



Dialogic® Host Media Processing Software Release 4.1LIN

Release Guide

June 2011

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Document Revision History

This revision history summarizes the changes made in each published version of the Release Guide for Dialogic® Host Media Processing Software Release 4.1LIN, which is a document that may be subject to updates during the lifetime of the release.

Document Rev 05 – published June 2011

Includes updates for Service Update 32 through 86.

Updates to the [Basic Software Requirements](#) section:

- In [Supported Compilers](#), added version 4.1.x to the GNU Compiler Collection (GCC). Removed note about GCC 4.1 compatibility libraries. Now all Dialogic libraries are fully linked to the GCC 4.1.x libraries.
- In [Supported Operating Systems](#), removed note about VOIP-only support for 32-bit compatibility mode. Added Update 4, 5, and 6 to Red Hat Enterprise Linux Release 5.0. Added Update 8 to Red Hat Enterprise Linux Release 4.0. Added SUSE Linux Enterprise Server 11.

In the [Features](#) chapter:

- Added G.722 and G.722.2 (AMR-WB) in [Audio Codecs for Transcoding](#). Added H.264 in [Video Codecs for Transcoding](#).
- Added HD voice conferencing in [New Multimedia \(Audio/Video\) Conferencing](#).
- Added [New MSML Server Software](#).
- Added [New IPv6 Support](#).
- Added [New Virtualization Support](#).
- Added H.264 in [3G-324M Interface](#).
- In [Audio Codecs for RTP](#), replaced 10 frames per packet with 33 frames per packet; added VAD note for AMR Narrow Band; added G.722 and G.722.2 (AMR-WB).
- In [Multimedia \(Audio/Video\) Play and Record](#), added Linear PCM 16 bit, 16 kHz; added hinted H.263 and AMR-NB to direct 3GP file; replaced the text under the “Play a still image over a video stream” item (IPY00081664)
- Added [Native RTP Hairpinning](#) (existing support but previously not documented in this guide).
- Indicated that [Secure Real-Time Transport Protocol \(SRTP\)](#) is supported.
- In [Audio \(Voice\) Play and Record](#), added G.729A; added recording and playing raw E1/T1 DS0 64 Kbps bit streams.

In the [Installation, Configuration, and Licensing](#) chapter:

- In [Installation](#) section, removed the statement that you can “upgrade to a later Dialogic® HMP Software 4.1LIN Service Update (when one is available) without

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uninstalling the existing version.” This statement is incorrect. You must uninstall the previous version before upgrading to a later version.

- In [Licensing](#) section, added additive licensing.

In the [Programming Libraries](#) chapter:

- In [New Dialogic® Media Toolkit API Library](#), replaced the text under the “Media toolkit (mtk) functions” item. (IPY00081664)
- In [Dialogic® 3G-324M API Library](#), added H.264.
- In [Dialogic® Conferencing \(CNF\) API Library](#), added monitor mode.
- In [Dialogic® Digital Network Interface API Library](#), added `dt_listentransparent()` support.
- In [Dialogic® Global Call API Library](#), added SIP Transport Layer Security (TLS); unspecified G.723.1 bit rate in outgoing SIP requests with SDP; overlap-receive support for limited SIP-I interworking scenarios; processing multiple 18x provisional responses; registering authentication data without realm string; handling non-2xx responses to T.38 switch; WaitCall cancellation; defer sending SIP messages; dynamic selection of outbound SIP proxy; retrieving SIP inbound RFC 2833 payload type.
- In [Dialogic® IP Media API Library](#), added support for multiple NICs; added support for IPv6.
- In [Dialogic® Voice API Library](#), added G.729A, `dx_setchxfercnt()`, and `dx_listentransparent()` support.

In the [Supported Hardware](#) chapter, added these Dialogic® HMP Interface Boards: DNI/300TEPHMPW, DNI/601TEPHMPW, DNI/1200TEPHMPW, DNI/2410AMCTEHMP, DNI1210TEPE2HMP, DNI2410TEPE2HMP.

In the [Documentation](#) chapter, added Dialogic® MSML Media Server Software User’s Guide in [Application Scenario Documentation](#) section.

Document Rev 04 – published February 2010

In the [Release Overview](#) chapter, added H.264 native play/record under [Release Highlights](#).

In the [System Requirements](#) chapter, updated the note under [Basic Software Requirements](#), Supported Operating Systems item.

In the [Features](#) chapter, added H.264 video codec support under [Video Codecs for RTP](#).

In the [Programming Libraries](#) chapter, updated video codec support under [Dialogic® IP Media API Library](#).

Document Rev 03 – published January 2010

Updated to include support for the following features of the Dialogic® HMP Software Release for 3.1LIN added in Service Update 23:

- Continuous Speech Processing (CSP)
- H.323 Signaling Support
- Modified Media (SIP re-INVITE and IP Call Control)
- Multimedia user I/O
- Automatic Gain Control (AGC) and Volume Control

In the [Features](#) chapter:

- Added Multimedia User I/O under [Multimedia \(Audio/Video\) Play and Record](#).
- Added H.323 and SIP re-INVITE under [IP Signaling](#).
- Added Automatic gain control and Volume control to the capabilities list in the [Audio \(Voice\) Play and Record](#) section.
- Added [IP Call Control](#) and Speech Integration to a new [Other Features](#) section.

In the [Programming Libraries](#) chapter:

- Added a [Dialogic® Continuous Speech Processing \(CSP\) API Library](#) section.

In the [Documentation](#) chapter:

- Added Speech Integration to Table 1. in the [Documentation Feature Support](#) section.
- Added *Dialogic® Continuous Speech Processing* library documentation to the bulleted list in the [Programming Libraries Documentation](#) section.
- Added the *Dialogic® Continuous Speech Processing API Demo Guide* to the [Demonstration Software Documentation](#) section.

Document Rev 02 – published November 2009

Updated for Dialogic® Host Media Processing Software Release 4.1LIN.

In the [Release Overview](#) chapter, updated Software Restrictions section.

In the [System Requirements](#) chapter, added GCC 4.1 to the [Basic Software Requirements](#) section.

Document Rev 01 – published October 2009

Initial version of document for Dialogic® Host Media Processing Software Release 4.1LIN.

Document Revision History

About This Publication

The following topics provide more information about this publication:

- [Applicability](#)
- [Intended Audience](#)
- [How to Use This Publication](#)
- [Related Information](#)

Applicability

This document provides information about the features, system requirements, and release documentation for the Dialogic® Host Media Processing Software Release 4.1LIN (also referred to as Dialogic® HMP Software 4.1LIN).

Intended Audience

This document is intended for all users of Dialogic® HMP Software 4.1LIN.

How to Use This Publication

The information 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 hardware and software requirements for this release.
- [Chapter 3, “Features”](#) describes the new features supported in this release.
- [Chapter 4, “Installation, Configuration, and Licensing”](#) provides installation, configuration, and licensing information.
- [Chapter 5, “Programming Libraries”](#) describes the various development software libraries that are available as part of this release.
- [Chapter 6, “Supported Hardware”](#) lists the hardware supported in this release.
- [Chapter 7, “Documentation”](#) provides a list of the documents that accompany this release.

Related Information

See the following for additional information:

- *Dialogic® Host Media Processing Software Release 4.1LIN Release Update* for information about known problems, resolved problems, and documentation updates associated with this release. Refer to the Release Update for late-breaking changes or corrections to the release information. Information is intended to be updated in the Release Update, as needed, during the life cycle of the release.
- <http://www.dialogic.com/support/>
- <http://www.dialogic.com/>

This chapter provides an overview of the Dialogic® Host Media Processing (HMP) Software as well as a high-level overview of the products and features that are newly supported in Dialogic® Host Media Processing Software Release 4.1LIN (also known as Dialogic® HMP Software 4.1LIN).

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

Dialogic HMP Software software supports two direct APIs: Dialogic® R4 APIs for media processing and Dialogic® Global Call API for call control.

Dialogic HMP Software supports the industry-standard Session Initiation Protocol (SIP) protocol for call control, with Real-time Transport Protocol (RTP) and Real-time Control Protocol (RTCP) for media streaming and control over IP in various audio formats, video formats, and fax formats.

Since Dialogic HMP Software is implemented as a software-only product, it can be installed and upgraded like other software.

Dialogic HMP Software is available through a flexible licensing scheme. Dialogic HMP Software media resources are provided via a license file, which contains authorization for a combination of call control and media processing features. Customers may choose the combination of resources they need for their solution, and obtain additional resources as their system grows.

Release Highlights

Highlights of Dialogic® HMP Software 4.1LIN are as follows.

- H.264 native play/record support and IP hairpinning
- MPEG-4 video codec for play and record
- Video transcoding, video transrating, image resizing
- Multimedia (audio/video) conferencing
- Play a still image over a video stream
- Capture or record a still image from a video stream
- Digital video recorder (DVR) controls
- Video fast update (VFU)
- H.324 MONA (Media Oriented Negotiation Acceleration)

Refer to [Chapter 3, “Features”](#) for more information about new features.

Software Restrictions

This software is subject to the U.S. Export Administration Regulations and other U.S. law, and may not be exported or re-exported to certain countries (as of the date of publication of the most recent release, Burma, Cuba, Iran, Libya, N. Korea, Sudan and Syria).

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<https://www.bis.doc.gov/complianceandenforcement/liststocheck.htm>

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The completion of an End User/End Use statement may be required prior to export release.

This chapter describes the hardware and software requirements for Dialogic® Host Media Processing Software Release 4.1LIN.

- [Basic Hardware Requirements](#) 13
- [Basic Software Requirements](#). 13

2.1 Basic Hardware Requirements

The basic hardware requirements for this release are:

Rack mount server or equivalent PC

- Memory: Minimum of 2 GB of RAM; 4 GB of RAM recommended.
- CPU: Minimum Single Socket Dual-Core Intel Xeon 5080 processor with Hyperthreading (3.73 GHz); Dual Socket Quad-Core Intel Xeon X5355 processor (2.67 GHz) or better recommended.
- Disk Space: 500 MB for full installation. Additional disk space may be required depending on multimedia recording needs.
- PCIe slots:
full length, full height slot for DNI boards

Optional Dialogic® HMP Interface Boards (DNI boards)

See [Section 6.1, “Dialogic® HMP Interface Boards”](#), on page 45 for a list of supported boards.

Note: This release supports 32-bit compatibility mode on 64-bit Linux systems for Dialogic® HMP Interface Boards.

Optional Dialogic® DSI SS7 Boards and DSI Signaling Servers:

See [Section 6.2, “Dialogic® DSI SS7 Boards and Dialogic® DSI Signaling Servers”](#), on page 45 for a list of supported boards.

2.2 Basic Software Requirements

The basic software requirements for this release are:

Supported Compilers

- GNU Compiler Collection (GCC) versions 3.2.3, 3.4.3, 4.1, and 4.1.x

Note: Development tools such as GCC must be installed on your system, even in a runtime installation. Dialogic® HMP Software 4.1LIN uses the GCC to compile certain Dialogic drivers.

System Requirements

Supported Operating Systems

- Red Hat Enterprise Linux Release 5.0 with Update 2, Update 3, Update 4, Update 5, and Update 6
- Red Hat Enterprise Linux Release 4.0 with Update 5, Update 6, Update 7, and Update 8
(Advanced Server, Enterprise Server, or Workstation)
- SUSE Linux Enterprise Server 9 Service Pack 4
- SUSE Linux Enterprise Server 11

For important information about additional operating system and other requirements, follow the instructions provided in the *Dialogic® Host Media Processing Software Release 4.1LIN Software Installation Guide*.

A license is required to use Dialogic® HMP Software 4.1LIN. For more information, see *Dialogic® Host Media Processing Software Release 4.1LIN Software Installation Guide*.

This chapter describes the features that are supported in Dialogic® Host Media Processing Software Release 4.1LIN (Dialogic® HMP Software 4.1LIN). Features and functionality that are new since Dialogic® Host Media Processing Software Release 3.1LIN are identified.

- [New Multimedia \(Audio/Video\) Transcoding](#) 15
- [New Multimedia \(Audio/Video\) Conferencing](#) 16
- [New Image Overlay](#) 17
- [New MSML Server Software.](#) 17
- [New IPv6 Support.](#) 18
- [New Virtualization Support.](#) 18
- [Dialogic® HMP Interface Boards.](#) 21
- [SS7 Support](#) 22
- [3G-324M Interface](#) 22
- [Codecs for RTP Interface](#) 24
- [Channel Density Support](#) 26
- [Multimedia \(Audio/Video\) Play and Record](#) 26
- [Native RTP Hairpinning](#) 28
- [IP Signaling.](#) 29
- [Tone Management](#) 29
- [Secure Real-Time Transport Protocol \(SRTP\)](#) 29
- [Audio \(Voice\) Play and Record](#) 30
- [Other Features](#) 31

3.1 New Multimedia (Audio/Video) Transcoding

Multimedia transcoding is introduced in Dialogic® Host Media Processing Software Release 4.1LIN.

Multimedia transcoding includes both audio transcoding and video transcoding.

Multimedia transcoding features are described as follows:

Video transcoding, video transrating, and image resizing

Video transcoding enables applications to record incoming video in a different format than what is being received from the network and to play back outgoing video in a

Features

different format than that of the locally stored file. Transcoding involves decoding and decompressing the original data to a raw intermediate format (YUV format), then converting the raw intermediate format to another encoding format.

Video transrating adjusts the number of video frames per second (and bitrate of the video) between two endpoints to suit the requirements of the device at each endpoint.

Image resizing converts video from one image size to another (for example, from CIF to QCIF) between two endpoints to suit the requirements of the device at each endpoint.

These features are available on MPEG-4, H.263, and H.264.

Note: In this document, the term “video transcoding” encompasses video transcoding, video transrating, and image resizing.

Device support for video transcoding

Video transcoding is supported between these devices: 3G-324M (m3g), conferencing (cnf), IP media (ipm), and multimedia (mm) devices.

Device support for audio transcoding

Audio transcoding is supported between these devices: 3G-324M (m3g), conferencing (cnf), digital network interface (dti), IP media (ipm), multimedia (mm), and voice (dx) devices.

Audio Codecs for Transcoding

Supported audio codecs for transcoding include:

- G.711
- G.723.1
- G.726
- G.729A
- G.729AB
- AMR Narrow Band (AMR-NB)
- G.722
- G.722.2 (AMR-WB)

Video Codecs for Transcoding

Supported video codecs for transcoding include:

- H.263
- H.264
- MPEG-4

3.2 New Multimedia (Audio/Video) Conferencing

Multimedia conferencing is introduced in Dialogic® Host Media Processing Software Release 4.1LIN.

Multimedia conferencing allows a real-time audio/video session between two or more participants whose call can originate from the IP network or TDM network.

Participants in a multimedia conference can be audio only, video only, or audio and video. You must apply multimedia transcoding for all participants of a conference; apply audio transcoding for audio participants and video transcoding for video participants. For more information on transcoding, see [Section 3.1, “New Multimedia \(Audio/Video\) Transcoding”](#), on page 15.

Users decide on the format of the output screen, and select who will be displayed on the output screen. The number of participants displayed depends on the video layout applied to the conference. Participants may be persistent or may be determined by the active talker algorithm based on user selection.

This release supports high definition (HD) voice conferencing, also called wideband audio conferencing, using G.722 and G.722.2 (AMR-WB) audio codecs. The conference can consist of a combination of wideband and narrowband parties. In order to achieve wideband fidelity audio, wideband audio codecs for HD voice conferencing.

Multimedia conferencing is implemented in the Dialogic® Conferencing (CNF) API library and video layout is created using the Dialogic® Media Toolkit API library. For more information, see [Section 5.3, “Dialogic® Conferencing \(CNF\) API Library”](#), on page 36 and [Section 5.1, “New Dialogic® Media Toolkit API Library”](#), on page 27.

3.3 New Image Overlay

Image overlay is introduced in Dialogic® Host Media Processing Software Release 4.1LIN.

The image overlay feature allows you to place an image over a streaming video. You create a template of the image and define the area on the video screen in which the image will be displayed.

Image overlay is implemented in the Dialogic® Media Toolkit API library. For more information, see [Section 5.1, “New Dialogic® Media Toolkit API Library”](#), on page 27.

3.4 New MSML Server Software

The Media Server Markup Language (MSML) is supported in Dialogic® Host Media Processing Software Release 4.1LIN.

The Media Server Markup Language (MSML) is an XML-based media resources control protocol. The MSML media server software has been designed and implemented as an integral part of the Dialogic® HMP Software 4.1LIN.

Features

If the Dialogic® HMP Software 4.1LIN is installed on a media server (MS), the MSML media server software enables a remote client, also known as an application server (AS), to control media resources.

The MSML media server software is based on the evolving MSML language, as defined in the IETF RFC 5707.

The connection between the AS and MS is established using the SIP protocol; thereafter media control commands/responses (in the form of MSML control syntax) are exchanged in SIP messages, such as the INFO request message or the 200 OK response message.

For more information, see the *Dialogic® MSML Media Server Software User's Guide*.

3.5 New IPv6 Support

Dialogic® Host Media Processing Software Release 4.1LIN introduces support for Internet Protocol Version 6 (IPv6) for open media connections.

The key features of IPv6 are:

- Simplified header format
- Expanded addressing capabilities (128 bits long, compared to 32 bits in IPv4)
- Stateless and stateful address configuration
- Built-in security support
- Improved support for quality of service (QoS)
- New protocol for neighboring node interaction
- Improved support for extensions and options

Applications can be configured to run in a pure IPv4, IPv6, or a mixed (both IPv4 and IPv6 addressing) network environment.

Limitations

Support for IPv6 addressing with Dialogic® HMP 4.1LIN software is implemented in phases. The initial phase, Phase 1, provides IPv6 support for bearer channel (multimedia) connections as well as for OA&M interfaces (CLI). Known limitations for Phase 1 are:

- IPv6 supports Audio/Video only. No Fax or NbUP support is provided.
- CLI (Telnet) may only be reached via an IPv4 address.

3.6 New Virtualization Support

Dialogic® Host Media Processing Software Release 4.1LIN introduces initial support for virtualization using VMware® ESXi 4.0 Update 1 Installable. This release offers IP-only support with Red Hat Enterprise Linux Release 5.0 with Update 4.

For additional information about operating system requirements, see [Section 2.2, “Basic Software Requirements”](#), on page 13.

This feature specifically focuses on the VMware® ESXi 4.0 installable product which provides a native (or full) virtualization layer running on physical servers for abstracting processor, memory, storage, and resources into multiple virtual machines. For more information about virtualization, refer to the VMware web site at www.vmware.com.

- Notes:**
1. It is assumed that the reader is familiar with common terms used to describe basic virtualization concepts, such as guest operating system, host, hypervisor, etc.
 2. Virtualization is not supported on thin-blade configurations.

3.6.1 VMware® ESXi 4.0 Virtualization Support

Dialogic® HMP virtualization refers to the capability of running a separate instance of the Dialogic® HMP software release on the “guest” operating system of one or more virtual machines being hosted on the same physical platform (i.e., server). Each Dialogic® HMP software release has a separate runtime license, a number of dedicated resources, and requires a dedicated application (written to standard Dialogic® HMP Global Call and R4 Media API) to manage the resources.

HMP virtualization is implemented using VMware® ESXi 4.0 Update 1 Installable. VMware® ESXi partitions a physical server into multiple secure and portable virtual machines that can run side by side. Each virtual machine represents a complete system—with processors, memory, networking, storage and BIOS—so that an operating system and software applications can be installed and run in the virtual machine without any modification.

Refer to the VMware® ESXi 4.0 documentation at <http://www.vmware.com/support/pubs/> for more information.

The density achieved when operating in an virtual environment is directly dependent on the configuration settings of the virtual machine (i.e., CPU, memory, etc.) and the host platform hardware. Users should view the configuration settings provided as guidelines and not absolute, based on the target platform hardware characteristics in which feature validation was performed. Customizing the settings for optimal performance based on needs of the controlling application and host platform should be done by knowledgeable and experience personnel familiar with VMware® ESXi products.

3.6.2 Configuring HMP Virtualization

To configure Dialogic® HMP software to run as close as it would in a physical server configuration, the hypervisor should be configured to distribute the host hardware CPU processor, memory, storage, and networking resources to enable the real-time processing of RTP, media, and call control on all instances of the Dialogic® HMP software. The following subsections examine the critical parameters to achieve this goal. Please refer to the vSphere Resource Management Guide found at http://www.vmware.com/pdf/vsphere4/r40_u1/vsp_40_u1_resource_mgmt.pdf for a thorough explanation of the terms and concepts utilized herein.

CPU Affinity Settings

To run real-time software on VMware® ESXi, use CPU affinity. This is the recommended method for real-time voice since each virtual processor can get CPU resources directly from one or more of the available host CPUs, reducing the likelihood that virtual processors are rescheduled to give CPU time to another virtual machine.

Each virtual machine is more isolated, which helps real-time software run as though it were in a physical server environment. Due to HMP software's intensive use of the operating system kernel resources, it is also highly recommended to set aside one physical (host) CPU to the VMware® ESXi 4.0 hypervisor. This host CPU should not be part of the affinity setting of any of the virtual machines.

For example, on a dual-processor, four-core host system without hyper-threading system, there will be eight physical CPUs available to VMware® ESXi. In this scenario, two virtual machines are configured with two virtual processors each. The system administrator could set the first virtual machine CPU affinity to physical CPUs 0 through 3 (total 4), and the second virtual machine CPU with affinity to physical CPUs 4 through 6 (total 3); this leaves physical CPU 7 unassigned and available to the VMware® ESXi hypervisor.

Virtual machine configuration is accomplished using the vSphere vCenter or via the VMware CLI. Refer to the vSphere Basic System Administration or equivalent guide at http://www.vmware.com/pdf/vsphere4/r40_u1/vsp_40_u1_admin_guide.pdf for vSphere vCenter information. For VMware CLI instructions, refer to http://www.vmware.com/pdf/vsphere4/r40_u1/vsp_40_u1_vcli.pdf.

- Notes:**
1. Be careful not to cross physical processor boundaries when assigning CPU affinity to virtual machines, so that all host CPUs assigned to a virtual machine belong to the same host physical processor.
 2. On NUMA host servers, it is recommended to keep all physical CPUs affine to a virtual machine residing in the same NUMA node in order to avoid a performance penalty when accessing non-local memory.

Timing Configuration

For optimal virtual machine timing and HMP operation in a virtualized environment, it is recommended that VMware Tools are installed in each virtual machine.

- Install VMware Tools in each virtual machine. Refer to the VMware ESXi Setup Guide for the installation procedure.
- Use the vSphere vCenter utility (or VMware CLI) to access the host system Time Configuration. Provide the address of an appropriate NTP Server in the Date and Time Options, and restart the NTP service to apply the changes.

Note: VMware Tools includes an optional clock synchronization feature “Time Synchronization between the virtual machine and the ESX Server” that can be enabled in the virtual machines, and could conflict with the native synchronization software. Be aware that having both enabled could affect the virtual machine's operating system's ability to correct long-term wall-clock drift, hence affect HMP audio quality.

For HMP media quality, it is recommended that the guest operating system operates with the ntpd process disabled to prevent NTP timing synchronization conflicts between the guest operating system and the ESX server. Use the setup command from the console to disable the ntpd feature prior to starting HMP software.

Resource Budgeting

The same HMP requirements for system resources are required when operating in a VMware® ESXi environment. Refer to the Dialogic® Host Media Processing Software Release 3.0WIN Release Guide for those requirements.

The user is responsible for distributing the host system so enough resources are available to the virtual machines at all times. In addition to the CPU affinity and timing settings discussed, VMware® ESXi and vSphere provide a vast number of virtual machine configuration parameters that affect the configuration and behavior of virtual resources, such as reservation, shares, and resource pools that are outside of the scope of this document but are very important in providing a virtual environment to HMP as close as possible to a physical server environment.

Network Configuration

By default, VMware® ESXi provides one virtual switch that handles all virtual machine network traffic according to each virtual machine's IP and MAC addresses and VMware® ESXi management network traffic. Virtual machines can be assigned to virtual networks, and these to virtual switches in various network topologies, utilizing all available host physical network interfaces. The system integrator should carefully consider the virtual network layout based on the aggregated network traffic of all virtual machines and the capabilities and number of the physical network interfaces.

3.6.3 Density Limits

Aggregate density limits were tested at the currently supported limits as physical platforms. It is important to note that density projections are platform specific and are susceptible to the performance capabilities of the underlying hardware platform (host), and to the number of virtual machines. Initial density results show that the aggregate density of virtual machines running on the same host may be slightly less than the total capacity of the physical server. This is the result of additional overhead associated with each virtual machine.

3.7 Dialogic® HMP Interface Boards

For a list of currently supported boards, see [Section 6.1, “Dialogic® HMP Interface Boards”](#), on page 45. For technical specifications, see http://www.dialogic.com/products/ip_enabled/hmp_enabled_boards.htm.

For information on configuring DNI boards, see the *Dialogic® HMP Software for Linux Configuration Guide*.

3.8 SS7 Support

No new SS7 features are added in this release.

For a list of currently supported boards, see [Section 6.2, “Dialogic® DSI SS7 Boards and Dialogic® DSI Signaling Servers”](#), on page 45. For technical specifications, see http://www.dialogic.com/products/signalingip_ss7components/signaling_boards.htm.

The Dialogic® Global Call software supports the development of call control applications that use SS7 technology. For more information on using SS7 technology, see the *Dialogic® Global Call SS7 Technology Guide*.

3.9 3G-324M Interface

The 3G-324M technical specification is an umbrella protocol produced by the 3rd Generation Partnership Project (3GPP). An extension to the ITU-T H.324 Recommendation for 3G mobile phone conferencing, the 3G-324M specification includes H.245 for session control; H.223 for bit streams to data packets multiplexer/demultiplexer; H.223 Annex A and B for error handling of low and medium bit error rate (BER) detection, correction, and concealment; and H.324 with Annexes A and C for operating in a wireless environment. H.324 Annex K adds support for Media Oriented Negotiation Acceleration (MONA).

This release supports 3G-324M multimedia sessions over PSTN, as defined in 3GPP Release 99. It also supports 3G-324M multimedia sessions over IP using the Nb UP protocol, as defined in 3GPP Release 4.

For more information about the 3G-324M API library, see the *Dialogic® 3G-324M API Programming Guide and Library Reference*.

New Features

New features of the 3G-324M interface include:

H.324 MONA

Accelerates 3G-324M call setup time significantly.

Audio transcoding

Audio transcoding can be performed between audio codecs supported for the 3G-324M interface and audio codecs supported for the RTP interface.

New video codecs for 3G-324M

MPEG-4 is supported with these characteristics:

- Simple Profile (SP) – Level L0
- Video picture format – QCIF
- Frame rate – Up to 15 frames per second (fps)
- Bit rate – Up to approximately 43 kbps

H.264 is supported with these characteristics:

- Profile and level – Baseline profile, level 1

- Video picture formats – QCIF
- Frame rate – Up to 15 frames per second (fps)
- Bit rate – Up to approximately 43 kbps

Video transcoding, video transrating, and image resizing

Video transcoding enables applications to record incoming video in a different format than what is being received from the network and to play back outgoing video in a different format than that of the locally stored file. Transcoding involves decoding and decompressing the original data to a raw intermediate format (YUV format), then converting the raw intermediate format to another encoding format.

Video transrating adjusts the number of video frames per second (and bitrate of the video) between two endpoints to suit the requirements of the device at each endpoint.

Image resizing converts video from one image size to another (for example, from CIF to QCIF) between two endpoints to suit the requirements of the device at each endpoint.

These features are available on MPEG-4, H.263, and H.264.

Note: In this document, the term “video transcoding” encompasses video transcoding, video transrating, and image resizing.

Other Features

Other features previously supported since Dialogic® Host Media Processing Software Release 3.1LIN include:

Audio codecs for 3G-324M

Supported audio codecs are as follows:

- G.723.1 – 5.3 and 6.3 kbps, 30 ms frames, 1 frame per packet
- AMR Narrow Band – 12.2 kbps, 20 ms frames, 1 frame per packet

Note: Using the AMR-NB resource in connection with one or more Dialogic® products mentioned herein does not grant the right to practice the AMR-NB standard. To seek a patent license agreement to practice the standard, contact the VoiceAge Corporation at <http://www.voiceage.com/licensing.php>.

Video codecs for 3G-324M

H.263 is supported with these characteristics:

- Profile and level – Profile 0, level 10
- Video picture formats – QCIF and sub-QCIF
- Frame rate – Up to 15 frames per second (fps)
- Bit rate – Up to approximately 43 kbps

RTP video data is compliant with Internet Engineering Task Force RFC 2190, RTP Payload Format for H.263 Video Streams.

3.10 Codecs for RTP Interface

This section describes supported audio codecs and video codecs for RTP.

Audio Codecs for RTP

Supported audio codecs for RTP include:

- G.711 – 64 kbps format, mu-law and A-law, at 10, 20, or 30 ms frames
- G.723.1 – 5.3 and 6.3 kbps, 30 ms frames, and 1, 2 or 3 frames per packet
- G.726 – 16, 24, 32 and 40 kbps
 - 20 ms frame size, 1, 2, or 3 frames per packet
- G.729A (compatible with G.729 format) – 8 kbps, 10 ms frames, and 2, 3, or 4 frames per packet
- G.729AB (compatible with G.729B format) – 8 kbps, 10 ms frames, and 2, 3, or 4 frames per packet
- AMR Narrow Band – 20 ms frames, 1 to 33 frames per packet

AMR-NB data is compliant with RFC 3267, RTP Payload for AMR.

Note: Voice activity detection (VAD) is disabled by firmware when frames per packet is greater than 10. This cannot be changed by the application.

Note: Using the AMR-NB resource in connection with one or more Dialogic® products mentioned herein does not grant the right to practice the AMR-NB standard. To seek a patent license agreement to practice the standard, contact the VoiceAge Corporation at <http://www.voiceage.com/licensing.php>.

- G.722 Wideband – 64 kbps, 10 or 20 ms frames, 1 frame per packet
- G.722.2 AMR Wideband – 64 kbps, 10 or 20 ms frames, 1 frame per packet

Video Codecs for RTP

Supported video codecs for RTP include:

MPEG-4 video codec

MPEG-4 is supported with these characteristics:

Simple Profile (SP), Levels L0, L1

- Video picture formats – Sub-QCIF, QCIF
- Frame rate – Up to 15 fps
- Bit Rate – Up to 64 kbps

Simple Profile (SP), Level L2

- Video picture formats – Sub-QCIF, QCIF
- Frame rate – Sub-QCIF and QCIF up to 30 fps; CIF up to 15 fps
- Bit Rate – Up to 128 kbps

Simple Profile (SP), Level L3

- Video picture formats – Sub-QCIF, QCIF, CIF
- Frame rate – Up to 30 fps

- Bit Rate – Up to 384 kbps

RTP video data is compliant with Internet Engineering Task Force RFC 3016, RTP Payload Format for MPEG-4 Audio/Visual Streams.

H.264 video codec

H.264 is supported with these characteristics:

Baseline Profile, Level 1

- Video picture formats – QCIF
- Frame rate – Up to 15 fps
- Bit rate – Up to 64 kbps

Baseline Profile, Level 1b

- Video picture formats – QCIF
- Frame rate – Up to 15 fps
- Bit rate – Up to 128 kbps

Baseline Profile, Level 1.1

- Video picture formats – QCIF, QVGA, CIF
- Frame rate – Up to 7.5 fps (CIF), Up to 10 fps (QVGA), Up to 30 fps (QCIF)
- Bit rate – Up to 192 kbps

Baseline Profile, Level 1.2

- Video picture formats – QCIF, QVGA, CIF
- Frame rate – Up to 15 fps (CIF), Up to 20 fps (QVGA), Up to 30 fps (QCIF)
- Bit rate – Up to 384 kbps

Baseline Profile, Level 1.3

- Video picture formats – QCIF, QVGA, CIF
- Frame rate – Up to 30 fps (CIF), Up to 30 fps (QVGA), Up to 30 fps (QCIF)
- Bit rate – Up to 768 kbps

RTP video data is compliant with Internet Engineering Task Force RFC 3984, RTP Payload Format for H.264 Video (Single NAL Unit mode and Non-Interleaved mode only).

H.263-1998 (H.263+) video codec

H.263+ is supported with these characteristics:

Note: H.263+ is supported in limited use cases. For details, see the *Dialogic® IP Media Library API Programming Guide and Library Reference*.

Profile 0, Level 10

- Video picture format – QCIF
- Frame rate – Up to 15 fps
- Bit rate – Constant bit rate up to 40 kbps

A nominal bit rate and frame rate to use is 37.8 at 7.5 fps.

RTP video data is compliant with Internet Engineering Task Force RFC 2429 (RFC 4629). Only Baseline Profile is supported. No H.263 annexes are supported.

H263+ encoded using the video format transported by the RFC 2190 RTP payload type

H.263 (1996) video codec

H.263 is supported with these characteristics:

Profile 0, Level 10

- Video picture formats – Sub-QCIF, QCIF

Features

- Frame rate – Up to 15 fps
- Bit rate – Up to 64 kbps

Profile 0, Level 20

- Video picture formats – Sub-QCIF, QCIF, CIF
- Frame rate – Sub-QCIF and QCIF up to 30 fps; CIF up to 15 fps
- Bit rate – Up to 128 kbps

Profile 0, Level 30

- Video picture formats – Sub-QCIF, QCIF, CIF
- Frame rate – Up to 30 fps
- Bit rate – Up to 384 kbps

RTP video data is compliant with Internet Engineering Task Force RFC 2190, RTP Payload Format for H.263 Video Streams.

3.11 Channel Density Support

For channel density information, see the data sheet for Dialogic® HMP Software 4.1LIN. In addition, density test results are published on the Dialogic® website. For more information, select Dialogic® HMP Software 4.1LIN from this location:

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

3.12 Multimedia (Audio/Video) Play and Record

This section describes multimedia play and record features.

New Features

New multimedia features supported in Dialogic® HMP Software 4.1LIN include:

WAVE file support

The play and record capabilities in the Dialogic® Multimedia API Library support WAVE file format.

Linear PCM 16 bit, 16 kHz

Supports Linear PCM 16 bit, 16 kHz compressed audio data (wideband file format) for native G.722 audio play/record operations. Also supports 16 bit, 16 kHz Linear PCM encoded audio data in Wave (.wav) file format (container) for storage of both wideband and narrowband data. The Wave file format contains uncompressed Linear PCM audio data.

Play a still image over a video stream

Only YUV 4:2:0 and JPEG formatted source material are supported for playing a still image. This feature is implemented in the Dialogic® Multimedia API Library.

Record or capture a still image from a video stream

This feature provides the ability to capture a frame after a video stream has been paused and save it as an image. This feature is implemented in the Dialogic® Multimedia API Library.

Digital Video Recorder (DVR) controls

These controls enable the user to pause, resume, and seek during video and audio playback. DVR controls are supported for native connections or transcoding-enabled connections. This feature is implemented in the Dialogic® Multimedia API Library.

Direct 3GP (3GPP) file play

This feature enables a standard 3GP file to be played. The file can contain AMR-NB audio format and MPEG-4 video format; or AMR-NB and hinted H.263 using RFC 2190 or RFC 2429 (H.263-1998) packetization. This feature is implemented in the Dialogic® Multimedia API Library.

Note: The file containing H.263-1998 using RFC 2429 (RFC 4629) packetization can only contain baseline H.263 (no options). This is the same restriction that applies for receiving H.263-1998 using RFC 2429 (RFC 4629) packetization from an RTSP server.

Enhanced video bitrate controller

This feature improves bitrate conformance, audio/video synchronization, and video bandwidth utilization.

Multimedia User I/O

This feature enables applications to directly play and record RTP data via user I/O buffers. This feature is implemented in the Dialogic® Multimedia API Library. For more information, see [Section 5.10, “Dialogic® Multimedia API Library”](#), on page 42.

Other Features

Other multimedia features previously supported include:

Multimedia programming libraries

Several programming libraries provide multimedia-related functionality:

- The Dialogic® Multimedia API library records and plays multimedia data using a multimedia device.
- The Dialogic® Device Management API library connects the multimedia device to other devices such as an IP media device or an m3g (3G-324M) device.
- Multimedia record and playback between the Dialogic® software and remote IP endpoints is accomplished by using the multimedia device and other devices such as IP media devices.
- The Dialogic® IP Media Library API provides IP multimedia session control.
- The Dialogic® Global Call API library provides IP call control for multimedia using SIP and Session Description Protocol (SDP). The Global Call API library must be used in third party call control (3PCC) mode.

Multimedia play and record

Support for the following functionality:

- Record from RTP stream to multimedia file. Play from multimedia file into RTP stream while maintaining synchronization.
- Multimedia API video record and playback with basic playback control and synchronized audio and video.

Features

- Play to and record from SIP devices, depending on capability of device (audio or audio/video). Play video only if no audio is required. Play audio only for non-video devices.

Multimedia file formats

Support for the following file formats for play and record:

- Linear PCM (128 kbps), 16-bit, 8 kHz, mono, LSB-MSB (“little-endian”) for audio play and record

Note: Voice API audio files may be used as the audio track in a multimedia session; however, no synchronization between the audio and video file is maintained.

In this case, the ipm device in a multimedia session listens to the dx 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 *Dialogic® Multimedia API Programming Guide*.

- Dialogic® proprietary native audio file format used for native RTP play and record and for transcoding. For more information, see the *Dialogic® Multimedia API Programming Guide* and *Dialogic® Multimedia File Conversion Tools User Guide*.
- Dialogic® proprietary video file formats used for video transcoding. For more information, see the *Dialogic® Multimedia File Conversion Tools User Guide*.

Multimedia file conversion utility

The hmp3gp utility converts multimedia data from Dialogic® proprietary file format to 3rd Generation Partnership Project (3GPP) file format conforming to 3GPP specifications. The reverse direction is also supported.

This utility can be downloaded from the following web site. Check this web site periodically for any updates to the conversion tools and for any corresponding updates to the documentation:

http://www.dialogic.com/products/ip_enabled/download/multimedia/omf.htm

Note: The conversion utility performs CPU-intensive tasks and should only be used when sufficient CPU capacity is available and when it won't impact other operations on the system.

3.13 Native RTP Hairpinning

Native RTP hairpinning is supported in Dialogic® Host Media Processing Software Release 4.1LIN.

Native RTP hairpinning enables applications to form RTP media stream connections between IP media streams, allowing the RTP media stream received from one IP media session to be retransmitted to the outgoing RTP media stream of another IP media session. This is done without processing or transcoding the RTP payload. The RTP packets that are hairpinned may be hairpinned as received, with packets out of order or even missing as long as the RTP stream is retransmitted so that the receiving terminating endpoint can perform necessary packet loss recovery (PLR) type functions.

Native RTP hairpinning is supported for both audio and video RTP streams.

In addition to IPM to IPM connections, native hairpinning connections may also be formed between 3G-324M and IPM devices.

Connections between devices are made using the Dialogic® Device Management API library.

Use cases for native RTP hairpinning include switching type applications, such as an IP-PBX, or streaming data to/from an external speech server. Benefits of using native RTP hairpinning include increasing achievable system densities, reducing latencies, and improving voice quality by eliminating an additional decode/encode operation.

3.14 IP Signaling

The Dialogic® HMP Software 4.1LIN supports the industry-standard Session Initiation Protocol (SIP).

New IP signaling features in Dialogic® HMP Software 4.1LIN include:

H.323

Note that this release 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 Re-INVITE

Support for subsequent INVITE requests, also known as re-INVITE requests, on existing SIP dialogs (calls). A Dialogic® 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.

3.15 Tone Management

There are no new tone management features in Dialogic® Host Media Processing Software Release 4.1LIN.

Tone management support includes:

- In-Band DTMF detection and generation
- RFC 2833 DTMF detection and generation
- H.245 UserInputIndication message in 3G-324M interface

3.16 Secure Real-Time Transport Protocol (SRTP)

Secure Real-Time Transport Protocol (SRTP) is supported.

Real-time Transport Protocol (RTP) is commonly used for the transmission of real-time audio or video streams in Internet telephony applications. Secure RTP (SRTP) is an

Features

enhancement to RTP that provides confidentiality, message authentication, and replay protection for RTP and the companion Real Time Control Protocol (RTCP). “Replay protection” is protection against the interception of an RTP packet and later reintroduction into the packet stream.

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

3.17 Audio (Voice) Play and Record

New voice play and record features in Dialogic® HMP Software 4.1LIN include:

New Voice API audio play and record file format
G.729A Microsoft WAV file format

Recording and playing raw E1/T1 Digital Signal 0 (DS0) 64 Kbps bit streams
Supports recording and playing raw bit stream in real-time allowing for offline post call processing and analysis of the recorded data. The bit stream recorded can be audio, H.223, or any type of data that can be carried over an E1/T1 DS0. The bit stream is unaltered or processed in any way. To do so, the DTI device must pass the data transparently between the E1/T1 network interface and the system TDM bus (physical and/or soft bus).

Other Features

Other supported voice play and record features include:

Voice API audio play and record capability

The following capability is supported:

- Playing and recording files in all supported encoding formats, with or without wave headers
- Volume control
- Automatic gain control (AGC)
- Indexed play
- Streaming to board (streams data to the network interface in real time)
- Transaction record

Voice API audio play and record file formats

The following file formats are supported:

- G.711 mu-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 and 128 kbps)
- GSM full rate (13 kbps, ETSI 6.10 and RTP, both Microsoft and TIPHON frame support)

For information about multimedia play and record, see [Section 3.12, “Multimedia \(Audio/Video\) Play and Record”](#), on page 26.

3.18 Other Features

The following features from Dialogic® Host Media Processing Software Release 3.1LIN are supported:

IP Call Control

IP call control resources supports 3PCC. This feature 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.

Speech Integration

Speech integration resources enabling Dialogic HMP software integration with speech engines for ASR and TTS support using the Continuous Speech Processing APIs. Requires voice resource.

For supported density ranges, refer to [Section 3.11, “Channel Density Support”](#), on page 26.

Installation, Configuration, and Licensing

4

This chapter describes the installation, configuration, and licensing features that are supported in Dialogic® Host Media Processing Software Release 4.1LIN.

- [Installation](#) 32
- [Configuration](#) 32
- [Licensing](#) 33

4.1 Installation

The installation of Dialogic® HMP Software 4.1LIN is a complete installation.

If a previous version of Dialogic® HMP Software or a previous Dialogic® HMP Software 4.1LIN Service Update is installed on your system, you must uninstall this version before installing Dialogic® HMP Software 4.1LIN.

For more information about software installation, see the *Dialogic® Host Media Processing Software Release 4.1LIN Software Installation Guide*.

4.2 Configuration

Two tools are available for configuring and monitoring the Dialogic® HMP Software 4.1LIN and Dialogic® HMP Interface Boards (DNI boards): Command Line Interface (CLI) and Simple Network Management Protocol (SNMP). They both have access to the same configuration and monitoring data. SNMP is MIB-based, and CLI is command line-based.

The CLI agent software and SNMP agent software are included with Dialogic® HMP Software 4.1LIN.

For information about CLI and SNMP, see the *Dialogic® Host Media Processing Software Configuration Guide*.

4.3 Licensing

The following licensing capabilities are supported in this release:

Host-based licensing

The license is associated with a particular machine based on the machine's MAC address (Host ID).

Note: If you have a board in the system, then a host-based license will not work (board-based licensing has a higher priority than host licensing).

Board-based licensing

If you are using one or more of the supported Dialogic® boards, the license can be associated with one of the boards in the system based on the board's serial number. Locking the license to a board allows you to transfer the license to another host by moving the board to that host.

Additive licensing

To increase licensed resources or scale system capability, you can augment an existing license with multiple licenses. The licenses must meet the following criteria:

- All licenses must have an additive capable version (version 110 or above)
- All licenses must be located in the same single directory.
- All license files in the designated directory must be of the same type; that is, all licenses must be either OEM, DNI or HOST.

If any of the above conditions are not met, then licensing validation will fail.

Note: When asking for a new additive license file, use the Product Center calculator to determine if the sum of all features is within the capacity of the system.

For more information about licensing, see the *Dialogic® Host Media Processing Software Release 4.1LIN Software Installation Guide*.

This chapter describes the development libraries that are available in Dialogic® Host Media Processing Software Release 4.1LIN.

- New Dialogic® Media Toolkit API Library 34
- Dialogic® 3G-324M API Library 35
- Dialogic® Conferencing (CNF) API Library 36
- Dialogic® Continuous Speech Processing (CSP) API Library 37
- Dialogic® Device Management API Library 37
- Dialogic® Digital Network Interface API Library 38
- Dialogic® Fax API Library 39
- Dialogic® Global Call API Library 39
- Dialogic® IP Media API Library 41
- Dialogic® Multimedia API Library 42
- Dialogic® Standard Runtime API Library 43
- Dialogic® Voice API Library 43
- Dialogic® Demonstration Programs 44

5.1 New Dialogic® Media Toolkit API Library

The Dialogic® Media Toolkit API (MTK) library consists of general-purpose structures and attribute templates as well as API functions for building and manipulating media-related items, such as video layouts and bitmaps. The library also includes functions that allow for the integration of these templates and media-related items with existing Dialogic® libraries. Generally, templates represent properties of a media-related item, such as a media file or a video layout, and are referenced when setting attributes of a media stream or a video conference.

The Dialogic® Media Toolkit API library includes a main library (mtk) and several sub-libraries as follows: layout builder (lb), overlay builder (ob), and stream manipulation (sm). Each library encapsulates a given type of functionality.

The layout builder functions allow the user to specify the video layout of a video conference or multimedia conference. These functions can be used in conjunction with the Dialogic® Conferencing (CNF) API to develop multimedia conferencing applications.

For more information about this API library, see the *Dialogic® Media Toolkit API Library Reference*.

Features

The Media Toolkit API library provides the following functionality in Dialogic® HMP Software 4.1LIN:

Media toolkit (mtk) functions

Used to create templates for images and frames. For images, only YUV 4:2:0 format and JPEG format are supported.

Note: The input YUV 4:2:0 or JPEG image file size should not exceed 152,064 bytes. This limit is based upon the maximum file size required to support CIF (352x288) frames in YUV 4:2:0 format. A compressed JPEG input file may contain a frame with a resolution larger than CIF (352x288) as long as the file size is less than 152,064 bytes.

Layout builder (lb) functions

Used to specify the video layout of a video conference or multimedia conference.

- Several layout types are supported including one region (full screen), four regions, six regions, and nine regions. Custom layout types are also supported.
- Display modes for a participant or party include still image and live streaming.
- Selection modes supported include active talker and user-selected.

Overlay builder (ob) functions

Used to define an overlay template to be applied to a streaming device. Attributes of an overlay template include size and position of the bounding frame, overlay fill style, and duration for the overlay to be played.

Stream manipulation (sm) functions

Used to manage overlays on a streaming device; that is, add overlays to a device and remove overlays from a device. An overlay can be applied to IPM, MM or M3G device types.

For more information about these features, see the *Dialogic® Media Toolkit API Library Reference*.

5.2 Dialogic® 3G-324M API Library

The Dialogic® 3G-324M API library provides a standards-compliant interface that enables conversational multimedia communication services to mobile handsets and terminals over circuit-switched networks and packet-switched networks.

The 3G-324M technical specification is an umbrella protocol produced by the 3rd Generation Partnership Project (3GPP). An extension to the ITU-T H.324 Recommendation for 3G mobile phone conferencing, the 3G-324M specification includes H.245 for session control; H.223 for bit streams to data packets multiplexer/demultiplexer; H.223 Annex A and B for error handling of low and medium bit error rate (BER) detection, correction, and concealment; and H.324 with Annexes A and C for operating in a wireless environment. H.324 Annex K adds support for Media Oriented Negotiation Acceleration (MONA).

Programming Libraries

The 3G-324M API library can be used in conjunction with other API libraries to develop multimedia services such as video conferencing, video-on-demand, surveillance, and multimedia entertainment services.

For more information about this API library, see the *Dialogic® 3G-324M API Programming Guide and Library Reference*.

New Features

The 3G-324M API library provides the following new capabilities in Dialogic® HMP Software 4.1LIN:

MONA support

Media Oriented Negotiation Acceleration (MONA) standard is a group of complementary procedures designed to significantly reduce delay in H.324 call setup time. To support MONA, a field is added in the M3G_H223_SESSION structure to enable MONA per call and notification events are added, among other updates.

New video codecs

H.264 and MPEG-4 are supported.

Video transcoding, video transrating, and image resizing

To support these video features, the M3G_OCTET_STRING structure is added to the library, and M3G_MPEG4_OPTIONS and M3G_PARM_INFO structures are updated. For more information on video transcoding, see [Section 3.1, “New Multimedia \(Audio/Video\) Transcoding”](#), on page 15.

Connecting audio device and DTI or voice device

The audio device type (m3gB1Tn:AUDIO1) in the 3G-324M endpoint can be connected to a digital network interface device (dtiBxTy) or a voice device (dxxxBxCy) through the **dev_Connect()** and **dev_Disconnect()** functions.

For more information about these updates, see the *Dialogic® 3G-324M API Programming Guide and Library Reference* and the *Dialogic® Device Management API Library Reference*.

5.3 Dialogic® Conferencing (CNF) API Library

The Dialogic® Conferencing (CNF) API library supports development of conferencing applications. The conference can take place over an IP network and/or over traditional PSTN lines.

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

New Features

The Dialogic® Conferencing (CNF) API library provides the following new capabilities in Dialogic® HMP Software 4.1LIN:

Multimedia (audio/video) conferencing

Provides the ability to combine images from conference participants into a single image viewed by the conference participants. Several functions and data structures are added to support multimedia conferencing, including **cnf_SetVideoLayout()**, **cnf_GetVideoLayout()**, **cnf_SetVisiblePartyList()**, and **cnf_GetVisiblePartyList()**.

The design of the video layout is created through the layout builder functions of the Dialogic® Media Toolkit API (see [Section 5.1, “New Dialogic® Media Toolkit API Library”](#), on page 27). This layout is then set or applied to a multimedia conference using **cnf_SetVideoLayout()**.

Monitor mode support

Provides the ability to create multiple connections from or to one conference party.

For more information about these updates, see the *Dialogic® Conferencing API Library Reference*.

5.4 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.

For more information, see the *Dialogic® Continuous Speech Processing API Programming Guide* and *Dialogic® Continuous Speech Processing API Library Reference*.

Dialogic® CSP API Functions Not Supported

The following CSP API functions are not supported by Dialogic® HMP Software:

- **ec_rearm()**

5.5 Dialogic® Device Management API Library

The Dialogic® Device Management API library provides run-time control and management of configurable system devices, including functions to reserve resources and to manage the connections between devices for communication.

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

New Features

The Dialogic® Device Management API library provides the following new capabilities in Dialogic® HMP Software 4.1LIN:

Video transcoding, video transrating, and image resizing

The device management API library provides the ability to connect devices together, as a native connection or for transcoding. Transcoding is invoked when connections are formed. Use the DMFL_TRANSCODE_ON flag in the DM_PORT_CONNECT_INFO structure to enable transcoding.

For more information on video transcoding, see [Section 3.1, “New Multimedia \(Audio/Video\) Transcoding”](#), on page 15.

5.6 Dialogic® Digital Network Interface API Library

The Dialogic® Digital Network Interface API library supports development of applications that require connection to a T1 or E1 network interface. This API library is used by the Dialogic® HMP Interface Boards (DNI boards).

For more information, see the “Digital Network Interface API for DM3” chapter in the *Dialogic® Digital Network Interface Software Reference*.

New Features

The Dialogic® Digital Network Interface API library provides the following new capabilities in Dialogic® HMP Software 4.1LIN:

Support for **dt_listenttransparent()**

This function is used in recording/playing raw E1/T1 DS0 64 Kbps bit streams. It connects a digital listen channel to a time slot in transparent mode using information in the SC_TSINFO data structure.

Dialogic® Digital Network Interface API Functions Supported

The following Digital Network Interface API functions **are supported** by Dialogic® HMP Software:

- **dt_close()** (with restrictions)
- **dt_getctinfo()**
- **dt_getxmitslot()**
- **dt_listen()**
- **dt_open()** (with restrictions)
- **dt_setevtmsk()** (with restrictions)
- **dt_unlisten()**
- **dt_xmitarm()**

Other Digital Network Interface API functions not listed here are not supported.

5.7 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, and firmware files.

See the *Dialogic® Fax Software Reference* for more information.

New Features

No new features have been added since Dialogic® Host Media Processing Software Release 3.1LIN.

5.8 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 Global Call API library supports a variety of protocols.

The Dialogic® Global Call API library has the following characteristics:

- Supports SIP protocols
- Provides a consistent application interface for the various protocols and technologies
- Can be run in third party call control mode (3PCC) (SIP only)

Call control is managed by the Global Call API library and media exchange is managed by the IP Media Library. The Global Call API library supports multimedia call control over IP when using SIP and SDP.

The generic functionality of the 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 the IP technology is documented in the *Dialogic® Global Call IP Technology Guide*.

New Features

The Dialogic® Global Call API library provides the following new capabilities in Dialogic® Host Media Processing Software Release 4.1LIN:

SIP Transport Layer Security (TLS)

Provides the ability to authenticate and encrypt TCP-based call control using a variety of different key exchange, authentication, encryption, and message authentication code algorithms.

For more information, see *Dialogic® Global Call IP Technology Guide*.

Unspecified G.723.1 bit rate in outgoing SIP requests with SDP

The application in 1PCC mode can choose not to specify the G.723.1 codec bit rate, namely 5.3 kbps or 6.3 kbps, in an outgoing SIP message with SDP body. Instead, the

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application can let the far end UA request the bit rate. Feature enablement and disablement can be controlled either at the IPT board-level device or the IPT network device (channel).

Overlap-receive support for limited SIP-I interworking scenarios

Provides a method for handling overlap-receive SIP calls, where called party addressing is supplied in multiple INVITEs but needs to be propagated to the application as standard en bloc signaling calls.

Processing multiple 18x provisional responses

Provides a method for obtaining subsequent provisional 18x SIP responses using the GCEV_EXTENSION event.

Registering authentication data without realm string

Provides a method for registering authentication data without using realm string.

Handling non-2xx responses to T.38 switch

Provides 1PCC Global Call support for RFC 3261 compliance for non-2xx responses to re-INVITE requests to switch to or from audio to T.38 fax and back.

WaitCall cancellation

The application can block the channel from accepting calls before making an outbound call. If an incoming call is already in progress, the application is notified and the call in progress is not affected.

Defer sending SIP messages

The application can delay sending the appropriate response to an incoming BYE request (such as 200OK), as well as delay the sending of a BYE request.

Dynamic selection of outbound SIP proxy

The application can select an outbound SIP proxy server on the Dialogic® HMP virtual board device dynamically. If an outbound SIP proxy server was selected at board initialization it will be overridden; otherwise it will be selected for the first time.

Once enabled, this feature applies to the following outgoing SIP requests, in addition to SIP responses out of Dialogic® HMP Software:

– 1PCC mode

ACK, INFO, INVITE, OPTIONS, REFER, REGISTER, BYE, NOTIFY, SUBSCRIBE and CANCEL.

– 3PCC mode

ACK, INFO, INVITE, OPTIONS, REFER, REGISTER, BYE, NOTIFY, SUBSCRIBE, UPDATE, PRACK and CANCEL.

Retrieving SIP inbound RFC 2833 payload type

The application can retrieve the RFC 2833 payload type value specified by a remote SIP user agent, using Global Call first party call control (1PCC). Since the ability to set the RFC 2833 payload type on outgoing media streams is already available in 1PCC, applications can take advantage of this feature to match the outgoing RFC 2833 payload type with the RFC 2833 payload type of the incoming media stream, if its mapping is available in an incoming Session Description Protocol (SDP).

5.9 Dialogic® IP Media API Library

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

- Developing Voice over IP (VoIP) applications that use IP signaling stacks other than those supplied with Dialogic® products
- Controlling audio and multimedia sessions when the Dialogic® Global Call 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 library in 3PCC mode.

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

New Features

The Dialogic® IP Media Library API provides the following new capabilities in Dialogic® HMP Software 4.1LIN:

New video codecs

H.264 and MPEG-4 are supported.

Video transcoding, video transrating, and image resizing

To support these video features, the `IPM_VIDEO_CODER_INFO_EX` structure is added to the library. This structure specifies video codec information for H.263 and MPEG-4. Updates were made to `IPM_VIDEO_CODER_INFO` structure and a new header file, *videodefs.h*, was introduced for video-related features.

Use the `DMFL_TRANSCODE_ON` flag in the `DM_PORT_CONNECT_INFO` structure of the device management API library to enable transcoding.

For more information on video transcoding, see [Section 3.1, “New Multimedia \(Audio/Video\) Transcoding”](#), on page 15.

I-Frame update

The application can send a request for the IPM device to transmit an I-Frame update (video fast update) to the remote terminal as needed using the new `ipm_GenerateIFrame()` function.

Support for multiple NICs

Use of multiple local IP addresses for media sessions in Global Call 3PCC mode or with third-party SIP stacks.

Support for IPv6

For more information, see [Section 3.5, “New IPv6 Support”](#), on page 18.

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

5.10 Dialogic® Multimedia API Library

The Dialogic® Multimedia API library 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.

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

New Features

The Dialogic® Multimedia API library provides the following new capabilities in this release:

New video codecs

H.264 and MPEG-4 are supported.

Video transcoding, video transrating, and image resizing

To support these video features, the MM_VIDEO_CODEC structure is updated with new fields and associated enumerated values. A new header file, *videodef.h*, is introduced for video-related features.

For more information on video transcoding, see [Section 3.1, “New Multimedia \(Audio/Video\) Transcoding”](#), on page 15.

Audio transcoding

To support audio transcoding, a new MM_AUDIO_CODEC_OPTIONS_INFO structure is added to the library; and the MM_AUDIO_CODEC structure is updated with an audio coder option field and associated enumerated values.

WAVE file support

The **mm_Play()** and **mm_Record()** functions support the WAVE file format. The MM_MEDIA_AUDIO, MM_MEDIA_VIDEO, MM_PLAY_RECORD_INFO structures are updated.

3GP (3GPP) file support

The **mm_Play()** function supports the standard 3GP file. The MM_MEDIA_AUDIO and MM_MEDIA_VIDEO structures are updated. For details on 3GP file support, see [Section 3.12, “Multimedia \(Audio/Video\) Play and Record”](#), on page 26.

Play a still image over a video stream

The **mm_Play()** function supports playing a still image. The MM_MEDIA_IMAGE structure is added and several structures are updated to support this feature.

Record or capture a still image from a video stream

The new **mm_Capture()** function provides the ability to capture a still image. Several structures are added to support this feature.

Digital Video Recorder (DVR) controls

The new **mm_Seek()**, **mm_Pause()**, **mm_Resume()**, **mm_GetDuration()**, and **mm_GetElapsedTime()** functions are added to support DVR controls. Several structures are added and others updated to support this feature.

Proprietary audio and video file formats

This format is used with RTP play and record. The MM_AUDIO_CODEC structure and MM_VIDEO_CODEC structure are updated with enumerated values. For more information on the proprietary file formats, see the *Dialogic® Multimedia File Conversion Tools User Guide*.

Multimedia user I/O

This feature enables applications to directly play and record RTP data via user I/O buffers.

For more information on the updates, see the *Dialogic® Multimedia API Programming Guide and Library Reference*.

5.11 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 Standard Runtime Library, events are handled in a standard manner.

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

Dialogic® SRL API Functions Not Supported

The following Dialogic® SRL API function is not supported by Dialogic® HMP Software:

- `sr_getboardcnt()`

Note: Use the SRL Device Mapper functions to return information about the structure of the system such as a list of boards and devices.

New Features

No new features have been added since Dialogic® Host Media Processing Software Release 3.1LIN.

5.12 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.

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

New Features

The Dialogic® Voice API library provides the following new capabilities in this release:

New audio codec

Record and playback of G.729A audio files in Microsoft WAV file format.

Support for **dx_setchxfercnt()**

This function sets the bulk queue buffer size for a channel and is typically used in conjunction with user I/O or streaming to board.

Support for **dx_listenttransparent()**

This function is used in recording/playing raw E1/T1 DS0 64 Kbps bit streams. It connects a voice receive channel to a time slot in transparent mode using information in the SC_TSINFO data structure.

5.13 Dialogic® Demonstration Programs

New video demonstration programs have been added to the Dialogic website for Dialogic HMP Software for Linux releases at

http://www.dialogic.com/products/ip_enabled/download/hmp-demos/default.htm. The new demos include: Video Conferencing, Multimedia Ring Back Tone, and Global Call Voice and Video. These demo programs are available on the Dialogic website only.

In addition, the Dialogic® Multimedia demo and the Dialogic® 3G-324M Multimedia Gateway demo have been updated to include new features, which can be enabled in the configuration file. These demo programs can also be found in */usr/dialogic/demos*.

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

Note: Demos may require configuration or modification before running.

This chapter lists the boards supported in Dialogic® HMP Software 4.1LIN.

- Dialogic® HMP Interface Boards 45
- Dialogic® DSI SS7 Boards and Dialogic® DSI Signaling Servers 45

6.1 Dialogic® HMP Interface Boards

The following Dialogic® HMP Interface Boards in PCI form factor are supported:

- Dialogic® DNI/300TEPHMPW Digital Network Interface Boards
- Dialogic® DNI/601TEPHMPW Digital Network Interface Boards
- Dialogic® DNI/1200TEPHMPW Digital Network Interface Boards

The following Dialogic® HMP Interface Boards in PCI Express form factor are supported:

- Dialogic® DNI/310TEPEHMPQ Digital Network Interface Boards
- Dialogic® DNI/610TEPEHMPQ Digital Network Interface Boards
- Dialogic® DNI/1210TEPEHMPQ Digital Network Interface Boards
- Dialogic® DNI/2410TEPEHMPQ Digital Network Interface Boards
- Dialogic® DNI1210TEPE2HMP Digital Network Interface Boards
- Dialogic® DNI2410TEPE2HMP Digital Network Interface Boards

The following Dialogic® HMP Interface board in AdvancedTCA form factor is supported:

- Dialogic® DNI/2410AMCTEHMP AMC module

For technical specifications, see

http://www.dialogic.com/products/jp_enabled/hmp_enabled_boards.htm.

6.2 Dialogic® DSI SS7 Boards and Dialogic® DSI Signaling Servers

The following Dialogic® DSI SS7 boards and DSI Signaling Servers are supported:

- Dialogic® DSI SPCI2S Network Interface Boards
- Dialogic® DSI SPCI4 Network Interface Boards
- Dialogic® DSI SS7HDP Network Interface Boards
- Dialogic® DSI Signaling Servers

Supported Hardware

For technical specifications, see

http://www.dialogic.com/products/signalingip_ss7components/signaling_boards.htm and
http://www.dialogic.com/products/signalingip_ss7components/signaling_servers_and_gateways.htm.

This chapter provides information about the documentation that supports the Dialogic® Host Media Processing Software Release 4.1LIN (Dialogic® HMP Software 4.1LIN). This information is organized into the following sections:

- [Documentation Feature Support](#) 47
- [Release Documentation](#) 49
- [Installation and Configuration Documentation](#) 50
- [OA&M Documentation](#) 50
- [Programming Libraries Documentation](#) 50
- [Application Scenario Documentation](#) 51
- [Demonstration Software Documentation](#) 51

7.1 Documentation Feature Support

The following table lists topics and features associated with the Dialogic® HMP Software 4.1LIN features and the user documentation that contains information about these features.

Table 1. Documentation Feature Support

Topic or Feature	Dialogic® HMP Software 4.1LIN Documentation
Release overview, features, API libraries, and system requirements	<ul style="list-style-type: none">• Release Guide
Known issues, limitations, new developments, documentation corrections	<ul style="list-style-type: none">• Release Update
Installing the software, including pre-installation and post-installation requirements	<ul style="list-style-type: none">• Software Installation Guide
License activation	<ul style="list-style-type: none">• Software Installation Guide
Resource licenses	<ul style="list-style-type: none">• Contact your Dialogic sales representative or authorized Dialogic distributor
Configuring software and boards using the Command Line Interface (CLI) tool or SNMP tool; includes system performance tuning	<ul style="list-style-type: none">• Configuration Guide

Table 1. Documentation Feature Support (Continued)

Topic or Feature	Dialogic® HMP Software 4.1LIN Documentation
3G-324M interface	<ul style="list-style-type: none"> • 3G-324M API Programming Guide and Library Reference • 3G-324M Multimedia Gateway Demo Guide
Conferencing (CNF)	<ul style="list-style-type: none"> • Conferencing API Library Reference • Media Toolkit API Library Reference
Diagnostics	<ul style="list-style-type: none"> • Diagnostics Guide
Digital network interface	<ul style="list-style-type: none"> • Digital Network Interface Software Reference • Global Call ISDN Technology Guide • Global Call E1/T1 CAS/R2 Technology Guide
Event handling	<ul style="list-style-type: none"> • Standard Runtime Library API Library Reference • Standard Runtime Library API Programming Guide
Fax using Global Call API	<ul style="list-style-type: none"> • Global Call IP Technology Guide • Fax Software Reference
Fax using Third-Party Stack	<ul style="list-style-type: none"> • IP Media Library API Programming Guide and Library Reference • Device Management API Library Reference • Fax Software Reference
Image overlay	<ul style="list-style-type: none"> • Multimedia API Programming Guide and Library Reference • Media Toolkit API Library Reference
IP call transfer	<ul style="list-style-type: none"> • Global Call API Library Reference • Global Call IP Technology Guide
IP multicast	<ul style="list-style-type: none"> • IP Media Library API Programming Guide and Library Reference
Multimedia capture and play still image	<ul style="list-style-type: none"> • Multimedia API Programming Guide and Library Reference
Multimedia Digital Video Recorder (DVR) controls	<ul style="list-style-type: none"> • Multimedia API Programming Guide and Library Reference
Multimedia (audio/video) play and record	<ul style="list-style-type: none"> • Multimedia API Programming Guide and Library Reference • Multimedia Demo Guide • Device Management API Library Reference • Multimedia File Conversion Tools User Guide (available with the multimedia file conversion tools download)

Table 1. Documentation Feature Support (Continued)

Topic or Feature	Dialogic® HMP Software 4.1LIN Documentation
Multimedia (audio/video) transcoding	<ul style="list-style-type: none"> • Multimedia API Programming Guide and Library Reference • Device Management API Library Reference • IP Media Library API Programming Guide and Library Reference
SIP call control using Global Call API	<ul style="list-style-type: none"> • Global Call API Library Reference • Global Call API Programming Guide • Global Call IP Technology Guide
SIP call control using a third-party stack	<ul style="list-style-type: none"> • IP Media Library API Programming Guide and Library Reference • Device Management API Library Reference
Speech integration	<ul style="list-style-type: none"> • Continuous Speech Processing API Library Reference • Continuous Speech Processing API Programming Guide • Continuous Speech Processing API Demo Guide
SS7 technology with Global Call API	<ul style="list-style-type: none"> • Global Call SS7 Technology Guide • Global Call API Library Reference • Global Call API Programming Guide
Voice (audio) features such as play and record, file formats, transaction record	<ul style="list-style-type: none"> • Voice API Library Reference • Voice API Programming Guide

7.2 Release Documentation

The following release documentation is provided for this release:

- *Dialogic® Host Media Processing Software Release 4.1LIN Release Guide* (this document) †
- *Dialogic® Host Media Processing Software Release 4.1LIN Release Update* †

Note: The Release Update includes issues that may affect the performance of the Dialogic® software and lists both resolved and known issues. The Release Update also includes corrections and changes to the user documentation that were not 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 3.1LIN.

7.3 Installation and Configuration Documentation

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

- *Dialogic® Host Media Processing Software Release 4.1LIN Software Installation Guide †*
- *Dialogic® Host Media Processing Software 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 3.1LIN.

7.4 OA&M Documentation

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

- *Dialogic® Host Media Processing Software Diagnostics Guide †*

Note: A dagger (†) next to a document title indicates that the document is new or has been updated since Dialogic® HMP Software 3.1LIN.

7.5 Programming Libraries Documentation

The following programming libraries documentation is provided for this release:

- *Dialogic® 3G-324M API Programming Guide and Library Reference †*
- *Dialogic® Conferencing API Library Reference †*
- *Dialogic® 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® 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® Global Call SS7 Technology Guide †*
- *Dialogic® IP Media Library API Programming Guide and Library Reference †*
- *Dialogic® Media Toolkit API Library Reference †*
- *Dialogic® Multimedia API Programming Guide and Library Reference †*

- *Dialogic® Standard Runtime Library API Library Reference*
- *Dialogic® Standard Runtime Library API Programming Guide*
- *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 3.1LIN.

7.6 Application Scenario Documentation

The following application scenario documentation is provided for this release:

- *Dialogic® MSML Media Server Software User's Guide*

Note: A dagger (†) next to a document title indicates that the document is new or has been updated since Dialogic® HMP Software 3.1LIN.

7.7 Demonstration Software Documentation

The following demo documentation is provided for this release:

- *Dialogic® Continuous Speech Processing API Demo Guide*
- *Dialogic® Global Call API Demo Guide*
- *Dialogic® Multimedia Demo Guide*
- *Dialogic® 3G-324M Multimedia Gateway Demo Guide †*

Note: A dagger (†) next to a document title indicates that the document is new or has been updated since Dialogic® HMP Software 3.1LIN.