Dialogic®

Dialogic® Host Media Processing Software Release 2.0WIN

Release Guide

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Contents

About This Publication

The following topics provide information about this publication.

Applicability

This Release Guide (05-2468-001)provides information about the features, system requirements, and release documentation for the Dialogic® Host Media Processing Software Release 2.0WIN.

Intended Audience

This document is intended for all users of Dialogic® Host Media Processing Software Release 2.0WIN, including the following:

- System Integrators
- Toolkit Developers
- Independent Software Vendors (ISVs)
- Original Equipment Manufacturers (OEMs)

How to Use This Publication

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

- Chapter 1, “Release Overview” - describes the highlights of this release.
- Chapter 2, “System Requirements” - describes the system software and hardware requirements for the Dialogic® Host Media Processing Software.
- Chapter 3, “Features” - describes the features supported in this release.
- Chapter 4, “Installation and Configuration” - provides information about installation and configuration.
- Chapter 5, “OA&M Software” - describes the operation, administration, maintenance, and diagnostics supported in this release.
- Chapter 6, “Programming Libraries” - describes the programming libraries that are available as part of this release.

- Chapter 7, “Demonstration Software” - describes the demonstration programs provided in this release.
- Chapter 8, “Supported Hardware” - provides a list of all the hardware supported in this release.
- Chapter 9, “Documentation” - provides a list of the documents that accompany this release, either on the CD or downloadable from the Dialogic Support Web site.

Related Information

See the following for additional information:

- *http://www.dialogic.com/manuals/* (for Dialogic® product documentation)
- *http://www.dialogic.com/support/* (for Dialogic technical support)
- *http://www.dialogic.com/* (for Dialogic® product information)

Release Overview 1

This chapter provides an overview of the Dialogic® Host Media Processing (HMP) Software Release 2.0WIN as well as a high-level overview of the products and features that are newly supported in Dialogic® HMP Software Release 2.0WIN.

Host Media Processing Software

Dialogic® HMP Software performs media processing tasks on general-purpose servers based on Dialogic® architecture without the need for specialized hardware. The software provides media services that can be used to build flexible, scalable, and cost-effective next-generation IP media servers.

Dialogic® HMP Software is a Dialogic communications building block technology. When installed on a system, the software operates with customer applications similarly to a Dialogic® board with Dialogic® DM3 architecture, but all media processing takes place on the host processor. To help customers migrate their existing applications to IP, the software also supports two direct APIs: R4 for media processing and Global Call (GC) for call control.

Dialogic® HMP software uses a built-in network interface card (NIC) to provide IP connectivity. Dialogic® HMP Software supports the industry-standard H.323 and Session Initiation Protocol (SIP) protocols for call control; Real-time Transport Protocol (RTP) and Real-Time Control Protocol (RTCP) for media streaming over IP in G.711, G.723.1, G.729, or G.729B audio formats; and the T.38 format for fax over IP.

Dialogic® HMP Software is implemented as a Windows® operating system kernel-mode driver that runs at real-time priority. The software is optimized to run on the Intel Pentium III, Pentium 4, and Xeon processors. Dialogic® HMP software can be installed and upgraded like any other software.

Licensing

The Dialogic® HMP Software media resources are licensed using an industry-standard model in which the license is locked to a specific computer or board. To allow customers the flexibility of choosing combinations of media processing, Dialogic® HMP Software is offered in a variety of licensing models. See Enhanced Licensing Capability in Chapter 3, “Features” for additional information.

Direct PSTN and Digital Station Connectivity

Dialogic® HMP Software supports a streaming interface to the public switched telephone network (PSTN) by bridging to T1/E1 network interface boards, and to digital stations by bridging to station interface boards. See Host Streaming Interface in Chapter 3, “Features” for additional information.

Release Highlights

In addition to the features supported by Dialogic® HMP Software Release 1.3WIN, this release of the Dialogic® Host Media Processing Software supports the following new features:

- Direct PSTN connectivity using a streaming interface between HMP and network interface boards
- Software selectable T1 and E1 network interfaces
- Direct digital station connectivity using a streaming interface between HMP and station interface boards
- Support for the Dialogic® DNI300TEPHMP, DNI601TEPHMP, and DNI1200TEPHMP T1/E1 network interface boards
- Support for the Dialogic® DSI162HMP and DSI162LGNHMP digital station interface boards
- Support for 400 G.711 channels
- Industry-standard license manager utility

System Requirements 2

The basic requirements to install and run Dialogic® Host Media Processing (HMP) Software Release 2.0WIN are described in the following sections:

2.1 Basic Hardware Requirements

The minimum hardware requirements for this release are:

- Intel Pentium III Processor (See Table 1. for processor recommendations.)
- 512 MB of RAM for less than 120 channels, 1 GB of RAM for 120 or higher channels
- 600 MB of Disk Space (for full installation of HMP Release 2.0)
- 100 Base-T Network Interface Card (NIC)

Note: For 120 channels or higher, using a 1000 Base-T NIC, while still using a 100Base-T Network, is recommended. In general, better performance will be realized by using a 1000Base-T NIC, even for configurations of less than 120 channels.

Table 1. Processor Recommendations

Number of User Sessions[1]	Minimum Processor Type and Clock Speed	
	G.711 (20 msec Frame)	G.723.1, G.729, or G.729B[2]
Up to 4	Intel Pentium III, 850 MHz	Intel Pentium III, 850 MHz
Up to 32	Intel Pentium III, 1.26 GHz	Intel Pentium 4, 1.7 GHz
Up to 64	Intel Pentium 4, 2.0 GHz	Dual Intel Xeon, 2.0 GHz
Up to 96	Single Intel Xeon, 2.4 GHz	Dual Intel Xeon, 2.8 GHz
Up to 120	Dual Intel Xeon, 2.4 GHz	Dual Intel Xeon, 3.06 GHz
Up to 240	Dual Intel Xeon, 3.2 GHz	Dual Intel Xeon, 3.6 GHz
Up to 400	Dual Intel Xeon, 3.6 GHz	—

1.RTP and Voice functionality
2.Number of low bit rate coder sessions = 50% of G.711 sessions

2.2 Basic Software Requirements

Note: Dialogic® HMP Software Release 2.0WIN has been tested only on systems with NT file systems (NTFS). This release of the Dialogic® HMP Software has not been tested on systems with FAT 32 file systems.

The basic software requirements for this release are:

- Operating System - one of the following:
  - Windows® XP Professional with Service Pack 2
  - Windows Server® 2003 (Standard or Enterprise Edition) with Service Pack 1
- Compilers: Microsoft® Visual Studio® 6.0 with Service Pack 5 or Microsoft® Visual Studio® .NET required for application development

Note: You may see a **Security Alert- Driver Installation** message during installation of the Dialogic® HMP Software. This is just a warning message, and the Dialogic® HMP Software will install properly after you click **Yes**. For more information, refer to the *Dialogic® Host Media Processing Release 2.0WIN Software Installation Guide.*

2.3 Additional Requirements Information

In addition to the basic hardware and software requirements, the following information is included in this section:

2.3.1 Hyper-Threading Technology

Hyper-Threading Technology (HT) is only supported on systems using the Intel Pentium 4 or Xeon processors and the Windows® 2003 or Windows® XP operating system. For detailed information about using HT with the Windows® operating system, see the following Web sites:

- *http://www.intel.com/technology/hyperthread/*
- *http://www.intel.com/homepage/land/hyperthreading_more.htm*

Also see the Microsoft design information titled "Windows Support for Hyper-Threading Technology" at the following Microsoft Web site:

- *http://www.microsoft.com/whdc/system/CEC/HT-Windows.mspx*

2.3.2 Memory Requirements

For production purposes, a minimum of 512 MB of memory is required. For 120 and higher channels, a minimum of 1 GB of memory is required.

2.3.3 IP Endpoints

Dialogic® HMP Software interoperation has been validated with the endpoint devices listed in Table 2.

Table 2. IP Endpoints

Endpoint Devices	H.323	SIP
Microsoft® NetMeeting® (Version 3.0 or later)	√	√
Microsoft® Messenger	√	√
Polycom SoundPoint IP 500	√	
Intel Optimizers Internet Phone	√	
Dialogic® 1000 Media Gateway Series (formerly known as Dialogic® PBX-IP Media Gateway)	√	√
Cisco AS5300 Universal Gateway IOS Version 12.3(1)	√	√
RadVision Gatekeeper 4.0.0.28	√	
Grandstream Budget Tone 1xx Series IP Phones		√
Cisco ATA-18x Series Gateways	√	√
Cisco 7960 Phone	√	√
Pingtel Xpressa PX-1		√

2.3.4 Configurations Tested

The reference configurations listed in Table 3 have been successfully tested with CPU utilization of 50% or less:

Table 3. Resource Configurations Tested

Configuration	RTP	Enhanced RTP	Voice	Conferencing (DCB)	Fax	Speech	PSTN	Station Interface
IVR	400	0	400	0	0	0	0	0
Unified Messaging	240	0	240	0	48	240	0	0
IVR	120	120	120	0	0	0	0	0
IVR/E1 CAS	240	0	240	0	0	0	240	0
IVR/T1 ISDN	120	0	120	0	0	0	96	0

Table 3. Resource Configurations Tested (Continued)

Configuration	RTP	Enhanced RTP	Voice	Conferencing (DCB)	Fax	Speech	PSTN	Station Interface
Conferencing/E1 ISDN	30	30	60	40	0	0	30	0
Conferencing	400	0	0	400	0	0	0	0
Unified Messaging/T1 Clear Channel	60	60	120	80	0	120	96	0
IP Gateway	23	11	23	0	4	23	0	0
IVR/UM/Conf/Speech High Density	240	120	240	240	64	240	0	0
IVR/UM/Conf/Speech Low Density	120	60	120	120	32	120	0	0
IVR/E1 ISDN Low Density	120	60	120	120	32	120	120	0
IP-PBX	128	0	128	0	2	128	120	128

2.3.5 Platforms Used in Testing the Dialogic® HMP Software

Table 4 provides information about the chassis/platform configurations used to test the Dialogic® HMP Software.

Note: Dialogic® HMP Software Release 2.0WIN has been tested only on systems with NT file systems (NTFS). Dialogic® HMP Software Release 2.0WIN has not been tested on systems with FAT 32.

Table 4. Platform Configurations Used in Testing HMP Software

Vendor	Processor	Processor Speed	Symmetric Multi-Processing	Operating System
Technoland	Dual Intel Xeon supporting Hyper-Threading Technology	3.02 GHz	Yes	Windows® XP Professional, SP2
Intel	Dual Intel Pentium III	1.26 GHz	Yes	Windows® XP Professional, SP2
Intel	Intel Pentium 4	2.4 GHz	No	Windows Server® 2003 (Enterprise Edition), SP1
Intel	Intel Pentium 4 supporting Hyper-Threading Technology	3.0GHz	Yes	Windows® XP Professional, SP2
Dell	Dual Intel Xeon	2.8 GHz	Yes	Windows Server® 2003 (Enterprise Edition), SP1

Table 4. Platform Configurations Used in Testing HMP Software (Continued)

Vendor	Processor	Processor Speed	Symmetric Multi-Processing	Operating System
Intel	Dual Intel Xeon supporting Hyper-Threading Technology	2.8 GHz	Yes	Windows® XP Professional, SP2
IBM	Dual Intel Xeon supporting Hyper-Threading Technology	3.06 GHz	Yes	Windows® XP Professional, SP2
IBM	Dual Intel Xeon supporting Hyper-Threading Technology	3.06 GHz	Yes	Windows Server® 2003 (Standard Edition), SP1
Intel	Dual Intel Xeon supporting Hyper-Threading Technology	3.6 GHz	Yes	Windows® XP Professional, SP2
Intel	Dual Intel Xeon supporting Hyper-Threading Technology	3.6 GHz	Yes	Windows® XP Professional, SP2
Dell	Dual Intel Xeon supporting Hyper-Threading Technology	3.6 GHz	Yes	Windows® XP Professional, SP2
Dell	Dual Intel Xeon supporting Hyper-Threading Technology	3.6 GHz	Yes	Windows Server® 2003 (Enterprise Edition), SP1

2.4 Ordering the Product

The following table lists the resources that are available through flexible licensing.

Table 5. Media and Other Resources

Resource	Resource Code	Number of Resources Available	Resource Description
RTP G.711	r	0-400	Supports streaming digitized voice over RTP using G.711 coder.
Voice	v	0-400	Provides basic voice ports that allow you to control volume, record with Automatic Gain Control (AGC), DTMF, and user-defined tone detection.

Table 5. Media and Other Resources (Continued)

Resource	Resource Code	Number of Resources Available	Resource Description
Enhanced RTP	e	0-120	Enhances the resource by supporting digitized voice over RTP using G.723.1, G.729, and G.729B coders.
Conferencing	c	0-400	Conferences parties using advanced features such as coach/pupil mode, tone clamping, and active talker notification.
Speech Integration (Continuous Speech Processing)	s	0-240	Provides speech integration capabilities that allow you to integrate Dialogic® HMP Software with speech engines for Automatic Speech Recognition (ASR) and Text-to-Speech (TTS) support using the Continuous Speech Processing (CSP) APIs.
T.38 Fax Termination	f	0-120	Supports T.38 fax origination and termination sessions.
IP Call Control	i	0-400	Supports third party IP call control. Third party call control enables one entity to create, modify, or terminate a media session between two or more endpoints. Call control signaling and media exchange are independently managed.

The Dialogic® HMP Software provides a high level of flexibility in choosing media processing configurations. However, all possible combinations of the resources listed in Table 2 are not supported. Refer to the following rules and the automatic license fulfillment tool for determining valid configurations.

Resource Configuration Rules

Use the following rules to determine a valid resource configuration:

- The number of Voice resources must be less than or equal to the number of RTP G.711 resources or T1/E1 DS0 channels.
- The number of T.38 Fax resources must be less than or equal to the number of RTP G.711 resources.
- The number of Enhanced RTP resources must be less than or equal to the number of RTP G.711 resources.

  Note: Enhanced RTP resources are used for G.723.1, G.729, and G.729B coders.
- The number of Conferencing resources must be less than or equal to the number of RTP G.711 resources or T1/E1 DS0 channels.
- The number of Speech Integration (continuous speech processing) resources must be less than or equal to the number of Voice resources.
- Each T.38 Fax resource also requires an RTP G.711 resource. For example, if you want one T.38 Fax session and one IVR session simultaneously, you will need one Voice resource, one T.38 Fax resource, and two RTP G.711 resources.

For more information about the Dialogic® HMP Software see the following Web site:

http://www.dialogic.com/products/ip_enabled/HMPWindows.htm

Features 3

This chapter lists and describes the features that are supported by the Dialogic® Host Media Processing (HMP) Software Release 2.0WIN release:

3.1 New Features in This Release

Dialogic® Host Media Processing (HMP) Software Release 2.0WIN includes the following new features that have been introduced since Dialogic® HMP Software Release 1.3WIN:

- Higher Channel Density Support
- Enhanced Licensing Capability
- Host Streaming Interface
- Interface Board Support
- Echo Cancellation
- SIP Re-INVITE
- Third Party Call Control (3PCC)
- Support for G.726 IP Coder
- Early Media Call Setup

Higher Channel Density Support

Dialogic® HMP Software Release 2.0WIN supports up to 400 instances of G.711-based voice resources in an IVR configuration.

For additional information, see Chapter 2, “System Requirements”.

Enhanced Licensing Capability

Dialogic® HMP Software Release 2.0WIN includes the following licensing enhancements:

- Industry-standard license manager tool
- Node-locked licensing - license is locked to particular machine
- Board-locked licensing - license is locked to a particular board

For additional information, see the *Dialogic® Host Media Processing Software Release 2.0WIN Administration Guide*.

Host Streaming Interface

Dialogic® HMP Software Release 2.0WIN can create media stream connections between external board-based channels on Digital Network Interface (DNI) and Digital Station Interface (DSI) boards to the host.

The Host Streaming Interface feature allows Dialogic® DNI and DSI boards to communicate with the Dialogic® HMP Software running on the host. The Dialogic® DNI and DSI boards contain bridge devices that are used to perform this streaming.

For additional information, see the *Dialogic® Host Media Processing Interface Boards Configuration Guide*.

Interface Board Support

Dialogic® HMP Software Release 2.0WIN supports the following interface boards:

- Dialogic® Digital Network Interface Boards
- Dialogic® Digital Station Interface Boards

Dialogic® Digital Network Interface Boards

Dialogic® HMP Software Release 2.0WIN introduces support for the Dialogic® Digital Network Interface boards. Based on Dialogic® DM3 architecture, these boards enable applications developed using Dialogic® API libraries in an HMP environment to connect to public swithed telephone network (PSTN) networks through T1 or E1 network interfaces. Each board includes an H.100 CT Bus connector and has a bridge device that enables media streaming between HMP and other boards connected to the CT Bus.

The Dialogic® Digital Network Interface products are ideal for converged IP-PSTN solutions that require both IP and PSTN connectivity. The products are used by mid-sized to large enterprises, primarily for media gateways and applications that require switching, such as PC PBX and call center applications.

A maximum of 240 DS0 channels are supported by a system. This accommodates:

- Up to four dual-span network interface boards
- Up to two quad-span network interface boards

Following is a description of the Dialogic® Digital Network Interface boards:

Dialogic® DNI300TEPHMP (single-span) Board
: Universal PCI board that provides a single software-selectable T1 or E1 digital network interface. This board uses a media load that supports network interface functionality only. Media processing functionality such as tone detection, tone generation, call progress analysis, and echo cancellation are provided by the HMP software.

Dialogic® DNI601TEPHMP (dual-span) Board
: Universal PCI board that provides two software-selectable T1 or E1 digital network interfaces. This board provides certain media processing functionality, including tone

detection, tone generation, call progress analysis, and echo cancellation. The media load supports this media processing functionality as well as network interface functionality.

Dialogic® DNI1200TEPHMP (quad-span) Board
Universal PCI board that provides four software-selectable T1 or E1 digital network interfaces. This board uses a media load that supports network interface functionality only. Media processing resources such as tone detection, tone generation, call progress analysis, and echo cancellation are provided by the HMP software.

Key features of the digital network interface boards include:

- Built on industry standard H.100 CT Bus
- Supports flexible routing configuration
- Supports the Dialogic® API libraries including audio conferencing, continuous speech processing, device management, digital network interface, fax, Global Call, IPML, standard runtime library, and voice.
- Supports the following T1 and E1 protocols:
  - 4ESS (T1)
  - 5ESS (T1)
  - NTT (T1)
  - NI2 (T1)
  - DMS (T1)
  - QSIGT1 (T1)
  - QSIGE1 (E1)
  - NET5 (E1)
  - T1CC (T1)
  - CAS (T1)
  - E1CC (E1)
  - R2MF (E1) (supported on Dialogic® DNI601TEPHMP boards only)

The following features are not supported at this time:

- Mixed ISDN and CAS protocols on the same board
- Mixed ISDN and R2MF protocols on the same board
- Two-way frequency shift keying (FSK)
- Silence compressed record
- DPNSS/DAS2 ISDN protocols
- Speed control
- Pause/resume play

For more information about media loads and how to configure the Dialogic® Digital Network Interface boards, see the *Dialogic® Host Media Processing Interface Boards Configuration Guide* and the Dialogic® Configuration Manager (DCM) Online Help.

Dialogic® Digital Station Interface Boards

Dialogic® HMP Software Release 2.0WIN introduces support for the Dialogic® Digital Station Interface boards. Based on Dialogic® Media Exchange Architecture (MEA), these boards enable applications developed using Dialogic® API libraries in an Dialogic® HMP Software environment to connect to digital stations. Each board includes an H.100 CT Bus connector and has a bridge device that enables media streaming between Dialogic® HMP Software and other boards connected to the CT Bus.

Following is a brief description of each Dialogic® Digital Station Interface product type:

Dialogic® DSI162HMP Board

Universal PCI board that provides 16 two-wire interfaces to the following digital station types:

- Norstar M7000 and T7000 series
- Nortel Meridian M2000 series
- Avaya Magix 4400 series
- Avaya Definity 6400 and 8400 series
- NEC Dterm III and Dterm E
- Siemens Optiset E series

Dialogic® DSI162LGNHMP Board

Universal PCI board that provides 16 four-wire interfaces to the following digital station types:

- Avaya Legend MLX

For information about how to configure the digital station interface boards, see the Dialogic® Configuration Manager (DCM) online Help.

Echo Cancellation

Dialogic® HMP Software Release 2.0WIN includes the following echo cancellation support for circuit switched connections that may contain echo on the received media stream:

- Provides echo cancellation via runtime API command for the:
  - Dialogic® HMP Software signal detector of the Dialogic® HMP Software Voice resource
  - Dialogic® HMP Software conferencing resource
  - Dialogic® HMP Software CSP resource
  - Dialogic® HMP Software IPM resource
- Compliance with G.168
- Support for echo cancellation on tail lengths up to 64 msec

Echo cancellation may be required when the above resources receive media streams from the PSTN via the DTI resources of the T1/E1 single span (DNI300TEPHMP) or the T1/E1 quad span (DNI1200TEPHMP) boards. Echo cancellation is not required for media streams received from IP connections, PSTN connections via the T1/E1 dual span

(DNI601TEPHMP) board which provides onboard echo cancellation as part of the DTI resources, or via the DSI162 digital station interface boards.

See the appropriate API library documentation for more information about echo cancellation support in that API library. Also, refer to Enabling Echo Cancellation on Dialogic® HMP Software in this Release Guide for information about enabling echo cancellation on the host.

SIP Re-INVITE

Dialogic® HMP Software Release 2.0WIN provides support for subsequent INVITE requests, also known as re-INVITE requests, on existing SIP dialogs (calls). A Global Call application using the SIP protocol can originate a re-INVITE request to a remote endpoint, receive a re-INVITE request from the remote endpoint, and accept or reject that received re-INVITE.

The re-INVITE mechanism is very general and can be used for many purposes. The Global Call implementation allows applications to accomplish the following operations:

- Changing the properties of a dialog, such as the endpoint's contact information, by refreshing the values of one or more SIP message header fields
- Changing the coder being used for media streaming
- Switching between media and fax modes
- Placing a call on hold or retrieving it from hold

The support of re-INVITE is implemented by means of three new, SIP-specific APIs that have been added to the Dialogic® Global Call API library. These new APIs are documented in detail in the *Dialogic® Global Call IP Technology Guide*.

Third Party Call Control (3PCC)

Dialogic® HMP Software Release 2.0WIN supports third party call control operations in a SIP environment. Third party call control enables one entity (for example, a third party call controller) to create, modify, or terminate a media session between two or more endpoints. Call control signaling and media exchange are separated and independently managed. The Dialogic® IP Media library is required to manage the media (RTP) side of 3PCC calls and the Dialogic® Global Call API library is used for the RTCP side.

The Dialogic® Global Call API library has been extended to support third party call control (3PCC) mode. Global Call can be configured to run in either the default first party call control (1PCC) mode or the 3PCC mode. These modes are mutually exclusive. When the Dialogic® Global Call API library is initialized in 3PCC mode, only SIP operations are available.

For more information about third-party call control, see the *Dialogic® Global Call IP Technology Guide*.

Support for G.726 IP Coder

The G.726 Codec is now supported for IP (RTP) encoding/decoding (16, 24, 32, and 40 kbps). See the *Dialogic® IP Media Library API Library Reference* for additional information.

Note: G.726 coder is not accessible from the Dialogic® Global Call API.

Early Media Call Setup

When using IP technology, the ability to configure an end point for half-duplex (or full-duplex) media streaming and subsequently reconfigure the end point for full-duplex (or half-duplex) media streaming is a useful capability.

One example that demonstrates this is when providing support for a call control feature know as “Early Media”. In IP technology, the establishment of RTP media streaming is normally one of the final steps in establishing and connecting a call. This is in contrast to the PSTN, where call progress signaling is commonly provided to the calling party via audible, in-band call progress tones, such as ringback, busy signal, and SIT tones. When implementing a VoIP gateway, it is often imperative to initiate media (RTP) streaming from the local endpoint to the calling party before the call is connected.

To achieve this functionality using the IP Media Library, an end point can be configured for a halfduplex streaming prior to call connection to receive call progress signaling. The end point can then be reconfigured for full-duplex streaming when the call is connected.

See the *Dialogic® IP Media Library API Programming Guide* for additional information.

3.2 Other Features

In addition to the new features, the following features are also supported in this release:

- Supported Codecs for IP (RTP) Encoding/Decoding:
  - G.711 (64 kbps format) mu-law and A-law (10, 20, and 30 ms frames)

    Note: Frames of 10 ms are not supported on configurations that exceed 240 channels.
  - G.723.1 (5.3 and 6.3 kbps format) 30 ms frames (1, 2, or 3 frames per packet)
  - G.729A (compatible with G.729 format) and G.729AB (compatible with G.729B format) (8 kbps format) 10 ms frames (2, 3, or 4 frames per packet)
- IP Call Control:
  - Support for H.323 and SIP protocols via Global Call
  - SIP call transfer
  - H.450.2 call transfer (H.323)
  - SIP outbound proxy
  - SIP over TCP
  - SIP request retry
  - MIME-encoded SIP message bodies

  - SIP INFO messages
  - SIP OPTION messages
  - SIP SUBSCRIBE and NOTIFY messages
  - Getting RTP addresses of a call
  - Getting SIP-specific origination and destination addresses for a call
  - Host LAN cable disconnect alarms
  - SIP generic headers
  - SIP register and unregister
  - SIP digest authentication
  - Support for SIP message headers greater than 255 bytes
    (See the *Dialogic® Global Call IP Technology Guide* for information.)
- Dialogic® API Libraries:
  - IP Media library to support third party call control (3PCC) mode and third-party protocol stacks for call control over IP (See the *Dialogic® IP Media Library API Library Reference* and *Dialogic® IP Media Library API Programming Guide* for information.)
  - R4 Media Processing for Voice (See the *Dialogic® Voice API Library Reference* and the *Dialogic® Voice API Programming Guide* for information.)
  - R4 Media Processing for Conferencing (See the *Dialogic® Audio Conferencing API Library Reference* and *Dialogic® Audio Conferencing API Programming Guide* for information.)
  - R4 Media Processing for Fax (See the *Dialogic® Fax Software Reference* for information.)
  - R4 Media Processing for Continuous Speech Processing (See the *Dialogic® Continuous Speech Processing API Library Reference* and *Dialogic® Continuous Speech Processing API Programming Guide* for information.)
  - Global Call for call control (See the *Dialogic® Global Call API Library Reference* and *Dialogic® Global Call API Programming Guide* for information.)
  - Standard Runtime Library for event handling (See the *Dialogic® Standard Runtime Library API Library Reference* and *Dialogic® Standard Runtime Library API Programming Guide* for information.)
  - Device Management API for coder reservation and T.38 connection (See the *Dialogic® Device Management API Library Reference* for more information.)
  - Station Interface API to support the Digital Station Interface boards (See the *Dialogic® Station Side Interface API Library Reference* for information.)
- IP Multicast (transmit) support
- Tone Management:
  - In-Band DTMF detection/generation
  - RFC 2833 DTMF detection/generation
  - H.245 User Input Indication (UII) (H.323) reception/transmission
  - User-defined Global Tone Detection (GTD) and Global Tone Generation (GTG)
- Player/Recorder Formats:
  - G.711 mu-law and A-law (48 kbps and 64 kbps)
  - OKI ADPCM (24 kbps and 32 kbps)

  - Linear PCM (88 kbps and 128 kbps)
  - G.726 (16 kbps and 32 kbps)
- Play/Record Capability:
  - Playing and recording files in all supported encoding formats with or without Wave headers
  - Automatic Gain Control
  - Volume Control
  - Indexed Play
  - Streaming to Board (streams data to the network interface in real time)
- Call progress analysis:
  - Cadence detection
  - Frequency detection
  - Loop current detection
  - Positive voice detection
  - Positive answering machine detection
  - Fax tone detection
- Audio conferencing:
  - Active Talker status
  - Digit Detection with tone clamping
  - Monitoring
  - Coach/Pupil monitoring
- Speech Integration (Continuous Speech Processing)
- Fax over IP (T.38 Fax origination/termination only)
- Transaction Record - enables the recording of a two-party conversation by allowing two time slots from a single channel to be recorded. (See the *Dialogic® Voice API Library Reference* and *Dialogic® Voice API Programming Guide* for information about this feature.)
- Programmatic control of inbound RTP stream gain and outbound RTP stream volume (See the *Dialogic® IP Media Library API Programming Guide* for more information.)
- Support of event notification for RTP and RTCP traffic stopping and starting (See the *Dialogic® IP Media Library API Library Reference* for information about this feature.)
- More flexible VoIP Quality of Service (QoS) support by modifying the default Registry setting of the Type Of Service (TOS) byte during installation to support TOS setting through IPML APIs at run time. (See the *Dialogic® IP Media Library API Library Reference* and *Dialogic® IP Media Library API Programming Guide* for information about this feature.)
- Manual, Semi-automatic, and Automatic startup modes for starting the System Service (See the *Dialogic® Host Media Processing Software Release 1.3WIN Software Installation Guide* for information about this feature.)
- Increased usability of HMP on Windows platforms with Advanced Configuration and Power Interface (ACPI) by integrating automated Advanced Programmable Interrupt Controller (APIC) Timer compatibility check into the installation. (See the *Dialogic® Host Media Processing Software Release 1.1WIN Software Installation Guide* and the Compatibility Notes section of the Release Update for information about this feature.)

- Support for Microsoft® Visual Studio® .NET compiler
- Ability to configure UDP/RTP port range

Installation and Configuration 4

This chapter describes the installation and configuration software features that are supported in the Dialogic® Host Media Processing (HMP) Software Release 2.0WIN.

4.1 Installation

The installation of Dialogic® HMP Software Release 2.0WIN is a complete installation.

If Dialogic® Host Media Processing (HMP) Software Release 1.1WIN or 1.3WIN is installed on your system, you must uninstall it before installing Dialogic® HMP Software Release 2.0WIN. However, if Dialogic® HMP Software Release 2.0WIN is on your system, you can upgrade to a later Dialogic® HMP 2.0 Service Update without uninstalling the existing version. During installation, the new software will determine if there is a previous version of 2.0 software installed, or that no Dialogic® HMP Software is currently installed, and correctly install the appropriate Dialogic® HMP Software Release 2.0WIN software.

For complete installation information, see the *Dialogic® Host Media Processing Software Release 2.0WIN Software Installation Guide*.

4.2 Configuration

This section describes the configuration software capabilities that are supported in the Dialogic® HMP Software Release 2.0WIN. Configuration is performed after the system software is installed, using the Dialogic® Configuration Manager (DCM) utility. The DCM utility allows you to configure:

- Host Media Processing software
- Bridge Devices
- Digital Network Interface boards
- Digital Station Interface boards
- TDM bus

In addition, you may modify FCD file parameters associated with a Dialogic® Digital Network Interface board by editing the board's .config file.

For detailed configuration information, see the DCM online context-sensitive Help and the *Dialogic® Host Media Processing Interface Boards Configuration Guide*.

Enabling Echo Cancellation on Dialogic® HMP Software

After you download a license file, a set of PCD, FCD, and CONFIG files relating to that license are created in the Program Files/Dialogic/HMP/Data directory. By default, echo cancellation is initially disabled in the Dialogic® HMP software. To enable echo cancellation on Dialogic® HMP Software, you will need to first edit the associated CONFIG file by changing the parameter value from a 0 to a 1 as shown in bold below:

Before:

```
[sigDet]
SetParm=0x0703,0 !  Disable Echo Cancellation (1=Enable, 0=Disable)on
sigDet
```

After:

```
[sigDet]
SetParm=0x0703,1 !  Disable Echo Cancellation (1=Enable, 0=Disable)on
sigDet
```

You may also set the echo cancellation tail length, using the default value of 16 milliseconds or selecting another value, by editing the CONFIG file. In the following example, the tail length has first been enabled by deleting the exclamation mark (!) preceding `SetParm=0x2c...` and then changed from the default value of 16 milliseconds to 24 milliseconds by replacing the value of 128 with a value of 192 shown in bold below.

Before:

```
[0x2c]
SetParm=0x2c17,83886! Set NoiseHiThrsh to -40db
!SetParm=0x2c03,128   ! Set EC tail length to 64(8ms), 80(10ms),
128(16ms), 192(24ms), 256(32ms), 512(64ms). (Default: 128(16ms)).
```

After:

```
[0x2c]
SetParm=0x2c17,83886! Set NoiseHiThrsh to -40db
SetParm=0x2c03,192   ! Set EC tail length to 64(8ms), 80(10ms), 128(16ms),
192(24ms), 256(32ms), 512(64ms). (Default: 128(16ms)).
```

After editing the CONFIG file, you will need to generate a new FCD file for the changes to take effect. Refer to the “Modifying the FCD File Parameters” section in the *Dialogic® Digital Network Interface Boards Configuration Guide* for information about modifying FCD file parameters.

Note: The T1/E1 dual span (DNI601TEPHMP) board has an onboard echo canceller which is enabled by default. For more information about modifying the echo canceller tail length parameter for this board, see the *Dialogic® Digital Network Interface Boards Configuration Guide*. The T1/E1 single span (Dialogic® DNI300TEPHMP) and quad span (Dialogic® DNI1200TEPHMP) boards do not have an onboard echo canceller. For more information about echo cancellation on these boards, see the "Echo Cancellation" topic in section 3.1, "New Features in This Release" in this release guide.

Comfort Noise Generation in Conferencing

Comfort noise can be generated on the outputs of a conference whenever the conference output drops below the no-talker level on an across-the-board basis. The conferencing comfort noise generation (CNG) can be enabled or disabled for all conferences by preruntime user configuration. This is accomplished by editing the .config file as described in the following paragraphs.

Enabling Comfort Noise

To enable comfort noise, edit the 0x3b38 parameter in the [0x3b] section of the .config file by changing **`SetParm=0x3b38,0`** to **`SetParm=0x3b38,1`** as shown in bold below:

```
[0x3b]
SetParm=0x3b38,1 !  Disable Comfort Noise in Conferencing (1=Enable, 0=Disable)
```

It is recommended that you accept the default values for setting the silence threshold, noise amplitude, and hang time parameters. If it is necessary, however, to modify these parameters, you will need to manually add the following parameters to the .config file following the 0x3b38 parameter:

```
SetParm=0x3b39,100 !  Silence threshold, default is 100 (-43dbm), 1630 (-18.5dbm) is maximum

SetParm=0x3b3a,200 !  Noise amplitude, default is 200 (-43dbm), 3270 (-18.5dbm) is maximum

SetParm=0x3b3b,25 !  Hang time, default is 25 (25 gives 12msx25=300ms, but actually results in
620 ms due to exponential averaging)
```

After editing the CONFIG file, you will need to generate a new FCD file for the changes to take effect. Refer to the “Modifying the FCD File Parameters” section in the *Dialogic® Digital Network Interface Boards Configuration Guide* for information about modifying FCD file parameters.

Setting Conferencing AGC Noise Level Threshold

The Conferencing AGC Noise Level Threshold parameter (0x3b1f) defines the upper threshold for noise level estimates. Any signal above this threshold will be considered speech. Thus, this threshold should be set quite high in order to let the AGC algorithm determine when there are voiced and unvoiced periods. The parameter is given in terms of the average level.

This parameter is defined as: $10^{(\text{outputlevel in dB})/20} * 2^{23}$. Multiplying by 2^{23} converts the value into a linear 24-bit value that accommodates the 24-bit DSPs.

The default value is -40 dB.

To set the conferencing AGC noise level threshold, you will need to edit the applicable CONFIG file in the [0x3b] section, after the 0x3b02 parameter information, by adding the following lines:

```
SetParm=0x3b1f,<value>
```

For example:

```
SetParm=0x3b1f,83886
```

sets the AGC noise level to the default value of -40 dB, which is the best setting for most applications.

If the background music is cutting off at the -40 dB setting, then try a setting of -60 dB.

$$10^{(-60/20)} * 2^{23} = 8388$$

If necessary, continue with additional attenuation settings until satisfactory results are obtained.

For example, -70 dB is:

$$10^{(-70/20)} * 2^{23} = 2652$$

After editing the CONFIG file, you will need to generate a new FCD file for the changes to take effect. Refer to the “Modifying the FCD File Parameters” section in the *Dialogic® Digital Network Interface Boards Configuration Guide* for information about modifying FCD file parameters.

OA&M Software 5

This section describes the OA&M (operation, administration, and maintenance) software features that are supported in Dialogic® Host Media Processing (HMP) Software Release 2.0WIN.

5.1 Administration Software

This section describes the system administration software capabilities that are supported in this release. Administration software allows the administrator to perform such tasks as starting and stopping the Dialogic® HMP Software service, obtaining and activating a license file, and running demo programs.

New Tools

Dialogic® HMP Software Release 2.0WIN introduces the following new administration tool:

LMTOOLS Licensing Manager
: The LMTOOLS Licensing Manager is a product licensing manager that allows software licenses to be available for a specific computer/server or a specific interface board. For more information, see the *Dialogic® Host Media Processing Software Release 2.0WIN License Manager Administration Guide*.

New API Libraries

Dialogic® HMP Software Release 2.0WIN introduces support for the following API library. This API library is new since Dialogic® HMP Software Release 1.3WIN.

Event Service Library
: The Dialogic® Event Service API provides an interface for registering your application with the Dialogic event notification framework. The event notification framework is the subsystem for sending asynchronous system administration events to applications. The framework is implemented using supplier objects, consumer objects, and event notification channels. Refer to the *Dialogic® Event Service API Programming Guide* and *Dialogic® Event Service API Library Reference*.

5.2 Diagnostics Software

This section describes the new diagnostic capabilities and tools available for Dialogic® HMP Software Release 2.0WIN. For more information about the diagnostics software, refer to the *Dialogic® Host Media Processing Diagnostics Guide*.

Support for interface boards

The *Dialogic® Host Media Processing Diagnostics Guide* now includes information related to the Dialogic® Digital Network Interface and Digital Station Interface boards.

Programming Libraries 6

This chapter describes the various development libraries and demonstration programs that are available as part of Dialogic® Host Media Processing (HMP) Software Release 2.0WIN.

6.1 Dialogic® Audio Conferencing (DCB) API Library

The Dialogic® Audio Conferencing (DCB) API library supports development of host-based conferencing applications. The Dialogic® Audio Conferencing API library provides many features that can be used to develop customized audio conferencing servers.

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

Audio Conferencing API Functions Not Supported by Dialogic® HMP Software

The following Dialogic® Audio Conferencing API functions are not supported:

- dcb_GetAtiBitsEx()

Refer to the *Audio Conferencing API Programming Guide* and the *Audio Conferencing API Library Reference* for additional information.

New Features

The Dialogic® Audio Conferencing API library supports the following new features in this release. These features are new since Dialogic® HMP Software Release 1.3WIN:

Volume control
: A conferee can adjust the output volume, either by API command or by DTMFs detected on a conferee's input leg.

Comfort noise generation

Comfort noise can now be generated on the outputs of a conference whenever the conference output drops below the no-talker level on an across-the-board basis. The conferencing comfort noise generation (CNG) can be enabled or disabled for all conferences by preruntime user configuration. This is accomplished by editing the .config file. See Comfort Noise Generation in Conferencing for more information.

6.2 Dialogic® Continuous Speech Processing (CSP) API Library

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

CSP API Functions Not Supported by Dialogic® HMP Software

The following Dialogic® CSP API functions are not supported:

- ec_rearm()

Refer to the *Dialogic® Continuous Speech Processing API Programming Guide* and *Dialogic® Continuous Speech Processing API Library Reference* for more information.

New Features

The Dialogic® CSP API library supports the following new feature. This feature is new since Dialogic® HMP Software Release 1.3WIN.

New CSP function

The ATEC_TERMMSK() function is now supported. This function returns the reason for the last CSP I/O function termination.

6.3 Dialogic® Device Management API Library

The Dialogic® Device Management API library provides run-time control and management of configurable system devices, which includes functions to reserve resources and manage the connections between devices for communication and sharing of resources. The Dialogic® Device Management API functions enable use of the T.38 fax IP-only resource, which provides the ability to originate and terminate T.38 fax over IP connections only. The API also includes functions to reserve low bit rate codecs for an IP media device on Dialogic® HMP Software.

Refer to the *Dialogic® Device Management API for Windows and Linux Operating Systems Library Reference* for more information.

No new Dialogic® Device Management API features have been added in Dialogic® Host Media Processing (HMP) Software Release 2.0WIN.

6.4 Dialogic® Fax API Library

The Dialogic® Fax API library supports development of a wide variety of fax applications such as fax mail, fax broadcast and fax-on-demand. The fax software includes library functions, device drivers, and firmware files.

FAX API Functions Not Supported by Dialogic® HMP Software

The following Dialogic® Fax API functions are not supported:

- fx_listen()
- fx_unlisten()
- fx_getxmitslot()

Refer to the *Dialogic® Fax Software Reference* for more information.

No new Dialogic® Fax API features have been added in Dialogic® Host Media Processing (HMP) Software Release 2.0WIN.

6.5 Dialogic® Global Call API Library

The Dialogic® Global Call API library provides a uniform call control interface for developing applications for multiple network interface technologies. The Dialogic® Global Call API library supports a variety of protocols.

The Dialogic® Global Call API library:

- Is designed to support H.323, SIP, and PSTN protocols.
- provides a consistent application interface for the various protocols and technologies.

Global Call API Functions Not Supported by Dialogic® HMP Software

The following Global Call API functions are not supported:

- gc_Attach()
- gc_CallProgress()
- gc_GetANI()
- gc_GetBilling()
- gc_GetCallProgressParm()

- gc_GetConfigData()
- gc_GetDNIS()
- gc_GetInfoElem()
- gc_GetNetworkH()
- gc_GetUserInfo()
- gc_GetVoiceH()
- gc_LoadDxParm()
- gc_Open()
- gc_QueryConfigData()
- gc_ReleaseCall()
- gc_ReqANI()
- gc_SetBilling()
- gc_SetCallProgressParm()

The generic functionality of Global Call is documented in the *Dialogic® Global Call API Library Reference* and the *Dialogic® Global Call API Programming Guide*. HMP-specific functionality is documented in the *Dialogic® Global Call IP Technology Guide*.

New Features

The Dialogic® Global Call API library supports the following new features in this release. These features are new since Dialogic® HMP Software Release 1.3WIN:

Call control support for T1 and E1 interfaces

Call control support for the E1 or T1 interfaces provided by Dialogic® Digital Network Interface boards running CAS/R2 or ISDN protocols. See the *Dialogic® Global Call API Library Reference* and *Dialogic® Global Call API Programming Guide,* as well as the respective Global Call Technology Guides, for more information.

6.6 Dialogic® IP Media API Library

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

For more information, see the *Dialogic® IP Media Library API Library Reference* and the *Dialogic® IP Media Library API Programming Guide*.

New Features

The Dialogic® IP Media Library API supports the following new features in this release. These features are new since Dialogic® HMP Software Release 1.3WIN:

New echo cancellation functionality

Echo cancellation can be monitored and controlled at run time using the ipm_GetParm( ) and ipmSetParm( ) functions in the IP Media Library. The following parameters have been added: PARMCH_ECACTIVE, PARMCH_ECHOTAIL, and PARMCH_ECNLP_ACTIVE.

For more information, see the *Dialogic® IP Media Library API Library Reference*.

6.7 Dialogic® Standard Runtime API Library

The Dialogic® Standard Runtime Library (SRL) API provides a common interface for event handling and other functionality common to all Dialogic® devices. The Dialogic® 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.

SRL API Functions Not Supported by Dialogic® HMP Software

The following SRL API functions are not supported:

- sr_getboardcnt()

Refer to the *Dialogic® Standard Runtime Library API Programming Guide* and the *Dialogic® Standard Runtime Library API Library Reference* for more information.

No new Dialogic® SRL API features have been added in Dialogic® Host Media Processing (HMP) Software Release 2.0WIN.

6.8 Dialogic® Station Side Interface API Library

The Dialogic® Station Side Interface API is a new library that provides call control processing and station-side application programming for the Dialogic® Digital Station Interface boards.

See the *Dialogic® Station Side Interface API Library Reference* for more information.

Features

The Dialogic® Station Side Interface API library provides the following features:

Device open and close

Capabilities determination

Control of the following:

ringer, alerting, volume, sensitivity, indicator, key, local audio routing, text display, caller-ID, parameters, station state

CT Bus routing

6.9 Dialogic® Voice API Library

The Dialogic® 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.

Refer to the *Dialogic® Voice API Library Reference* and the *Dialogic® Voice API Programming Guide* for more information.

New Features

The Dialogic® Voice API library supports the following new features in this release. These features are new since Dialogic® HMP Software Release 1.3WIN:

Special Information Tone (SIT) Frequency Detection enhancements

The following enhancements to Special Information Tone (SIT) frequency detection are provided:

- Broader default SIT sequence definitions to allow greater coverage for SIT sequences detected in the field.
- Three new SIT sequence definitions in the SIT tone set. The new SIT sequences are: InterLATA no circuit (TID_SIT_NC_INTERLATA), InterLATA reorder tone (TID_SIT_RO_INTERLATA), and ineffective other (TID_SIT_IO).
- A new catch-all SIT sequence definition (TID_SIT_ANY) to cover SIT sequences that fall outside the range of the defined SIT sequences.

For more information, see the *Dialogic® Voice API Programming Guide*.

New voice function support

The ATDX_CRTNID( ) function, which allows for retrieval of the SIT ID, is now supported.

For additional information about this function, see the *Dialogic® Voice API Library Reference*.

New echo cancellation enablement parameter

The dx_setparm( ) function has a new channel-level define, DXCH_EC_ACTIVE, to enable echo cancellation on a channel basis.

For more information, see the *Dialogic® Voice API Library Reference*.

Demonstration Software 7

Demonstration programs are provided to demonstrate the functionality and features of Dialogic® products and serve as examples of application programming using Dialogic® API libraries. All demo programs are supplied as source code which users may modify to explore other capabilities of the products.

This chapter provides information about demonstration programs provided in Dialogic® Host Media Processing (HMP) Software Release 2.0WIN.

7.1 New Demo Programs

The following new demo programs are included in this release. These demo programs are new since Dialogic® HMP Software Release 1.3WIN. The demo programs are located in the \demos directory under the environment variable for the directory in which the Dialogic® HMP Software was installed.

Dialogic® IP Gateway (Global Call) Demo

The Dialogic® IP Gateway (Global Call) demo program is an object-oriented host-based application that demonstrates using the Dialogic® Global Call API to build a PSTN-IP gateway. The demo source code can be used as sample code for those who want to begin developing an application from a working application. The demo is not designed to implement a complete gateway and lacks features such as least-cost routing.

The IP Gateway (Global Call) Object Oriented demo program supports the following features:

- Accepts IP calls
- Places IP calls
- Accepts PSTN calls
- Places PSTN calls
- Configuration file
- Command line options
- Output log files
- Printing to the monitor
- QoS

See the *Dialogic® IP Gateway (Global Call) Demo Guide* for more information.

Dialogic® Ansrmt Voice Demo

The Dialogic® Ansrmt demonstration program is a multithreaded application based on the Dialogic® Voice API library that is developed using the synchronous programming

model. Unlike asynchronous application models that use events and event handlers to manage specific devices and events on an "interrupt" basis, Ansrmt uses a single thread per voice channel that allows voice channel processing to run uninterrupted until completion.

The Dialogic® Ansrmt demo program illustrates the voice recording and playback feature. You can listen to a prompt, record a message, and play back that message.

See the Dialogic® Ansrmt Voice Demo online Help for more information.

Dialogic® Xaansr Voice Demo

The Dialogic® Xaansr demonstration program is a multithreaded voice application based on the Dialogic® Voice API and is developed using the extended asynchronous polled programming model. Xaansr is state driven and uses two threads to handle events: one thread for voice events and another thread for network events.

The Dialogic® Xaansr demo program illustrates the voice recording and playback feature. You can listen to a prompt, record a message, and play back that message.

See the Dialogic® Xaansr Voice Demo online Help for more information.

Dialogic® VoiceDemo

The Dialogic® VoiceDemo demonstration program uses the asynchronous programming model. It is a multithreaded, multi-channel demo based on the Dialogic® Voice API that illustrates key voice features, such as play, record, volume adjustment, and make call.

The demo consists of two threads. The main thread creates a child window for each voice device that is opened. The purpose of the second thread is to poll for device events using the Dialogic® Standard Runtime Library function sr_waitevt( ). After an event is received, a message is displayed in the child window, and menu items are available for the next function selection.

See the Dialogic® VoiceDemo online Help for more information.

Dialogic® Station Interface (SiTest) Demo

The Dialogic® SiTest demo program uses the Dialogic® Station Interface API to drive proprietary digital stations using the Dialogic® DSI162HMP or DSI162LGNHMP boards. The demo is a console-based application that requires two command line arguments – one that specifies the board (0-based) and one that specifies the station interface(1-based) to be used: For example, executing the command " SiTest 2 5" executes on the ssiB3C5 device. The default parameters that SiTest.exe will execute with are 0 and 1, namely the first station on the first board (ssiB1C1).

When the program is executed, it will query and output the capabilities (display, ringer, etc.) of the specified station, open the station, enable all asynchronous events, and subsequently wait for events on the station. Pressing keys on the digital phone, lifting the handset, disconnecting the phone, etc. will all generate unsolicited event messages to the console. The SiTest Demo program is terminated by pressing any key on the console keyboard.

Additionally, the Dialogic® SiTest demo provides a fully compiled Dialogic® Station Interface API project, complete with source code, project files, etc. in Microsoft®

Visual C++® 6.0. This program can be accessed by opening the SiTest.dsw workspace in <Installation Path>\demos\SiTest

Note: To open the Station Interface project, you will need Microsoft®Visual C++® 6.0 installed on the machine.

Browsing to Project -> Settings will reveal the recommended compile and link options for multithreaded Station Interface API applications. The source code included in SiTest.cpp provides a simple starting point for developing applications using the Dialogic® Station Interface API.

7.2 Other Supported Demo Programs

The following demo programs continue to be supported in this release:

Dialogic® Audio Conferencing (DCB) Demo

The Dialogic® Audio Conferencing demo is a simple audio conferencing application that is implemented using the Dialogic® HMP Software. The Dialogic® Audio Conferencing demo directly supports H.323 and SIP call control signaling protocols through use of the Dialogic® Global Call API.

The Dialogic® Audio Conferencing demo application is written in asynchronous mode, using a single process, single-threaded program that handles events using the polled mode. Conferencing features are accessed using the Dialogic® Audio Conferencing (DCB) API. The Dialogic® Global Call API is used for implementing call control and the Voice API is used for basic voice functionality.

See the *Dialogic® Audio Conferencing API Demo Guide* for more information.

Note: This Demo is not supported by the Interface boards.

Dialogic® Continuous Speech Processing (CSP) Demo

The Dialogic® CSP demo is a single-threaded program based on the continuous speech processing API that illustrates key CSP features such as voice activity detection, barge-in, pre-speech buffering, and echo cancellation. You can run the CSP demo in two different modes: manual mode and diagnostics mode.

In the Manual mode, the demo is a single-channel, interactive demo which allows you to barge in on a prompt that is being played. Messages are displayed on your screen as the demo progresses. This mode illustrates the operation of the **ec_stream( )** function.

In the Diagnostic mode, the demo is a non-interactive demo that exercises the CSP parameters.

See the *Dialogic® Continuous Speech Processing API Demo Guide* for more information.

Note: This Demo is not supported by the Dialogic® Interface boards.

Dialogic® Global Call API Demo

The Dialogic® Global Call API demo program sets up and tears down calls on the virtual boards and channels specified by the user. The program demonstrates call control functionality only and uses the Global Call basic call state model. Using the Dialogic® Global Call API demo program configuration file, the user can specify:

- The channels to be used by the demo

- The protocol (H.323 or SIP) to be used by each device
- The protocol type (inbound or outbound) for each device
- The IP destination address to associate with each device
- The transmit (Tx) and receive (Rx) codec parameters (type, rate and Voice Activity Detection [VAD])

When the Dialogic® Global Call API demo program is run, one device waits for calls while another device makes calls. The sequence of function calls, events received, and the call states are displayed as the program proceeds. When the user presses Ctrl-C to interrupt the process, the program prints a summary of the activity including information such as, the total number of inbound calls, the total number of outbound calls, the amount of time the demo program was running.

See the *Dialogic® Global Call API Demo Guide* for more information.

Note: This Demo is not supported by the Dialogic® Interface boards.

Dialogic® IP Media Server for HMP Demo

The Dialogic® IP Media Server demo is an object-oriented host-based application that demonstrates using the Dialogic® Global Call API to build an IP media server, providing voice and fax services via IP technology. The demo source code can be used as sample code for those who want to begin developing an application from a working application.

The Dialogic® IP Media Server demo supports the following features:

- Voice service
- Fax service
- CSP barge in
- Configuration file
- Command line options

See the *Dialogic® IP Media Server Demo Guide* for more information.

Note: This Demo is not supported by the Dialogic® Interface boards.

Supported Hardware 8

This section lists the boards supported by Dialogic® Host Media Processing (HMP) Software Release 2.0WIN. The boards are grouped in the following categories:

8.1 Dialogic® Digital Network Interface Products

The Dialogic® Digital Network Interface products consist of the following models:

- DNI300TEPHMP
- DNI601TEPHMP
- DNI1200TEPHMP

8.2 Dialogic® Digital Station Interface Products

The Dialogic® Digital Station Interface products consist of the following models:

- DSI162HMP
- DSI162LGNHMP

Documentation 9

This chapter provides information about the documentation that supports the Dialogic® Host Media Processing (HMP) Software Release 2.0WIN. This information is organized into the following sections:

9.1 Support for Dialogic® HMP Software Release 2.0WIN Features

The following table lists the Dialogic® Host Media Processing (HMP) Software Release 2.0WIN features and the user documentation containing the information about these features.

Table 6. User Documentation Feature Support

Dialogic® HMP Software Release 2.0WIN Feature	User Documentation
Dialogic® HMP Software Installation	Dialogic® Host Media Processing Software Release 2.0WIN Software Installation Guide (05-2478-001)
Resource Licensing	Dialogic® Host Media Processing Software Release 2.0WIN Administration Guide (05-2483-002)
IP Call Control Using Global Call • RFC2833 • H.245 UII • Low Bit Rate Coder Reservation	• Dialogic® Global Call API Library Reference (05-1816-007) • Dialogic® Global Call API Programming Guide (05-2409-002) • Dialogic® Global Call IP Technology Guide (05-2239-007) • Dialogic® IP Media Server Demo Guide (05-2389-003)

Table 6. User Documentation Feature Support (Continued)

Dialogic® HMP Software Release 2.0WIN Feature	User Documentation
IP Call Transfer	• Dialogic® Global Call API Library Reference (05-1816-007) • Dialogic® Global Call IP Guide (05-2239-007)
Digital Network Interface	• Dialogic® Digital Network Interface Boards Configuration Guide (05-2474-001) • Dialogic® Digital Network Interface Software Reference (05-1313-005) • Dialogic® Global Call ISDN Technology Guide (05-2242-005) • Dialogic® Global Call E1/T1 CAS/R2 Technology Guide (05-2445-001)
Digital Station Interface	• Dialogic® Station Side Interface API Library Reference (05-2462-002)
Media Streaming Compatibility with a Third-Party Stack for IP Call Control • RFC2833 • H.245 UII • Low Bit Rate Coder Reservation	• Dialogic® IP Media Library API Library Reference (05-2257-006) • Dialogic® IP Media Library API Programming Guide (05-2330-004) • Dialogic® Device Management API Library Reference (05-2222-003)
IP Multicast	• Dialogic® IP Media Library API Library Reference (05-2257-006) • Dialogic® IP Media Library API Programming Guide (05-2330-004)
Voice Features	• Dialogic® Voice API Library Reference (05-2333-003) • Dialogic® Voice API Programming Guide (05-2332-003)
Conferencing	• Dialogic® Audio Conferencing API Library Reference (05-1843-003) • Dialogic® Audio Conferencing API Programming Guide (05-1920-003) • Dialogic® Audio Conferencing Demo Guide (05-2290-004)

Table 6. User Documentation Feature Support (Continued)

Dialogic® HMP Software Release 2.0WIN Feature	User Documentation
Speech Integration	• Dialogic® Continuous Speech Processing API Library Reference (05-1700-005) • Dialogic® Continuous Speech Processing API Programming Guide (05-1699-005) • Dialogic® Continuous Speech Processing API Demo Guide (05-2084-004)
T.38 Fax Using Global Call	• Dialogic® Global Call IP Technology Guide (05-2239-007) • Dialogic® Fax Software Reference (05-2341-001)
T.38 Fax Using Third-Party Stack	• Dialogic® IP Media Library API Library Reference (05-2257-006) • Dialogic® IP Media Library API Programming Guide (05-2330-004) • Dialogic® Device Management API Library Reference (05-2222-003) • Dialogic® Fax Software Reference (05-2341-001)
Event Handling	• Dialogic® Standard Runtime Library API Library Reference (05-1882-004) • Dialogic® Standard Runtime Library API Programming Guide (05-1880-003) • Dialogic® Event Service API Library Reference (05-1905-003) • Dialogic® Event Service API Programming Guide (05-1918-003)
Diagnostics	• Dialogic® Host Media Processing Diagnostics Guide (05-2494-001)

9.2 Release Documentation

The following system documentation is provided for this release:

- *Dialogic® Host Media Processing Software Release 2.0WIN Release Guide* (this document).

- *Dialogic® Host Media Processing Software Release 2.0WIN Release Update*

  Note: The Release Update is not part of the online bookshelf, but is posted on the Support Web site. This document includes issues that may affect the performance of the Dialogic® HMP Software and lists both resolved and known issues. The Release Update also includes corrections and changes to the user documentation that could not be made to the documents prior to the release.

Note: A dagger (†) next to a document title indicates that the document is new or has been updated since Dialogic® HMP Software Release 1.3WIN.

9.3 Installation and Configuration Documentation

The following installation and configuration documentation is provided for this release:

- *Dialogic® Host Media Processing Software Release 2.0WIN Software Installation Guide*
- *Dialogic® Digital Network Interface Boards Configuration Guide* †
- *Dialogic® Global Call Country Dependent Parameters (CDP) for PDK Protocols Configuration Guide*

Note: A dagger (†) next to a document title indicates that the document is new or has been updated since Dialogic® HMP Software Release 1.3WIN.

9.4 OA&M Documentation

The following OA&M Software documentation is provided for this release:

- Dialogic® Host Media Processing Software Release 2.0WIN Administration Guide †
- *Dialogic® SNMP Agent Software for Host Media Processing Administration Guide†*
- *Dialogic® Host Media Processing Diagnostics Guide* †
- *Dialogic® Event Service API Library Reference* †
- *Dialogic® Event Service API Programming Guide* †
- *Dialogic® Native Configuration Manager API Library Reference* †
- *Dialogic® Native Configuration Manager API Programming Guide* †

Note: A dagger (†) next to a document title indicates that the document is new or has been updated since Dialogic® HMP Software Release 1.3WIN.

9.5 Programming Libraries Documentation

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

- *Dialogic® Audio Conferencing API Library Reference*
- *Dialogic® Audio Conferencing API f Programming Guide*

- *Dialogic® Continuous Speech Processing API Library Reference †*
- *Dialogic® Continuous Speech Processing API Programming Guide †*
- *Dialogic® Device Management API Library Reference*
- *Dialogic® Digital Network Interface Software Reference †*
- *Dialogic® Fax Software Reference*
- *Dialogic® Global Call API Library Reference †*
- *Dialogic® Global Call API Programming Guide †*
- *Dialogic® Global Call IP Technology Guide †*
- *Dialogic® Global Call ISDN Technology Guide*
- *Dialogic® Global Call E1/T1 CAS/R2 Technology Guide*
- *Dialogic® IP Media Library API Library Reference †*
- *Dialogic® IP Media Library API Programming Guide †*
- *Dialogic® Standard Runtime Library API Library Reference †*
- *Dialogic® Standard Runtime Library API Programming Guide †*
- *Dialogic® Station Side Interface API Library Reference †*
- *Dialogic® Voice API Library Reference †*
- *Dialogic® Voice API Programming Guide †*

Note: A dagger (†) next to a document title indicates that the document is new or has been updated since Dialogic® HMP Software Release 1.3WIN.

9.6 Demonstration Software Documentation

The following demo documentation is provided for this release:

- *Dialogic® Audio Conferencing API Demo Guide*
- *Dialogic® Continuous Speech Processing API Demo Guide †*
- *Dialogic® Global Call API Demo Guide*
- *Dialogic® IP Media Server Demo Guide*
- *Dialogic® IP Gateway (Global Call) Demo Guide †*

Note: A dagger (†) next to a document title indicates that the document is new or has been updated since Dialogic® HMP Software Release 1.3WIN.

9.7 Online Help

The following online help is provided for this release:

- *Dialogic® Configuration Manager (DCM) Online Help †*
- *Dialogic® Installation Online Help †*
- *Dialogic® Ansrmt Voice Demo Online Help †*

- *Dialogic® Xaansr Voice Demo Online Help*†
- *Dialogic® VoiceDemo Online Help*†

Note: A dagger (†) next to a document title indicates that the document is new or has been updated since Dialogic® HMP Software Release 1.3WIN.