# IBM 973X IDNX Multiplexer New Features Fact Sheet

**Increased capacity on leased lines**

8 October 1996

***Announcement Summary***

**The IBM 973X IDNX family of products (9733, 9736, 9738 and 9739) introduces two new features... the PrimeVoice Low Delay Code Excited Linear Prediction (LD-CELP) and PX3 Frame Express (PX3).**

**The LD-CELP 12 and 24 modules add two new members to the IDNX family of voice compression products.** With LD-CELP toll-quality voice is provided at 16 Kbps versus the requirement of 32 Kbps for adaptive differential pulse code modulation (ADPCM). Additionally, each channel is dynamically assigned on an individual basis, providing one card the ability to handle any compression data rate and companding method (A-law or Mu-law).

**PX3 contains an on-board processor and high-speed serial ports.** PX3 serial ports connect to remote PX3 modules or to local or remote data cards with external serial ports. The PX3 card has an instruction cache, data cache and additional memory, providing higher performance than previous PX cards. The PX3 front card requires IDNX release 13.X4 but is fully compatible with older PX installations, enabling users to install a combination of PX cards in the same IDNX network. This enables users to leverage their investment in existing IDNX equipment while implementing state-of-the-art, packet-processing technologies. The PX3 switches channels to and from the T1 or E1 interface card without crossing the T-Bus, which saves T-Bus bandwidth and improves overall PX3 and system performance.

## Announcement Highlights

*PrimeVoice*

- Toll quality at 16 Kbps as defined per ITU Recommendation G.728
- Support for 16, 9.6, 8 or 4.8 Kbps of compressed voice
- LD-CELP compression rate dynamically assigned for each voice channel
- A-law or Mu-law voice companding on a per-channel basis

*PX3 Frame Express*

- On-board processor and high-speed serial ports
- On-board flash memory
- Optional T1/Ethernet or E1/Ethernet Interface cards
- Up to 16 HDLC T-Bus ports
- Hot insertion without interruption

## Additional Technical Details

*PrimeVoice*

The LD-CELP algorithm is defined by ITU Recommendation G.728. This recommendation defines a voice compression process that achieves a low algorithmic delay. The LD-CELP module provides the following functionality:

- 4.8-Kbps FS-1016-based voice compression
- 8-Kbps voice compression, near toll quality
- 9.6-Kbps voice compression, near toll quality
- 16-Kbps G.728 recommendation, toll quality

- At 9.6 Kbps and 8 Kbps, near toll quality through two encodings
- DTMF Relay supporting DTMF, Q.23, V.25 and G.165 2100 Hz, AC13 and AC15, ITU SS #5, 6 and 7 and R2 frequency pairs
- Group 3 fax support, V.21, V.27ter and V.29. Optional Group 3 error correction mode support provided
- Support of A-law or Mu-law PCM encoded streams
- Automatic Gain Control for adjusting valid input signals to levels that are better suited for transmission in a digital network

There are two server cards, LD-CELP 12 (supports 12 channels) and LD-CELP 24 (supports 24 channels). Each channel is configured for operation on a call-by-call basis. A single card originates and terminates calls at various compression rates.

*PX3 Frame Express*

Software applications for the PX3 are stored directly on the card in on-board flash memory. This allows for redundant software images and simplifies the upgrade process.

With T1 and E1 interface cards (currently available with the PX3-16 and FRX 2.03 software) the PX3 supports access from groomed carrier services. The T1 card supports up to 24 channelized DS0s for a T1 trunk; the E1 card supports up to 31 channelized time slots for an E1 trunk. These channels may be aggregated to form higher bit-rate signals, with no requirement that they be contiguous.

## Benefits

*PrimeVoice*

- Decrease in transmission costs through bandwidth efficiencies.
- Voice-networking costs for international expansion can be contained.
- Toll-quality voice achieved at 16 Kbps as opposed to 32 Kbps ADPCM.

*PX3 Frame Express*

- Performance improvement in a heavily loaded FRX network.
- Fewer card slots required for same network capacity requirements.
- Costs per port acquisition reduced up to 75%.

## Positioning

- IDNX network provides multiservice connectivity for legacy interfaces.
- IDNX network interoperates with other backbone networks such as ATM and ISDN.

**Table 1. Part Numbers, Prices, Availability**

| Item | Machine Type | Model/Feature | Price (USD) | Availability |
|---|---|---|---|---|
| **973X IDNX Multiplexer (9733, 9736, 9738, 9739)** | | | | |
| PX3 Front Card | 973X | 5640 | $15,070 | 10/96 |
| PX3 T1 Interface | 973X | 5641 | $6,020 | 10/96 |
| PX3 E1 Interface | 973X | 5642 | $6,020 | 10/96 |
| PX3 8-MB Flash Memory | 973X | 5643 | – | 10/96 |
| PX3 8-MB DRAM Memory | 973X | 5644 | – | 10/96 |
| FRX 2.03 SW License, CD-DOC | 973X | 5645 | $960 | 10/96 |
| PX3 PCMCIA 2.03 | 973X | 5646 | $910 | 10/96 |
| LIC 13.04 Primary Node | 973X | 9416 | – | 10/96 |
| LIC 13.04 Base on Memory | 973X | 9670 | $4,050 | 10/96 |
| LIC 13.04 Extended on Memory | 973X | 9671 | $4,050 | 10/96 |
| LIC 13.94 Primary Node | 973X | 9417 | – | 10/96 |
| LIC 13.94 Base on Memory | 973X | 9672 | $4,050 | 10/96 |
| LIC 13.94 Extended on Memory | 973X | 9673 | $4,050 | 10/96 |
| CDROM 13.X4 Customer Documentation | 973X | 9674 | $760 | 10/96 |
| Hard Copy 13.X4 Customer Documentation | 973X | 9675 | $145 | 10/96 |
| Hard Copy FRX 2.03 (PX-3) Customer Documentation | 973X | 9676 | $205 | 10/96 |
| LD-CELP/12 | 973X | 4110 | $13,050 | 10/96 |
| LD-CELP/24 | 973X | 4100 | $25,950 | 10/96 |

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This fact sheet is for an IBM Networking Product announced on 8 October 1996.

The part numbers, prices and availability dates shown here are valid in the U.S. They will vary from country to country. Some products may not be announced in your country. Refer to product announcements for your country or contact your local IBM representative or IBM Business Partner.