1 Mode destination Trunk Group (1-128) + HOLD.
5. Enter the number of the Night 1 Mode destination Trunk Group (1-128) + HOLD.
6. Enter the number of the Midnight 1 Mode destination Trunk Group (1-128) + HOLD.
7. Enter the number of the Rest 1 Mode destination Trunk Group (1-128) + HOLD.
8. Enter the number of the Day 2 Mode destination Trunk Group (1-128) + HOLD.
9. Enter the number of the Night 2 Mode destination Trunk Group (1-128) + HOLD.
10. Enter the number of the Midnight 2 Mode destination Trunk Group (1-128) + HOLD.
11. Enter the number of the Rest 2 Mode destination Trunk Group (1-128) + HOLD.
12. Repeat from step 3 and select another ISDN trunk.

OR

HOLD to exit.
0916 - Incoming ISDN Data Trunk Ring Group

Description

Use Program 0916 - Incoming ISDN Data Trunk Ring Group to assign the destination Ring Group for ISDN data calls. All data calls are identified in the Bearer Capability information element contained in the call’s Layer 3 (Call Control) Setup Message.

This option is currently not used.

Conditions

None

Default Setting

0 (No assignment)

Telephone Programming Instructions

To enter data for Program 0916 (Incoming ISDN Data Trunk Ring Group):

1. Enter the programming mode.
2. 0916 + HOLD.
3. Enter the number of the ISDN trunk you want to program (1-192) + HOLD.
4. Enter the number of the Day 1 Mode destination Trunk Group (1-128) + HOLD.
5. Enter the number of the Night 1 Mode destination Trunk Group (1-128) + HOLD.
6. Enter the number of the Midnight 1 Mode destination Trunk Group (1-128) + HOLD.
7. Enter the number of the Rest 1 Mode destination Trunk Group (1-128) + HOLD.
8. Enter the number of the Day 2 Mode destination Trunk Group (1-128) + HOLD.
9. Enter the number of the Night 2 Mode destination Trunk Group (1-128) + HOLD.
10. Enter the number of the Midnight 2 Mode destination Trunk Group (1-128) + HOLD.

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Target (RES2): n
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11. Enter the number of the Rest 2 Mode destination Trunk Group (1-128) + HOLD.

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TRK No?
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12. Repeat from step 3 and select another ISDN trunk.

OR

HOLD to exit.
Other Important Telephone Numbers

Sales: ........................................... 203-926-5450
Customer Service: .............................203-926-5444
Customer Service FAX: ....................203-926-5454
Technical Service: ............................203-925-8801
Discontinued Product Service: ............900-990-2541
Technical Training: ............................203-926-5430
Emergency Technical Service (After Hours) . . . . . . . . . . . . . . . . . 203-929-7920
(Excludes discontinued products)