

Lucent Technologies
Bell Labs Innovations



Digital Networking

Digital Networking

Intuity AUDIX Digital Networking is an optional feature package that provides customers with the ability to exchange messages with customers on other Lucent Intuity and AUDIX systems. The remote system can be collocated with or geographically distant from the local Lucent Intuity system.

Topics discussed in this section include:

- [Description](#)
- [Requirements](#)
- [Capacities](#)
- [Connectivity](#)
- [Channel Support](#)
- [Features](#)
- [Operation](#)

Description

Intuity AUDIX Digital Networking uses the proprietary AUDIX digital protocol to exchange messages, user profiles, and message status information with other machines. The digital protocol uses a digital file format, similar to a data file transfer between two computer systems, to transmit the information. Digitally transmitted messages are communicated quickly and with excellent sound quality.

Digital networking provides customers with the ability to exchange:

- Voice, fax, text messages, and attached files from networked sources, including:
 - Messages from users on other Lucent Intuity AUDIX systems
 - Message Manager text components
 - Networked Internet Messaging users
- Voice and fax messages with customers on Lucent Intuity AUDIX R3 or later systems
- Voice messages with customers on Intuity AUDIX, Definity AUDIX R3.2 or later, and AUDIX R1V3 or later systems (AUDIX systems)



Continue, press PAGE DOWN.

Requirements

All Lucent Intuity platforms support Intuity AUDIX Digital Networking. Intuity AUDIX Digital Networking requires the base platform configuration. The following table provides the base platform configuration.

Table: Intuity AUDIX Digital Networking Requirements

Requirement	Notes
Networking card (ACCX or LAN)	—
UNIXware Networking Set	<ul style="list-style-type: none"> ■ Remote procedure calls ■ Internet utilities ■ Ethernet hardware support ■ Commands Networking extension
One of the following modems or data modules (or others that may be certified in your area): <ul style="list-style-type: none"> ■ AT&T Paradyne 3820 	Required for RS-232 asynchronous connections
Intuity AUDIX Digital Networking software package	Must be purchased
Intuity Digital Networking	Documentation provided with the networking product



Continue, press PAGE DOWN.

Capacities

The Intuity AUDIX Digital Networking feature supports a maximum of 485 remote machines. The system supports a maximum of 100,000 administered and nonadministered remote users. The total number of networked systems and remote users depends on the:

- Amount of available storage
- Available networking ports
- Type of ports

The Lucent Intuity Release 5 system provides a maximum capacity of 64 ports with 12 channels of digital networking. The following table summarizes the Lucent Intuity Release 5 system capacities for a system using digital networking.

Table: Lucent Intuity Release 5 System Capacities with Digital Networking

Component	MAP/5P	MAP/40P	MAP/100P
Voice channels (ports) available for voice messaging	18	42	64
Maximum networking channels (four channels per ACCX networking card)	8	12	12



Continue, press PAGE DOWN.

Connectivity

The Intuity AUDIX Digital Networking feature package provides different types of network connections using the Lucent Digital Communication Protocol (DCP) or the Electronic Industries Association (EIA) RS-232 protocol or the TCP/IP protocol over an Ethernet connection to local and wide area TCP/IP networks. Data connections serve both local and remote networking, depending on the customer's system configuration.

Connection Types

The following table briefly describes the different types of network connections.

Table: Network Connections

Connection	Description
DCP mode 1	A connection using a data rate of 56 Kbps
DCP mode 3	A connection using a data rate of 64 Kbps
RS-232 low speed	An asynchronous RS-232 connection using data rates of 9.6 Kbps or 19.2 Kbps through a modem
TCP/IP LAN	A connection using the customer's LAN/WAN Note: The optional feature Enhanced-List Application (ELA) requires the administration of a TCP/IP address, but does not require a physical connection.



Continue, press PAGE DOWN.

Connection Use

The type of data connection used depends on the facilities of the site and how the customer plans to connect with remote sites. The customer does not have to use the same type of data connection for all networking channels. Each channel can have a different type of data connection. For example, a customer may dedicate channel 1 for a local stacking arrangement. A customer could use Channel 3 as an RS-232 channel for connecting to a remote machine that does not have a digital switch with DCP capabilities.

To use DCP mode 1, the Lucent Intuity Release 5 system must connect to a digital switch with DCP capabilities. These switches include the System 75, System 85, or DEFINITY Communication Systems Generic 1, 2, or 3.

To use DCP mode 3, the Lucent Intuity Release 5 system must connect to a digital switch with DCP capabilities. These switches include the System 75, System 85, or DEFINITY Communication Systems Generic 1, 2, or 3. Use DCP Mode 3 to create a stacked arrangement.

Use low-speed RS-232 connections when DCP switch facilities are not available or if a TCP/IP Intranet is unavailable.

Use either DCP (mode 1 or mode 3) or RS-232 to any Definity AUDIX R3.2 or AUDIX R1 system. These systems do not support TCP/IP networking.

Use TCP/IP to directly connect two or more machines when LAN/WAN facilities are available. The TCP/IP throughput is higher and more cost effective than DCP.



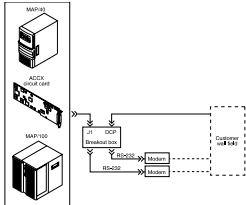
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Channel Support

The Lucent Intuity Release 5 system allows combinations of DCP and RS-232 in two-channel increments through the ACCX circuit card. Each ACCX circuit card terminates four data channels in one of the following combinations:

Click the drawing for a larger view.

Digital Networking Connectivity (DCP and RS-232)



- Two DCP ports, each providing two Interface channels (I-channels) for data. Depending on the version of the switch the customer has, only one of the two I-channels of each DCP port may be used as shown in the following list:
 - System 75 R1V3, DEFINITY G1 R1V4, and DEFINITY G3i, G3s, or G3vs Version 1 only support one I-channel per DCP port
 - DEFINITY G3i, G3s, and G3vs Version 2 can use both of the I-channels. The option must be purchased, installed, and administered on the switch before Lucent Intuity Release 5 system administration is performed. Lucent account representatives have more information on the I-channel option for the Intuity AUDIX Digital Networking feature package.
- Four RS-232 ports
- One DCP port (two I-channels) and two RS-232 ports
- When using TCP/IP, an ACCX card can take the place for up to 4 TCP/IP channels, through the Ethernet LAN card. If no ACCX card is used, then all 12 networking channels can be configured as TCP/IP.

The Sales and Design Support Center (SDSC) or the International Technical Assistance Center (ITAC) works with the customer to help determine the best configuration.

▶ Continue, press PAGE DOWN.

Features

Users who want to send Intuity AUDIX Digital Networking messages to recipients on administered remote systems can:

- Address their messages by name

NOTE:

This feature applies *only* to administered remote recipients. *Administered* refers to remote users that have been entered in the database of the local Lucent Intuity system either manually or through an automatic update.

- Include the names and telephone numbers of remote recipients in their personal mailing lists

NOTE:

Nonadministered remote recipients can be included only by telephone number.

- Hear the spoken name of the person to whom they are addressing mail or looking up in the directory.

NOTE:

If the administrator has not recorded these names or they have not been received in a remote update, users hear only the remote mailbox ID.

- Use the names and number directory (N) to look up telephone numbers by name.



Continue, press PAGE DOWN.

- Assign aliases to any remote recipients on systems administered for Intuity AUDIX Digital Networking. Administered remote recipients can be included by name or telephone number. Nonadministered remote recipients can be included by telephone number only.
- Use automatic addressing to reply to incoming messages.

Digital networking enhances AUDIX Messaging in many ways:

- Customers with business offices in more than one location, whether in the same building or in different cities, can exchange messages with all locations.
- Customers who exceed the capacity of one Intuity AUDIX system at a location can network multiple machines together to enable users to exchange messages as if they were on the same machine.

The following message-exchange features can be used for messages exchanged between remote users:

- The ability to address a message by entering a user's name. This is called *name addressing*.
- The ability to play a recorded name, if a name is recorded for the remote user, when a user addresses a message to the remote user or when the user receives a message from the remote user.
- The ability to forward messages to one user or a group of users, respond to messages, and create group mailing lists.



Continue, press PAGE DOWN.

NOTE:

Mailing lists cannot be shared across the network, unless the optional feature Enhanced-List Application (ELA) is purchased. For more information on ELA, see [System Features Description](#).

- The quality of the voice message received is the same as when it was recorded, no matter how many times the message is forwarded. This is true for voice messages exchanged between Intuity AUDIX systems and between Intuity AUDIX and DEFINITY AUDIX systems. Voice messages exchanged between Intuity AUDIX and AUDIX R1 systems use the AUDIX R1 voice messaging encoding. This type of encoding is not of as high a quality as that used by the Intuity AUDIX voice messaging system.
- Local and remote user databases are updated automatically with the remote update feature.
- Customers with businesses that operate in different time zones can send or receive messages any time of the day or night.
- All a digital networking user needs to know to exchange messages with remote users is the machine prefix and remote user extension or, if using the name addressing feature, just the user's name.

Users can exchange fax messages with Intuity AUDIX Release 3 and later systems that are enabled for fax.

Users can exchange text and/or file attachments with Intuity AUDIX Release 4 and later systems if both systems.



Continue, press PAGE DOWN.

Operation

Before users can exchange messages, the machine name, machine extension length, dial string, and starting and ending extensions must be administered for each machine.

Because an administrator sets up the Lucent Intuity AUDIX system with remote machine and user information, all a user needs to know to send a message to a remote user is the user's name or machine prefix and extension.

Encoding Methods

The Lucent Intuity Release 5 system can accommodate messages encoded using the code excited linear prediction (CELP) encoding algorithm or the sub-band algorithm. Because AUDIX utilizes only the sub-band algorithm, outgoing messages transmitted from a Lucent Intuity system to an AUDIX are converted from CELP to sub-band format as they are sent to the remote system. Incoming messages are stored in the format received, either CELP or sub-band. Transcoding is made possible by the ACCX circuit card and the Intuity AUDIX Digital Networking feature package software.



Continue, press PAGE DOWN.

The following table shows the encoding methods for the Intuity AUDIX Digital Networking package.

Table: Encoding Methods for Intuity AUDIX Digital Networking

Voiced Entity	Path	Encoding Method
Voice messages	Local	CELP
Digitally networked voice messages	Intuity to AUDIX	Transcoded from CELP to SUB-BAND during transmission
	AUDIX to Intuity	SUB-BAND
	Intuity to Intuity	CELP
	AUDIX to AUDIX	SUB-BAND
AMIS analog networked voice messages	Intuity to Other	N/A



Procedure completed.

Digital Networking Connectivity (DCP and RS-232)

Figure: Digital Networking Connectivity (DCP and RS-232)

