

Intel® Dialogic® System Release 6.0 on PCI for Windows on Intel® Architecture

Release Guide

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05-2220-001

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Publication Date: December, 2003

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About This Information

The following topics provide information about this publication:

- Purpose
- Intended Audience
- How to Use This Publication
- Related Information

Purpose

This Release Guide provides information about the products and features contained in Intel® Dialogic® System Release 6.0 on PCI for Windows on Intel® Architecture.

Intended Audience

This Release Guide is intended for the following types of customers:

- Distributors
- System Integrators
- Toolkit Developers
- Independent Software Vendors (ISVs)
- Value Added Resellers (VARs)
- Original Equipment Manufacturers (OEMs)

How to Use This Publication

This information found in this document is organized into the following sections:

- Release Overview – describes the highlights of this release
- System Requirements – describes what you need to install and use this release
- Features by Product – describes the hardware products and features supported in this release
- Configuration Software – describes the configuration features supported in this release
- OA&M Software - describes the operation, administration, and maintenance (OA&M) features in this release
- Development Software – describes the software features supported in this release
- Demonstration Software – describes the demonstration programs provided in this release
- Supported Hardware – provides a list of all the hardware supported in this release
- Separately Orderable Products – describes additional software that may be required in order to utilize certain features of this release as well as ordering information
- Release Documentation – provides a list of the documents that accompany this release either on the CD or downloadable from the Intel Telecom Support Resources website
- System Test Configurations – describes the chassis configurations that were used when testing the various boards supported in this release

Related Information

Refer to the following links for additional information:

- If you are new to Intel® telecom products or some of the latest technology and don't want to search through the documentation to find the information you need, use the Learn About website to get an overview of the products supported in this release. Learn About is located at the following link:
<http://resource.intel.com/telecom/support/documentation/learnabout/index.htm>
- For Technical Support, visit the Intel® Telecom Support Resources website at the following link:
<http://developer.intel.com/design/telecom/support>
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<http://www.intel.com/design/network/products/telecom/index.htm>
- For Sales Offices and other contact information, visit the Intel® Telecom Products Sales Offices page at the following link:
<http://www.intel.com/network/csp/sales>
- The *System Release 6.0 on PCI for Windows Release Update* contains information about fixed problems, compatibility issues, restrictions and limitations, known problems, and documentation updates associated with this system release. The Release Update is available at the following link:
<http://resource.intel.com/telecom/support/documentation/releases/index.htm>

NOTE: Refer to the Release Update for late-breaking changes or corrections to the release information. Information is updated in the Release Update, as needed, during the lifecycle of the system release.

Release Overview

This section provides a high-level overview of the products, boards, and features that are newly supported in System Release 6.0 on PCI for Windows. Products, boards, and features are new since System Release 5.1.1 Feature Pack 1 for Windows.

System Release 6.0 on PCI for Windows provides support for the new Intel® NetStructure™ DM/V-B and Intel® Dialogic® DMV160LPHIZ boards. In addition, this release provides improved installation and diagnostic capabilities, support for universal media loads, and enhanced CSP features.

Release Highlights

System Release 6.0 on PCI for Windows provides the following new products, boards and features:

- New Universal PCI Support on several boards
- New Intel Dialogic Digital HiZ board
- New Intel® NetStructure™ DM/V-B boards
- New CSP features on Intel® NetStructure™ boards
- New Global Call features on Intel® NetStructure™ boards
- New Learn Mode and Tone Set File API support
- Enhanced support for Intel® Dialogic® Analog Loop Start boards
- Enhanced support for Intel® Dialogic® DI/Sixx-R2 Series boards
- Enhanced support for Intel® Dialogic® DI/0408-LS-A-R2 boards
- Enhanced support for Intel® Dialogic® D/160JCT and D/320JCT boards
- Enhanced support for Intel® NetStructure™ DM/IP Series boards
- Enhanced support for Intel® NetStructure™ DM/V-A, DM/V, DM/N, and DM/T boards
- Enhanced PBX Expert utility

System Requirements

This chapter describes the system requirements for System Release 6.0 on PCI for Windows. This information is provided in the following sections:

- Basic Hardware Requirements
- Basic Software Requirements

Basic Hardware Requirements

Recommended Hardware Configuration

The recommended hardware configuration requirements for this release include:

- 850 MHz or faster Pentium® processor
- 512 MB RAM
- 600 MB free space on hard disk
- CD-ROM drive
- VGA display
- Pointing device

Minimum Hardware Configuration

The minimum hardware configuration requirements for this release include:

- 500 MHz Pentium processor
- 128 MB RAM for a system that contains less than three Intel telecom boards
- 256 MB RAM for a system that contains three or more Intel telecom boards
- 500 MB free space on hard disk
- CD-ROM drive
- VGA display
- Pointing device

Basic Software Requirements

The basic operating system requirements include:

- Windows 2000 (Professional, Server, and Advanced Server) SP4
- Windows XP Professional with SP1
- Windows 2003 (Standard or Enterprise)

NOTE: This system release is designed for US English versions of the Microsoft* Operating System. System directory path names are often spelled using the native language. Therefore if you are using a language other than U.S. English, various manual file copy operations may be necessary to place files in directories with the expected path names. For assistance, please contact the support organization that services your country.

Supported Compilers

The following compilers are supported in this release:

- Microsoft Visual C++ Version 5.xx
- Microsoft Visual C++ Version 6.xx with Service Pack 5
- Microsoft Visual C++ Version 7.xx
- Microsoft Visual C++ .NET

SMP Support

- Intel Dialogic drivers are SMP-safe

Features by Product

This chapter describes the features of the products that are supported in System Release 6.0 on PCI for Windows. This information is provided in the following sections:

- New Universal PCI Support
- New Intel® Dialogic® DMV160LPHIZ Analog HiZ Call Logging Board Features
- New Intel® NetStructure™ DM/V-B Board Features
- BRI PCI Digital Telephony Interface Board Features
- Intel® Dialogic® CPI Fax Series Features
- Intel® Dialogic® CPI/400-BRI PCI Fax Board Features
- Intel® Dialogic® D/4PCIU Voice Board and D/4PCIUF Voice/Fax Board Features
- Intel® Dialogic® D/41JCT-LS Board Features
- Intel® Dialogic® D/120JCT-LS Combined Media Board Features
- Intel® Dialogic® D/160JCT and D/320JCT Board Features
- Intel® Dialogic® DI/0408-LS-A-R2 Board Features
- Intel® Dialogic® Digital Call Logging Board Features
- Intel® Dialogic® DI/Sixx-R2 Series Board Features
- Intel® Dialogic® DMV160LP Analog Loop Start Board Features
- Intel® Dialogic® DualSpan-JCT Series Features
- Intel® Dialogic® PBX Integration Board Features
- Intel® Dialogic® SingleSpan-JCT Series Features
- Intel® Dialogic® VFX/41JCT-LS Board Features
- Intel® NetStructure™ DM/F Fax Series Features
- Intel® NetStructure™ DM/IP Series Features
- Intel® NetStructure™ DM/N, DM/T, DM/V, and DM/V-A Series Features
- Intel® NetStructure™ DM/VF Series Features
- Intel® NetStructure™ High Density Station Interface (HDSI) Product Features
- Intel® NetStructure™ SS7 Product Support Features

New Universal PCI Support

Universal PCI support has been added to the following boards:

D/240JCT-T1	D/300JCT-E1-75	D/300JCT-E1-120	D/160JCT
D/320JCT	D/120JCT-LS	D/41JCT-LS	D/42JCT-U
D/82JCT-U	D/480JCT-2T1	D/600JCT-2E1-120	D/480JCT-1T1
D/600JCT-1E1-75	D/600JCT-1E1-120	DM/V960A-4T1	DM/V1200A-4E1
DM/V480A-2T1-PCI	DM/V600A-2E1-PCI	DM/V480-2T1-HIZ	DM/V600-2E1-HIZ
DM/IP481-2T1-100	DM/V2400A-PCI	DM/IP241-1T1-100	DM/IP301-1E1-100
DI/SI16	DM/IP601-2E1-100	DI/SI32	DI/SI24

D/240JCT-T1	D/300JCT-E1-75	D/300JCT-E1-120	D/160JCT
HDSI-PCI	DI/408-LS-A	DM/V3600BP	DM/V1200BTEP
DM/V600BTEP			

New Intel® Dialogic® DMV160LPHIZ Analog HiZ Call Logging Board Features

The Intel® Dialogic® DMV160LPHIZ is a high-density, voice processing board capable of monitoring up to 16 analog loop start lines. It is a next-generation product based on DM3 architecture, available in a universal PCI form factor and additionally provides an H.100 interface. The DMV160LPHIZ board monitors the analog loop start lines using 16 high impedance analog line tapping ports. Applications for this product include call monitoring and call recording for the security and quality assurance industries.

Features

The DMV160LPHIZ board provides the following new features in System Release 6.0 on PCI for Windows :

- Universal PCI
- 16 ports of voice processing per board
- 16 ports of high impedance analog loop start interface per board
- Up to 15 DMV160LPHIZ boards per system
- Call logging API support
- Voice API support including new **dx_SetRecordNotifyBeepTone()** for beep tone recording notification
- Global Call API support (but functions for making/receiving calls are not applicable to this board)
- Voice coders supported
 - OKI* ADPCM, 6 kHz sampling 24 kbps (4 bits) and 8 kHz sampling 32 kbps (4 bits)
 - G.711 mu-law PCM, 8 kHz sampling 64 kbps (8 bits) and 6 kHz sampling 48 kbps (8 bits)
 - G.711 A-law PCM, 8 kHz sampling 64 kbps (8 bits) and 6 kHz sampling 48 kbps (8 bits)
 - G.726 bit exact, 8 kHz sampling 16 kbps (2 bits), 24 kbps (3 bits), 32 kbps (4 bits), 40 kbps (5 bits)
 - GSM full rate at 13 kbps (ETSI 6.10 and RTP; both Microsoft and TIPHON frame support)
 - Linear PCM, 8 kHz sampling 64 kbps (8 bits), 8 kHz sampling 128 kbps (16 bits)
 - Linear PCM, 11 kHz sampling 88 kbps (8 bits), 11 kHz sampling 176 kbps (16 bits)
 - TrueSpeech* (8.5 kbps)
- Automatic gain control (AGC) configurable on a per channel basis through the voice **dx_setparm()** function
- Caller ID in the U.S., U.K., and Japan
- Global approvals planned for U.S., Canada, European Union, Australia, Taiwan, Hong Kong, Israel, Korea, Malaysia, New Zealand, Singapore, and Japan
- SNMP supported administration, basic configuration (DLGHWINF MIB and DM3 Extended MIB support)

New Intel® NetStructure™ DM/V-B Board Features

The new Intel® NetStructure™ DM/V-B boards support all of the features from the DM/V-A, DM/V, DM/N, and DM/T boards (formerly known as DM3 MediaSpan) in addition to several new features.

The DM/V-B PCI series includes the following three boards:

- **DMV3600BP** - Resource "B". 120-576 channels of media processing with no network interface. Includes media load with 360 channels of basic voice and tone processing. New universal media load offers simultaneous voice, fax, and conferencing. Universal PCI form factor.

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- **DMV600BTEP** - Dual span "B" with software selectable T1/E1. Two digital network interfaces with 60+ channels of media processing. New universal media load offers simultaneous voice, fax, and conferencing. Ability to mix select protocols on each span. Universal PCI form factor.
- **DMV1200BTEP** - Quad span "B" with software selectable T1/E1. Four digital network interfaces with 120+ channels of media processing. New universal media load offers simultaneous voice, fax, and conferencing. Ability to mix select protocols on each span. Universal PCI form factor.

Features

The DM/V-B boards support the same features of the DM/V-A boards, in addition to the following new features in System Release 6.0 on PCI for Windows :

- Universal media load support with at least the following voice to other media ratio: CSP 1:1, Fax 1:10, Conf 1:4
- Software selectable T1/E1
- The ability to select protocols on the same board
 - NOTE:** Only protocols within any of the 5 groups A-E, which are listed below, can be mixed. The ability to mix protocols between different groups of protocols is not supported in this release.
 - Group A: Mix any ISDN T1 protocols per board on a trunk basis
 - 4ESS, 5ESS, NI2, DMS100/250, NTT, QSIG-T1 or
 - Group B: Mix any ISDN E1 protocols per board on a trunk basis
 - NET5, QSIG-E1
 - Group C: Mix DASS2 or DPNSS per board on a trunk basis
 - Group D: Mix CAS T1 protocols per board on a trunk basis
 - Group E: Mix any CAS E1 protocols per board on a trunk basis
- " ¾ size " PCI Daughter Card

BRI PCI Digital Telephony Interface Board Features

The BRI/80-PCI and BRI/160-PCI digital telephony interface boards install into a single expansion slot. These boards provide network access via the ISDN Basic Rate Interface (BRI) for CT systems based on the industry-standard CT Bus. These boards complement the Single and Dual Span Series of voice and digital network interface boards, all of which provide ISDN Primary Rate Interface (PRI) Service. Applications developed using the API for ISDN PRI access can be extended easily to provide BRI access using these boards. Developers can design CT Bus based solutions with the ISDN service that best suits their needs, PRI or BRI.

New Features

No new BRI PCI digital telephony interface board features are introduced in System Release 6.0 on PCI for Windows.

Other Supported Features

The BRI PCI digital telephony interface boards continue to support the following features:

- High-density digital interface board providing access to 8 or 16 ISDN BRI channels for CT Bus™ based computer telephony (CT) systems
- Enables developers of PC-based CT switches to directly connect to BRI digital station sets
- Enables developers of PC-based voice processing systems to use ISDN to optimize their connections to PBXs and the PSTN
- Individual routing of 32 B channels to any of the CT Bus' 1024 time slots by using the CT Bus distributed switching capability
- Onboard Intel® i960® RISC processor runs up to Layer 3 of the ISDN protocol stack and supports up to 32 simultaneous voice calls
- Onboard DSP for call progress tone signaling

- Using the ISDN API for Windows NT* allows application compatibility with Intel® Dialogic® Primary Rate Interface (PRI) boards
- Each BRI line is runtime selectable by protocol
- Each BRI line is runtime configurable as terminal equipment (TE) or network equipment (NT)

Intel® Dialogic® CPi Fax Series Features

The Intel® Dialogic® CPi Fax products support low-density to high-density fax solutions. These products provide access through the GDK/GRT API.

NOTE: Please go to <http://www.intel.com/design/network/products/telecom/index.htm> for the latest information about CPi Fax products.

New Features

The following new features are supported in System Release 6.0 on PCI for Windows :

- New 16-bit header files from 8-bit
- Ability to configure 8 trunks of BRI
- Upgraded firmware
- Updates to the device names in the Dialogic Configuration Manager (DCM)

Other Supported Features

The following features continue to be supported in this release:

- V.34 (33.6 kbps) high speed fax on Cpi/200B2 and Cpi/400B2
- 2 or 4 channels of fax
- T.30 protocol support
- MH, MR, MMR compression
- Access to 24/30 channels of integrated fax on one single board in one single PCI slot; backwards compatible with all applications based on GDK 3.0 or later
- Support for 96 channels in a single chassis (up to four Cpi/2400-1T1-PCIU or three Cpi/3000-1E1-PCIU boards)
- One install for separate dispatchers based on hardware
- Support for the following protocols on Cpi/2400-1T1-PCIU and Cpi/3000-1E1-PCIU
 - 4ESS
 - 5ESS
 - DMS
 - NTT
 - NET5
- Support for resource boards (Cpi/2400-PCIU & Cpi/3000-PCIU) with DTI as network interface
 - In transparent mode (fax only application)
 - Transparent ISDN support for network interfaces
 - NT EventViewer support
 - Host and firmware ECR fixes
 - Troubleshooting tips
- Support for resource boards (Cpi/2400-PCIU and Cpi/3000-PCIU) using GRT SCbus functions
- Answer and Dial
- Error Correction Mode (ECM)
- MH-T.4 Compression

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- MR Compression
- MMR-T.6 Compression
- Transmit and Receive
- Overlap Sending is supported by the following hardware:
 - CPi/400-BRI: CP (BRI - EuroISDN (CTR4))
 - CPi/3000-PCIU)
 - Springware: (PRI - EuroISDN (CTR4))
 - CPi/3000-1E1-PCIU: DM3 (PRI - EuroISDN(CTR4))
- Support for the Intel® Dialogic® CPi/400 BRI PCI fax board, which is a DM3 architecture board used in the ISDN BRI marketplace. It is intended to provide access through the GDK/GRT API. The features supported on this board include the following:
 - Universal PCI form factor
 - Two (2) Basic Rate Interface (BRI) ports (each with 2B + D) with Euro compatible connectors (RJ45)
 - Four (4) B channels
 - Digital Network Interface:
 - Standard Euro-ISDN S/T (CTR4) (Approval in Europe, Australia, and New Zealand)
 - NTT protocol support (implemented by a .config/.fcd file change)
 - Point-to-point and point-to-multipoint configurations
 - H.100 CT Bus, SCbus compatibility mode
 - ISDN Support:
 - Restart Procedure
 - Overlap Sending and Overlap Receiving
 - Call Waiting support for BRI
 - GDK/GRT API
 - V.17 - 14.4 kbps data rate
 - Modified Huffman (MH), Modified READ (MR), Modified Modified READ (MMR) Compression modes
 - TIFF Data compression
 - ITU Error Correction Mode (ECM)
 - ITU-T Group 3 compliant (T.4, T.6, T.30)

NOTE: Refer to the *GDK Programming Reference Manual for Windows* for additional information.

Intel® Dialogic® CPi/400-BRI PCI Fax Board Features

The Intel® Dialogic® CPi/400-BRI PCI fax board is a single-slot, medium-density board that supports four ports of feature-rich fax capabilities plus two integrated, on-board, digital BRI network interfaces. This product is a key component of medium-scale, computer-based fax applications for the enterprise (for example, fax servers).

New Features

No new Intel® Dialogic® CPi/400-BRI PCI board features are introduced in System Release 6.0 on PCI for Windows.

Other Supported Features

The Intel® Dialogic® Cpi/400-BRI PCI fax board continues to support the following features:

- Four send/receive fax ports plus two network interfaces in one slot
- 14.4 KB/s fax transmission, sending/receiving, concurrently on all channels
- Compatibility with T.30 protocol and modifications

- On-board and on-the-fly MH, MR, and MMR compression
- DSP-based for maximum flexibility, future firmware upgradability

Intel® Dialogic® D/4PCIU Voice Board and D/4PCIUF Voice/Fax Board Features

The Intel® Dialogic® D/4PCIU and D/4PCIUF four-port, half-size DSP-based voice and voice/fax boards have four analog line interfaces for use in global markets. Application developers can use these boards for creating applications for the small- and medium-sized enterprise market, including sophisticated interactive voice response (IVR), 2-12 line voice messaging, and auto attendant applications. The boards offers enhanced DSP power and memory capacity that provide a base level of performance for today's requirements as well as the "head room" for future application expansion via software-based technologies.

New Features

No new voice or fax features are introduced in the System Release 6.0 on PCI for Windows .

Other Supported Features

The following features continue to be supported in this release:

- Universal PCI
- CTR-21 and a variety of international approvals mean expanded market segments
- Caller ID lets applications perform intelligent call handling
- Provides reliable DTMF detection during voice playback, letting callers "type-ahead" through voice menus for quicker completion of call transactions
- Delivers advanced call processing features and enables competitive differentiation by supporting software-based features such as
 - Global DPD
 - PBXpert tone characterization utility
- Ensures reliability via call progress analysis which monitors outgoing call status quickly and accurately Flexible voice coding at dynamically selectable data rates, 24 Kb/s to 64 Kb/s, selectable on a channel-by-channel basis for optimal tradeoff in disk storage and voice quality
- Compatible with legacy telephone switches in the United Kingdom and Northern Europe that use Earth Recall signaling
- Supports DSP-onboard fax (on D/4PCIU only)

Intel® Dialogic® D/41JCT-LS Board Features

The Intel® Dialogic® D/41JCT-LS is a four-port, analog converged communications board used for developing global, enterprise applications such as unified messaging, IVR and contact centers. The D/41JCT-LS supports voice, fax and software-based speech recognition processing in a single PCI slot, providing four analog telephone interface circuits for direct connection to analog loop start lines.

New Features

No new Intel® Dialogic® D/41JCT-LS features are introduced in System Release 6.0 on PCI for Windows .

Other Supported Features

The following features continue to be supported in this release:

- Universal PCI
- Four independent voice processing ports in a single PCI slot for low- to medium-density enterprise communications applications

- With a variety of international approvals, the D/41JCT-LS board cost effectively expands an application's ability to serve several global market segments
- Supports DSP-based onboard fax and host-based speech recognition to maximize the number of boards in the system
- Supports G.726 bit exact and GSM coders, letting developers implement unified messaging applications that meet VPIM standards
- CT Bus connector increases the board's capacity to interoperate with other CT Bus/SCbus compatible boards

Intel® Dialogic® D/120JCT-LS Combined Media Board Features

The Intel® Dialogic® D/120JCT-LS analog combined media PCI board offers enhanced capabilities for developing multimedia communications applications such as Web-enabled call centers, unified messaging, and speech-enabled interactive media response (IMR) systems. This globally approved product offers increased functionality such as G.726 and GSM voice coders; the de facto standard when complying with VPIM, the ability to support CSP and full duplex echo cancellation and DSP-based fax (Softfax) capability.

New Features

No new Intel® Dialogic® D/120JCT-LS features are introduced in System Release 6.0 on PCI for Windows.

Other Supported Features

The following features continue to be supported in this release:

- Universal PCI
- Supports DSP-based onboard fax and host-based speech recognition to maximize the number of boards in the system Supports G.726 bit exact and GSM coders, letting developers implement unified messaging applications that meet VPIM standards
- With a variety of international approvals, the board expands an application's ability to serve several global market segments at no extra cost
- Supports continuous speech processing, a flexible speech processing technology, which when coupled with efficient drivers, off-loads critical real-time signal processing in speech-enabled applications to onboard DSPs
- Support for Simple Network Management Protocol (SNMP) software, used for remote CT board diagnostics/management
- Earth Recall capability provides support for switches in the UK in addition to complementing existing infrastructure Full support of Japanese CID, including the ability to detect polarity reversals while online

Intel® Dialogic® D/160JCT and D/320JCT Board Features

Intel® Dialogic® D/160JCT and D/320JCT are 16 and 32-port voice resource boards with universal PCI form factors.

New Features

The following new features are supported in System Release 6.0 on PCI for Windows.

- CSP support

Other Supported Features

The following features continue to be supported in this release:

- Universal PCI
- Onboard fax
- Standards-based coders (G.726, GSM)

- Silence-compressed recording downloadable firmware
- Multi-application development
- SNMP support

Intel® Dialogic® DI/0408-LS-A-R2 Features

The Intel® Dialogic® DI/0408-LS-A-R2 board is an update to the original DM3 architecture, single-slot, PCI form factor, SCbus and CT Bus compatible DI/0408-LS-A board. The new DI/0408-LS-A-R2 board has four analog loop start interfaces and eight analog station interfaces. It has ring capability plus an audio input port, and supports call processing, voice, conferencing, and fax. It is a universal PCI form factor board.

New Features

The following new features are introduced on the DI/0408-LS-A-R2 in System Release 6.0 on PCI for Windows :

- Volume control for conferencing.
- Audio Input APIs

Other Supported Features

The following features continue to be supported in this release:

- Universal PCI
- Continuous Speech Processing (CSP) APIs
- European support including selectable 20, 25, or 50 Hz ringer
- Japanese and U.K. Caller ID
- Support for new DI media loads 2 and 4
- 9 conferees with Echo Cancellation

The following features are supported on both the DI/0408-LS-A-R2 and the DI/0408-LS-A boards:

- R4 on DM3 fax support on Dialogic Integrated Series Products
- Basic Voice: provides play, record, digit generation and detection. (Play and record are not simultaneously supported on a channel.)
- Supported coders:
 - 64 kbps and 48 kbps G.711 PCM VOX
 - 24 kbps and 32 kbps OKI ADPCM VOX
 - 88/176K Linear PCM VOX and WAV
 - 11 kHz 8-bit and 16-bit WAV
 - Speed Control on 8 kHz coders
- Volume Control
- GTG/GTD
- Transaction record (DI media load 2 only)
- Basic call control features for loop start interfaces including call analysis and support for analog call ID
- Basic call control features for analog station interfaces including ring, caller ID transmission, and MWI
- Global Call API for trunk call control
- R4 Voice APIs for voice and tone
 - Play/Record
 - Tone Generation/Signal Detection
- R4 MSI API for stations
 - Transmit CallerID/MWI

- Distinctive ring cadences
- R4 MSI API for conferencing
- R4 DCB API for conferencing with extensions
 - Active Talker
 - Coach/Pupil mode
- Audio Input API for Music on Hold (MOH)

Exceptions:

- No call control or call progress support with dx_dial()
- For conferencing, tone clamping and digit detect via the conferencing resource is not supported.

Intel® Dialogic® Digital HiZ Call Logging Board Features

The Intel® Dialogic® DM/V480-2T1-PCI-HiZ and DM/V600-2E1-PCI-HiZ line-tapping boards support two digital trunks (per board) for recording up to 60 voice channels. These single-slot digital HiZ boards provide high-impedance call recording capability for two T-1 (1.544 mbps) or E-1 (2.048 mbps) digital interfaces. These boards are now available in universal PCI form factor.

New Features

The DM/V600-2E1-PCI-HiZ board supports the following new features in System Release 6.0 on PCI for Windows .

- Universal PCI
- E1 ISDN NFAS support. (standard multiple-ISDN E1 protocol).
- TrueSpeech coder support

Other Supported Features

The following features continue to be supported in this release:

- Two digital trunks per board for recording up to 60 voice channels
- High-impedance interface allows undetectable call monitoring
- Choice of T1 or E1 digital network interfaces supporting ISDN PRI protocol
- The call logging interface shortens application development time
- Determines call status and abstracts protocol-specific information for simple application deployment

Intel® Dialogic® DI/SIxx-R2 Series Features

The Intel® Dialogic® DI/SIxx-R2 series is an update to the original DM3 architecture, single-slot, PCI form factor, SCbus and CT Bus compatible DI/SI32 board. The new DI/SIxx-R2 series is available with 16, 24, or 32 analog station interfaces with associated model names DI/SI16-R2, DI/SI24-R2, and DI/SI32-R2. It has ring capability plus an audio input port, and supports call processing, voice, and conferencing. It is a universal PCI form factor board.

New Features

The following new features will be available on the DI/SIxx-R2 (where xx is the number of stations: 16, 24 or 32) in System Release 6.0 on PCI for Windows :

- Volume control for conferencing
- Audio Input API

Other Supported Features

The following features continue to be supported in this release:

- Universal PCI
- 16 conferees with Echo Cancellation
- European support including selectable 20, 25, or 50 Hz ringer
- Japanese and U.K. Caller ID
- Support for flash hook via the Global Call Tsc_MsgDial feature on all DI series products

The following features are supported on both the DI/SI32 and the DI/SIxx-R2 series boards:

- Basic Voice: provides play, record, and digit generation and detection. (Play and record are not simultaneously supported on a channel.)
- Supports multiple coder types, including:
 - 64 kbps and 48 kbps G.711 PCM VOX
 - 24 kbps and 32 kbps OKI ADPCM VOX
 - 88/176K Linear PCM VOX and WAV
 - 11 kHz 8-bit and 16-bit WAV
 - Speed control on 8 kHz coders
- Volume control
- Tone detection/generation:
 - Global Tone Detection (GTD) for user-defined tones
 - Global Tone Generation (GTG) for user-defined tones, including cadenced tone generation
- Basic call control features for analog station interfaces, including ring, caller ID transmission, and MWI
- R4 Voice APIs for voice and tone
 - Play/Record
 - Tone Generation/Signal Detection
- R4 MSI API for stations
 - Transmit CallerID/MWI
 - Distinctive ring cadences
- R4 MSI API for conferencing
- R4 DCB API for conferencing with extensions
 - Active Talker
 - Coach/Pupil mode
- Audio Input API for Music on Hold (MOH)

Exceptions:

- No call control or call progress support with dx_dial()
- For conferencing, tone clamping and digit detect via the conferencing resource is not supported.

Intel® Dialogic® DMV160LP Analog Loop Start Board Features

The Intel® Dialogic® DMV160LP is a next-generation, high-density analog loop start voice processing board with a universal PCI form factor. Based on DM3 Mediastream architecture, it provides 16 channels of voice processing, 16 analog loop start interfaces, and supports fax as well as continuous speech processing.

New Features

The following new features are supported in System Release 6.0 on PCI for Windows:

- PBX Expert support
- Learn Mode and Tone Set File API for DM3
- Automatic gain control configurable on a per-channel basis through the voice API

Other Supported Features

The following features continue to be supported in this release:

- Universal PCI form factor
- 16 ports of voice processing and 16 ports of analog loop start interface
- Up to 8 boards per chassis
- H.100 connector (H.100 TDM Bus support)
- R4 API on DM3 support for voice, fax, continuous speech processing, and Global Call APIs
- Analog Display Services Interface (ADSI) and 2-way FSK support
- Fax capability for up to four channels of 14.4 kbps Tx/Rx Group 3 fax resources with recommended T.30, T.4, and T.6 support (MH, MR, MMR with ECM)
- Simultaneous voice record activity with continuous speech processing and fax
- Hook-flash through the Global Call API
- Voice coders supported:
 - OKI* ADPCM, 6 kHz sampling 24 kbps (4 bits) and 8 kHz sampling 32 kbps (4 bits)
 - G.711 mu-law PCM, 8 kHz sampling 64 kbps (8 bits) and 6 kHz sampling 48 kbps (8 bits)
 - G.711 A-law PCM, 8 kHz sampling 64 kbps (8 bits) and 6 kHz sampling 48 kbps (8 bits)
 - G.726 bit exact, 8 kHz sampling 16 Kbps (2 bits), 24 Kbps (3 bits), 32 Kbps (4 bits), ADPCM
 - GSM full rate at 13 kbps (ETSI 6.10 and RTP; both Microsoft and TIPHON frame support)
 - Linear PCM, 11.025 kHz sampling 88 kbps (8 bits) and 11 kHz sampling 176 kbps (16 bits)
 - TrueSpeech* (8.5 kbps)

***NOTE:** When using continuous speech processing, play and record activity is only supported on a subset of these voice coders. For more information, see the Continuous Speech Processing API for Linux and Windows Programming Guide.*
- Pitch-corrected speed control on playback (on 8 kHz coders only)
- Global approvals including U.S., Canada, European Union, Australia, China, Hong Kong, India, Korea, Malaysia, New Zealand, Singapore, and Japan
- Caller ID in the U.S., Japan, and U.K.
- SNMP supported administration, basic configuration (DLGHWINF MIB and DM3Extended MIB support)

Intel® Dialogic® DualSpan-JCT Series Features

Intel® Dialogic® D/480JCT-2T1 and D/600JCT-2E1 dual span-JCT boards provide two spans of digital network interfaces in a H.100-compliant universal PCI form factor. The boards contain rich media features such as voice processing, continuous speech processing (CSP), fax, tone signaling, global tone detection, global tone generation, and call progress analysis, as well as support continuous speech processing (CSP) and fax in certain environments.

New Features

No new Intel® Dialogic® dual span-JCT features are introduced in System Release 6.0 on PCI for Windows.

Other Supported Features

The following features continue to be supported in this release:

- Supports continuous speech processing: a flexible speech processing technology, coupled with efficient drivers, off-loads critical real-time signal processing in speech-enabled applications to onboard DSPs.
- Reduces system latency, increases recognition accuracy, and improves overall system response time for high-density speech solutions.
- Supports DSP-based onboard fax and host-based speech recognition to maximize the number of boards in the system.
- Supports G.726 bit exact and GSM coders, letting developers implement unified messaging applications that meet VPIM standards.
- Silence-compressed recording eliminates silence and preserves hard disk space.
- Unified call control access through Global Call interface provides worldwide application portability and shortens development time by using the same API for almost any network protocol.

Intel® Dialogic® PBX Integration Board Features

Intel® Dialogic® D/82JCT-U and D/42JCT-U PBX integration boards offer direct connectivity to the most popular Private Branch Exchanges (PBXs) for unified and Internet-ready call, voice, and fax processing applications.

New Features

The following new feature is supported in System Release 6.0 on PCI for Windows :

- NEC support
Support for the following NEC equipment:
 - NEC IVS 2000 PBX
 - NEC IMX 2400 PBX
 - Electra Elite KTS

Other Supported Features

The following features continue to be supported in this release:

- Support for the following PBX types:
 - Lucent Definity
 - Siemens ROLM
 - Siemens Hicom
 - Mitel Superswitch
 - Nortel Norstar
 - Nortel Meridian 1
- A Unified API for application programming. See the *PBX Integration* section in the *Development Software* chapter for more information.
- Software-controlled configuration
- Universal digital interface with downloadable firmware for different phone emulations
- Support for PBX operations:
 - Calling/Called party ID
 - Message Waiting lamp control
 - Loop current detection
 - Disconnect supervision
 - Ring detection
 - Link status detection
 - Read display
- WAVE, A-law or Mu-law PCM, ADPCM, GSM 610 or G.726 audio encoding.

Intel® Dialogic® SingleSpan-JCT Series Features

Intel® Dialogic® D/240JCT-T1, D/480JCT-1T1, D/300JCT-E1 and D/600JCT-1E1 single span-JCT boards provide one span of digital network interfaces in a H.100-compliant universal PCI form factor. The boards contain rich media

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features such as voice processing, speech recognition software, fax, tone signaling, global tone detection, global tone generation, and call progress analysis, as well as support continuous speech processing (CSP) or fax on the D/480JCT-1T1 and D/600JCT-1E1 boards.

New Features

No new Intel® Dialogic® single-span-JCT series features are introduced in System Release 6.0 on PCI for Windows.

Other Supported Features

The following features continue to be supported in this release:

- Supports continuous speech processing: a flexible speech processing technology, coupled with efficient drivers, off-loads critical real-time signal processing in speech-enabled applications to onboard DSPs. Reduces system latency, increases recognition accuracy, and improves overall system response time for high-density speech solutions.
- Supports DSP-based onboard fax and host-based speech recognition to maximize the number of boards in the system.
- Supports G.726 bit exact and GSM coders, letting developers implement unified messaging applications that meet VPIM standards.
- Silence-compressed recording eliminates silence and preserves hard disk space.
- Unified call control access through Global Call interface provides worldwide application portability and shortens development time by using the same API for almost any network protocol.

Intel® Dialogic® VFX/41JCT-LS Board Features

The Intel® Dialogic® VFX/41JCT-LS is a four-port analog converged communications board used for developing global, enterprise applications such as unified messaging, IVR and contact centers. The VFX/41JCT-LS supports voice, enhanced fax and software-based speech recognition processing in a single PCI slot, providing four analog telephone interface circuits for direct connection to analog loop start lines

New Features

No new Intel® Dialogic® VFX/41JCT-LS features are introduced in System Release 6.0 on PCI for Windows.

Other Supported Features

The following features continue to be supported in this release:

- Universal PCI
- Four independent voice and fax processing ports in a single PCI slot for low- to medium-density enterprise communications applications
- Supports DSP-based onboard enhanced fax and host-based speech recognition to maximize the number of boards in the system
- Supports G.726 bit exact and GSM coders, letting developers implement unified messaging applications that meet VPIM standards
- Supports all fax recommendations of ITU-T T.4 Group III Fax (T.4 and T.30) and ETSI NET/30 for send and receive operations
- Fax data modem data rate complies with ITU-T V.17 (up to 14.4 kbps) recommendations for sending and receiving faxes

Intel® NetStructure™ DM/F Fax Series Features

The Intel® NetStructure™ DM/F Fax Series boards (formerly known as DM3 Fax) give fax-intensive applications robust processing power and messaging flexibility. Compatibility with Network Interface products enables worldwide deployment of high-density fax solutions. These boards have a universal PCI form factor.

New Features

No new fax features are introduced in the System Release 6.0 on PCI for Windows .

Other Supported Features

The following features continue to be supported in this release

- Universal PCI
- ITU-T Group 3 (T.30) fully compliant
- Color fax
- Hardware-independent fax resource model (T.30, MH, MR, MMR, ECM, image conversion, v.17, v.21, v.27, v.28, etc.)
- The boards support the R4 programming environment and use R4 and Global Call application programming interfaces (APIs)
- Shareable fax resources
- High-density fax solution (up to 240 channels in a single chassis; maximum density is 8 boards for E-1 or T-1)
- Fax resource boards compatible with Intel NetStructure network interface products
- Downloadable firmware allows simple software upgrades instead of hardware replacement when new features are introduced
- Protocols supported:
 - T1 Robbed bit
 - 4ESS
 - 5ESS
 - DMS
 - NTT
 - NI2
 - QSIG (T1)
 - R2MF
 - NET5
 - QSIG (E1)
- Advanced Call Progress Analysis features (integrated T1 and E1 versions only)
 - PerfectCall call progress analysis
 - Positive Voice Detection (PVD)
 - Positive Answering Machine Detection (PAMD)
 - Frequency detection
 - Special Information Tones (SIT) frequency detection
 - Busy Tone detection
 - Fax Modem tone detection
- Silence Detection
- Tone Detection/Generation software (integrated T-1 and E-1 versions only)
 - R2MF Signaling (based on GTD and GTG)
 - PerfectDigit DTMF signaling
 - Global Tone Detection (GTD)
 - Global Tone Generation (GTG)
 - Disconnect Tone Supervision
 - Dual Tone Multi Frequency (DTMF)

- Multi Frequency (MF) Dial and Detect
- Selectable Dual-Tone Resolution
- Serial # and Silicon Serial # retrieval
- T.30 state transition and resource trace

Intel® NetStructure™ DM/IP Series Features

The Intel® NetStructure™ DM/IP platform (formerly known as DM3 IPLink) allows a Voice Over IP (VoIP) call to be connected to the CT Bus. Using DM/IP boards equipped with a PSTN network front end, you can build a single-board digital IP-to-PSTN gateway application. Adding boards for analog connectivity or station interface and technologies such as conferencing, voice recognition, or text-to-speech makes a variety of applications possible.

NOTE: Please go to <http://www.intel.com/design/network/products/telecom/index.htm> for the latest information about our IP hardware.

New Features

The following new features are supported for DM/IP boards in System Release 6.0 on PCI for Windows :

- IP Call control implemented on the host with RTP/RTCP implemented on the board (All NIC-enabled). For information about the configuration files that support host-based (or embedded) call control, see the *Intel DM3 Architecture PCI Products on Windows Configuration Guide* e..
- Host-Based SIP protocol stack
- Host-Based H.323 protocol stack
- Supports the ability to change from voice to fax coder without application intervention
- Setting DTMF transfer mode on a per call basis
- Conferencing on voice resources
- IP Precedence ToS on DM/IP (ToS byte)
- Multicast

Other Supported Features

The following features continue to be supported in this release:

- Split call control (third-party stack) via the IP Media Library API
- IPVSC firmware on PCI boards. Besides RFC 2833, this includes the ability to change from voice to fax coder without application intervention, setting DTMF transfer mode on a per call basis, and conferencing on voice resources.
- Global Call API support for IP and PSTN
- FCD file generation utility
- PCD file selection
- Flexible Routing (exportable voice resources)
- Simple Network Management Protocol (SNMP): TCP/IP level SNMP
- Standard Internet protocols, including TCP/IP, UDP, and RTP/RTCP
- Coders supported:
 - G.711 (ALaw and ULaw)
 - G.723.1 (5.3 kbps and 6.3 kbps)
 - G.729 Annex A
 - G.729 Annex B
 - G.729 Annex A with Annex B
 - GSM (Full Rate, TIPHON*)

- T.38
- Full-duplex communication with all coders
- Voice Activity Detection (VAD) on G.723, G.729, and GSM
- RADVISION* stack; compliant with ITU-T H.323 specification, including provision for periodic registration with gatekeeper
- Comprehensive support for industry-standard H.323 clients including Microsoft* NetMeeting*, VocalTec* Iphone*, Intel® Video Phone, and Intel® Internet Phone
- Gatekeeper registration
- Non-standard RAS
- H.245 tunneling
- Improved 16 ms echo cancellation
- IP precedence (100Base-T)
- Improved Fast Start compatibility
- IP switching (bridging two calls) with minimum latency for use in IP voice mail applications
- IP Voice Stream resource
- Quality of Service (QoS)
- Packet redundancy; complies with RFC 2198 (Redundancy)
- RTCP time parameters
- DTMF volume/gain controls
- Object ID support when sending non-standard command
- Q.931 Facility message: Support for non-standard information element in the Facility message over Q.931 port
- Vendor-specific information sending during call setup
- Voice quality parameters
- Volume adjustment
- Volume control
- Gain control
- CauseReason field in H.323 ReleaseComplete message
- Support for digital and on-board PSTN interfaces
- Support for media load 1 (basic voice), media load 2 (enhanced voice), and media load 11
- Basic DTMF and MF detection
- Call analysis
- Call control functions
- Call progress analysis
- Continuous Speech Processing (CSP) support (as a shared resource that can be routed to either the IP or PSTN interface)
- NFAS (on NI2 protocol only)
- R2MF hot download protocols
- Support for the following PSTN protocols:
 - 4ESS
 - 5ESS
 - DMS
 - NI2
 - NTT

- QSIG (T-1)
- CAS
- NET5
- QSIG (E1)
- R2MF (Global Call Protocols)
- Tone detection/generation

Intel® NetStructure™ DM/N, DM/T, DM/V and DM/V-A Series Features

The Intel® NetStructure™ DM/V-A, DM/V, DM/N, and DM/T boards (DM/V-A and DM/V boards were formerly known as DM3 MediaSpan) are based on DM3 architecture and are all universal PCI form factor. DM/V-A boards provide enhanced media in addition to 0,2,4 ISDN PRI trunks. DM/V boards provide basic voice in addition to 4 ISDN PRI trunks. DM/T boards provide support for tone processing in addition to 4 ISDN PRI trunks. DM/N boards provide support for 4 ISDN PRI trunks.

DM/N and DM/T

New Features

The following new features are supported for DM/N and DM/T boards in System Release 6.0 on PCI for Windows:

- NFAS for 5ESS, 4ESS, DMS250 and DMS100 (NI-2 already supported)
- D channel backup for NI2
- Clear channel support for both T1 and E1 boards
- DPNSS and DASS2 protocols
 - Hold and Retrieve for DPNSS
 - Virtual Calls on DPNSS
- Hold and Retrieve for all supported ISDN protocols
- 2 B-Channel Transfer
- Blind Transfer – PDK USMF T1 CAS, PDK FXS T1 & PDK FXS E1 (Global Call Protocols)
- Supervised transfer – PDK USMF T1 CAS, PDK FXS T1 & PDK FXS E1 (Global Call Protocols)
- PDK Tracing Tool
- Enhancements to Call Progress Analysis
- DS1 SNMP support

Other Supported Features

The following features continue to be supported for DM/N and DM/T boards in this release:

- Universal PCI
- PDK for T1 and E1
- Global Call Alarm Management System (GCAMS)
- D-channel enable/disable
- Tone detection/generation (DM/T only):
 - Dual Tone Multi Frequency (DTMF)
 - Multi Frequency (MF)
 - Global Tone Detection (GTD) for user-defined tones
 - Global Tone Generation (GTG) for user-defined tones, including cadenced tone generation

- Support for the following protocols:
 - 4ESS
 - 5ESS
 - DMS
 - NI2
 - NTT
 - QSIG (T1)
 - CAS (Global Call Protocols)
 - NET5
 - QSIG (E-1)
 - R2MF (Global Call Protocols)
 - Clear Channel
- Any Message/Any IE to support various Supplementary Services. The messages support includes:
 - Information
 - Congestion
 - UUI Facility
 - Notify
- Layer 2 access
- NFAS on NI2

DM/V

The DM/V boards support all the features of the DM/N and DM/T boards as well as the following features listed under “New Features” and “Other Supported Features”. The following new features are supported for DM/V boards in System Release 6.0 on PCI for Windows :

New Features

- AGC, SCR support for Linear coders
- Cached Prompts
- Playback pause and resume
- Streaming to Board

Other Supported Features

The following features continue to be supported for DM/V boards in this release:

- Audio digitizing for play and record:
 - OKI* ADPCM at 6 kHz with 4-bit samples (24 kbps) and 8 kHz with 4-bit samples (32 kbps), VOX and WAVE file formats
 - G.711 PCM at 6 kHz with 8-bit samples (48 kbps) and 8 kHz with 8-bit samples (64 kbps) using A-law or mu-law coding, VOX and WAVE file formats
 - Linear PCM at 11 kHz with 8-bit samples (88 kbps) and 11 kHz with 16-bit samples (176 kbps) using linear coding, VOX and WAVE file formats
 - Linear PCM at 8 kHz with 8-bit samples (64 kbps) and 8 kHz with 16-bit samples (128 kbps) using linear coding, VOX and WAVE file formats
- PerfectCall call progress analysis, featuring:
 - Positive voice detection (PVD)
 - Positive answering machine detection (PAMD)
 - Frequency detection

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- Special information tones (SIT) frequency detection
- Busy tone detection
- Fax modem tone detection
- Silence detection

Playback speed control (8 kHz coders only)

- Volume control
- Automatic gain control (AGC)
- Transaction record
- Silence compressed record

DM/V-A

The DM/V-A boards support all the features from the DM/V boards as well as the following features listed under “New Features” and “Other Supported Features”. The following new features are supported for DM/V-A boards in System Release 6.0 on PCI for Windows :

New Features

- IMA ADPCM Coder
- On board Fax (Media Load 5) on select boards
- Conferencing
 - DTMF clamping on a per party basis
 - Volume control
 - Monitoring feature
 - Bridging (the ability to bridge conferences across DSPs and boards)
 - Media load 9C: 240 channels of basic conferencing (without DTMF detection, EC, or Tone Clamping) on the DM/V2400A-PCI
- Universal media load including voice, fax, and conferencing on the DM/V960A-4T1-PCI
- Silence Compressed Streaming (SCS)
- CSP Enhanced Echo Cancellation (EEC) with 32 ms and 64 ms tail length on select boards
- CSP streaming of echo cancelled data to the CT Bus (CSC) on select boards
- DX_MAXTIME termination condition support on CSP

Other Supported Features

The following features continue to be supported for DM/V-A boards in this release:

- ETSI-FSK
- Transmit/receive Analog Display Services Interface (ADSI)
- TrueSpeech* at 8 kHz with 16-bit samples (8.5 kbps), VOX and WAVE file formats
- GSM 6.10 full-rate voice coder at 13 kbps using Microsoft* format (VOX and WAVE file formats) and TIPHON* format (VOX file format only)
- G.726 bit-exact voice coder at 8 kHz with 2-, 3-, 4-, or 5-bit samples (16, 24, 32, 40 kbps), VOX and WAVE file formats
- Conferencing
 - Flexible routing of conferencing resources
 - Coach/pupil feature
 - Active talker status
 - On-board digit detection
 - Echo cancellation for each active talker

- Continuous Speech Processing (CSP):
 - Full duplex operation
 - Echo cancellation (32 ms and 64 ms tail length)
 - Voice activity detector (VAD)
 - Barge-in
 - Voice event signaling
 - Pre-speech buffering

NOTE 1: For more information about the media loads supported by each board, see the *Intel DM3 Architecture PCI Products on Windows Configuration Guide*.

NOTE 2: For information about conferencing, see the *Conferencing API for Linux and Windows Library Reference and Conferencing API for Linux and Windows Programming Guide*.

Intel® NetStructure™ DM/VF Series Features

The Intel® NetStructure™ DM/VF Series (formerly known as DM3 VFN) consists of integrated T1 and E1 boards providing a full span of feature-rich voice and fax processing in a single PCI slot. The availability of 24 or 30 universal voice and fax channels on each DM/VF Series board ensures that applications will be able to process any incoming or outgoing voice and/or fax transaction at any time, provided there is an open channel. Four DM/VF Series products may be combined in a single chassis, enabling applications to support up to 120 channels of high-performance voice and fax. The DM/VF boards support the universal PCI form factor.

New Features

No new Intel® NetStructure™ DM/VF Series features are introduced in the System Release 6.0 on PCI for Windows.

Other Supported Features

The following features continue to be supported in this release:

- Universal PCI
- Color fax
- V.17 fax
- Basic voice (equivalent to media load 1)
- SCbus
- H.100 CT Bus
- Single board start/stop
- The boards support the R4 programming environment and use fax and Global Call application programming interfaces (APIs)
- Pre-built clusters: Voice and fax features are clustered together and dedicated to network interface channels. In this release, both fixed and flexible routing are supported depending on the cluster configuration (.pcd file) that is used.
- Support for the following protocols:
 - Robbed bit
 - 4ESS
 - 5ESS
 - DMS
 - NTT
 - NI2
 - QSIG (T1)
 - R2MF

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- NET5
- QSIG (E1)
- Simple Network Management Protocol (SNMP)
- Basic play and record: Allows recording and playback of 48 kbps and 64 kbps mu-law and A-law G.711 PCM, 32 kbps OKI* ADPCM, and 24 kbps OKI ADPCM
- Basic DTMF and MF detection
- Serial number and silicon serial number retrieval (of Intel telecom boards)
- T.30 state transition and resource trace
- DLL version number retrieval
- Call analysis software
 - PerfectCall call analysis
 - Positive Voice Detection (PVD)
 - Positive Answering Machine Detection (PAMD)
 - Frequency detection
 - Special Information Tones (SIT) frequency detection
 - Ringback detection
 - Busy tone detection
 - Fax or modem tone detection
 - Silence detection
- Tone detection/generation software (integrated T1 and E1 versions only)
 - R2MF signaling (based on GTD and GTG)
 - PerfectDigit DTMF signaling
 - Global Tone Detection (GTD)
 - Global Tone Generation (GTG)
 - Dual Tone Multi Frequency (DTMF)
 - Multi Frequency (MF) dial and detect
- DM3 fax software
- 14.4 kbps transmit/receive
- ITU T.30 compliant
- 100% Group 3 compatibility
- Error Correction Mode (ECM)
- Bad scan line detection and correction
- Image concatenation, compression formats, and resolutions
- Scaling to and from all supported page sizes, compression formats, and resolutions
- Support for A3, A4, and B4 page sizes
- Receive MH, MR, and MMR advanced compression
- Send MH, MR, and MMR advanced compression
- Normal (100dpi) and fine (200dpi) resolution
- Image conversion: TIFF-F and ASCII
- Simple header overlay

Intel® NetStructure™ High Density Station Interface (HDSI) Features

The Intel® NetStructure™ High Density Station Interface (HDSI) is an open-architecture platform for computer telephony that integrates large-scale switching and voice processing resources under a single hardware and software architecture. The HDSI offers the industry's highest-density analog station connectivity in a single PCI slot. This board uses the universal PCI form factor.

The HDSI is an assembly consisting of a Station Interface Box (SIB) connected to an HDSI-PCI board with H.100-compliant CT Bus connectivity. The CT Bus provides switching between trunks and stations and also allows expansion for additional network and resource boards. With just one HDSI-PCI board, this solution can support up to 120 stations with tone detection and generation, and FSK Caller ID transmission. This product uses the following application programming interfaces:

- Modular Station Interface (MSI) R4 API
- Voice (dx_) R4 API

The Station Interface Box (SIB) is a single unit that supports 48 stations in the base model configuration. However, the SIB is a modular unit that is designed to accept plug-in components to accommodate 72, 96, and 120 stations. The SIB features a "hot swap" capability, which allows you to break and re-establish connections to the HDSI-PCI board without powering down or rebooting the system.

NOTE: For more detailed information about the Intel NetStructure High Density Station Interface product, refer to the High Density Station Interface Series Hardware Installation Guide.

New Features

No new HDSI features are introduced in System Release 6.0 on PCI for Windows.

Other Supported Features

The following features continue to be supported in this release:

- Universal PCI
- An optional PCD configuration that adds play and record support similar to that found now in media load 1 with the following limitations:
 - Fixed routing only
 - No transaction record support
- The 20 Hz, 25 Hz and 50 Hz ring frequencies are supported using the country-specific configuration files.

NOTE: For more detailed information, refer to the Intel DM3 Architecture PCI Products on Windows Configuration Guide:

- Configurations of 48, 72, 96, and 120 station interfaces using a single slot
- H.110-compliant CT Bus connectivity for switching between trunks and stations and sharing resources
- On-board tone generation
- On-board DTMF detection
- FSK send Caller ID support
- FSK Message Waiting Indicator (MWI) support (on-hook only)
- Programmable ring cadence options
- The capability to ring telephones with a Ringer Equivalence Number (REN) of two, per station
- SIB battery power provided to station sets
- Unobtrusive monitoring of connections
- International support of the HDSI/1200. Since HDSI does not have a PSTN interface, there are no protocols such as T-1 CAS. Refer to the MSI Boards Country Specific Parameter Files section in the *Intel DM3 Architecture PCI Products on Windows Configuration Guide* for a list of the supported countries and country codes.

NOTE 1: *(country)_hdsi configurations provide station with dedicated tone-only channels (fixed routing). Tone-only channels provide dialing and digit detection but cannot perform play or record.*

NOTE 2: *(country)_hdsi_96_play configurations provide 96 stations with dedicated voice channels (fixed routing). These voice channels provide media load equivalent functionality. However, they use fixed routing and don't support transaction record.*

- The following telephone sets are supported on the HDSI/1200:

- AT&T* model 706
- Cidcon* model CT 250 (FSK enabled)
- ITT* 2500 Series
- Lucent* model 210
- Lucent model 925
- Master* model MT-001
- Nortel* model 390 (FSK enabled)
- Panasonic* model KX-2315
- Southwestern Bell* Freedom Phone*

NOTE: *Most analog phones will work with the High Density Station Interface. However, for displaying messages like Caller ID, only the telephones listed above have been tested.*

Intel® NetStructure™ SS7 Product Support Features

Intel® NetStructure™ SS7 boards provide on-board support for SS7 common channel signaling protocols with up to four digital line interfaces (E1/T1/J1) and a H.100 PCM highway that supports connection to a wide range of voice, data, and fax boards. Intel NetStructure Signaling Interface Units (SIUs) are SS7 server solutions that provide a convenient and cost-effective way to add SS7 connectivity to an existing multi-chassis system or to enable an application with the necessary protocols for mobile wireless or intelligent networks.

New Features

The following new feature has been added in System Release 6.0 on PCI for Windows :

- Simplified Global Call SS7 software configuration
The Global Call SS7 software is now configured in a single configuration file called `gcss7.cfg`.

Other Supported Features

The following features continue to be supported in this release:

- Global Call API support for developing call control applications that use Intel NetStructure SS7 boards or SIUs.

Configuration Software

This chapter describes the configuration software features that are supported in System Release 6.0 on PCI for Windows.

Configuration is performed after the system release software is installed, using the configuration manager (DCM).

Detailed procedures are given in the *Intel DM3 Architecture PCI Products on Windows Configuration Guide* and the *Intel Springware Architecture Products on Windows Configuration Guide*.

New Features

The configuration manager (DCM) provides the following new features in the System Release 6.0 on PCI for Windows:

- Ability for the configuration of the required Dialogic parameters among the different form factors to be the same
- Ability to migrate DM3 and NGHD applications from PCI to cPCI and cPCI to PCI form factors with minimal application changes

Other Supported Features

The following configuration features continue to be supported in this release:

- DCM for configuring boards and TDM bus clocking setup
- Media loads and configuration file sets for board feature selection
- PDKManager for downloading Global Call protocol firmware and country-dependent parameter (CDP) configuration files
- Adding third-party devices to an Intel Dialogic system and reserving TDM bus time slots for third-party devices. This is now accomplished using the configuration manager (DCM).

OA&M Software

This chapter describes the OA&M software features that are supported in System Release 6.0 on PCI for Windows. This information is organized into the following sections:

- Administration Software
- SNMP Agent Administrative Software
- Diagnostics Software
- Other Utilities

Administrative Software

This section describes the system administration software that is available in System Release 6.0 on PCI for Windows. Administrative software allows the administrator to perform such tasks as starting and stopping the Intel Dialogic System, running demo programs, monitoring performance, and replacing a board in an active system with the same board type.

New Features

The following administrative software features are new in System Release 6.0 on PCI for Windows:

- Support for the SendAlive API (formerly known as Ping). The Board Management Library (BML) contains functions that provide runtime fault monitoring and management of configurable boards. The API provides the ability to monitor the host computer for a failure and take boards out of service to prevent the network from offering calls to a failed system.

NOTE: A restriction and limitation of Board Management is that it is supported only on JCT single span and dual span boards under the following protocols: T1 4ESS, T1 5ESS, T1 DMS100, and T1 NI2. (E1 protocols are not supported.)

- PDK Trace tool
- SRL Eventing
- Event Viewer utility - displays the Windows Event Viewer which displays error and administrative messages generated by the system.
- TBLIST Utility - provides a display of the TDM bus settings for specified boards that have been started.

Other Supported Features

The following administration features continue to be supported in this release:

- The Selective Startup Mode (Start Devices Preference) provides the ability to continue initializing a group (or set) of Intel NetStructure boards regardless of a single board failure. This means that firmware download and initialization of the system will occur even if one or more Intel NetStructure boards fail to initialize properly.
- Selecting **Start All Device(s) or Start None** causes the Intel Dialogic System to run only if all Intel NetStructure devices have downloaded the firmware. If at least one device fails to download, the Intel Dialogic System will not start.
- Selecting **Start Selective (Good Devices Only)** causes the Intel Dialogic System to run even if one or more devices fail to download the firmware. The system will bypass the problematic device(s) and the Intel Dialogic System will start.
- Alarms utility—monitors the alarms on a T1 or E1 line.
- Audio Control utility—controls the Player and Recording resources.
- CAS Signal Editor utility—allows you to dynamically view and modify CAS signal identification parameters (transitions, pulses, trains, or sequences) so you can test them before changing the config file.

- LineAdmin utility—puts lines into service so you can run a number of the other utilities, and also monitors T1 and E1 alarms.
- Line Admin utility—puts E1 and T1 lines into service for the purpose of running diagnostic utilities.
- Listboards utility—displays information for boards present in the system and recognized by the device driver.
- STD Config utility—provides a flexible way to configure DM3 component parameters.

SNMP Agent Administration Software

New Features

No new SNMP features are introduced in System Release 6.0 on PCI for Windows.

Supported Features

The following SNMP Agent administration software features continue to be supported in System Release 6.0 on PCI for Windows:

- Detection and monitoring of telecom boards, including model, type, firmware name and version, memory address, IRQ, BLT ID, PCI slot ID, and current operational status
- Detection and monitoring of telecom devices, including voice channels, DTI time slots, ISDN B channels, and MSI station sets
- Tracking of information common to all devices, such as name, type, open count, TDM bus transmit and receive time slot, and physical device table
- Automatic pinging to detect failed hardware or firmware
- Remote resetting of the Intel Dialogic System
- Tracking of lost messages and errors
- Maintenance of statistics over a user-specified interval

Diagnostics Software

This section describes the diagnostics software that is available in System Release 6.0 on PCI for Windows. Diagnostics software allows the administrator to perform tasks such as the following for Intel telecom boards:

- Determining the status
- Printing standard errors
- Verifying network connections
- Troubleshooting a board or a system.

For information about diagnostic tools for Intel Dialogic Springware boards, refer to the *Dialogic Universal Hardware Diagnostics Guide*.

For information about diagnostic tools for DM3 architecture boards, refer to *the Intel Dialogic System Software for DM3 Architecture Products on Windows Diagnostics Guide*.

New Features

The following new diagnostic utilities have been added for System Release 6.0 on PCI for Windows:

- Command line version of dlgsnapshot, a utility for extracting board data
- CAS Trace—enables you to track the bit level transitions on a robbed bit or CAS line
- DebugAngel—polls the board and posts statements from the board's resources and kernel to the screen and a designated output file. DebugAngel replaces the Dm3StdErr utility

NOTE: *The DM3Trace tool is no longer supported in System Release 6.0 on PCI for Windows. Use the DebugAngel tool to obtain firmware debug information for both resources and kernel on DM3 architecture boards.*

- Status Monitor—enables you to track the state of the TSC as well as the state of the bits on a robbed bit or CAS

Other Supported Features

The following diagnostic utilities continue to be supported for DM3 architecture boards in this release:

- CallInfo—detects call information using the Telephony Service Provider (TSP) resource
- DebugView—allows you to monitor debug output on the local system or any networked system that can be reached via TCP/IP
- DigitDetect—provides the ability to detect digits at the local end of a channel connection
- dlgsnapshot—generates a core dump file when a Control Processor (CP), Signal Processor (SP), or Shared RAM (SRAM) fault is detected on certain Intel NetStructure board models
- Dm3Insight—allows you to capture message and stream traffic from the DM3 driver
- Dm3post—performs Power On Self Test (POST) for a specified board
- GetVer—prints the version of a DM3 binary file to the screen
- ISDNtrace—provides the ability to track Layer 3 (Q.931) messages on the ISDN D channel of Intel NetStructure products.
- Kernelver—can be used to verify whether or not a processor has crashed
- MercMon—MercMon provides counter information about DM3 board device drivers (Class Driver and Protocol Drivers)
- PDK Trace—allows those who use a DM3 PDK protocol to log specific information related to the operation of the protocol (requires Global Call Protocols Version 4.1 or later).
- Phone—provides control for a single DM3 resource channel (make calls, wait for calls, etc.), monitors channel and call states, and sends call control operations to the DM3 Global Call resource
- Qerror—displays error code strings for DM3 Kernel errors
- StrmStat—displays the status of specified DM3 streams
- TSP Config—allows you to change T1 CAS or ISDN protocol variant parameters
- TSP Monitor—allows you to monitor the Global Call Resource protocol
- TSP Tracer—allows you to trace CAS protocol operations and includes timing information

Other Utilities

This section describes other utilities that are available in System Release 6.0 on PCI for Windows.

PBX Expert is a utility program for learning and managing the unique call progress tones produced by PBXs, key systems, and PSTNs. This tool enables you to integrate your telephony application with a wide variety of PBX and key systems. Files created with PBX Expert can be used with call progress analysis.

New Features

The PBX Expert utility provides the following new feature in System Release 6.0 on PCI for Windows:

- Support for DM3 analog boards including the DMV160LP

Other Supported Features

The following features continue to be supported in this release:

- Support for Springware boards
- Command-line options to run in one of three different modes : Auto or Wizard Mode, Default Mode, or Power User Mode
- Audio indication of periods of non-silence during the Learn and Test processes
- Tone characterization tool
- TSF file generation for use in defining the call analysis structure
- Expandable library of pre-characterized call progress tone

Development Software

This chapter describes the features of the API libraries, protocol stacks, and demonstration programs that are available in System Release 6.0 on PCI for Windows. The development software is divided into the following categories:

- API Libraries
- Protocol Stacks

API Libraries

This section describes the features of the following API libraries that are available in System Release 6.0 on PCI for Windows:

- New Conferencing API Library
- Audio Conferencing API Library
- Call Logging API Library
- Continuous Speech Processing API Library
- Digital Network Interface API
- Event Service API
- Fax API Library
- GDK/GRT API
- Global Call API Library
- IP Media Library API
- ISDN API
- Learn Mode and Tone Set File API
- Modular Station Interface API
- NCM (Native Configuration Manager) API Library
- PBX Integration
- Standard Runtime Library API
- Voice API Library

New Conferencing API Library

The new Conferencing (CNF) API library is a next-generation conferencing library that supports development of conferencing applications on boards based on the DM3 architecture. This library supports both TDM and IP legs in the same conference.

NOTE: *Although the Audio Conferencing (DCB) API continues to be supported, it is recommended that all new conferencing applications be developed using the new CNF API.*

The Conferencing software includes library functions, device drivers, and firmware.

NOTE: *Refer to the Conferencing API for Linux and Windows Library Reference and Conferencing API for Linux and Windows Programming Guide for more information.*

Features

The new Conferencing API Library offers the following features in System Release 6.0 on PCI for Windows:

- Conference bridging, where all parties in two or more established conferences can speak to and listen to one another, enabling large conferences to be built

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- Conference monitoring, in which participants have listen-only access to a conference
- Active talker status, used to indicate which participants in a given conference are currently talking
- Coach and pupil role assignments, which can be used for training or for private (one-way messages) such as setting up a sub-conference
- Tone clamping, which mutes dual tone multi-frequency (DTMF) tones generated by a given party
- Automatic gain control (AGC), which equalizes the volume levels of different parties
- Volume control, which enables an individual party to adjust the listening volume of the conference
- DTMF digit detection, which determines when a party has generated a DTMF digit
- Echo cancellation, which reduces echo from the incoming signal
- Asynchronous programming model support
- User context support when running a function in asynchronous mode
- Ability to manage all conference resources in a system at the host application level and to get a snapshot view of these resources at any point in time

Audio Conferencing API Library

The Audio Conferencing API library supports development of host-based conferencing applications on certain Intel Dialogic boards and certain Intel NetStructure boards. The Audio Conferencing API library provides many features that can be used to develop customized audio conferencing servers.

NOTE: *Although the Audio Conferencing (DCB) continues to be supported, it is recommended that all new conferencing applications be developed using the new Conferencing (CNF) API. See the New Conferencing API Library section for more information.*

The Audio Conferencing software includes library functions, device drivers, and firmware.

NOTE: *Refer to the Audio Conferencing API for Linux and Windows Library Reference and Audio Conferencing API for Windows Programming Guide for more information.*

New Features

The Audio Conferencing API Library provides the following new features in System Release 6.0 on PCI for Windows.

- Conference bridging, where all parties in two or more established conferences can speak to and listen to one another, enabling large conferences to be built
- Volume control for any conferee by issuing pre-programmed DTMF digits added for DM3 (currently exists for Springware)
- Monitoring feature added for DM3, enabling many participants to monitor a single conference without interrupting the conference (currently exists for Springware)

Other Supported Features

The following audio conferencing features continue to be supported in this release:

- Coach/pupil feature allows two selected conferees to establish a private communication link with respect to the overall conference. The coach is a private member of the conference and is only heard by the pupil. However, the pupil cannot speak privately to the coach.
- DTMF digit detection for any conferee, allowing the application to determine when or if any party has generated a DTMF digit.
- Volume control for any conferee by issuing pre-programmed DTMF digits.
- Tone clamping that allows each conferee to reduce the amount of DTMF tones heard during a conference.

NOTE: *DTMF tones may be heard by conferees if the application encourages the user to repeatedly press DTMF tones: for example, press 9 to raise the volume.*

- Automatic Gain Control (AGC) for all conferees. AGC is an algorithm for normalizing an input signal to a target level. The AGC algorithm discriminates between voiced and unvoiced signals within a conference.
- Active talker indication to determine which conferees in any given conference are currently talking. The active talker feature can be set to indicate which conferees are talking the loudest or for the longest amount of time.

- Monitoring feature, enabling many participants to monitor a single conference without interrupting the conference.
- Echo cancellation for each active talker
- Flexible routing of conferencing resources on Intel telecom boards

Call Logging API Library

The Call Logging API library supports development of call monitoring and call recording applications on analog and digital call logging boards. The Call Logging software includes library functions, device drivers, and firmware.

NOTE: Refer to the *Call Logging API Software Reference for Windows* for more information.

New Features

The Call Logging API Library offers the following new features in System Release 6.0 on PCI for Windows :

- Support for the new analog high impedance (HiZ) call logging board, namely DMV160LPHIZ
- New `cl_GetOrdinalChannel()` function that returns the ordinal channel number at event time
- New `cl_PeekOrdinalChannel()` function that returns the ordinal channel number as it was observed at the time the function was called
- Enhanced `cl_Open()` function to support new analog HiZ boards

Other Supported Features

The following call logging features continue to be supported in this release:

- Support for digital high impedance (HiZ) call logging boards
- On digital HiZ boards, monitoring of Layer 1 (L1) alarms, Layer 2 (L2) events, and Layer 3 (L3) messages

Continuous Speech Processing API Library

The continuous speech processing (CSP) API Library supports development of host-based automatic speech recognition (ASR) applications. CSP provides many features such as high-performance echo cancellation, voice energy detection, barge-in, voice event signaling, pre-speech buffering, and full-duplex operation.

The CSP software includes library functions, device drivers, firmware, and demonstration programs.

NOTE: Refer to the *Continuous Speech Processing API for Linux and Windows Library Reference and Continuous Speech Processing API for Linux and Windows Programming Guide* for more information.

New Features

The CSP API Library offers the following new features in System Release 6.0 on PCI for Windows :

- CSP support for additional boards:
 - Intel® Dialogic® D/160JCT
 - Intel® Dialogic® D/320JCT
- Silence compressed streaming to the host
- Enhanced Echo canceller tap length of 32 ms and 64 ms on select DM3 boards
- Streaming of echo-cancelled data to the CT Bus on select DM3 boards (CSC)
- DX_MAXTIME termination condition support on DM3 boards

Other Supported Features

The following Continuous Speech Processing features, which were supported in System Release 5.1.1 Feature Pack 1 for Windows, continue to be supported:

- Full duplex operation
- Echo cancellation (EC)
- Barge-in
- Voice event signaling

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- Pre-speech buffering
- Barge-in and play event generation
- Ability to re-arm the VAD (this feature has been replaced by the new silence compressed streaming feature)
- Ability to send an echo-reference signal (also called external reference signal) from another device across the TDM bus to the CSP voice channel
- Streaming of echo-cancelled data to the TDM Bus on select Springware JCT boards
- Unified API
- Echo canceller convergence event notification (supported on DM3 boards only)
- More powerful Voice Activity Detector (VAD) (supported on DM3 boards only), including the ability to modify certain parameters on the fly

Digital Network Interface API

***NOTE:** Refer to the *Digital Network Interface Software Reference for Linux and Windows* for more information.*

New Features

No new Network Interface Support features have been implemented in System Release 6.0 on PCI for Windows .

Other Supported Features

The following features continue to be supported:

- T1 digital telephony signaling
- E1 digital telephony signaling
- Digital Network Interface API (dt_ functions) including alarm, diagnostic, extended attribute, parameter request and setting, resource management, SCbus routing, and time slot audio and signaling functions.
- CAS DTI signal pattern transmission and detection functions:
The CAS DTI extensions permit higher-density systems to perform the signaling operations needed for CAS protocols within strict protocol time specifications.

Fax API Library

The Fax API library supports development of a wide variety of fax applications such as fax mail, fax broadcast and fax-on-demand. Boards based on Springware architecture, such as the VFX/41JCT-LS, support DSP-based fax (softfax). Boards based on DM3 architecture use an on-board fax resource.

The Fax software includes library functions, device drivers, firmware, and demonstration programs.

***NOTE:** Fax support differs among basic DSP-based fax, enhanced DSP-based fax, and DM3 fax. This section lists the key fax features. Refer to the *Fax Software Reference for Windows* for more information.*

New Features

No new features have been implemented in System Release 6.0 on PCI for Windows .

Other Supported Features

The following fax features continue to be supported:

- V.17 Fax
- ITU-T Group 3 (T.4, T.30) compliant
- Data rate
 - Up to 14.4 kbps transmission
 - Up to 14.4 kbps reception
 - Selectable preferred data transmission and reception rates

- File storage format
 - Raw MH, MR, and MMR encoded data
 - TIFF/F MH, MR, and MMR encoded data
 - ASCII for transmit only
- Data transmission encoding scheme with advanced compression
 - MH, MR, and MMR
 - Selectable data transmission encoding scheme
- Data reception encoding scheme with advanced compression
 - MH, MR, and MMR
 - Selectable data reception encoding scheme
- T.30 Error Correction Mode (ECM)
- T.30 Phase B event notification
- T.30 Phase D event notification
- Polling and turnaround polling
- Bad scan line detection and correction
- Image concatenation, compression formats and resolutions
- Scaling to and from all supported page sizes, compression formats and resolutions
- Support for A3, A4 and B4 page sizes
- Normal (100 dpi), fine (200 dpi), and superfine (400 dpi) resolution
- Simple header overlay
- Image bit order (MSB/LSB) conversion
- ASCII configuration:
 - Left/right/top margin
 - Line spacing
 - Tab stop
 - Wrapping
 - Extended characters (above ASCII #127)
- Color Fax
 - Transmission and reception of JPEG- and JBIG-encoded color facsimile images to and from color fax devices
 - Encoding of color fax images using the JPEG format as specified in ITU Rec. T.81 and T.42 standards and the ITU Rec. T.4 Annex E standard (ITU Rec. T.4 Annex E defines the specific JPEG profile for color fax)
 - Encoding of fax images using the JBIG format as specified in ITU Rec. T.82 and T.43 standards and the ITU Rec. T.85 standard (ITU Rec. T.85 defines a specific profile for bilevel JBIG encoded fax images.)
- Support for **fx_originate()** function

GDK/GRT API

NOTE: For more information about the API, refer to the *GDK Version 5.0 Programming Reference Manual for Windows* for more information. For information about installing the GDK software, refer to the *GDK Version 5.0 Installation and Configuration Guide for Windows*. Also refer to *Updates for GDK Version 6.0 and System Release 6.0 on PCI for Windows*, which contains updates to the information contained in the *GDK Version 5.0 Installation and Configuration Guide for Windows*.

New Features

No new features have been implemented in System Release 6.0 on PCI for Windows .

Other Supported Features

The following features continue to be supported in this release:

- Interactive and batch programming models
- GDK system service (the Dispatcher)
- Queue file database
- Status files
- Device drivers for ISA and PCI
- Firmware Download Utility

Global Call API Library

The Global Call API library provides a uniform call control interface for developing applications for multiple network interface technologies. The Global Call API library supports a variety of protocols operating on Intel telecom boards that use the DM3 and Springware architectures.

The Global Call API library supports:

- A variety of protocols; for example, E1 CAS, T1 robbed bit, analog loop start, ISDN, SS7, IP H.323, and SIP interfaces
- Consistent application interface for the various protocols and technologies
- The same input and output parameters at the application level to configure and control the different interfaces

The generic functionality of Global Call is documented in the *Global Call API Library Reference* and the *Global Call API Programming Guide*. Technology-specific functionality is documented in the various Global Call Technology Guides.

New Features

The Global Call API library provides the following new features that are common to a number of technologies in System Release 6.0 on PCI for Windows :

- Call Progress Analysis (CPA) when using DM3 boards
Common method of call progress analysis when using E1/T1 CAS protocols, ISDN protocols and Analog protocols. Call progress (pre-connect) information reports the status of the call connection, such as busy, no dial tone or no ringback. Call analysis (post-connect) information reports the destination party's media type, for example, voice, fax or answering machine. See the *Implementing Call Progress Analysis* chapter in the *Global Call API Programming Guide* for details.

The Global Call API library provides the following new features for **E1/T1** technologies in System Release 6.0 on PCI for Windows:

- Call transfer when using DM3 boards
Support for unsupervised and supervised call transfer when using CAS protocols. Unsupervised transfer is transfer of a call to a third party without any consultation or announcement by the person transferring the call. Supervised transfer is the transfer of a call to a third party where the person transferring the call stays on the line, announces the call, and consults with the party to whom the call is being transferred before the transfer is completed. See the *Global Call E1/T1 CAS/R2 Technology User's Guide* for details.
- Call hold and retrieve when using DM3 boards
The ability to place a call on hold and later retrieve the call when using PDK protocols. See the *Global Call E1/T1 CAS/R2 Technology User's Guide* for details.

The Global Call API library provides the following new feature for **ISDN** technologies in System Release 6.0 on PCI for Windows:

- Dynamic trunk configuration when using ISDN on DM3 boards

Global Call provides the ability to change the protocol mode (user or network) and CRC (on or off) without having to redownload the board firmware. See the *Global Call ISDN Technology Guide* for more information.

- Call hold and retrieve when using DM3 boards
The ability to place a call on hold and later retrieve the call when using ISDN protocols. See the *Global Call ISDN Technology Guide* for details

The Global Call API library provides the following new feature for **Analog** technologies in System Release 6.0 on PCI for Windows:

- Call transfer when using DM3 boards
Support for unsupervised (blind) transfer. Unsupervised transfer is transfer of a call to a third party without any consultation or announcement by the person transferring the call.

The Global Call API library provides the following new features for **IP** technologies in System Release 6.0 on PCI for Windows:

- Access to SIP message information fields

Other Supported Features

The following Global Call features, previously supported in System Release 5.1.1 Feature Pack 1 for Windows, continue to be supported in System Release 6.0 on PCI for Windows:

- Support for PSTN and IP interfaces on Intel NetStructure boards
- Support for PSTN and IP protocols including E1 CAS, T1 robbed bit, ISDN, R2MF, H.323, and SIP
- Basic call control that includes the ability to make a call, detect a call, answer a call, release a call, etc. The implementation of these capabilities is based on a generic call state model that maintains a consistent call control paradigm across all technologies supported by Global Call.
- Call progress and call analysis including the ability to handle pre-connect (Call Progress) information that reports the status of the call connection, such as busy, no dial tone or no ringback, and post connect (Call Analysis) information that reports the destination party's media type (that is, voice, answering machine, fax, or modem).
- Call hold and transfer for ISDN and PDK protocols. Support includes the ability to place a call on hold in order to answer a third party and/or transfer a call to the third party. The implementation of these features is based on a more advanced call state model.
- Feature Transparency and Extension (FTE), that is, the ability to extend the capabilities of Global Call to handle features that are technology-specific so that those features are accessible via the Global Call interface
- Global Call Alarm Management System (GCAMS) that provides the ability to manage alarms
- Real Time Configuration Management (RTCM) that allows the modification of call control and protocol elements in real time, providing a single common user interface for configuration management
- A generic service request facility that allows an application to send a request for a service to a remote device. Examples of the types of services that this feature supports are device registration, channel setup, call setup, and information requests
- Easy access to error information using **gc_ErrorInfo()** for function failures and **gc_ResultInfo()** for event information
- Selective call control library initialization using **gc_Start()** that allows applications to control which call control libraries are started during initialization
- Library information functions that enable an application to get information about the call control libraries being used

ISDN-specific features including:

- Support for supplementary services for applications that use ISDN protocols including Any Message, Any IE, and User-to-User messaging
- D Channel enable/disable when using ISDN protocols

IP-specific features including:

- H.323 and SIP RADVISION* host-based stacks
- Multi-protocol support on Global Call devices
- Registration with a Gatekeeper (H.323) or Registrar (SIP)
- Support for UII Alphanumeric (H.323 only), RFC 2833, and Inband DTMF modes
- Support for T.38 Fax transmission and reception

IP Media Library API

The IP Media Library (IPML) API is used to control media on IP devices. Voice over IP applications that use IP signaling stacks other than those supplied with Intel products may use this library for application development.

NOTE: *IP Media Library functionality is documented in the IP Media Library API for Linux and Windows Library Reference and the IP Media Library API for Linux and Windows Programming Guide.*

New Features

The IP Media Library (IPML) provides the following new features in System Release 6.0 on PCI for Windows:

- Support for RFC 2833
Applications can configure the preferred DTMF mode: UII Alphanumeric, RFC 2833, or Inband. In addition, applications can initiate the generation of DTMF, and receive notification of DTMF detection.
- Support for T.38 Fax
IPML provides an event when CNG or CED tone is detected allowing applications to switch to T.38
- IP Media Gateway (IPML) Demo
The IP Media Gateway (IPML) demo demonstrates using the IPML API to build a PSTN-IP gateway
NOTE: *Refer to the IP Media Gateway (IPML) Demo Guide for complete information on the demo.*

Other Supported Features

The following IPML features continue to be supported in this release:

- Media resource management and media resource operations functionality
- Quality of Service (QoS) threshold alarm configuration and status reporting
- Standard Runtime Library (SRL) event management routines for error retrieval

ISDN API

NOTE: *The Global Call API is the preferred call control API for all technologies including ISDN. However, certain features that are not supported by Global Call may be supported by the underlying ISDN API. See the ISDN Software Reference for more information.*

NOTE: *The ISDN API is not supported when using DM3 boards.*

New Features

No new features have been enabled for the ISDN API in System Release 6.0 on PCI for Windows.

Other Supported Features

The following features continue to be supported:

- BRI Call Waiting
- PRI Support
 - Generic support for supplementary services
 - Programmable start-up conditions
 - Access to protocol timers for performance tuning
 - All specified PRI messages
 - Two B Channel Transfer (TBCT)
 - Non-Call-Associated Signaling (NCAS)
 - Vari-A-Bill
 - ANI-on-demand
 - User-to-user information
 - Dialed Number Identification (DNIS)
 - Non-Facility Associated Signaling (NFAS)

- Supported under Global Call for Springware and DM3 products
 - B channel negotiation
 - Multinational approvals with all popular protocols
 - Automatic Number Identification (ANI)
 - LAP-D Layer 2 access
 - DialView Suite:
 - ISDN Diagnostic Program (isdiag)
 - ISDN Trace Utility (isdtrace)
 - ISDN Network Protocol Firmware (NT1, NE1, ETN, VNNT, TPHNT, QNT, QTE)
 - BRI/SC Support
 - ISDN API
 - User-to-user information
 - Dialed Number Identification (DNIS)
 - Multinational approvals with all popular protocols
 - Automatic Number Identification (ANI)
 - LAP-D Layer 2 access
 - DialView Suite:
 - ISDN Diagnostic Program (isdiag)
 - ISDN Trace Utility (isdtrace)
 - ISDN Network Protocol Firmware (NT1, NE1, ETN, VNNT, TPHNT, QNT, QTN)
 - Basic Call Control
 - Makecall
 - Rejectcall
 - Layer 2 Access
 - Layer 3 Access
 - 8 or 16 S/T interface supporting the following protocols:
 - National ISDN-1
 - Euro-ISDN
 - INS64
 - 5ESS
 - DMS
 - Layer 3 supplementary services
 - Hold and Retrieve
 - Messaging
 - In-band tone generation
 - Multiple D channel configuration
 - 5ESS custom messages
 - Broadcast handling in point-to-multipoint configuration
- NOTE:** Each BRI is configurable as a TE (station) or as an NT (PSTN).
- Springware PRI Protocol Support

Learn Mode and Tone Set File APIs

The Learn Mode API was previously supported on Springware boards only. In this release, it is also supported on DM3 boards. The Tone Set File API is new in System Release 6.0 on PCI for Windows .

NOTE: For more information about the Learn Mode and Tone Set File APIs, refer to the *Learn Mode and Tone Set File API Software Reference*.

Features

The Learn Mode API provides the ability to characterize a call progress tone from a PBX, key system or PSTN and to obtain a complete tone description.

NOTE: You can use the *PBX Expert* utility provided with this system release to accomplish PBX tone learning and tone set file management. See the online help provided with this utility for more information.

The Tone Set File API provides the capability to do the following:

- Store unique call progress tone data obtained from the Learn Mode API
- Change default tone definitions that are provided by the voice library
- Create a new tone definition and add it to the tone template for use with call progress analysis
- Store an unlimited number of tone sets on your system (subject to storage constraints)
- Combine up to 10 sets of tone characteristics into a single, consolidated tone set
- Support up to 10 sets of tone characteristics (that is, for up to 10 different PBX or key systems)

Modular Station Interface API

The Modular Station Interface (MSI) API is used by the following products:

- Intel® Dialogic® DI/0408-LS-A-R2 boards
- Intel® Dialogic® DI/SI-xx-R2 Series boards
- Intel® NetStructure™ High Density Station Interface (HDSI) boards

For more information on these new features, refer to the *Modular Station Interface API for Linux and Windows Library Reference* and the *Modular Station Interface API for Linux and Windows Programming Guide*.

New Features

No new MSI APIs are being introduced in System Release 6.0 on PCI for Windows.

Other Supported Features

The following MSI features continue to be supported in this release:

- Conference Management functions to control conferencing features
- Configuration functions to set and retrieve device parameters
- Device Management functions to open and close devices
- Diagnostic functions to test devices
- Routing functions to allow communication between devices connected to time slots on the CT Bus
- Station functions to control station interfaces

NCM (Native Configuration Manager) API Library

The NCM API library provides an interface for developing customized system configuration and administration applications. The NCM API functions operate on the complete Intel Dialogic system, individual Intel NetStructure and Intel Dialogic boards, or the TDM bus settings.

NOTE: Refer to the *Native Configuration Manager API for Windows Library Reference* and the *Native Configuration Manager API for Windows Programming Guide* for complete information about the NCM API.

New Features

No new NCM API features are being introduced in System Release 6.0 on PCI for Windows.

Other Supported Features

The following NCM API features continue to be supported in this release:

- Adding third-party devices to a system with Intel Dialogic boards
- Reserving TDM bus time slots for exclusive use by third party devices
- Modifying board-level and system-level configuration data
- Querying board-level and system-level configuration data
- Starting, stopping, and checking the status of the Intel Dialogic system
- Starting and stopping individual boards
- Setting the TDM bus clock master fallback list
- Getting Intel Dialogic System Software version information

PBX Integration

The PBX integration Unified API provides a common PBX-integration interface for all of the supported Private Branch Exchanges (PBXs) and Key Telephony Systems (KTSs) and is used to develop computerized voice and call processing applications.

New Features

The following feature has been added in System Release 6.0 on PCI for Windows:

- A new **d42_gtcallidex()** function that, on some PBXs, enables the retrieval of call information in addition to the calling and called party ID. The information includes for example the call type (internal or external) or the reason for the call (for example, forwarded as a result of being busy).

Other Supported Features

The following features continue to be supported in this release:

- Board and channel status retrieval
- Board and channel type retrieval
- Board and channel parameter setting and retrieval
- Called and calling party ID retrieval
- LED or LCD information retrieval
- Writing phone's display information

Support for the following NEC* equipment when used with NEC DTerm Series III phones:

- NEC IVS 2000 PBX
- NEC IMX 2400 PBX
- Electra Elite KTS

Standard Runtime Library API

The Standard Runtime Library (SRL) API provides a common interface for event handling and other functionality common to all Intel Dialogic and Intel NetStructure devices. The Standard Runtime Library provides the framework for implementing the supported programming models and serves as the central dispatcher for events that occur on all devices. Through the Standard Runtime Library, events are handled in a standard manner.

NOTE: Refer to the *Standard Runtime Library API for Linux and Windows Library Reference and Standard Runtime Library API for Windows Programming Guide* for more information.

New Features

The **sr_GetUserContext()** function has been added to the SRL in System Release 6.0 on PCI for Windows. This function provides support for user context in asynchronous mode. User context is a mechanism that allows you to

match a termination event with a function call by returning the user-supplied pointer originally passed to the function. In this release, user context is only supported in the new Conferencing (CNF) API library.

Other Supported Features

The following Standard Runtime Library (SRL) features continue to be supported in this release:

- Support for the following programming models:
 - Synchronous model
 - Synchronous with SRL callback model
 - Asynchronous polled model
 - Asynchronous with non-signal callback model
 - Asynchronous with SRL callback model
 - Asynchronous with Windows callback model
 - Asynchronous with Win32 Synchronization
 - Extended asynchronous model
- Device event management
- Device information retrieval using ATDV_ prefixed functions
- System structure information retrieval using the SRL device mapper API
- The ability to set and retrieve user-specific context using the **sr_setparm()** and **sr_getparm()** functions

Voice API Library

The Voice API library provides a rich set of features for building a wide range of high-density call processing applications such as voice messaging, interactive voice response, telemarketing/call center, operator services, and more. Features include tone signaling, global tone detection and generation, call progress analysis, and a variety of voice encoding algorithms selectable on a channel-by-channel basis.

NOTE: For more information, see the *Voice API for Windows Library Reference and Voice API for Windows Programming Guide*.

New Features

The Voice API library provides the following new features in System Release 6.0 on PCI for Windows (these features are not supported on Springware boards).

- Streaming to Board
- Enhancements to call progress analysis to support the new learn mode and tone set file API
- Automatic gain control (AGC) configurable on a per channel basis through new **dx_setparm()** parameters
- Record notification beep tone generation (used in call logging applications)
- Playback pause and resume
- ETSI-compliant Frequency Shift Keying (FSK) support
- IMA ADPCM coder

Other Supported Features

The following Voice software features continue to be supported in this release:

- Enhanced CT_DEVINFO structure
- Tone detection/generation:
 - Dual Tone Multi Frequency (DTMF)
 - Multi Frequency (MF)
 - Global Tone Detection (GTD) user-defined tones
 - Global Tone Generation (GTG) user-defined tones, including Cadenced Tone Generation
 - Global Dial Pulse Detection (not supported on DM3 boards)

- Tone set file
- Adjustable built-in beep tone length through **dx_settonelen()** (not supported on DM3 boards)
- Data formats for play and record:
 - OKI* ADPCM at 6 kHz with 4-bit samples (24 kbps) and 8 kHz with 4-bit samples (32 kbps), VOX and WAVE file formats
 - G.711 PCM at 6 kHz with 8-bit samples (48 kbps) and 8 kHz with 8-bit samples (64 kbps) using A-law or mu-law coding, VOX and WAVE file formats
 - G.721 at 8 kHz with 4-bit samples (32 kbps), VOX and WAVE file formats (not supported on Springware boards)
 - PCM at 8 kHz with 8-bit samples (64 kbps) and 8 kHz with 16-bit samples (128 kbps) using linear coding, VOX and WAVE file formats
 - PCM at 11 kHz with 8-bit samples (88 kbps) and 11 kHz with 16-bit samples (176 kbps) using linear coding, VOX and WAVE file formats
 - TrueSpeech* at 8 kHz with 16-bit samples (8.5 kbps), VOX and WAVE file formats (not supported on Springware boards)
 - GSM 6.10 full-rate voice coder at 13 kbps using Microsoft* format (VOX and WAVE file formats) and TIPHON* format (VOX file format only)
 - G.726 bit-exact voice coder at 8 kHz with 4-bit samples (32 kbps), VOX and WAVE file formats (WAVE file format not supported on Springware)
 - G.726 bit-exact voice coder at 8 kHz with 2-, 3-, or 5-bit samples (16, 24, 40 kbps), VOX and WAVE file formats (not supported on Springware boards)

NOTE: When using Continuous Speech Processing, play and record activity is only supported on a subset of these voice coders. For more information, see the Continuous Speech Processing API Programming Guide.

 - Speed Control (not all coders supported)
 - Volume Control (not all coders supported)
 - Transmit/receive Analog Display Services Interface (ADSI) 2-way FSK through the **dx_Rxlottdata()**, **dx_Txlottdata()**, and **dx_TxRxlottdata()** functions (supports FSK Bellcore and ETSI standards)
 - Call Progress Analysis
 - Transaction Record
 - Bulk data buffer sizing through the **dx_setchxfercount()** function
 - Silence Compressed Record (not all coders supported)
 - Echo Cancellation

NOTE: For enhanced echo cancellation, use the Continuous Speech Processing software.

 - Caller ID (international caller ID support varies by board)

Protocol Stacks

System Release 6.0 on PCI for Windows includes implementations of two IP signaling protocol stacks which enable the establishment of calls over an IP network. These stacks include:

- Host-Based H.323 Protocol Stack
- Host-Based SIP Protocol Stack

Host-Based H.323 Protocol Stack

The host-based H.323 RADVISION* protocol stack provides features that enable the establishment of calls over an IP network using the H.323 protocol. This IP signaling stack is compliant with ITU H.323 Revision 2.0 and supports some of the features of revision 3.0 and 4.0. Refer to the features section of each product family in this document to

identify the products both that support the host-based H.323 protocol stack as well as any deviations from the feature support described here.

Features

The features provided by the host-based H.323 protocol stack include:

- **Slow start**
Slow start is the original call setup method proposed in H.323 Revision 1.0 and continues to be supported in subsequent versions. Using this method several steps (up to 18) were involved in setting up the connection for a call. An alternative connection method, known as *fast connect*, that involves fewer steps was adopted in H.323 Revision 2.0 (see below).
- **Fast connect**
Fast connect (also known as fast start) is a method of call setup that bypasses some of the usual steps in order to reduce the connection setup time. A fast connect setup can be achieved in as little as one round trip.
NOTE: *The audio is enabled only when the application gets GCEV_CONNECTED event.*
- **Tunneling**
Tunneling is the process of sending H.245 Protocol Data Units (PDUs) through the Q.931 channel (that is, the signaling channel).
- **Call identifier**
The call identifier is a globally unique ID that can be used to always correctly identify which call a packet is referencing, even when going through a gatekeeper.
- **Progress message**
The Progress message is used to indicate that a gateway in the call is inter-working with the switched-circuit network (SCN) or to indicate the presence of in-band information.
- **Alias type support**
The following alias types are supported:
 - E-mail
 - H.323 ID
 - IP Address
 - Phone Number
 - URL
- **Time to live**
Time to live is a parameter that can be requested by an endpoint or specified by the gatekeeper during registration. It indicates the duration (in seconds) for which that registration is valid. Using this mechanism, a gatekeeper does not need to be concerned about its database filling up with entries from endpoints that are no longer active.
- **Keep alive**
The keep alive parameter is sent in a lightweight Registration Request from an endpoint to its gatekeeper to indicate a desire to keep the registration active for a given amount of time. This is useful if the registration is about to expire based on the endpoint's time to live value described above.
- **Caller ID**
Caller ID is a feature found in traditional telephone networks. It also includes the ability of the caller to request that the name and address information be withheld from the called party and the ability of network equipment (for example, the gatekeeper) to screen caller information.
- **Real-time fax**
Real-time fax enables fax devices to initiate a voice call and then switch to fax at some point during the call. Along with the obvious benefit of allowing an IP-based fax device to operate in a manner similar to today's PSTN fax devices, the media switch is performed in such a way that DSP resources are conserved, which reduces the overall cost of equipment. UDP is the method used for carrying fax data.
- **Gatekeeper support**
Functionality for interaction with a gatekeeper includes the ability to do the following:
 - Locate a gatekeeper via a multicast or unicast

- Specify one-time or periodical registration
- Register with a gatekeeper
- Change registration information
- Remove registration information by value
- Send non-standard registration messages
- Deregister
- Handle calls according to the gatekeeper policy for directing and routing calls
- RFC 2833
The ability to advertise support for RFC 2833 and use RFC 2833 on the media when enabled at the local side and supported at the remote side. This capability also includes the ability to use the same RFC 2833 payload type number as the remote side.

Host-Based SIP Protocol Stack

The host-based SIP RADVISION* protocol stack provides features that enable the establishment of calls over an IP network using the SIP protocol. Refer to the features section of each product family in this document to identify the products that support the SIP protocol stack and for any deviations in feature support described here.

Features

The features provided by the host-based SIP protocol stack include:

- UDP support
The ability to convey SIP messages over a UDP/IP transport and to deploy a retransmission mechanism that assures reliability and that duplicated packets are ignored.
- Audio support
The ability to start Audio media sessions using RTP.
- Registration
The ability to register and un-register with SIP registrar using the REGISTER method.
- Re-Invite capability
The ability to generate a modification request internally to switch to T.38 after detecting a CNG/CED tone. Also, the ability to process an incoming modification request to switch to T.38. The parameters currently supported by re-invite are the parameters used to switch between Audio and T.38 fax.
- SRV support
The ability to locate a SIP server using a DNS record, for example "sip11.intel.com", and to resolve it without an IP address for the remote side. Adding a record to the DNS is outside the scope of SIP.
- RFC 2833
The ability to advertise support for RFC 2833 and use RFC 2833 on the media when enabled at the local side and supported at the remote side. This capability also includes the ability to use the same RFC 2833 payload type number as the remote side.

Demonstration Software

Demonstration programs are provided to demonstrate the functionality and features of Intel® Dialogic® and Intel® NetStructure™ products and serve as examples of application programming using Intel Dialogic API libraries. All demo programs are supplied as source code which users may modify to explore other capabilities of the products. All demo programs listed below are located in `\Program Files\Dialogic\demos` following standard installation of the System Release.

New Demo Programs

The following new demo programs are included in System Release 6.0 on PCI for Windows:

- **HiZ Demo**
This text-based (command line) demo illustrates call monitoring and call recording functionality on analog HiZ boards and on digital HiZ boards. This demo can be a useful tool for discovering all devices in the system, both HiZ and non-HiZ. For more information on this demo, see the *Call Logging API Software Reference*.
- **IP Multicast Client Demo**
The IP Multicast Client demo demonstrates using the IP Media Library API to build an IP multicast client application. It allows an IP gateway to listen to RTP streams broadcast from a multicast IP address.
NOTE: Refer to the *IP Multicast Client (IPML) Demo Guide* for complete information on the demo.
- **IP Multicast Server Demo**
The IP Multicast Server demo demonstrates using IP Media Library API to build an IP multicast server application. It allows an IP server to use RTP multicasting to continuously deliver an RTP stream to a multicast IP address.
NOTE: Refer to the *IP Multicast Server (IPML) Demo Guide* for complete information on the demo.

Updated Demo Programs

The following demo programs have been updated, modified, or enhanced since System Release 5.1.1 Feature Pack 1 for Windows:

- **CSP Demos**
The Continuous Speech Processing (CSP) demos have been enhanced as follows. For more information about these demos, see the *Continuous Speech Processing API Demo Guide*.
 - **CSPAuto** - Non-interactive (automatic) CSP demo with diagnostics supported on Springware boards and DM3 boards
 - **CSPLive** - Interactive CSP demo with diagnostics supported on Springware boards and DM3 boards
- **Call Logging SnifferMFC Demo**
GUI-based demo that illustrates call monitoring and call logging functionality on analog HiZ boards and on digital HiZ boards. It has been updated to support the new Analog HiZ board. For more information about this demo, refer to the *Call Logging API Software Reference for Windows*.
- **Voice Demos**
The Voice demos have been enhanced as follows. For more information about these demos, see the online help provided with the demos.
 - **Ansrmt** - Synchronous Multithreaded programming model demo that now supports DM3 boards
 - **VoiceDemo** (formerly called *sample*) - GUI-based, multi-channel, working demonstration of voice processing features that now supports DM3 boards

Other Supported Demo Programs

The following demo programs continue to be supported in the System Release. These programs have not changed since System Release 5.1.1 Feature Pack 1 for Windows.

- **BRI Call Waiting (BCW) Demo**
The BRI Call Waiting (BCW) demo demonstrates how to make and answer a waiting call on BRI/SC products.
- **Fax Demos**
The following fax demonstration programs are supported. See the *Fax Software Reference* for more information.
 - **faxsr** - sends or receives faxes on a single voice/fax channel (not supported on DM3 boards)
 - **faxdemo** (formerly called scfax) - sends or receives faxes using the TDM bus configuration (not supported on DM3 boards)
 - **dspfaxsr** - sends or receives faxes using DSP Fax (SoftFax) on a single voice/fax channel (not supported on DM3 boards)
- **Global Call Basic Call Control Demo**
A demonstration program that exercises some of the capabilities of Global Call. See the *Global Call API Demo Guide* for more information.
- **IP Gateway (Global Call) Demo**
The IP Gateway (Global Call) demo demonstrates using the Global Call API to build a PSTN-IP gateway. The demo implements an object-oriented design.
NOTE: Refer to the *IP Gateway (Global Call) Object Oriented Demo Guide* for complete information.
- **IP Media Server (Global Call) Demo**
The IP Media Server (Global Call) demo demonstrates using the Global Call API to build an IP media server, providing voice services via IP technology.
NOTE: Refer to the *IP Media Server (Global Call) Demo Guide* for complete information on the demo.
- **IP Media Gateway (IPML) Demo**
The IP Media Gateway (IPML) demo demonstrates using the IP Media Library API to build a PSTN-IP gateway application, using a third-party call control stack.
NOTE: Refer to the *IP Media Gateway (IPML) Demo Guide* for complete information on the demo.
- **PBX Integration Demos**
 - **PBX Integration Demo** (previously called D42) - D/42JCT-U only
 - **Message Waiting Indicator Demo (MWI)** - Message waiting demo for Siemens Optiset Switch (supports Springware D82 board)
- **Voice Demos**
 - **Cbansr** - Asynchronous Callback programming model demo that supports Springware boards
 - **Pansrmtc** - Asynchronous Polled programming model demo that supports Springware boards
 - **Xaansr** - Extended Asynchronous programming model demo that supports Springware boards

Supported Hardware

This chapter describes the hardware boards that are supported in the System Release 6.0 on PCI for Windows. The products in this section are organized into the following categories:

- Media Processing - Combined Media Boards
- Media Processing - Single Media Boards
- Signaling Products
- Switching Boards

Media Processing - Combined Media Boards

The Media Processing Combined Media Boards consist of the following subcategories:

- Voice with Conferencing + Speech + Fax Boards (Universal Media Load)
- Voice with Speech and Conferencing
- Voice with Fax Boards
- Voice with Fax and/or Speech Boards

Voice with Conferencing + Speech + Fax Boards (Universal Media Load)

- DM/V960A-4T1-PCI
- DM/V3600BP
- DM/V1200BTEP
- DM/V600BTEP

Voice - with Speech and Conferencing

- DM/V480A-2T1-PCI
- DM/V600A-2E1-PCI
- DM/V2400A-PCI

Voice with Fax Boards

- DM/VF240-T1-PCIU
- DM/VF300-E1-PCIU
- D/4PCIUF

Voice with Fax and/or Speech Boards

- DM/V480A-2T1-PCI
- DM/V600A-2E1-PCI
- DM/V2400A-PCI
- DMV160LP
- DMV160LPEU
- D/240JCT-T1
- D/300JCT-E1
- D/480JCT-1T1
- D/600JCT-1E1

- D/480JCT-2T1
- D/600JCT-2E1
- D/160JCT
- D/320JCT
- D/41JCT-LS
- D/120JCT-LS
- VFX/41JCT-LS

Media Processing - Single Media Boards

The Media Processing Single Media Boards consist of the following subcategories:

- Fax Boards
- Voice Boards

Fax Boards

- CPi/200PCI
- CPi/400PCI
- CPi/200B2
- CPi/400B2
- CPi/400BRI-PCI
- CPi/2400CT-1T1-PCIU
- CPi/3000CT-1E1-PCIU
- CPi/2400CT-PCIU
- CPi/3000CT-PCIU
- DM/F240-PCIU
- DM/F300-PCIU
- DM/F240-T1-PCIU
- DM/F300-E1-PCIU

Voice Boards

- D/4PCIU
- DM/V480-4T1-PCI
- DM/V600-4E1-PCI
- DM/V960-4T1-PCI
- DM/V1200-4E1-PCI

Signaling Products

The Signaling Products consist of the following subcategories:

- Digital Telephony Interface Boards
- IP Boards
- Call Logging (Line-Tapping) Boards
- PBX Integration Boards
- SS7 Boards

- Signaling Gateways (SS7 Signaling Interface Units [SIU])

Digital Telephony Interface Boards

- DM/T960-4T1
- DM/T1200-4E1-PCI
- DM/N960-4T1-PCI
- DM/N1200-4E1-PCI
- BRI/80PCI
- BRI/160PCI

IP Boards

- DM/IP241-1T1-PCI-100BT
- DM/IP301-1E1-PCI-100BT
- DM/IP481-2T1-PCI-100BT
- DM/IP601-2E1-PCI-100BT

Call Logging (Line-Tapping) Boards

- DM/V480-2T1-PCI-HiZ
- DM/V600-2E1-PCI-HiZ
- DMV160LPHIZ
- DSLT/162CT-U-HiZ

PBX Integration Boards

- D/42JCT-U
- D/82JCT-U
- DSE

SS7 Boards

- SS7HDP
- SPCI2S
- SPCI4

Signaling Gateways (SS7 Signaling Interface Units [SIUs])

- SIU131
- SIU231
- SIU520

Switching Boards

The Switching Boards consist of the following subcategories:

- Conferencing + Speech + Station Interface + Voice Boards
- Station Interface Boards

Conferencing + Speech + Station Interface + Voice Boards

- DI/0408-LS-A-R2
- DI/SI16-R2
- DI/SI24-R2

- DI/SI32-R2

Station Interface Boards

- HDSI-1200-PCIU
- HDSI-960-PCIU
- HDSI-720-PCIU
- HDSI-480-PCIU

Separately Orderable Products

This section describes separately orderable products that are not part of the System Release 6.0 on PCI for Windows but are required to perform some of the functions supported by the system release.

Global Call Protocols Package

The Intel® Dialogic® Global Call Protocols for Linux and Windows provides analog and E1/T1 CAS/R2 protocols for a variety of countries and switches on Intel® NetStructure™ Intel® Dialogic® boards. The Global Call Protocols Package contains:

- Global Call PDK and ICAPI protocol binaries and country-dependent parameter (CDP) files
- *Intel Dialogic Global Call Protocols for Linux and Windows Release Notes*, which describes the features in the current release and provides installation instructions
- *Global Call Country Dependent Parameters (CDP) Configuration Guide*, which describes the parameters associated with each of the countries needed for utilizing Global Call protocols

NOTE: The Global Call Protocols Package can be downloaded from the Intel Telecom Support Resources web site at <http://developer.intel.com/design/telecom/support>.

Release Documentation

This chapter provides information about the documentation that has been developed to accompany the System Release 6.0 on PCI for Windows. This information is organized into the following sections:

- Documentation Highlights
- System Release Documentation
- Installation and Configuration Documentation
- OA&M Documentation
- Programming Libraries Documentation
- Demonstration Software Documentation

Documentation Highlights

The System Release 6.0 on PCI for Windows documentation referenced in this Release Guide is available only on CD or downloadable from the support website located at:

<http://resource.intel.com/telecom/support/documentation/releases/index.htm>

The new documentation uses a new presentation format and a more customer-focused information architecture. There will be a transition period during which some documents will be in the new format and structure, while others will remain in the old format and structure. You will notice the changes in a variety of ways: some documents may be re-titled, some may be split into several documents, and some may be retired altogether. As this migration takes place, the changes will be highlighted in this section.

Among the more notable changes in System Release 6.0 on PCI for Windows are the following:

- The *Compatibility Guide for the Dialogic R4 API on DM3 Products* has been retired. The R4 on DM3 compatibility information contained in the guide has been incorporated into the appropriate individual programming guides and API library references.
- Information in the *Customization Tools for Installation and Configuration for Windows* has transitioned to the *Native Configuration Manager API for Windows Library Reference* and the *Native Configuration Manager API for Windows Programming Guide*.
- *Board Management API for Windows and Linux Library Reference*: provides reference information on the functions, parameters, error codes, data, and example code for the Board Management API. This API provides run-time fault monitoring and management of configurable boards, which includes the ability to monitor the host computer for a failure and take boards out of service to prevent the network from offering calls to a failed system.

If you are new to Intel telecom products or some of the latest technology and don't want to search through the documentation to find the information you need, use the Learn About website to get an overview of our products and what is required to use them. The URL for Learn About is:

<http://resource.intel.com/telecom/support/documentation/learnabout/index.htm>

System Release Documentation

The following system release documentation is provided to support System Release 6.0 on PCI for Windows:

- *Intel Dialogic System Release 6.0 on PCI for Windows on Intel Architecture Release Guide* (this document) †
- *Intel Dialogic System Release 6.0 on PCI for Windows on Intel Architecture Release Update* (Web only) †

NOTE: A dagger (†) next to a document title indicates that the document has either been updated since System Release 5.1.1 Feature Pack 1 for Windows or is an entirely new document.

Installation and Configuration Documentation

The following installation and configuration documentation is provided to support System Release 6.0 on PCI for Windows:

- *Intel Dialogic System Release 6.0 on PCI for Windows on Intel Architecture Software Installation Guide* †
- *Intel DM3 Architecture PCI Products on Windows Configuration Guide* †
- *Intel Springware Architecture Products on Windows Configuration Guide* †
- *GDK Version 5.0 Installation and Configuration Guide for Windows*
- *Updates for GDK Version 6.0 and Intel Dialogic System Release 6.0 on PCI for Windows* †

NOTE: A dagger (†) next to a document title indicates that the document has either been updated since System Release 5.1.1 Feature Pack 1 for Windows or is an entirely new document.

OA&M Documentation

The following Operation, Administration and Maintenance (OA&M) documentation is provided to support this release:

- *Intel Dialogic System Software for PCI Products on Windows Administration Guide* †
- *Intel Dialogic System Software for DM3 Architecture Products on Windows Diagnostics Guide* †
- *Dialogic Universal Hardware Diagnostics Guide*
- *SNMP Agent Software for Windows Operating Systems Administration Guide* †
- *Board Management API for Windows and Linux Operating Systems Library Reference* †
- *Event Service API for Windows Operating Systems Programming Guide* †
- *Event Service API for Windows Operating Systems Library Reference* †
- *Native Configuration Manager API for Windows Operating Systems Programming Guide* †
- *Native Configuration Manager API for Windows Operating Systems Library Reference* †

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Programming Libraries Documentation

Call Control

- *Global Call API for Linux and Windows Library Reference* †
- *Global Call API for Windows Programming Guide* †
- *Global Call Analog Technology User's Guide for Linux and Windows* †
- *Global Call E-1/T-1 CAS/R2 Technology User's Guide for Linux and Windows* †
- *Global Call IP Technology Guide* †
- *Global Call ISDN Technology Guide* †
- *Global Call SS7 Technology Guide* †
- *Porting Global Call H.323 Applications from Embedded Stack to Host Based Stack Application Note*
- *Digital Network Interface Software Reference for Linux and Windows* †
- *ISDN Software Reference for Linux and Windows*

Call Logging

- *Call Logging API Software Reference for Windows* †

Conferencing

- *Conferencing (CNF) API for Linux and Windows Programming Guide* †

- *Conferencing (CNF) API for Linux and Windows Library Reference †*
- *Audio Conferencing (DCB) for Windows Programmer's Guide †*
- *Audio Conferencing (DCB) for Linux and Windows Library Reference †*

Continuous Speech Processing

- *Continuous Speech Processing API for Linux and Windows Programming Guide †*
- *Continuous Speech Processing API for Linux and Windows Library Reference †*

Fax

- *Fax Software Reference for Windows †*
- *GDK Version 5.0 Programming Reference Manual for Windows*

IP Media

- *IP Media Library API for Linux and Windows Programming Guide †*
- *IP Media Library API for Linux and Windows Library Reference †*

Modular Station Interface

- *Modular Station Interface API for Linux and Windows Programming Guide †*
- *Modular Station Interface API for Linux and Windows Library Reference †*

PBX Integration

- *PBX Integration User's Guide †*
- *PBX Integration Software Reference †*

Standard Runtime Library

- *Standard Runtime Library API for Windows Programming Guide †*
- *Standard Runtime Library API for Linux and Windows Library Reference †*

Voice

- *Voice API for Windows Programming Guide †*
- *Voice API for Windows Library Reference †*
- *Learn Mode and Tone Set File API Software Reference for Linux and Windows †*

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Demonstration Software Documentation

The following demonstration software documentation is provided to support this release:

- *Continuous Speech Processing API for Linux and Windows Demo Guide †*
- *Global Call API for Linux and Windows Demo Guide*
- *IP Gateway (Global Call) Object Oriented Demo Guide*
- *IP Media Server (Global Call) Demo Guide for Linux and Windows †*
- *IP Media Gateway (IPML) Demo Guide for Linux and Windows †*
- *IP Multicast Client (IPML) Demo Guide †*
- *IP Multicast Server (IPML) Demo Guide †*

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