Dialogic®

# Dialogic® Host Media Processing Software Release 1.5LIN

## Release Guide

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# Contents

# Document Revision History

This revision history summarizes the changes made in each published version of the Release Guide for Dialogic® Host Media Processing (HMP) Software Release 1.5LIN, which is a document that is subject to updates during the lifetime of the release.

## Document Rev 02 - published December 2007

Made global changes to reflect the Dialogic brand.

Changed the title to: “Dialogic Host Media Processing Software Release 1.5LIN Release Guide.”

Added this new Document Revision History section.

In the System Requirements section:

- Added Unified Messaging resource to Table 4, “Resource Configurations Tested”, on page 18.
- Added new information for Red Hat Enterprise Linux, SUSE Linux, and Debian GNU/Linux 3.1 in Section 2.2, “Software Requirements”, on page 12.

## Document Rev 01 - published September 2005

Initial Version of document.

# About This Publication

The following topics provide information about this publication.



## Applicability

This Release Guide provides information about the features, system requirements, and release documentation for Dialogic® Host Media Processing (HMP) Software Release 1.5LIN.

## Intended Audience

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

- 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® HMP Software.
- Chapter 3, “Features” - describes the features supported in this release.
- Chapter 4, “Programming Libraries” - describes the various development software libraries and demonstration programs that are available as part of this release.
- Chapter 5, “Documentation” - provides a list of the documents that accompany this release.

## 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 a high-level overview of the Dialogic® Host Media Processing (HMP) Software Release 1.5LIN.

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

Dialogic® HMP Software performs like a Dialogic® board with Dialogic® DM3 architecture to the customer application, 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: Dialogic® R4 for media processing and Dialogic® Global Call API for call control.

Dialogic® HMP Software supports the industry-standard H.323 protocol and session initiation protocol (SIP) for call control, with the Real-time Transport Protocol (RTP) and Real-Time Control Protocol (RTCP) for media streaming and control over IP in G.711, G.723.1, G.729, or G.729B audio formats, and H.263 (profile 0, level 30) video format.

Dialogic® HMP Software is optimized to run on the Intel Pentium 4 and Intel Xeon processors. Since Dialogic® HMP Software is implemented as a software-only product, it can be installed and upgraded like any other software. The Dialogic® HMP Software is licensed using an industry-standard model in which the MAC address (NIC) is used to node-lock the software to a specific computer. To enable customers to choose combinations of media processing, the Dialogic® HMP Software is available through a flexible licensing scheme.

***Note:*** New to this release are the features that provide the capability of streaming digitized multimedia (video and audio) over RTP, using the H.263 coder for video, in support of applications providing video services, such as video mail, video color ring, video caller ID, and video location-based services. The multimedia capabilities are provided by the new Dialogic® Multimedia API, as well as enhancements to the Dialogic® Global Call API, IP Media Library API, and Device Management API.

Refer to Chapter 3, “Features” for a list of the features supported by this release.

# System Requirements 2

This chapter describes the hardware and software system requirements for Dialogic® Host Media Processing (HMP) Software Release 1.5LIN. This information is provided in the following sections:



## 2.1 Basic Hardware Requirements

The following hardware requirements for this release are for a minimum hardware configuration:

- See Table 1, “Processor Recommendations”, on page 12 for processor recommendations, including the Intel Pentium 4 processor and Intel Xeon processor

  ***Note:*** Hyper-Threading Technology (HT Technology) is supported only on systems using the Intel Pentium 4 or Intel Xeon processors.
- See Table 2, “RAM Requirements and Recommendations”, on page 12 for RAM requirements and recommendations.
- Hard disk space usage for multimedia recording depends upon the application program, but can be estimated using the following guidelines:
  - 160 KB required for 10 seconds of audio at maximum of 128 kbps bitrate (linear PCM format)
  - 160 KB required for 10 seconds of video at maximum of 128 kbps bitrate
  - 80 KB required for 10 seconds of video at maximum of 64 kbps bitrate
- VGA display
- Pointing device (if using the Linux GUI)
- 100Base-T Network Interface Card (NIC)

  ***Note:*** For 120 channels or higher, using a 1000Base-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), H.263 | G.723.1, G.729A, or G.729AB.[2] |
| 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 |
| Over 120[3] | Dual Intel Xeon, 3.2 GHz | Dual Intel Xeon, 3.6 GHz‡ |
| ‡ = Up to a maximum of 120 low bit rate coder sessions | | |

1.Either RTP and Voice functionality, or RTP and Multimedia functionality, with the functionality defined as that provided by the licensable resource.
2. Number of low bit rate coder sessions = 50% of G.711 Sessions
3. Over 120 multimedia channels not supported.

### Table 2. RAM Requirements and Recommendations

| Application | Minimum | Recommended |
|---|---|---|
| Non-Multimedia | 512 MB[1] | 1 GB |
| Multimedia (audio/video) | 1 GB[2] | 2 GB |

1. If you are using an X Window System, 1 GB is required.
2. If using only a few video channels, only 512 MB is required.

## 2.2 Software Requirements

The following software is supported in this release:

- Supported compilers: GNU Compiler Collection (GCC) Version 3.2.3
- Red Hat Enterprise Linux Advanced Server, Enterprise Server, or Workstation (AS, ES, or WS) **Release 4.0** with Update 1 or Update 2

  ***Note:*** No kernel/OS changes are needed to use Red Hat Enterprise Linux 4.0.

  ***Note:*** SNMP is not supported when using the default netsnmp (version 5.1.2) that is provided with Red Hat Enterprise Linux 4.0. **Workaround:** Use the earlier 5.0.10 version of netsnmp.

  – The Update requires a Certificate of Authorization from Red Hat. Use the following instructions to obtain the update.
    - Sign in to the Red Hat Network at https://rhn.redhat.com/index.pxt. If you do not have an existing login, you can select “Create Login” to create a Red Hat

login and subscribe to the Red Hat network. You will then need to enter the Red Hat product ID.

- Select **Channels** from the tab selections at the top of the page.
- Select **Red Hat Enterprise Linux AS** (or ES or WS) from the Channel Name list.
- Select **Downloads** from the menu selections.
- After reading and accepting the License Agreement, follow the instructions provided on the web page to download the ISO images that comprise the updates. Also, refer to the Red Hat Installation Manual for additional information.

– Finally, follow the instructions in the *Dialogic® Host Media Processing Software Release 1.5LIN Installation Guide* and install the Dialogic® HMP Software obtained from the Dialogic® HMP Software Release 1.5LIN download site at:
http://www.dialogic.com/support/helpweb/dxall/hmplinux/hmp15/current/default.htm#config

- Red Hat Enterprise Linux Advanced Server, Enterprise Server, or Workstation (AS, ES, or WS) **Release 3.0** with Update 1 or Update 3 (Update 2 is not supported.)
  – The Update requires a Certificate of Authorization from Red Hat. Use the following instructions to obtain the update.
    - Sign in to the Red Hat Network at https://rhn.redhat.com/index.pxt. If you do not have an existing login, you can select “Create Login” to create a Red Hat login and subscribe to the Red Hat network. You will then need to enter the Red Hat product ID.
    - Select **Channels** from the tab selections at the top of the page.
    - Select **Red Hat Enterprise Linux AS** (or ES or WS) from the Channel Name list.
    - Select **Downloads** from the menu selections.
    - After reading and accepting the License Agreement, follow the instructions provided on the web page to download the ISO images that comprise the updates. Also, refer to the Red Hat Installation Manual for additional information.

  – You must install kernel version 2.6.8.1 on top of the OS. See the OS Specific Configuration information on the software download page at:
  http://www.dialogic.com/support/helpweb/dxall/hmplinux/hmp15/current/default.htm#config

  – Finally, follow the instructions in the *Dialogic® Host Media Processing Software Release 1.5LIN Installation Guide* and install the Dialogic® HMP Software obtained from the Dialogic® HMP Software Release 1.5LIN download site at:
  http://www.dialogic.com/support/helpweb/dxall/hmplinux/hmp15/current/default.htm#config

- SUSE Linux Professional 9.2.

  - At a minimum, the kernel *.config* file should be configured for an Intel Pentium 4 processor (which also includes the Mobile Intel Pentium 4 Processor-M and the Intel Xeon processor) as follows:
    - CONFIG_M586 should be disabled and CONFIG_MPENTIUM4 should be enabled
    - CONFIG_PREEMPT should be enabled
    - CONFIG_HPET_RTC_IRQ should be disabled
  - Although the *.config* file can be manually configured, it is recommended that you use the configuration script provided by Dialogic. See the OS Specific Configuration information at the following web site:

    http://www.dialogic.com/support/helpweb/dxall/hmplinux/hmp15/current/default.htm#config
  - After making the changes, you must recompile the kernel.
  - Finally, follow the instructions in the *Dialogic® Host Media Processing Software Release 1.5LIN Installation Guide* and install the Dialogic® HMP Software obtained from the Dialogic® HMP Software Release 1.5LIN download site at:

    http://www.dialogic.com/support/helpweb/dxall/hmplinux/hmp15/current/default.htm#config
- SUSE Linux Enterprise Server 9, which includes kernel 2.6.5.
  - At a minimum, the kernel *.config* file should be configured for an Intel Pentium 4 processor (which also includes the Mobile Intel Pentium 4 Processor-M and the Intel Xeon processor) as follows:
    - CONFIG_M586 should be disabled and CONFIG_MPENTIUM4 should be enabled
    - CONFIG_PREEMPT should be enabled
    - CONFIG_HPET_RTC_IRQ should be disabled
  - After changing the configuration, you must recompile the kernel using the following commands:
    - make
    - make modules_install
    - make install
  - Finally, follow the instructions in the *Dialogic® Host Media Processing Software Release 1.5LIN Installation Guide* and install the Dialogic® HMP Software obtained from the Dialogic® HMP Software Release 1.5LIN download site at:

    http://www.dialogic.com/support/helpweb/dxall/hmplinux/hmp15/current/default.htm#config
- Debian GNU/Linux 3.1 (a.k.a. sarge), which includes kernel 2.6.8-2.
  - See the web site at http://www.debian.org for information about obtaining the download.
  - At a minimum, the kernel *.config* file should be configured for an Intel Pentium 4 processor (which also includes the Mobile Intel Pentium 4 Processor-M and the Intel Xeon processor) as follows:
    - CONFIG_M586 should be disabled and CONFIG_MPENTIUM4 should be enabled
    - CONFIG_PREEMPT should be enabled
    - CONFIG_HPET_RTC_IRQ should be disabled

– After making the changes, you must recompile the kernel.
– Get and install the stable lsb-base package (Version 2.0-7) from the Debian web site at: http://packages.debian.org/lsb-base.
– Finally, follow the instructions in the *Dialogic® Host Media Processing Software Release 1.5LIN Installation Guide* and install the Dialogic® HMP Software obtained from the Dialogic® HMP Software Release 1.5LIN download site at: http://www.dialogic.com/support/helpweb/dxall/hmplinux/hmp15/current/default.htm#config

## 2.3 Other Requirements

The following topics describe additional requirements:

- Installation Requirements
- Early Media Requirements
- Requirements for Running a Demo Using a Single Channel

### 2.3.1 Installation Requirements

Before installing the Dialogic® HMP Software, double check that the system meets the previously described system requirements. In addition, check to make sure that your system meets the following requirements:

- Section 2.1, “Basic Hardware Requirements”, on page 11.
- The machine must be able to resolve its name to an IP address, either using DNS or the /etc/hosts file. If it cannot resolve its name, the Dialogic® HMP Software will **not** start.

### 2.3.2 Early Media Requirements

***Note:*** Early media refers to media (e.g., audio and/or video) transfer before a particular session is accepted by the called party.

Applications, such as video color ring and video caller ID, require a half duplex, early media session (pre-answer) to be established between the Dialogic® HMP Software IP Multimedia Server (IMS) and the calling or called party. For video caller ID applications, an early media session must be established with the called party, and for video color ring, it must be established with the calling party.

Dialogic® HMP Software does not directly support early media between the Dialogic® HMP Software IMS and the calling or called party and is therefore dependent upon other network elements, such as a gateway, to provide this capability. Additionally, video color ring or video caller ID services require video phones that support these services.

In a 3G or IP environment, where the Dialogic® HMP Software IMS sits behind a gateway, video color ring or video caller ID applications can be supported without the Dialogic® HMP Software IMS directly supporting early media. Early media support can be

established by another subsystem in the network, such as by a gateway that supports early media. A full duplex call between the Dialogic® HMP Software IMS and the gateway could be established and the Dialogic® HMP Software IMS could be provided the IP address and RTP port of the calling or called party, allowing the Dialogic® HMP Software IMS to stream the video color ring to the calling party or the video caller ID to the called party. As an alternative approach, call signaling to the Dialogic® HMP Software IMS is not even required. The Dialogic® HMP Software IMS could be instructed to just stream the appropriate media to a specified IP address and RTP port.

### 2.3.3 Requirements for Running a Demo Using a Single Channel

The default channel license provided with the Dialogic® HMP Software relies on the correctness of the */etc/hosts* file. Invalid entries in this file will render the Dialogic® HMP Software non-functional with respect to the default channel license. For example:

| | | | |
|---|---|---|---|
| 1. | 127.0.0.1 | myhostname | **<< incorrect** |
| 2. | 127.0.0.1<br>192.168.124.124 | localhost<br>localhost | **<< incorrect** |
| 3. | 127.0.0.1<br>192.168.124.124 | localhost<br>myhostname | **<< correct** |

## 2.4 Equipment and Configurations Tested

The following topics describe equipment and configurations tested:

- Multimedia Gateways
- Voice Gateways
- Multimedia or Voice IP Phones
- Configurations Tested

### 2.4.1 Multimedia Gateways

Dialogic® HMP Software has been tested with the following multimedia gateways:

- Dilithium Networks DTG 2000 Multimedia Gateway (SIP version)

  ***Note:*** The Dilithium gateway was configured so that a Dialogic® HMP Software Multimedia Server was one of the SIP endpoints running a video messaging test application. A video call was placed from the 3G-324M side of the DTG 2000 and terminated on one of the SIP endpoints of the Dialogic® HMP Software Multimedia Server. A 64 kbps H.263/G.711 video/audio stream was opened and inband DTMF tones were used to control the playing and recording of the media stream on the Dialogic® HMP Software Multimedia Server.

## 2.4.2 Voice Gateways

Dialogic® HMP Software has been tested with the following H.323 and SIP voice gateways:

- Cisco Systems AS5300 Universal Gateway with Cisco IOS (Internetworking Operating System) software version 12.3(9). For a detailed interoperability report on this device, please contact your Dialogic sales representative.

## 2.4.3 Multimedia or Voice IP Phones

Dialogic® HMP Software has been tested (except as noted) with the multimedia or voice IP phones as shown in Table 3.

**Table 3. Multimedia or Voice IP Phones**

| Manufacturer & Product | Media Type | Phone Type | SIP | H.323[1] |
|---|---|---|---|---|
| Avaya 4600 series IP telephones[2] | audio | hard | yes | yes |
| C&S Technology Vizufon CIP-4500 videophone | mutlimedia | hard | yes | yes[3] |
| Cisco Systems 7900 series IP telephones[1] | audio | hard | yes | yes |
| DyLogicDMD Mirial PRO DS version 4.2 | mutlimedia | soft | yes | yes |
| Grandstream Networks BudgeTone 100 series SIP phones | audio | hard | yes | no |
| Microsoft® NetMeeting® version 3.01 | audio | soft | no | yes |
| Windows Messenger version 5.1[4] | mutlimedia | soft | yes | no |
| Polycom Soundpoint IP family phones | audio | hard | yes | yes |
| Siemens optiPoint 400 Standard IP phone | audio | hard | yes | yes |
| SJ Labs SJphone VOIP softphone version 1.10 | audio | soft | yes | yes |
| Wooksung Electronics WVP-2100 Internet videophone | mutlimedia | hard | yes | no |
| Xten eyeBeam v1.1 SDK video SIP softphone[5] | mutlimedia | soft | yes | no |

1. This release of Dialogic® HMP Software does not directly support video applications using Global Call H.323, although customers may choose to develop audio/video applications using their own H.323 stack.
2. For a detailed interoperability report on this device, please contact your Dialogic sales representative.
3. Although the device supports this configuration, it was not tested for this release.
4. Windows Messenger does not directly support DTMF transmission and is not supported in the Dialogic® HMP Software Release 1.5LIN release as a stand-alone softphone. To function as a video mail terminal supported by Dialogic® HMP Software, it requires additional software providing an external control path between the softphone and the HMP IP Multimedia Server (IMS) that does not depend upon DTMF for video message recording/playback. The additional software would be required at both ends: the Dialogic® HMP Software IMS and the softphone. For example, Automatic Speech Recognition software could be used as a substitute for DTMF transmission capability, or Windows® Messenger could be enhanced using the Microsoft® Real-Time Communications framework.
5. This video phone tested with this release requires that the application program handle an incoming re-INVITE. The Dialogic® Global Call API in third party call control (3PCC) mode provides the ability to generate and accept SIP re-INVITE methods to modify the characteristics of established media sessions. However, support for changing the media session parameters, including changing the media codec in a media session to switch the call from audio to video, is provided by interrupting the session using the **ipm_Stop( )** function, making the changes, and then resuming the session with the **ipm_StartMedia( )** function. The **ipm_ModifyMedia( )** function, which modifies various properties of an active media session, is not supported in this release as part of the re-INVITE functionality supported in Global Call 3PCC mode.

## 2.4.4 Configurations Tested

See Table 4 for all configurations, including the multimedia configurations, tested in support of video services.

**Table 4. Resource Configurations Tested**

| Configuration | RTP | Enhanced RTP | Voice | Conferencing (DCB) | Fax | Speech | Multimedia |
|---|---|---|---|---|---|---|---|
| IVR (LBR) | 120 | 120 | 120 | 0 | 0 | 0 | 0 |
| IVR (G.711) | 240 | 0 | 240 | 0 | 0 | 0 | 0 |
| Unified Messaging | 100 | 100 | 100 | 24 | 24 | 100 | 0 |
| Unified Messaging | 240 | 0 | 240 | 0 | 48 | 240 | 0 |
| Gateway (SIP) | 23 | 11 | 23 | 0 | 23 | 23 | 0 |
| Gateway (H.323) | 23 | 11 | 23 | 0 | 23 | 23 | 0 |
| Conferencing (DCB) | 100 | 0 | 100 | 25 | 0 | 0 | 0 |
| Conferencing (DCB) | 240 | 0 | 120 | 240 | 0 | 0 | 0 |
| Video Services | 240 | 0 | 120 | 0 | 0 | 0 | 120 |
| Unified Messaging | 120 | 120 | 120 | 0 | 120 | 0 | 0 |

The following information applies to the testing:

- Testing of 240 channels is performed with G.711 20 ms and 30 ms frames only.
- Testing of 240 channels is performed using the Intel 8254x-based gigabit Ethernet solution. Other network interface cards may not provide optimum performance. However, 8241, 8245, 8246, and 8247-based gigabit cards are also expected to perform well. These cards provide superior performance by:
  - Minimizing the number of interrupts needed relative to work accomplished.
  - Reducing the frequency of all interrupts by setting the “Interrupt Throttling Register” to the appropriate value.
  - Accepting multiple receive packets before signaling an interrupt.
  - Eliminating (or at least reducing) the need for interrupts on transmit.
  - Minimizing the processing overhead associated with each interrupt.

# Features 3

This chapter lists and describes the features that are supported by Dialogic® Host Media Processing (HMP) Software Release 1.5LIN. This information is provided in the following sections:



***Note:*** Features shown in **boldface** type are new for this release.

## 3.1 Multimedia (Audio/Video)

***Note:*** All multimedia-related features are new for the Dialogic® HMP Software Release 1.5LIN release.

- Multimedia record and playback with basic playback control and synchronized audio and video.
- Record from RTP stream to multimedia file. Play from multimedia file into RTP stream while maintaining synchronization.
- Supports the H.263 (profile 0, level 30) video codec. Level 30 supports CIF, QCIF and sub-QCIF resolution decoding. It is capable of operation with a bit rate up to 6 x (64,000) = 384,000 bits per second, with a picture decoding rate up to (30,000)/1001 pictures per second.
- Supports the following audio codecs for RTP:
  - G.711
  - G.723.1
  - G.729A (compatible with G.729 format)
  - G.729AB (compatible with G.729B format)
- Supports the following video picture formats:
  - Common Intermediate Format (CIF) picture size (PAL 352 pixels by 288 pixels)
  - Quarter Common Intermediate Format (QCIF) picture size (PAL 176 pixels by 144 pixels)
  - Sub-QCIF picture size (PAL 128 pixels by 96 pixels) at 30, 15, 10, or 6 frames/second, used for mobile handsets

- Supports a proprietary video file format and the Linear PCM (128 kbps) audio file format.
- **Multimedia File Conversion Utilities:** These utilities provide off-line conversion of multimedia files. They can be downloaded from the following web site (check this web site periodically for updates to the conversion tools and their capabilities): http://www.dialogic.com/support/helpweb/dxall/hmpmedia/default.htm

  ***Note:*** The conversion utilities perform CPU-intensive tasks and should only be used when sufficient CPU capacity is available and when they won't impact other operations on the system. For example, they should not be used while performing audio/video operations or when processing audio/video calls, as this can impact the performance and operation of the system.

  – ***mmconvert***: Conversion of multimedia data from Audio Video Interleave (AVI) Type-2 files with DVSD and DV25 encoded video in PAL 720 x 576 or NTSC 720 x 480 video format, with PCM linear 16-bit (any rate) mono or stereo audio format, to Dialogic® proprietary multimedia file format. Conversion includes selectable picture format (sub-QCIF, QCIF, CIF), aspect ratio adaptation, bit rate, and frames per second (30, 15, 10, 6).

  ***Note:*** The *mmconvert* utility does not support conversion in the reverse direction (from Dialogic® proprietary multimedia file format to AVI file format).

  – ***hmp3gp***: Conversion of multimedia data from Dialogic® proprietary multimedia file format to 3rd Generation Partnership Project (3GPP) file format conforming to 3GP Release 4 file format (.3gp), conforming to 3GPP specifications. The generated 3GP file contains two tracks: a video track with H.263 bit-stream video data, and an audio track with Global System for Mobile communication Adaptive Multi-Rate Narrow Band (GSM-AMR-NB) audio encoded at a bitrate of 12.2 kbps. No transrating or resizing is done, so the destination frame rate and the picture size will be the same as the source.

  ***Note:*** The *hmp3gp* utility does not support conversion in the reverse direction (from 3GPP to Dialogic® proprietary multimedia file format).
- Play to and record from SIP devices, depending upon capability of device (audio or audio/video). Play video only if no audio is required. Play audio only for non-video devices.
- Supports existing Quality of Service (QoS) audio alarms through the IPML API for the voice portion of multimedia stream.

  ***Note:*** QoS alarms and events are not supported for video streams.
- Play Dialogic® Voice API audio files in a multimedia session. You can play Dialogic® Voice API audio files in a multimedia session as long as tight synchronization with video is not required (as when playing with a video menu or status display). In this case, the "ipm" device in a multimedia session will listen to the "dxxx" device to which the Dialogic® Voice API is playing an audio file. This overrides any audio stream (but not video) from the "mm" device in the multimedia session. See the *Dialogic® Multimedia API Programming Guide* for details.
- Licensing of Dialogic® HMP Software multimedia resources. One complete multimedia session requires one multimedia resource license and one RTP resource license. The multimedia resource provides the video/audio play/record capability,

while the RTP resource provides one RTP channel for the audio stream and one RTP channel for the video stream.

***Note:*** The video RTP channel cannot be used for an audio stream.

- The programming libraries that provide multimedia-related enhancements and additions are identified in the following outline of multimedia functionality:
  - The New Dialogic® Multimedia API Library records and plays the multimedia data using a multimedia device.
  - The Dialogic® Device Management API Library is used to connect the multimedia device with an IP media device.
  - Multimedia record and playback between HMP and remote IP endpoints is accomplished by using both the multimedia and IP media devices.
  - The Dialogic® IP Media API Library provides the IP multimedia session control.
  - The Dialogic® Global Call API Library must be used in third party call control (3PCC) mode. The Dialogic® Global Call API Library provides IP call control for multimedia using SIP and Session Description Protocol (SDP).

## 3.2 Audio Codecs for IP (RTP) Encoding/Decoding

G.711
: 64 kbps format, µ-law and A-law, and 10, 20, and 30 ms frames

G.723.1
: 5.3 and 6.3 kbps, 30 ms frames, and 2 or 3 frames per packet

G.729A and G.729AB
: 8 kbps, 10 ms frames, and 2, 3, or 4 frames per packet

## 3.3 Video Codecs for IP (RTP)

- **Supports the H.263 (profile 0, level 30) video codec. Level 30 supports CIF, QCIF and sub-QCIF resolution. It is capable of operation with a bit rate up to 6 x (64,000) = 384,000 bits per second, with a picture rate up to (30,000)/1001 pictures per second. RTP video data is compliant with Internet Engineering Task Force RFC 2190: "RTP Payload Format for H.263 Video Streams."**

## 3.4 IP Signaling

- H.323

  ***Note:*** This release of Dialogic® HMP Software does not directly support video applications using Global Call H.323, although customers may choose to develop audio/video applications using their own H.323 stack.

- SIP

  ***Note:*** **Session Description Protocol (SDP) information is exposed for media capabilities exchanges when the Dialogic® Global Call API is configured in third party call control (3PCC) mode (SIP only).**

## 3.5 Tone Management

- In-Band DTMF detection and generation
- RFC 2833 DTMF detection and generation
- H.245 User Input Indication (UII) Out-of-Band DTMF reception/transmission (H.323 only)

## 3.6 APIs

- Dialogic® IP Media Library (IPML)
  - **Support for IP media session control (audio only, video only, multimedia, or T.38 fax) when using the Dialogic® Global Call library in third party call control (3PCC) mode (SIP only).**
  - Support for IP media session control (audio only, video only, multimedia, or T.38 fax) when using third party protocol stacks for call control over IP
- Dialogic® Global Call API Library for call control
  - First party call control mode under H.323 or SIP (call control and media exchange are managed by the Dialogic® Global Call API library)
  - **Third party call control (3PCC) mode, in which call control is managed by the Dialogic® Global Call API library and media exchange is managed by the Dialogic® IP Media Library. Global Call supports multimedia call control over IP when using SIP and SDP.**

  ***Note:*** To play/record multimedia with the Dialogic® Multimedia API, you must configure and use the Dialogic® Global Call library for 3PCC mode. In this mode, the application is responsible for capability negotiation by accessing and manipulating the SDP contents passed with call control exchanges.
- Dialogic® Standard Runtime Library for event handling
- Dialogic® R4 for Media Processing for multimedia (audio/video), voice, conferencing, fax, and continuous speech processing
- Dialogic® Device Management Library for **multimedia connection**, T.38 UDP connection, and coder reservation

## 3.7 Play and Record

- Dialogic® Voice API Audio Play and Record Capability
  - Playing and recording files in all supported encoding formats, with or without Wave headers

  - Volume Control
  - Automatic Gain Control
  - Indexed Play
  - Stream to Board (streams data to the network interface in real time)
  - Transaction record
- Dialogic® Voice API Audio Play and Record File Formats
  - G.711 µ-law and A-law (48 kbps and 64 kbps)
  - OKI ADPCM (24 kbps and 32 kbps)
  - G.726 (16 kbps and 32 kbps)
  - Linear PCM (88 kbps)
  - **Linear PCM (128 kbps). To use this Dialogic® Multimedia API audio file format in the Dialogic® Voice API, set the fields in the DX_XPB structure to the following values:**
    - **wFileFormat = FILE_FORMAT_VOX**
    - **wDataFormat = DATA_FORMAT_PCM**
    - **nSamplesPerSecond = DRT_8KHZ**
    - **wBitsPerSample = 16**
- **Dialogic® Multimedia API Video Play and Record Capability**
  - Record and playback of audio and video, video only, or audio only
  - Record to and playback from a file
  - Transmit notification tone at start of recording
- **Dialogic® Multimedia API Audio Play and Record File Format**
  - Linear PCM (128 kbps): 16-bit, 8 kHz , mono, LSB-MSB (“little-endian”).

  ***Note:*** Except for the 128 kbps linear PCM file format listed above, the Multimedia API does not directly support Voice API audio files. However, they are indirectly supported and you can play these Voice API audio files in a multimedia session as long as tight synchronization with video is not required (as when playing with a video menu or status display). In this case, the "ipm" device in a multimedia session will listen to the "dxxx" device to which the Voice API is playing an audio file. This overrides any audio stream (but not video) from the "mm" device in the multimedia session. For details, see the section on making connections in the “Application Development Guidelines” chapter of the *Dialogic® Multimedia API Programming Guide*.
- **Dialogic® Multimedia API Video Play and Record File Formats**
  - Dialogic proprietary format. See the *Dialogic® Multimedia API Programming Guide* for more information on this format.
- See *Multimedia File Conversion Utilities* in Section 3.1, “Multimedia (Audio/Video)”, on page 19.

## 3.8 Audio Conferencing

- Active Talker status
- Digit Detection with tone clamping

- Volume Control
- Monitoring
- Coach/Pupil Monitoring

## 3.9 Other Features

- Speech Integration (Continuous Speech Processing)
- Fax over IP (T.38 Fax origination/termination only)
- Flexible Configuration Licensing
- Network Interface Card (NIC) Failover (implemented by the operating system)

# Programming Libraries 4

This chapter describes the various programming libraries and demonstration programs that are available as part of Dialogic® Host Media Processing (HMP) Software Release 1.5LIN.



***Note:*** Individual features shown in **boldface** type are new for the Dialogic® HMP Software Release 1.5LIN release.

## 4.1 New Dialogic® Multimedia API Library

The Dialogic® Multimedia (MM) API is used to play and record digitized multimedia in support of applications providing video services, such as video mail, video color ring, video caller ID, and video location-based services.

***Note:*** The Dialogic® Multimedia API is new for Dialogic® HMP Software Release 1.5LIN release.

Multimedia library functionality is documented in the *Dialogic® Multimedia API Library Reference* and the *Dialogic® Multimedia API Programming Guid*e.

### Features

The Dialogic® Multimedia API library provides the following capabilities:

- Transmit a start-of-recording tone to notify the party being recorded. If enabled, the tone is transmitted upon detection of an I-frame (complete video frame) or upon time-out waiting for an I-frame.
- Record audio and video data from an IP stream into a file in real time; also provides the capability to record only the audio portion or video portion.

- Play back audio and video data from a file  to a media session in real time while maintaining synchronization; also provides the capability to playback only the audio portion or video portion.
- Play Dialogic® Voice API audio files in a multimedia session where tight synchronization with video is not required (such as for playing with a video menu or status display).
- Easy access to error information using **mm_ErrorInfo( )** for function failures.
- See *Multimedia File Conversion Utilities* in Section 3.1, “Multimedia (Audio/Video)”, on page 19.

## 4.2 Dialogic® IP Media API Library

The Dialogic® IP media library (IPML) API is used to control media on IP devices. The Dialogic® IP IPML API is primarily used for:

- Developing Voice over IP applications that use IP signaling stacks other than those supplied with Dialogic® products
- **Controlling audio and multimedia sessions when the Dialogic® Global Call API library is running in third party call control (3PCC) mode**

  ***Note:*** **IP call control with multimedia is provided only when using the Dialogic® Global Call API library in 3PCC mode.**

IP media library functionality is documented in the *Dialogic® IP Media Library API Library Reference* and the *Dialogic® IP Media Library API Programming Guide*.

### Features

The Dialogic® IP media library (IPML) provides the following features:

- **Start/stop multimedia session and get/set video related properties.**
- Configure the preferred DTMF mode: RFC 2833, In-Band, or Out-of-Band. In addition, applications can generate and receive DTMF tones to and from the TDM bus.
- Quality of Service (QoS) alarm threshold configuration and status reporting for audio streams (including the audio streams in multimedia sessions)

  ***Note:*** QoS alarms and events are not supported for video streams.

# 4.3 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 operating on Dialogic® DM3 architecture.

The Dialogic® Global Call API library:

- Is designed to support both H.323[1] and SIP protocols
- Provides a consistent application interface for the various protocols and technologies
- **Can be configured to run in third party call control (3PCC) mode (SIP only)**

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

## Features

The Dialogic® Global Call API library provides the following features for IP technologies:

- The Dialogic® Global Call API library supports the development of applications that use the host-based H.323[1] and SIP stacks supplied with the Dialogic® HMP Software.
- Applications can open and use devices that support the H.323 protocol, the SIP protocol, or both protocols.
- Applications can use the Dialogic® Global Call API library to register with a Gatekeeper (H.323) or Registrar (SIP).
- Applications can configure the preferred DTMF mode for H.323 or SIP: RFC 2833, In-Band, or H.245 UII Alphanumeric Out-of-Band (H.323 only).
- 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 the Dialogic® Global Call API library.
- **Initialize the Dialogic® Global Call library in third party call control (3PCC) mode, allowing the application to coordinate calls in which media communications are actually between two or more other parties.**
- **Attach Session Description Protocol (SDP) information to outbound Global Call API events in 3PCC mode. Similarly, applications can parse inbound Global Call API events for SDP content.**
- **SDP example code for parsing and generating SDP contents for media capabilities exchanges in 3PCC mode.**

1. This release of Dialogic® HMP Software does not directly support video applications using Global Call H.323, although customers may choose to develop audio/video applications using their own H.323 stack.

- **In 3PCC mode, ability to generate and accept SIP re-INVITE methods to modify the characteristics of established media sessions.**

  ***Note:*** The **ipm_ModifyMedia( )** function, which modifies various properties of an active media session, is not supported in this release as part of the re-INVITE functionality supported in Global Call 3PCC mode. Support for changing the media session parameters, including changing the media codec in a media session to switch the call from audio to video, is provided by interrupting the session using the **ipm_Stop( )** function, making the changes, and then resuming the session with the **ipm_StartMedia( )** function.

- **In 3PCC mode using the SIP INFO method , request from the remote encoder in a multimedia session a video picture fast update (an intraframe request) so that the encoder transmits an I-frame (complete video frame).**
- The Dialogic® Global Call library supports the sending and receiving of fax information by the inclusion of the T.38 UDP coder in the capability exchange. Applications can be configured to receive notification of audio-to-fax and fax-to-audio transition as well as notification of T.38 status changes.
- 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.
- Easy access to error information using **gc_ErrorInfo( )** for function failures and **gc_ResultInfo( )** for event information.

## 4.4 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.

### Features

The Dialogic® Voice API library provides the following features:

- Call progress and call analysis through the **dx_dial( )** function, 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).
- Tone detection/generation:
  – Dual Tone Multi Frequency (DTMF)

  - Global Tone Detection (GTD) user-defined tones
  - Global Tone Generation (GTG) user-defined tones, including Cadenced Tone Generation
- Data formats for play and record:
  - 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 µ-law coding, VOX and WAVE file formats
  - 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
  - PCM at 11 kHz with 8-bit samples (88 kbps) using linear coding, VOX and WAVE file formats
  - **PCM at 8 kHz with 16-bit samples (128 kbps) using linear coding, VOX file format (Multimedia API audio file format)**
  - G.726 bit-exact voice coder at 8 kHz with 2- or 4-bit samples (16, 32 kbps), VOX and WAVE file formats
- Volume Control
- **Transaction Record through the dx_mreciottdata( ) function enables the recording of a two-party conversation by allowing two time slots from a single channel to be recorded.**
- **Asynchronous routing through the dx_listenEx( ) and dx_unlistenEx( ) functions.**

## 4.5 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 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 Dialogic® Standard Runtime Library, events are handled in a standard manner.

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

### Features

The Dialogic® Standard Runtime Library (SRL) API provides the following features:

- A set of functions called the device grouping API has been added to support a more efficient alternative to the **sr_waitevtEx( )** variant of the extended asynchronous model.
- Support for the following programming models:
  - Asynchronous polled model
  - Asynchronous with non-signal callback model
  - Extended asynchronous model
- Device event management
- Device information retrieval using ATDV_ prefixed functions

- The ability to set and retrieve user-specific context using the **sr_setparm( )** and **sr_getparm( )** functions

## 4.6 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 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.

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

### Features

The following Dialogic® Continuous Speech Processing features are supported:

- The **ec_stream( )** and **ec_reciottdata( )** functions support the DX_MAXTIME termination condition which is set in the DV_TPT data structure.
- Full duplex operation
- Voice Activity Detector (VAD)
- Barge-in
- Voice event signaling
- Pre-speech buffering
- Modifying certain voice activity detector (VAD) parameters on the fly
- Barge-in and play event generation
- Unified API

## 4.7 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, firmware, and demonstration programs.

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

## Features

The following fax features are supported in the Dialogic® HMP Software:

- Uses T.38 Fax protocol to convert T.30 Fax session information and data to UDP packets
- Operates in T.38 Fax server mode (originates and terminates Fax sessions using T.38 protocol)
- 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
  - ASCII
  - Selectable data transmission encoding scheme
- Data reception encoding scheme with advanced compression
  - MH, MR, and MMR
  - Selectable data reception encoding scheme
- 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 greater than ASCII #127

# 4.8 Dialogic® Audio Conferencing (DCB) API Library

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

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

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

## Features

Dialogic® HMP Software supports the following Audio Conferencing features:

- Conference bridging, where all parties in two or more established conferences can speak and listen to one another, enabling large conferences to be conducted
- Volume control for any conferee by issuing pre-programmed DTMF digits
- Conference monitoring, which allows one or more participants to monitor a conference without interrupting the conference.
- 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
- 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, which equalizes the volume levels of different parties
- Active talker indication to determine which conferees in any given conference are currently talking.
- Echo cancellation for each active talker

## 4.9 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 to manage the connections between devices for communication. More specifically, the functions enable the following connections:

- **Connection between IP media and multimedia devices on Dialogic® HMP Software, providing the ability for multimedia (audio/video) communication over IP connections.**
- Use of a T.38 fax IP-only resource, providing the ability to originate and terminate T.38 fax over IP connections only.

The API also includes functions to reserve low bit rate codecs (e.g., G.723, G.729A, or G.729AB) for an IP media device on Dialogic® HMP Software.

Refer to the *Dialogic® Device Management API Library Reference* for additional information.

## 4.10 Demonstration Programs

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.

The demo programs are located in *the /demos directory*.

### Demo Programs

The following demo programs are included in the release:

**Dialogic® Multimedia Demo Program**

**The Dialogic® Multimedia Demo processes a multimedia (audio and video) IP call with SIP endpoints. It uses the following APIs to accomplish the audio/video streaming:**

- **Dialogic® Device Management Library API to connect the multimedia device with an IP media device**
- **Dialogic® Multimedia API to record and play audio/video data**
- **Dialogic® IPML API for media session control and RTP stream manipulation**
- **Dialogic® Global Call API in 3PCC mode for SIP call control**

**See the *Dialogic® Multimedia Demo Guide* for more information.**

Dialogic® IP Media Server (Global Call) Demo Program

The Dialogic® IP Media Server (Global Call) Demo uses the Global Call API to provide voice services via IP technology. See the *Dialogic® IP Media Server Demo Guide* for more information.

Dialogic® Continuous Speech Processing (CSP) Demo
: The Dialogic® HMP Software CSP demo is a single-threaded program that illustrates key CSP features such as barge-in, voice activity detection, and streaming. See the *Dialogic® Continuous Speech Processing API Demo Guide* for more information.

Dialogic® Audio Conferencing (DCB) Demo
: The Dialogic® HMP Software audio conferencing demo is 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 Dialogic® Voice API is used for basic voice functionality. See the *Dialogic® Audio Conferencing API Demo Guide* for more information.

Dialogic® Global Call Basic Call Control Demo
: A demonstration program that exercises some of the capabilities of the Dialogic® Global Call API. See the *Dialogic® Global Call API Demo Guide* for more information.

## 4.11 API Functions Not Supported

The following sections identify those API functions that are not supported by the Dialogic® HMP Software. The functions that are not supported are mostly those functions associated with a particular feature that is not supported in this release of the Dialogic® HMP Software.

The functions are grouped alphabetically by the API with which they are associated.

### Dialogic® Standard Runtime Library API Functions

The following Dialogic® Standard Runtime Library API function is not applicable or supported:

- sr_getboardcnt( )

### Dialogic® Continuous Speech Processing (CSP) API Functions

The following Dialogic® CSP API functions are either not applicable or not supported. See the *Dialogic® Continuous Speech Processing Library Reference* or the *Dialogic® Continuous Speech Processing Programming Guide* for additional information:

- ec_getxmitslot( )
- ec_listen( )
- ec_rearm( )
- ec_unlisten( )

## Dialogic® Fax API Functions

The following Dialogic® Fax API functions are either not applicable or not supported. See the *Dialogic® Fax Software Reference* for additional information:

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

## Dialogic® Audio Conferencing API Functions

The following Dialogic® Audio Conferencing API functions are either not applicable or not supported. See the *Dialogic® Audio Conferencing API Library Reference* or the *Dialogic® Audio Conferencing API Programming Guide* for additional information:

- dcb_GetAtiBitsEx( )

# Documentation 5

This chapter provides information about the documentation that supports Dialogic® Host Media Processing (HMP) Software Release 1.5LIN. This information is organized into the following sections:



## 5.1 Documentation Support for Dialogic® HMP Software Features

The following table lists the user documentation related to Dialogic® HMP Software features and topics.

**Table 5. User Documentation by Feature**

| Dialogic® HMP Software Feature | User Documentation |
|---|---|
| Dialogic® HMP Software Installation | • Dialogic® Host Media Processing Software Release 1.5LIN Installation Guide (05-2450-001) |
| Licensing | • Dialogic® Host Media Processing Software Release 1.5LIN License Manager Administration Guide (05-2353-002)<br>***Note:*** See also the user guide on the Dialogic® Host Media Processing Software Product Center web site. |
| Diagnostics | • Dialogic® Host Media Processing Diagnostics Guide (05-2356-004) |

### Table 5. User Documentation by Feature

| Dialogic® HMP Software Feature | User Documentation |
|---|---|
| IP Call Control Using Global Call, including:<br>• RFC2833<br>• H.245 UII<br>• Third party call control mode | • Dialogic® Global Call API Library Reference (05-2362-003)<br>• Dialogic® Global Call API Programming Guide (05-2346-001)<br>• Dialogic® Global Call IP Technology Guide (05-2239-006)<br>• Dialogic® IP Media Server Demo Guide (05-2389-003) |
| IP Call Transfer | • Dialogic® Global Call API Library Reference (05-2362-003)<br>• Dialogic® Global Call IP Technology Guide (05-2239-006) |
| Media Streaming Compatibility with a Third-Party Stack for IP Call Control, including:<br>• RFC2833<br>• Low Bit Rate Coder Reservation | • Dialogic® IP Media Library API Library Reference (05-2257-005)<br>• Dialogic® IP Media Library API Programming Guide (05-2330-003)<br>• Dialogic® Device Management API Library Reference (05-2222-003) |
| IP Multicast | • Dialogic® IP Media Library API Library Reference (05-2257-005)<br>• Dialogic® IP Media Library API Programming Guide (05-2330-003) |
| Multimedia/Video | • Dialogic® Multimedia API Library Reference (05-2454-001)<br>• Dialogic® Multimedia API Programming Guide (05-2455-001)<br>• Dialogic® Multimedia Demo Guide (05-2456-001)<br>• Dialogic® Device Management API Library Reference (05-2222-003) |
| Voice Features | • Dialogic® Voice API Library Reference (05-2333-002)<br>• Dialogic® Voice API Programming Guide (05-2332-002) |

**Table 5. User Documentation by Feature**

| Dialogic® HMP Software Feature | User Documentation |
|---|---|
| Conferencing | • Dialogic® Audio Conferencing API Library Reference (05-1843-003)<br>• Dialogic® Audio Conferencing API Programming Guide (05-1879-003)<br>• Dialogic® Audio Conferencing Demo Guide (05-2290-003) |
| Speech Integration | • Dialogic® Continuous Speech Processing API Library Reference (05-1700-003)<br>• Dialogic® Continuous Speech Processing API Programming Guide (05-1699-003)<br>• Dialogic® Continuous Speech Processing API Demo Guide (05-2084-003) |
| T.38 Fax Using Global Call API | • Dialogic® Global Call IP Technology Guide (05-2239-006)<br>• Dialogic® Fax Software Reference (05-2341-001) |
| T.38 Fax Using Third-Party Stack | • Dialogic® IP Media Library API Library Reference (05-2257-005)<br>• Dialogic® IP Media Library API Programming Guide (05-2330-003)<br>• Dialogic® Device Management API Library Reference (05-2222-003)<br>• Dialogic® Fax Software Reference (05-2341-001) |
| Event Handling | • Dialogic® Standard Runtime Library API Library Reference (05-1882-003)<br>• Dialogic® Standard Runtime Library API Programming Guide (05-1881-002) |

## 5.2 Dialogic® HMP Software Documentation

The following system documentation is provided for this release:

- *Dialogic®* Host Media Processing Software Release 1.5LIN *Release Guide* (this document)
- *Dialogic®* Host Media Processing Software Release 1.5LIN *Release Update* (web site download only)

## 5.3 Installation, Configuration, and OA&M Documentation

The following installation, configuration, and OA&M documentation is provided for this release:

- *Dialogic® Host Media Processing Software Release 1.5LIN Installation Guide*
- *Dialogic® Host Media Processing Software Release 1.5LIN License Manager Administration Guide*
- *SNMP Agent Software for Dialogic® Host Media Processing Software Administration Guide*
- *Dialogic® Host Media Processing Software Diagnostics Guide*

## 5.4 Programming Libraries Documentation

The following development software documentation is provided for this release:

- *Dialogic® Audio Conferencing API Library Reference*
- *Dialogic® Audio Conferencing API Programming Guide*
- *Dialogic® Continuous Speech Processing API Library Reference*
- *Dialogic® Continuous Speech Processing API Programming Guide*
- *Dialogic® Device Management API Library Reference*
- *Dialogic® Fax Software Reference*
- *Dialogic® Global Call API Library Reference*
- *Dialogic® Global Call API Programming Guide*
- *Dialogic® Global Call IP Technology Guide*
- *Dialogic® IP Media Library API Library Reference*
- *Dialogic® IP Media Library API Programming Guide*
- *Dialogic® Multimedia API Library Reference*
- *Dialogic® Multimedia API Programming Guide*
- *Dialogic® Standard Runtime Library API Library Reference*
- *Dialogic® Standard Runtime Library API Programming Guide*
- *Dialogic® Voice API Library Reference*
- *Dialogic® Voice API Programming Guide*

## 5.5 Demonstration Software Documentation

The following demonstration software documentation is provided for this release:

- *Dialogic® Multimedia Demo Guide*
- *Dialogic® IP Media Server Demo Guide*

- *Dialogic® Global Call API Demo Guide*
- *Dialogic® Continuous Speech Processing Demo Guide*
- *Dialogic® Audio Conferencing Demo Guide*