



Ordering ISDN Service From Your Telephone Company (IOCs)

Introduction

ISDN is a complex service with many network options. Obtaining service from your local telephone company and long distance providers can be complicated. To help in this process, ADTRAN ISU products support the most common central office (CO) telephone switches in a variety of configurations.

ISDN service can be ordered using ISDN ordering codes (IOCs), which simplify the ordering process. If your local service provider supports IOCs, see the section [Ordering ISDN Using IOCs](#). If IOCs are not supported, see the section [Ordering ISDN without IOCs](#).

Ordering ISDN Using IOCs

The development of ISDN ordering codes (IOCs) simplifies the process of ordering ISDN service. The ISDN Solutions Group, a consortium of ISDN equipment vendors, service providers, and Bellcore, established these codes to represent predetermined line configurations for ISDN Basic Rate service for specific applications. If the local service provider does not support IOCs, see [Ordering ISDN without IOCs](#).

EZ-ISDN 1 (Capability Package U)

Ordering EZ-ISDN 1 (Capability Package U) is recommended by the industry for most home office/small business applications. If this is not available from your service provider, consider the remaining options listed in this document.

Features

- 2B service
- Both B channels alternating voice and data
- Two directory numbers
- Flexible calling voice (drop, transfer, hold, three-way conference calling)
- Call forwarding
- Additional call offering
- Caller ID

Applications

- Host data center, internet access, bulletin board service (BBS) including bandwidth allocation, and modem pooling applications
- Modem and voice capabilities; capable of two simultaneous voice calls
- Generic data transfer, including remote access and LAN/WAN connectivity and telecommuting

If EZ-ISDN 1 Is Not Available

ADTRAN and Bellcore have registered and tested eight generic IOCs. These IOCs are supported by all major local exchange carriers as well as several independent carriers. After reviewing the following list, order ISDN lines from the local service provider. Request the appropriate IOC for your application.

Capability S (previously Generic Data M) ordering code is recommended for ISU applications. It is the most feature-rich and supports most voice and data Applications. In some areas, ISDN tariffs may warrant the use of ordering codes with less features. For example, in a particular region, there may be additional monthly expense associated with having voice service on each B channel. If you have a data-only application, Capability R (previously Generic Data I) may be more cost-effective. Each ISDN line provides 112/128 kbps of service.

ADTRAN has registered the following ISDN ordering codes to support a variety of tariffs and applications:

Capability S (previously Generic Data M)

Features

- 2B service
- Both B channels alternating voice and data
- Two directory numbers

Applications

- Host data center, internet access, BBS, and modem pooling applications
- Modem and voice capabilities; capable of two simultaneous voice calls
- Generic data transfer, including remote access and LAN/WAN connectivity and telecommuting

Capability R (previously Generic Data I)

Features

- 2B service
- Data only
- Two directory numbers

Applications

- Host data center, internet access, BBS, and modem pooling applications
- Data only applications, no modem or voice capabilities
- Data transfer applications, including remote access and LAN/WAN connectivity

B1 (previously Generic Data B)

Features

- 1B service
- Data only
- One directory number

Applications

- 64k internet access, 64k BBS, dial backup where primary service is DDS
- Data only, no modem or voice capabilities.

Capability C (previously Generic Data C)

Features

- 1B service
- Alternating voice and data
- One directory number

Applications

- 64k internet access, 64k BBS requiring both voice and data service (not simultaneously)

I2 (previously Generic Data I-1DN)

Features

- 2B service
- Data only
- One directory number

I2 is not available for services provided by a Northern Telecom switch. Two directory numbers are required for 2B operation. In this case, use Capability R.

Applications

- Host data center, internet access, BBS, and modem pooling applications
- Generic data transfer, including remote access, LAN/WAN connectivity, and telecommuting

J3 (previously Generic Data J 1DN)

Features

- 2B service
- 1B alternating voice/data, 1B data only
- One directory number

J3 is not available for services provided by a Northern Telecom switch. Two directory numbers are required for 2B operation. In this case, use J2.

Applications

- 64k internet access, 64k BBS, 64k remote access and telecommuting requiring simultaneous voice and data service where 64k is sufficient

J2 (previously Generic Data J)

Features

- 2B service
- 1B alternating voice/data, 1B data only
- Two directory numbers

Applications

- Host data center, internet access, BBS, and modem pooling applications
- Applications requiring only one voice port
- Generic data transfer, including remote access, LAN/WAN connectivity, and telecommuting

M5 (previously Generic Data M-1 DN)

Features

- 2B service
- Both B channels alternating voice and data
- One directory number

M5 is not available for services provided by Northern Telecom or AT&T switches. Two directory numbers are required for 2B operation. In this case, use Capability S.

Applications

- For use where Capability S is not available
- Host data center, internet access, BBS, and modem pooling applications
- Modem and voice capabilities; capable of two simultaneous voice calls
- Generic data transfer, including remote access, LAN/WAN connectivity, and telecommuting

ISDN Service Ordering Information Form (for ordering with IOCs)

Name:	_____
Address:	_____
City:	_____ State:
Zip Code:	_____ Daytime telephone number :
ISDN Ordering Code:	
EZ-ISDN 1	
Capability S	
Capability R	
B1	
Capability C	
I2	
J3	
J2	
M5	
Long distance access should be provided through:	
AT&T	MCI
SPRINT	Other

Ordering ISDN Without IOCs

This section guides you and your telephone company in specifying and obtaining ISDN service when IOCs are not used.

To support most of the features in the ISU, your telephone service needs to meet certain requirements. A general description of these requirements follows. Depending on the actual data service needs, some features may be deleted. Other features may not be available in your area. Also, features may be deleted for economic reasons, depending on your needs and local tariffs. Consult the telephone company first to determine which services are provided.

The form located at the end of this document has been designed to assist you. Complete and FAX this form to the telephone company to request the proper type of ISDN telephone lines for use with the ISU.

Local Interface Requirements

Physical Interface

- ISDN basic rate interface (BRI) line
- U-interface reference point
- 2B1Q line coding

ISDN service must be provided from one of the following CO switches and protocols:

Switch	Protocol
AT&T 5ESS [™]	Custom 5E6 or later software National ISDN-1
Northern Telecom DMS-100 BCS-32 or later software (Pvc1)	National ISDN-1 (Pvc2)
Siemens EWSD	National ISDN-1
NEC	NTT Protocol

The interface provides the ability to allocate one dynamic terminal endpoint identifier (TEI) per phone number.

Local Service Requirements

Bearer Capabilities:

- Circuit mode voice service for speech and 3.1 kHz audio
- Circuit mode data service for 56 kbps and 64 kbps unrestricted data

Two simultaneous calls supported on the interface. Any mix of voice and data bearer capabilities is supported for both bearer channels on incoming and outgoing calls.

Service provided inside the LATA (local access and transport area) for the bearer capabilities mentioned previously.

Long distance access for the previously mentioned bearer capabilities to and from the chosen long distance providers.

Long Distance Service Requirements

If the facilities are available, subscribe to long distance service supporting the bearer capabilities previously listed. If not, request service supporting circuit-switched 64 kbps or 56 kbps access. It is recommended that the same long distance carrier end-to-end throughout the network be used.

Deciding Which Services to Order

If you are new to ISDN, first obtain the features listed previously. See the fax form at the end of this document as a basic guide to ordering ISDN service. It is easier to begin operating on a full-featured line because more options are available. This also lowers the chances of downtime when a particular service is turned off. Later, features not actually used can be deleted.

If all of the previously mentioned features are not available, compare the actual data service requirements with those which are available. A likely problem is the lack of a clear trunk to provide 64 kbps of unrestricted data service. A solution is to use 56 kbps service. Sometimes voice circuits are suitable for data service at a reduced bit rate.

5ESS Custom Line (Additional Parameters)

The AT&T 5ESS CO telephone switch supports a proprietary ISDN D-channel call control protocol, called Custom, which is based on CCITT recommendations. The ISU configured for AT&T 5ESS switch type works with lines providing this protocol on 5ESS switches with software version 5E6 or later.

A 5ESS PPP line does not support two simultaneous voice calls on two individual devices. Therefore, a PPP line is not recommended for use with a dual POTS ISU Express or Express XRT.

The ISU supports the following configurations on 5ESS custom lines:

- Point-to-point with one phone number
- Multipoint with one phone number
- Multipoint with two phone numbers

The requirements for the 5ESS point-to-point line are defined as follows:

B1 service	On-demand (DMD)
B2 service	On-demand (DMD)
Data line class	Point-to-point (PP)
Maximum B channels	2
Number of circuit-switched voice (CSV) calls	1
Circuit-switched voice bearer channels	Any
Number of circuit-switched data (CSD) calls	2
Circuit-switched	Any
Terminal type data bearer channels	Type A

With two SPIDs, two different service profiles (or sets of features) may be used on the same line. For example, one profile could be configured for circuit-switched data service, while the other is configured for circuit-switched voice to include supplementary service features.

The 5ESS switch can provide a variety of supplementary features which the ISU may not support. Enabling these features may have undesirable consequences. Avoid the following features:

- Packet mode data
- Multiline hunt groups
- Multiple call appearances
- Electronic key telephone set (EKTS)
- Shared directory numbers
- Intercom groups
- Network resource selector (modem pools)
- Message waiting
- Hunting
- Inter LATA competition
- Accept special type of number

DMS-100 Protocol Version 1 Line (Additional Parameters)

The Northern Telecom DMS-100 telephone switch supports a proprietary ISDN D-channel call control protocol called Pvc1, which is based on CCITT recommendations. The ISU configured for switch-type DMS-100 is functional on lines providing this protocol on DMS-100 switches with software version BCS-32 or later. The ISU supports the following configurations on DMS-100 lines:

- Multipoint with one phone number (for 1B+D service)
- Multipoint with two phone numbers (for 2B+D service)

The requirements for the DMS-100 multipoint line are defined in the section Local Service Requirements, and in the following list. Fax this information to your local phone company. The line should have two service profiles with the parameters below, to support BONDING, multilink PPP, or simultaneous voice and data applications.

Line type	Basic rate, functional
Electronic key telephone set (EKTS)	No
Call appearance handling (CACH)	No
Initializing terminal	Yes
Bearer service	Circuit-switched voice and data permitted. Packet mode data not permitted.
Circuit-switched service	Yes
Packet-switched service	No
Protocol version	Functional Pvc1
TEI	Dynamic

After Installation of Service

When the line is installed, the following information is provided by the local phone service provider:

- A seven-digit local directory number (LDN) for the line. If the line is multipoint with two phone numbers, two LDNs are provided.
- A SPID for each LDN if the line is multipoint.
- Dialing information, including the area code, for the line.
- Any special instructions for dialing outside lines, dialing four-digit local extension numbers, and prefixes for using the desired long distance provider.

ISDN Service Ordering Information Form (for ordering without IOCs)

Name:	_____
Address:	_____
City:	_____ State:
Zip Code:	_____ Daytime telephone number :
Request up to four ISDN Basic Rate Interface (BRI) lines. 1 2 3 4	
U-interface reference point	
2B1Q line coding	
2B+D service	
The ISU supports the following switch types and software protocols:	
AT&T 5ESS Custom, 5E6 and later software, National ISDN-1	
NTI DMS-100 BCS-32 and later software (Pvc1), National ISDN-1 (Pvc2)	
Siemens EWSD National ISDN-1	
NEC NTT Protocol	
Request that the ISDN line allocate one dynamic terminal endpoint identifier (TEI) per phone number.	
For service offered from an AT&T 5ESS, request a point-to-point line, with the following features:	
B1 Service Demand (DMD)	On
B2 Service Demand (DMD)	On
Data Line Class to-Point (PPP)	Point-
Maximum B Channels	
2	
Circuit Switched Voice Bearer (CSV) Channels	
Any	

Number of CSV calls 1 (recommended for testing purposes)

Circuit Switched Data (CSD) Bearer Channels Any

Number of CSD calls 2

Terminal Type Type A

Turn the following features off:

D Channel Packet
Hunting/Multiline Hunt
Multiple Call Appearances
Electronic Key Telephone Sets (EKTS)
Shared Directory Numbers
Accept Special Type of Number
Intercom Groups
Network Resource Selector (Modem Pools)
Message Waiting
InterLata Competition

Northern Telecom requires two SPIDs for each 2B+D line. For service offered from a Northern Telecom DMS-100, request a point-to-multipoint line, with the following features:

Line Type	Basic Rate,
Functional	
Electronic Key Telephone Sets (EKTS)	
No	
Call Appearance Handling (CACH)	
No	
Non-Initializing Terminal	
No	
Circuit Switched Service	
Yes	
TEI	
Dynamic	
Bearer Service	Circuit Switched Data
Permitted	(no packet mode data permitted)

Select a long distance carrier and request circuit-switched 64 kbps clear channel access, if possible; otherwise request circuit-switched 56 kbps clear channel access.

Long distance access should be provided through:

AT&T MCI SPRINT Other