



Dialogic[®] Host Media Processing Software Release 3.1LIN

Release Guide

January 2009

Copyright and Legal Notice

Copyright © 2007-2009, Dialogic Corporation. All Rights Reserved. You may not reproduce this document in whole or in part without permission in writing from Dialogic Corporation at the address provided below.

All contents of this document are subject to change without notice and do not represent a commitment on the part of Dialogic Corporation or its subsidiaries ("Dialogic"). Reasonable effort is made to ensure the accuracy of the information contained in the document. However, due to ongoing product improvements and revisions, Dialogic Corporation and its subsidiaries do not warrant the accuracy of this information and cannot accept responsibility for errors or omissions that may be contained in this document.

INFORMATION IN THIS DOCUMENT IS PROVIDED IN CONNECTION WITH DIALOGIC® PRODUCTS. NO LICENSE, EXPRESS OR IMPLIED, BY ESTOPPEL OR OTHERWISE, TO ANY INTELLECTUAL PROPERTY RIGHTS IS GRANTED BY THIS DOCUMENT. EXCEPT AS EXPLICITLY SET FORTH BELOW OR AS PROVIDED IN A SIGNED AGREEMENT BETWEEN YOU AND DIALOGIC, DIALOGIC ASSUMES NO LIABILITY WHATSOEVER, AND DIALOGIC DISCLAIMS ANY EXPRESS OR IMPLIED WARRANTY, RELATING TO SALE AND/OR USE OF DIALOGIC PRODUCTS INCLUDING LIABILITY OR WARRANTIES RELATING TO FITNESS FOR A PARTICULAR PURPOSE, MERCHANTABILITY, OR INFRINGEMENT OF ANY INTELLECTUAL PROPERTY RIGHT OF A THIRD PARTY.

Dialogic products are not intended for use in medical, life saving, life sustaining, critical control or safety systems, or in nuclear facility applications.

Due to differing national regulations and approval requirements, certain Dialogic products may be suitable for use only in specific countries, and thus may not function properly in other countries. You are responsible for ensuring that your use of such products occurs only in the countries where such use is suitable. For information on specific products, contact Dialogic Corporation at the address indicated below or on the web at www.dialogic.com.

It is possible that the use or implementation of any one of the concepts, applications, or ideas described in this document, in marketing collateral produced by or on web pages maintained by Dialogic Corporation or its subsidiaries may infringe one or more patents or other intellectual property rights owned by third parties. Dialogic Corporation or its subsidiaries do not provide any intellectual property licenses with the sale of Dialogic products other than a license to use such product in accordance with intellectual property owned or validly licensed by Dialogic Corporation or its subsidiaries. More detailed information about such intellectual property is available from Dialogic Corporation's legal department at 9800 Cavendish Blvd., 5th Floor, Montreal, Quebec, Canada H4M 2V9. **Dialogic Corporation encourages all users of its products to procure all necessary intellectual property licenses required to implement any concepts or applications and does not condone or encourage any intellectual property infringement and disclaims any responsibility related thereto. These intellectual property licenses may differ from country to country and it is the responsibility of those who develop the concepts or applications to be aware of and comply with different national license requirements.**

Dialogic, Dialogic Pro, Brooktrout, Diva, Cantata, SnowShore, Eicon, Eicon Networks, NMS Communications, NMS (stylized), Eiconcard, SIPcontrol, Diva ISDN, TruFax, Exnet, EXS, SwitchKit, N20, Making Innovation Thrive, Connecting to Growth, Video is the New Voice, Fusion, Vision, PacketMedia, NaturalAccess, NaturalCallControl, NaturalConference, NaturalFax and Shiva, among others as well as related logos, are either registered trademarks or trademarks of Dialogic. Dialogic's trademarks may be used publicly only with permission from Dialogic. Such permission may only be granted by Dialogic's legal department at 9800 Cavendish Blvd., 5th Floor, Montreal, Quebec, Canada H4M 2V9. Any authorized use of Dialogic's trademarks will be subject to full respect of the trademark guidelines published by Dialogic from time to time and any use of Dialogic's trademarks requires proper acknowledgement.

The names of actual companies and products mentioned herein are the trademarks of their respective owners.

This document discusses one or more open source products, systems and/or releases. Dialogic is not responsible for your decision to use open source in connection with Dialogic products (including without limitation those referred to herein), nor is Dialogic responsible for any present or future effects such usage might have, including without limitation effects on your products, your business, or your intellectual property rights.

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>

Publication Date: January 2009

Document Number: 05-2527-007

Contents

	Document Revision History	5
	About This Publication	9
	Applicability	9
	Intended Audience	9
	How to Use This Publication	9
	Related Information	10
1	Release Overview	11
2	System Requirements	13
	2.1 Basic Hardware Requirements	13
	2.2 Basic Software Requirements	14
	2.3 Additional Requirements	15
	2.3.1 Red Hat 4.0 Installation Requirements	15
	2.3.2 /etc/hosts Requirement	15
	2.3.3 Unselecting Bigsmp Kernel on SUSE Linux	15
	2.3.4 Reconfiguring Kernel 2.6.5 on SUSE Linux	16
	2.4 Equipment and Configurations Tested	16
	2.4.1 Multimedia Gateways	16
	2.4.2 Multimedia and Voice IP Devices	17
	2.4.3 Configurations Tested	17
3	Features	20
	3.1 Dialogic® HMP Interface Boards	20
	3.2 Dialogic® SS7 Boards	21
	3.3 3G-324M Interface	22
	3.4 Multimedia (Audio/Video) Play and Record	23
	3.5 Audio Codecs for RTP	25
	3.6 Video Codecs for RTP	26
	3.7 Remote Media Control Interface	26
	3.8 IP Signaling	26
	3.9 Tone Management	28
	3.10 Secure Real-time Transport Protocol (SRTP)	28
	3.11 Audio (Voice) Play and Record	28
	3.12 Channel Density Support	29
	3.13 OA&M Support Using CLI and SNMP	30
	3.14 Other Features	30
4	Installation, Configuration, and Licensing	32
	4.1 Installation	32
	4.2 Configuration	32
	4.3 Licensing	33
5	OA&M Software	35
	5.1 Administration	35

Contents

5.2	Diagnostics	35
6	Programming Libraries	37
6.1	New Dialogic® 3G-324M API Library	37
6.2	New Dialogic® Conferencing (CNF) API Library	38
6.3	Dialogic® Audio Conferencing (DCB) API Library	39
6.4	Dialogic® Continuous Speech Processing (CSP) API Library	40
6.5	Dialogic® Device Management API Library	40
6.6	Dialogic® Digital Network Interface API Library	41
6.7	Dialogic® Fax API Library	42
6.8	Dialogic® Global Call API Library	42
6.9	Dialogic® IP Media API Library	44
6.10	Dialogic® Multimedia API Library	45
6.11	Dialogic® Standard Runtime API Library	46
6.12	Dialogic® Voice API Library	46
7	Supported Applications	48
7.1	MSML Media Server Software	48
8	Demonstration Software	49
8.1	New Demo Programs	49
8.2	Other Supported Demo Programs	51
9	Supported Hardware	53
9.1	Dialogic® HMP Interface Boards	53
9.2	Dialogic® SS7 Boards	53
10	Documentation	54
10.1	Documentation Support for Dialogic® HMP Software Features	54
10.2	Release Documentation	57
10.3	Installation and Configuration Documentation	57
10.4	OA&M Documentation	58
10.5	Programming Libraries Documentation	58
10.6	Supported Applications Documentation	59
10.7	Demonstration Software Documentation	59

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 3.1LIN. This document may be subject to updates during the lifetime of the release.

Document Rev 07 – published January 2009

Updated.

In the [System Requirements](#) chapter:

- Removed “Disabling ACPI Features on SUSE Linux for Dialogic® HMP Interface Boards” as this information is now obsolete.

In the [Features](#) chapter:

- Removed “Usage Guidelines” in the 3G-324M Interface section as this information is included in the *Dialogic® 3G-324M API Programming Guide and Library Reference*.
- Updated website information for multimedia file conversion tools in Multimedia (Audio/Video) Play and Record section.

In the [Demonstration Software](#) chapter:

- Added a reference to the *Dialogic® 3G-324M Multimedia Gateway Demo Guide* in the 3G-324M Multimedia Gateway Demo section.

In the [Supported Hardware](#) chapter:

- Added Dialogic® DNI310TEPEHMP, Dialogic® DNI610TEPEHMP, and Dialogic® DNI1210TEPEHMP Digital Network Interface boards.

In the [Documentation](#) chapter:

- Added *Dialogic® 3G-324M API Programming Guide and Library Reference* in the Programming Libraries Documentation section. This document replaces the library reference.
- Added *Dialogic® IP Media Library API Programming Guide and Library Reference* in the Programming Libraries Documentation section. This document replaces the individual programming guide and library reference.
- Added *Dialogic® 3G-324M Multimedia Gateway Demo Guide* in the Demonstration Software Documentation section.

Document Rev 06 – published October 2008

Updated for Service Update 204.

Document Revision History

In the [System Requirements](#) chapter:

- Added support for Red Hat Release 5.0 in [Basic Software Requirements](#).
- Added additional installation instructions in [Red Hat 4.0 Installation Requirements](#).

Document Rev 05 – published August 2008

Updated for Service Update 201.

In the Features chapter:

- Added support for 2 to 10 frames per packet on AMR-NB 20 ms frames in Audio Codecs for RTP. Previously only 1 frame per packet was supported.

Document Rev 04 – published June 2008

Updated for Service Update 197.

In the System Requirements chapter:

- Added note in Basic Software Requirements, Supported Compilers section, that development tools such as GCC must be installed on your system if Dialogic® HMP Interface Boards (DNI boards) are used. (IPY00043983)
- Updated and added details on whether to disable ACPI in Disabling ACPI Features on SUSE Linux for Dialogic® HMP Interface Boards.
- Removed Selecting Linux Kernel Source for Dialogic® HMP Interface Boards as it is no longer applicable.

Document Rev 03 – published April 2008

Updated for Service Update 187.

In the Release Overview chapter:

- Added support for 3GPP Release 4 in the Release Highlights section.

In the System Requirements chapter:

- Added support in Basic Software Requirements for: SUSE Linux Enterprise Server 9 SP 3 and SP 4; and Red Hat Linux Release 4.0 with Update 5 and 6.
- Renamed section title from “Requirements for Running a Demo Using a Single Channel” to “/etc/hosts Requirement.” Clarified requirement information.
- Added Reconfiguring Kernel 2.6.5 on SUSE Linux.

In the Features chapter:

- Added Dialogic® DNI2410TEPEHMP board in Dialogic® HMP Interface Boards.
- Added Dialogic® SS7 Boards.
- Added support for 3GPP Release 4 in 3G-324M Interface.

Document Revision History

- Added support for GSM full rate 13 kbps in Audio Codecs for RTP.
- Updated channel density for 3G-324M from 120 to 250 in Channel Density Support.

In the Programming Libraries chapter:

- Removed sentence about 3GPP Release 4 not being supported in New 3G-324M API Library.
- Removed note about Nb UP protocol not being supported in Dialogic[®] IP Media Library API.

In the Supported Applications chapter:

- Added MSML Audit Package in MSML Media Server Software.

In the Supported Hardware chapter:

- Added Dialogic[®] DNI2410TEPEHMP board in Dialogic[®] HMP Interface Boards.
- Added support for Dialogic[®] SS7 Boards.

In the Documentation chapter:

- Added Dialogic[®] Global Call SS7 Technology Guide.

Document Rev 02 – published October 2007

Updated for Service Update 139.

In the System Requirements chapter:

- Added IVR (G.711) configuration with 1000 channels in Resource Configurations Tested table.

In the Features chapter:

- Added table that lists the supported channel density ranges in Channel Density Support section.

Document Rev 01 – published August 2007

Initial version of document.

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 3.1LIN (also referred to as Dialogic® HMP Software 3.1LIN).

Intended Audience

This document is intended for all users of Dialogic® Host Media Processing Software Release 3.1LIN.

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 and configuration information.
- [Chapter 5, “OA&M Software”](#) describes the operations, administration, maintenance, and diagnostics supported in this release.
- [Chapter 6, “Programming Libraries”](#) describes the various development software libraries that are available as part of this release.
- [Chapter 7, “Supported Applications”](#) describes the applications supported in this release.
- [Chapter 8, “Demonstration Software”](#) describes the demonstration programs supported in this release.
- [Chapter 9, “Supported Hardware”](#) lists the hardware supported in this release.

About This Publication

- [Chapter 10, "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 3.1LIN 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/> (for technical support)
- <http://www.dialogic.com/> (for product information)

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 3.1LIN.

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

Dialogic HMP Software performs like a Dialogic® board with DM3 architecture to the customer application, but media processing takes place on the host processor. The 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 H.323 protocol and 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 format, 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® Host Media Processing Software Release 3.1LIN are as follows. These highlights are new since Dialogic® Host Media Processing Software Release 1.5 for Linux.

- Support for Dialogic® HMP Interface Boards, which enable public switched telephone network (PSTN) connectivity between Dialogic® HMP Software and the PSTN
- 3G-324M API library, supporting multimedia services to mobile handsets over PSTN as defined in 3GPP Release 99 and over IP as defined in 3GPP Release 4
- AMR-NB audio codec for RTP streaming
- Native play and record, native hairpinning, user and buffer I/O
- MSML media server software for use by remote applications
- Dialogic® Conferencing (CNF) API library
- Secure real-time transport protocol (SRTP)

Release Overview

- SIP transport layer security (TLS)
- Higher channel densities
- Configuration using SNMP and CLI tools
- Industry-standard licensing software (FLEXnet) from Macrovision Corporation

Refer to [Chapter 3, “Features”](#) and [Chapter 4, “Installation, Configuration, and Licensing”](#) for more information about these 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) or to persons or entities prohibited from receiving U.S. exports (including Denied Parties, Specially Designated Nationals, and entities on the Bureau of Export Administration Entity List or involved with missile technology or nuclear, chemical or biological weapons).

This chapter describes the hardware and software requirements for Dialogic® Host Media Processing Software Release 3.1LIN (Dialogic® HMP Software 3.1LIN) as well as related topics. The information is provided in the following sections:

- [Basic Hardware Requirements](#) 13
- [Basic Software Requirements](#). 14
- [Additional Requirements](#). 15
- [Equipment and Configurations Tested](#) 16

2.1 Basic Hardware Requirements

The basic hardware requirements for this release are:

- Memory: at least 512 MB of RAM, depending on channel density and resource configuration.
Note: For more information, contact your sales representative for guidance.
- Disk Space: 500 MB of disk space is required for full installation of this release. For multimedia recording, disk space depends on the application program, but can be estimated using the following guidelines:
 - 160 KB required for 10 seconds of audio at maximum of 128 kbps bit rate (linear PCM format)
 - 160 KB required for 10 seconds of video at maximum of 128 kbps bit rate
 - 80 KB required for 10 seconds of video at maximum of 64 kbps bit rate
- IP Network Interface: 100 Base-T Network Interface Card (NIC)
Note: For 120 channels or higher, it is recommended to use a 1000Base-T NIC, although using a 100Base-T Network is acceptable. In general, better performance will be realized by using a 1000Base-T NIC, even for configurations of fewer than 120 channels.

2.2 Basic Software Requirements

The following software is supported in this release:

Supported Compilers

- GNU Compiler Collection (GCC) Versions 3.2.3 and 3.4.3
Note: Development tools such as GCC must be installed on your system if Dialogic® HMP Interface Boards (DNI boards) are used, even in a runtime installation. Dialogic® HMP Software 3.1LIN uses the GCC to compile certain Dialogic® drivers.

Supported Operating Systems

- Red Hat Enterprise Linux Release 5.0 Advanced Server, Enterprise Server, or Workstation (AS, ES, or WS)
Note: For video play and record, Red Hat 5.0 is supported in NFS and RAID configurations only. A known issue (IPY00044980) exists when running over 60 channels on a system with a local hard drive.
- Red Hat Enterprise Linux Release 4.0 Advanced Server, Enterprise Server, or Workstation (AS, ES, or WS) with Update 1, 2, 3, 4, 5 or 6
Note: For further instructions, see [Section 2.3.1, “Red Hat 4.0 Installation Requirements”](#), on page 15.
- Red Hat Enterprise Linux Release 3.0 Advanced Server, Enterprise Server, or Workstation (AS, ES, or WS) with Update 7
Note: You must also install Kernel 2.6.8.1 on top of Red Hat 3.0 Update 7. For the kernel download and instructions to install the kernel, see: <http://www.dialogic.com/support/helpweb/hmp/HMPLinux/hmp31/redhat/default.htm>
Note: Red Hat Release 3.0 Update 7 is supported with the Dialogic® HMP Software package only. The Dialogic® HMP Interface Boards are **not** supported with Red Hat 3.
Note: Red Hat Release 3.0 Update 7 with Kernel 2.6.8.1 may not support newer systems and hard drive controllers. If you encounter problems, it is recommended to upgrade to Red Hat Release 4.0 Update 4.
- SUSE Linux Enterprise Server 9 Service Pack 4 with reconfigured Kernel 2.6.5
- SUSE Linux Enterprise Server 9 Service Pack 3 with reconfigured Kernel 2.6.5
- SUSE Linux Professional Release 9.3 with Kernel 2.6.11

Caution: See [Section 2.3, “Additional Requirements”](#), on page 15 for important information about additional requirements for Dialogic® HMP Software 3.1LIN and for Dialogic® HMP Interface Boards.

Caution: For information on system performance tuning, see the chapter on this topic in the *Dialogic® System Configuration Guide*. For example, this chapter discusses recommendations for high channel density systems and optimizing NIC driver settings.

2.3 Additional Requirements

The following topics describe additional requirements:

- [Red Hat 4.0 Installation Requirements](#)
- [/etc/hosts Requirement](#)
- [Unselecting Bigsmp Kernel on SUSE Linux](#)
- [Reconfiguring Kernel 2.6.5 on SUSE Linux](#)

2.3.1 Red Hat 4.0 Installation Requirements

During the Red Hat 4.0 OS installation, you should select specific packages for installation as described here.

- On the “Package Installation Defaults” screen (this appears after the “Set Root Password” screen), select the second option:
“Customize software packages to be installed”
Click next.
- On the “Package Group Selection” screen, scroll down to the “Development Tools” package group (you will notice 0 out of 75 packages are selected from this group). Click the check box next to this group (you will now notice that 57 out of 75 packages are selected from this group).
Click next to continue the installation and install the package list selected.

Any packages added to or removed from this package list may have an effect on product functionality, behavior, and performance.

2.3.2 /etc/hosts Requirement

Use of the Dialogic® HMP Software 3.1LIN relies on the correctness of the */etc/hosts* file. Invalid entries in this file will render the Dialogic® HMP Software 3.1LIN non-functional.

Specify localhost and myhostname in the */etc/hosts* file as follows, where ‘myhostname’ represents the name of your host machine:

```
127.0.0.1      localhost
192.168.124.124 <myhostname>
```

2.3.3 Unselecting Bigsmp Kernel on SUSE Linux

During the SUSE Linux 9.3 OS install, the bigsmp kernel may be selected. By default, the bigsmp kernel is configured with HPET Control RTC IRQ enabled. The Dialogic® HMP Software 3.1LIN will not work with HPET Control RTC IRQ enabled.

Unless the bigsmp kernel is needed, do not select it; select the regular smp kernel from the package list instead. If the bigsmp kernel is needed, it can be installed but will need to

System Requirements

be rebuilt with configuration changes for Dialogic® HMP Software 3.1LIN to work. While rebuilding the kernel, select the default bigsmp config and run "make menuconfig". Disable the following: Device Drivers -> Character Devices -> HPET Control RTC IRQ.

Note: At high densities, your hardware may require HPET to be disabled. For more information on HPET and system performance tuning, see the *Dialogic® System Configuration Guide*.

2.3.4 Reconfiguring Kernel 2.6.5 on SUSE Linux

Follow these instructions to reconfigure kernel 2.6.5 of SUSE Linux Enterprise Server 9:

- At a minimum, configure the kernel .config file for an Intel Pentium 4 processor (which also includes the Mobile Intel Pentium 4 Processor-M and the Intel Xeon processor) as follows:
 - Disable CONFIG_M586 and enable CONFIG_MPENTIUM4.
 - Enable CONFIG_PREEMPT.
 - Disable CONFIG_HPET_RTC_IRQ.
- After changing the configuration, recompile the kernel using the following commands:
 - make
 - make modules_install
 - make install
- Although the .config file can be manually configured, it is recommended that you use the make menuconfig command or the configuration script provided at:
<http://www.dialogic.com/support/helpweb/hmp/hmplinux/hmp12/suse/default.htm>.

2.4 Equipment and Configurations Tested

The following topics describe equipment and configurations tested:

- [Multimedia Gateways](#)
- [Multimedia and Voice IP Devices](#)
- [Configurations Tested](#)

2.4.1 Multimedia Gateways

Dialogic® HMP Software 3.1LIN has been tested with the following multimedia gateway:

- Dilithium Networks DTG 2000 Multimedia Gateway (SIP version)

Note: The Dilithium gateway was configured so that a Dialogic® HMP media server was one of the SIP endpoints running a video messaging test application. 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 media server.

2.4.2 Multimedia and Voice IP Devices

Dialogic® HMP Software 3.1LIN has been tested (except as noted) with the devices listed in Table 1.

Table 1. Devices Tested for Interoperability with Dialogic® HMP Software

Manufacturer & Product	Device Type	SIP	H.323
Aastra Telecom SIP IP Phone 480i	IP Phone	Tested	N/A
Avaya 4600 Series	IP Phone	Not Tested	Tested ¹
Avaya G700 and S8300	IP-PBX	Tested	Tested
Avaya IP Office 4x0	IP-PBX	NA	Tested
Cisco 7900 Series	IP Phone	Tested	Tested
Cisco 2600, 3600 Series	Gateway/Switch	Tested	Tested
Cisco AS5300/5350/5400	Gateway/Switch	Tested	Tested
Cisco Call Manager 3.3 and 4.0	Gateway/Switch	Tested	Tested
Cisco Call Manager Express	Gateway/Switch	Tested	Tested
Dialogic® 2000 Media Gateway Series (formerly Dialogic® T1/E1-IP Media Gateway)	Gateway	Validated	Validated
Dilithium DTG2000 Multimedia Gateway	Gateway	Tested	N/A
DyLogic Mirial Standard SIP	Video SoftPhone	Validated ²	N/A
Grandstream BudgetTone 1xx Series	IP Phone	Validated	N/A
Kapanga Softphone	IP Phone	Tested	N/A
Microsoft® NetMeeting®	Soft Client	N/A	Validated
Microsoft® Messenger	Soft Client	Validated	N/A
Polycom Soundpoint IP family phones	Audio	Tested	Tested
RadVision Gatekeeper 4.0.0.28	Audio	N/A	Tested
Siemens HiPath	IP-PBX	Not Tested	Tested
SJ Labs SJphone VOIP softphone version 1.10	Soft Client	Validated	N/A

1. Tested = Interoperability has been tested by Dialogic Corporation.

2. Validated = Interoperability has been confirmed by third party, but not by Dialogic Corporation.

2.4.3 Configurations Tested

The reference configurations listed in Table 2 have been successfully tested with CPU utilization of 50% or less.

In the table, the Dialogic® HMP Interface Boards in the HIB column include the Dialogic® DNI601TEPHMP board (DNI601) and the Dialogic® DNI1200TEPHMP board (DNI1200).

System Requirements

Table 2. Resource Configurations Tested

Configura- tion‡	Processor	R	V	E	C	S	F	I	M	A	U	N	G	HIB
IVR (Low bit rate)	Dual Intel Xeon 3.6 GHz	200	200	200	—	—	120	200	—	—	—	200	—	—
IP Media Server (Cisco)	Intel Pentium 4 2.0 GHz	23	23	11	—	23	4	23	—	—	—	23	—	—
IP Media Server (Dialogic® 2000 Media Gateway Series)	Intel Pentium III 700 MHz	23	23	11	—	23	4	23	—	—	—	23	—	—
IVR/UM/ Conf/ Speech High Density Contact Center	Intel Xeon DP (Dual Dual-Core 2.8 GHz)	240	240	120	180	120	24	240	—	—	—	240	—	DNI1200 (2 boards)
Gateway	Intel Pentium 4 3.0 Ghz	60	60	60	—	—	—	60	—	—	—	60	—	DNI601
Gateway	Intel Xeon DP (Dual Dual-Core 2.8 GHz)	360	360	—	—	—	—	360	—	—	—	360	—	DNI1200 (3 boards)
Media Server	Intel Xeon LV (Dual Dual-Core 2.0 GHz)	120	120	60	120	120	16	120	120	—	—	120	—	—
IVR (G.711)	Intel Xeon 5160 (Dual Dual-Core 3.0 GHz)	600	600	—	600	—	—	600	—	—	—	600	—	—
IVR (G.711)	Intel Xeon 5355 (Dual Quad-Core 2.66 GHz)	1000	1000	—	—	—	—	1000	—	—	—	1000	—	—

Legend:
R = G.711/G.726 V = Voice E = G.729/G.723.1 C = CNF Conferencing S = Speech integration F = Fax termination
I = IP call control M = Multimedia A = AMR-NB U = Native audio play/record N = Basic RTP streaming G = 3G-324M
HIB = Dialogic® HMP Interface Board
‡ = Not all resources are used simultaneously.

Table 2. Resource Configurations Tested (Continued)

Configura-tion‡	Processor	R	V	E	C	S	F	I	M	A	U	N	G	HIB
Native features	Intel Xeon DP (Dual Dual-Core 2.8 GHz)	480	240	200	—	—	—	480	240	—	240	480	—	—
Video Services	Intel Xeon 5080 (Dual Dual-Core 3.73 GHz)	400	240	200	—	—	—	400	240	120	—	400	—	—
Video Services with MSML/MOML	Intel Xeon 5080 (Dual Dual-Core 3.73 GHz)	480	480	180	480	—	—	480	120	—	—	480	—	—
3G Media Server	Intel Xeon Dual 3.06 GHz			120					120	120		120	120	DNI1200
Media Server	Intel Xeon 5355 (Dual Quad-Core 2.66 GHz)	600	600	240	600			600				600		
Video Services	Intel Xeon 5355 (Dual Quad-Core 2.66 GHz)	240						240	240	240		240		
Legend: R = G.711/G.726 V = Voice E = G.729/G.723.1 C = CNF Conferencing S = Speech integration F = Fax termination I = IP call control M = Multimedia A = AMR-NB U=Native audio play/record N=Basic RTP streaming G=3G-324M HIB = Dialogic® HMP Interface Board ‡ = Not all resources are used simultaneously.														

This chapter covers the features and functionality that are supported by Dialogic® Host Media Processing Software Release 3.1LIN (also referred to as Dialogic® HMP Software 3.1LIN). Features and functionality that are new since Dialogic® Host Media Processing Software Release 1.5 for Linux are identified.

- [Dialogic® HMP Interface Boards](#) 20
- [Dialogic® SS7 Boards](#) 21
- [3G-324M Interface](#) 22
- [Multimedia \(Audio/Video\) Play and Record](#) 23
- [Audio Codecs for RTP](#) 25
- [Video Codecs for RTP](#) 26
- [Remote Media Control Interface](#) 26
- [IP Signaling](#) 26
- [Tone Management](#) 28
- [Secure Real-time Transport Protocol \(SRTP\)](#) 28
- [Audio \(Voice\) Play and Record](#) 28
- [Channel Density Support](#) 29
- [OA&M Support Using CLI and SNMP](#) 30
- [Other Features](#) 30

3.1 Dialogic® HMP Interface Boards

Dialogic® HMP Software 3.1LIN introduces support for Dialogic® HMP Interface Boards (DNI boards). Based on Dialogic® DM3 architecture, these boards enable applications developed using Dialogic® API libraries in a Dialogic® HMP Software environment to connect to the public switched telephone network (PSTN) through T1 or E1 network interfaces.

Each board includes an H.100 CT Bus connector that enables media streaming between Dialogic HMP Software and the CT Bus. A host streaming interface allows DNI boards to communicate with Dialogic HMP Software running on the host via bridge devices. For a list of supported boards, see [Chapter 9, “Supported Hardware”](#).

The Dialogic® Global Call API provides call control functionality on PSTN interfaces. For E1, T1 and ISDN technologies, the libdm3cc.dll library provides this functionality and is dynamically loaded, by specifying GC_DM3CC_LIB when calling the **gc_Start()** function.

Dialogic® HMP Interface Boards (DNI boards) include the following:

Dialogic® DNI300TEPHMP board (single-span)

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

Dialogic® DNI601TEPHMP board (dual-span)

Universal PCI board that provides two software-selectable T1 or E1 digital network interfaces. This board provides certain media processing functionality, including tone detection, tone generation, call progress analysis, and echo cancellation. The media load supports this media processing functionality as well as network interface functionality.

Note: The Dialogic® DNI601TEPHMP board does not support 3G-324M.

Dialogic® DNI1200TEPHMP board (quad-span)

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

Dialogic® DNI2410TEPEHMP board (octal-span)

High-density, high-performance, digital network interface board with eight T1/E1 network interfaces in a full-length PCI Express form factor.

For information on configuring DNI boards, see the *Dialogic® System Configuration Guide*. For technical specifications, see

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

3.2 Dialogic® SS7 Boards

Dialogic® SS7 boards provide on-board support for SS7 common channel signaling protocols with a number of digital line interfaces (T1/E1/J1) and an H.100 or H.110 PCM highway that supports connection to a wide range of voice, data, and fax boards.

The following Dialogic® SS7 PCI boards are supported in this release:

Dialogic® SPCI2S

Provides two T1/E1 interfaces, an H.100 PCM highway, two synchronous serial interfaces (V.11/V.35), and four SS7 links.

Dialogic® SPCI4

Provides four T1/E1 interfaces, an H.100 PCM highway, two synchronous serial interfaces (V.11/V.35), and four SS7 links.

Dialogic® SS7HDP

Provides up to four T1/E1 interfaces, V.11(V.35-compatible) serial ports, an H.110 PCM highway, and 64 SS7 links.

Features

For technical specifications, see

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

For more information on using SS7 technology, see *Dialogic® Global Call SS7 Technology Guide*.

3.3 3G-324M Interface

The 3G-324M interface is new in Dialogic® HMP Software 3.1LIN.

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.

This release supports 3G-324M multimedia sessions over PSTN as defined in 3GPP Release 99. This release supports 3G-324M multimedia sessions over IP using the Nb UP protocol as defined in 3GPP Release 4. For channel density, see [Section 3.12, “Channel Density Support”](#), on page 29. For more information on Nb UP, see [Section 6.9, “Dialogic® IP Media API Library”](#), on page 44.)

For more information about the 3G-324M API library, see [Section 6.1, “New Dialogic® 3G-324M API Library”](#), on page 37.

Audio Codecs for 3G-324M

Supported audio codecs for the 3G-324M interface include:

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

Video Codecs for 3G-324M

Supported video codec and video picture formats for the 3G-324M interface include:

- H.263 (profile 0, level 10) video codec
 - Level 10 – Support of QCIF and sub-QCIF resolution decoding, capable of operation with a bit rate up to 64000 bits per second, with a picture decoding rate up to (15000)/1001 pictures per second.
- RTP video data is compliant with Internet Engineering Task Force RFC 2190: “RTP Payload Format for H.263 Video Streams.”
- Video picture formats:
 - Quarter Common Intermediate Format (QCIF) picture size (PAL 176 pixels by 144 pixels) at 30, 15, 10, or 6 frames/second, used for mobile handsets

- Sub-QCIF picture size (PAL 128 pixels by 96 pixels) at 30, 15, 10, or 6 frames/second, used for mobile handsets

3.4 Multimedia (Audio/Video) Play and Record

New Features

New multimedia features supported in Dialogic® HMP Software 3.1LIN include:

Native RTP hairpinning

The RTP media stream received from one IP media session can be retransmitted to the outgoing RTP media stream of another IP media session without being processed or transcoded by Dialogic HMP Software. The RTP packets remain exactly as received, with packets out of order or even missing; the RTP stream is retransmitted so that the receiving terminating end point can perform necessary packet loss recovery (PLR) activity.

Note that RTCP data is not hairpinned, and SRTP data cannot be hairpinned.

This feature is implemented in the Dialogic® Device Management API Library and the Dialogic® IP Media API Library. For more information, see [Section 6.5, “Dialogic® Device Management API Library”](#), on page 40 and [Section 6.9, “Dialogic® IP Media API Library”](#), on page 44.

New proprietary native audio file format

Used for native RTP play and record, this file format is supported by the Dialogic® Multimedia API Library and the Dialogic® Multimedia File Conversion Utilities. For more information, see [Section 6.10, “Dialogic® Multimedia API Library”](#), on page 45 and the *Dialogic® Multimedia File Conversion Tools User Guide*.

Native RTP play and record

The RTP data in both incoming and outgoing directions is not processed or transcoded by Dialogic HMP Software. With this feature, the RTP data is stored directly by and retrieved directly from Dialogic HMP Software without application data handling.

The application must negotiate the proper coder formats when establishing the IP media sessions and match these formats when receiving and sourcing data. Additional media stream data such as RTP timestamps and sequence numbers are made available to the application by the native RTP feature. The RTP packets may be stored exactly as received, with packets out of order or even missing, as long as the RTP stream is retransmitted so that the receiving terminating end point can perform necessary packet loss recovery (PLR) activity.

This feature is implemented in the Dialogic® Multimedia API Library. For more information, see [Section 6.10, “Dialogic® Multimedia API Library”](#), on page 45.

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 6.10, “Dialogic® Multimedia API Library”](#), on page 45.

Features

Multimedia buffer I/O

This feature enables applications to directly play and record RTP data via memory.

This feature is implemented in the Dialogic® Multimedia API Library. For more information, see [Section 6.10, “Dialogic® Multimedia API Library”](#), on page 45.

Multimedia runtime control

This feature allows multimedia play and record functions to be terminated on certain conditions such as digits received.

This feature is implemented in the Dialogic® Multimedia API Library. For more information, see [Section 6.10, “Dialogic® Multimedia API Library”](#), on page 45.

Other Features

Other multimedia features supported since Dialogic® HMP Software 1.5 include:

- Programming libraries that provide multimedia-related functionality:
 - The Dialogic® Multimedia API library records and plays multimedia data using a multimedia device.
 - The Dialogic® Device Management API library is used to connect the multimedia device to an IP media device.
 - Multimedia record and playback between Dialogic HMP Software and remote IP endpoints is accomplished by using both the multimedia and IP media devices.
 - The Dialogic® IP media API library 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.
- Record from RTP stream to multimedia file. Play from multimedia file into RTP stream while maintaining synchronization between audio and video.
- Support for audio codecs for RTP as described in [Section 3.5, “Audio Codecs for RTP”](#), on page 25.
- Support for video codec and video picture formats as described in [Section 3.6, “Video Codecs for RTP”](#), on page 26.
- Dialogic® Multimedia API video record and playback with basic playback control and synchronized audio and video.
- Dialogic® Multimedia API audio play and record file format
 - Linear PCM (128 kbps): 16-bit, 8 kHz, mono, LSB-MSB (“little-endian”)
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 and Library Reference*.
- Dialogic® Multimedia API video play and record file formats
 - Dialogic proprietary format. See the *Dialogic® Multimedia API Programming Guide and Library Reference* and *Dialogic® Multimedia File Conversion Tools User Guide* for more information on this format.

- Dialogic® Multimedia File Conversion Tools. These tools 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/products/ip_enabled/download/multimedia/omf.htm

Note: The conversion tools 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.

– **mmconvert** tool: Converts 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 mono or stereo audio format, to Dialogic proprietary multimedia file format.

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

– **hmp3gp** tool: Converts multimedia data from Dialogic proprietary multimedia file format to 3rd Generation Partnership Project (3GPP) file format conforming to 3GPP Release 4 file format (.3gp), conforming to 3GPP specifications. The reverse direction is also supported.

For more information about these tools, see the *Dialogic® Multimedia File Conversion Tools User Guide*.

- 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.
- Support for existing Quality of Service (QoS) audio alarms through the Dialogic® IP media library API for the audio portion of multimedia stream.

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

3.5 Audio Codecs for RTP

New Features

New audio codecs for RTP supported in Dialogic® HMP Software 3.1LIN include:

- AMR Narrow Band – 20 ms frames, 1 to 10 frames per packet
- G.726 – 16, 24, 32 and 40 kbps
 - 20 ms frame size, 1, 2 or 3 frames per packet
- GSM full rate – 13 kbps (ETSI 6.10 and RTP, both Microsoft and TIPHON frame support)

Other Features

Other supported audio codecs for RTP encoding/decoding include:

- G.711 – 64 kbps format, mu-law and A-law, and 10, 20, and 30 ms frames
- G.723.1 – 5.3 and 6.3 kbps, 30 ms frames, and 1, 2 or 3 frames per packet

Features

- 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

3.6 Video Codecs for RTP

There are no new video codecs for RTP in Dialogic® HMP Software 3.1LIN.

Supported video codec and video picture formats for RTP include:

- 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 $6 \times (64,000) = 384,000$ 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.”
- 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)

3.7 Remote Media Control Interface

This capability is new in Dialogic® HMP Software 3.1LIN.

Dialogic® HMP Software 3.1LIN supports MSML media server software that uses the common interfaces provided by the Dialogic® Global Call call control software and the Session Initiation Protocol (SIP) to allow media processing on a media server from a remote agent such as an application server.

For more information, see [Section 7.1, “MSML Media Server Software”](#), on page 48 and the *Dialogic® MSML Media Server Software User’s Guide*.

3.8 IP Signaling

New Features

New IP signaling features in Dialogic® HMP Software 3.1LIN include:

SIP Transport Layer Security (TLS)

This feature 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. TLS provides for its own authentication and key

management, as well as encryption. TLS can provide a secure way for two devices mutually using SRTP to exchange the necessary setup information, including the SRTP keys (using SDP Secure Descriptions). This capability is only available when the Dialogic HMP Software call control stack is used. When using a call control stack external to Dialogic HMP Software, you will need to provide your own call control security.

Note: The maximum number of TLS channels in a system is restricted to 125.

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

SIP Provisional Response ACKnowledgement (PRACK) (RFC 3262)

This feature provides the reliable transmit of a provisional response in the public SIP network. As request/response protocol for initiating and managing communication sessions, SIP uses provisional and final responses. Final responses are sent reliably and convey the result of request processing. Provisional responses provide information on the progress of request processing, but are not sent reliably in RFC. The SIP PRACK method is supported in 3PCC mode only.

For more information, see the Documentation Updates chapter, *Dialogic® Global Call IP Technology Guide* section, in the *Dialogic® Host Media Processing Software Release 3.1LIN Release Update*.

SIP Session Timer

This feature provides a keepalive mechanism for SIP to determine whether a session is still active using an extension defined in RFC 4028. The keepalive mechanism enables you to set the value for the length and the minimum time of the session and to refresh the duration of the call; and allows User Agents and proxies to determine if the SIP session is still active.

For more information, see the Documentation Updates chapter, *Dialogic® Global Call IP Technology Guide* section, in the *Dialogic® Host Media Processing Software Release 3.1LIN Release Update*.

Other Features

Other IP signaling support includes:

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

Note that 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).

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.

Features

For more information about IP signaling support, see the *Dialogic® Global Call IP Technology Guide*.

3.9 Tone Management

There are no new tone management features in Dialogic® HMP Software 3.1LIN.

Tone management support includes:

- In-Band DTMF detection and generation
- RFC 2833 DTMF detection and generation

3.10 Secure Real-time Transport Protocol (SRTP)

This capability is new in Dialogic® HMP Software 3.1LIN.

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 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.

SRTP can be thought of as residing between an RTP application and the transport layer. On the sending side, SRTP intercepts an RTP packet and forwards an equivalent SRTP packet. At the receiving side, SRTP receives an SRTP packet and the equivalent RTP packet is passed up the protocol stack.

In SRTP, the payload (and padding) of RTP and RTCP packets may be authenticated or encrypted. RTCP packets are always authenticated, but encryption on RTP and RTCP packets and authentication on RTP packets is optional.

Note: The maximum number of SRTP channels in a system is restricted to 125.

For more information, see [Section 6.9, “Dialogic® IP Media API Library”](#), on page 44 and the *Dialogic® IP Media Library API Programming Guide and Library Reference*.

3.11 Audio (Voice) Play and Record

There are no new audio play and record features in Dialogic® HMP Software 3.1LIN.

Supported voice play and record features include:

- 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
- Streaming to board (streams data to the network interface in real time)
- Transaction record
- Dialogic® Voice API audio play and record file formats
 - 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)

For information about multimedia play and record, see [Section 3.4, “Multimedia \(Audio/Video\) Play and Record”](#), on page 23.

3.12 Channel Density Support

The following table lists the supported channel density ranges for Dialogic® HMP Software 3.1LIN.

Feature	Acceptable Range	Description
Voice	0, 4-1000	Voice resources that allow for voice record and play functions. Includes record with Automatic Gain Control, DTM and user-defined tone detections, RFC 2833, and H.245 UII.
Basic RTP Streaming	0, 4-1000	Basic RTP streaming resources to support hair pinning and tromboning. Required for using supported coders.
G.711, G.726 Coder	0, 4-1000	Resources for transcoding of G.711 and G.726 voice coders. Requires Basic RTP streaming.
G.729, G.723 Coder	0, 4-480	Resources for transcoding of G.729ab, G.723.1 voice coders. Requires Basic RTP streaming.
Native Play/Record	0, 4-1000	Resources for Native Record and Play for a supported coder in its native format. Requires Basic RTP streaming.
Conferencing	0, 4-600	Conferencing resources with advanced features such as coach/pupil mode, tone clamping, and active talker notification.
Fax	0-120	Fax resources for T.38 and V.17 fax termination.
Multimedia	0, 4-480	Multimedia resources at half duplex. Audio and video resource for multimedia messaging. Supports play, record, and synchronization of voice and video in a multimedia stream. Includes video I-frame detection to trigger start of record as well as transmit-of-tone notification when recording begins. Requires Basic RTP streaming.
Speech Integration	0, 4-240	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.

Features

Feature	Acceptable Range	Description
IP Call Control	0, 4-2000	IP call control resources. Supports First party or Third party call control; enables one entity to create, modify, or terminate a media session between two or more endpoints. Call control signaling and media exchange are independently managed.
AMR-NB Coder	0, 4-480	AMR-NB codec resources. Requires a License from Voice Age. Please contact www.Voiceage.com .
3G-324M	0, 4-250	Provides synchronization between voice and video streams for playback on IP video phones and video-enabled soft clients and connection to a 3G network.

3.13 OA&M Support Using CLI and SNMP

Dialogic® HMP Software 3.1LIN provides two tools for administration, management, and configuration: the Command Line Interface (CLI) and the Simple Network Management Protocol (SNMP). CLI is text command line-based and SNMP is MIB-based.

These tools replace *config.sh*, which is no longer available.

For more information about CLI and SNMP, see [Section 4.2, “Configuration”](#), on page 32 and [Section 5.1, “Administration”](#), on page 35.

3.14 Other Features

The following features are also supported in Dialogic® HMP Software 3.1LIN:

Echo Cancellation

Includes echo cancellation support for circuit-switched connections that may contain echo on the received media stream:

- Echo cancellation via runtime API command for the following resources:
 - signal detector of the voice resource
 - conferencing resource
 - CSP resource
 - IPM resource (for E1/T1 connections)
- Compliance with G.168
- Support for echo cancellation on tail lengths up to 64 msec

Note: The signal detector only supports tail lengths of 8 msec.

See the appropriate Dialogic API library documentation for more information about echo cancellation support in an API library. See the *Dialogic® System Configuration Guide* for information about implementing echo cancellation.

Early Media Call Setup

When using IP technology, the ability to configure an end point for half-duplex (or full-duplex) media streaming and subsequently reconfigure the end point for full-duplex (or half-duplex) media streaming is supported. See the *Dialogic® IP Media Library API*

Programming Guide and Library Reference and the *Dialogic® Global Call IP Technology Guide* for additional information.

IP Multicast (transmit and receive) support
For more information, see the *Dialogic® IP Media Library API Programming Guide and Library Reference*.

Installation, Configuration, and Licensing

4

This chapter describes the installation, configuration, and licensing features that are supported in Dialogic® Host Media Processing Software Release 3.1LIN (also referred to as Dialogic® HMP Software 3.1LIN).

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

4.1 Installation

The installation of Dialogic® HMP Software 3.1LIN is a complete installation.

If a previous version of Dialogic® HMP Software is installed on your system, you must uninstall this version before installing Dialogic® HMP Software 3.1LIN. However, if Dialogic® HMP Software 3.1LIN is on your system, you can upgrade to a later Dialogic® HMP Software 3.1LIN Service Update without uninstalling the existing version.

For more information, see the *Dialogic® Host Media Processing Software Release 3.1LIN Installation Guide*.

Web Only User Documentation

With Dialogic® HMP Software 3.1LIN, the user documentation will be delivered only on the web. This is to ensure that only the most current user documentation is available. Because the user documentation is available on the web, “Documentation” will no longer be available as an installable option as it has been in the past.

For access to user documentation, go to <http://www.dialogic.com/manuals/default.htm>.

4.2 Configuration

Two tools are available for configuring and monitoring the Dialogic® HMP Software 3.1LIN 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 text command line-based.

The CLI agent software and SNMP agent software are included with Dialogic® HMP Software 3.1LIN.

Note: The CLI and SNMP tools replace the *config.sh* utility, which is no longer supported and is not available for use.

Configuration is performed after the Dialogic® HMP Software 3.1LIN is installed. The CLI and SNMP tools allow you to monitor, configure, and manage:

- Licensing
- Status of media services (started or stopped)
- DNI boards including PSTN network interface
- Bridge devices
- TDM bus
- User accounts
- System information such as contact information and HMP RTP address
- MSML remote media control

Most of the configuration is permitted only when media services are stopped.

- Notes:**
1. For the CLI tool, user roles other than “root” currently expire in 90 days. As a workaround, use the root account.
 2. If a DNI board is removed from the system and reinserted, you will need to reconfigure the board using the CLI or SNMP tool.

For information about CLI and SNMP, see the *Dialogic® System Configuration Guide*. For information about a CLI script for automating repetitive tasks, see [Section 8.1, “New Demo Programs”](#), on page 49.

4.3 Licensing

The following licensing capabilities are supported in this release:

Host-based licensing

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

Board-based licensing

If you are using one or more of the supported Dialogic® HMP Interface 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.

For more information about licensing, see the *Dialogic® Host Media Processing Software Release 3.1LIN Installation Guide*.

Installation, Configuration, and Licensing

- Notes:**
- 1.** For host-based licensing, currently the license can only be tied to eth0.
 - 2.** 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).

This chapter describes the OA&M (operations, administration, and maintenance) software features that are supported in Dialogic® Host Media Processing Software Release 3.1LIN (also referred to as Dialogic® HMP Software 3.1LIN).

- [Administration](#) 35
- [Diagnostics](#) 35

5.1 Administration

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

Two tools are available for performing administration as well as configuration tasks for Dialogic® HMP Software 3.1LIN and Dialogic® HMP Interface Boards (DNI boards): Command Line Interface (CLI) and Simple Network Management Protocol (SNMP). They both have access to the same administration, configuration, and monitoring data. SNMP is MIB-based, and CLI is text command line-based.

For more information about CLI and SNMP, see [Section 4.2, “Configuration”](#), on page 32.

5.2 Diagnostics

This section describes the new diagnostic capabilities and tools available for Dialogic® HMP Software 3.1LIN. For more information about diagnostics software, refer to the Documentation Updates chapter of the *Dialogic® Host Media Processing Software Release 3.1LIN Release Update* as well as the *Dialogic® Host Media Processing Software Diagnostics Guide*.

DM3post Tool

This tool is newly supported in Dialogic® HMP Software 3.1LIN. The DM3post tool is used to perform diagnostics on stopped Dialogic® HMP Interface Boards at any time to detect and isolate possible hardware faults.

Subsystem Summary Tool (its_sysinfo)

This tool is newly supported in Dialogic® HMP Software 3.1LIN. The its_sysinfo tool provides baseline information about the system environment such as the operating system, computer architecture, Dialogic® HMP Software, and operational logs.

Runtime Trace Facility (RTF) Tool

A new version of the Runtime Trace Facility tool is supported. The RTF tool provides a mechanism for tracing the execution path of runtime libraries that are supported by Dialogic® HMP Software. Support for the RTF tool is as follows:

- Rtftrace command is used to stop/start the RTF tool's tracing capabilities.
- You can run the RTF tool in preservation mode. Preservation mode allows you to save specified RTF trace information into a separate, preserved log file while the RTF engine continues to output active trace information into the default log file. The RTF engine will not overwrite, delete or append to the preserved log file after it has been saved.

This chapter describes the development libraries that are available as part of Dialogic® Host Media Processing Software Release 3.1LIN (also referred to as Dialogic® HMP Software 3.1LIN).

- New Dialogic® 3G-324M API Library 37
- New Dialogic® Conferencing (CNF) API Library 38
- Dialogic® Audio Conferencing (DCB) API Library 39
- Dialogic® Continuous Speech Processing (CSP) API Library 40
- Dialogic® Device Management API Library 40
- Dialogic® Digital Network Interface API Library 41
- Dialogic® Fax API Library 42
- Dialogic® Global Call API Library 42
- Dialogic® IP Media API Library 44
- Dialogic® Multimedia API Library 45
- Dialogic® Standard Runtime API Library 46
- Dialogic® Voice API Library 46

6.1 New Dialogic® 3G-324M API Library

The Dialogic® 3G-324M API library is new in Dialogic® HMP Software 3.1LIN.

The 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.

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*.

Features

The new 3G-324M API library provides the following capabilities:

- Ability to control and manage 3G-324M multimedia sessions
 - Note:** It does not include a call session control protocol such as SS7 ISUP for establishing a bearer channel connection between 3G-324M endpoints.
- Ability to initiate/terminate a 3G-324M session
- Ability to interconnect/disconnect H.223 multiplex inputs and outputs (through device management API library functions)
- Ability to initiate/terminate an H.245 session
- Support for G.723.1 and AMR Narrow Band (AMR-NB) audio codecs
- Support for H.263 video codec

6.2 New Dialogic® Conferencing (CNF) API Library

The new 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*.

Note: The maximum number of parties allowed in a single conference is 254. This applies to conferencing applications developed using CNF conferencing API and DCB conferencing API.

Features

The new Dialogic® Conferencing (CNF) API library supports the following capabilities:

Asynchronous programming model support

This model enables multiple channels to be handled in a single process and supports higher density conferencing solutions.

Support for conferees from multiple sources

Participants in a conference may come from a variety of sources, such as a voice device and an IP media device. The software is designed for flexibility to grow and support additional sources.

Conference bridging

Multiple conferences can be bridged together so that all parties (also called conferees) in two or more established conferences can communicate with one another.

Coach/pupil feature

Two selected parties can establish a private communication link within 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 with the coach.

DTMF digit detection

The application can determine whether a party has generated a DTMF digit.

Volume control

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

DTMF tone clamping

This feature mutes dual tone multi-frequency (DTMF) tones heard during a conference. Tone clamping applies to the transmitted audio going into the conference and does not affect DTMF function. It can be enabled on a board, conference, or party basis.

Automatic gain control (AGC)

AGC is an algorithm for normalizing an input signal to a target level. The AGC algorithm discriminates between voiced and unvoiced signals within a conference.

Active talker

The active talker feature sums the three most active talkers in a conference, so that the conversation doesn't get drowned out when too many people talk at once.

Conference monitoring

Participants have listen-only access to a conference.

Echo cancellation

This feature reduces echo from the incoming signal, improving the quality of a conference for all participants.

Tariff tone

A party can receive a periodic tone for the duration of the conference call.

6.3 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.

Note: Audio Conferencing (DCB) API support is being deprecated. It is recommended that all new conferencing applications be created using the Conferencing (CNF) API library.

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

Dialogic® Audio Conferencing API Functions Not Supported

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

- **dcb_GetAtiBitsEx()**

New Features

No new features have been implemented since Dialogic® Host Media Processing Software Release 1.5 for Linux.

6.4 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()**

New Features

No new features have been implemented since Dialogic® Host Media Processing Software Release 1.5 for Linux.

6.5 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. The API functions enable use of the T.38 fax IP-only resource, which provides the ability to originate and terminate T.38 fax over IP connections only. The API also includes functions to reserve low bit rate codecs for an IP media device on Dialogic® HMP Software.

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 this release:

Support for native features

Native features include RTP hairpinning and RTP play and record. The device management API library provides the ability to connect devices together natively; the DMFL_TRANSCODE_NATIVE flag in DM_PORT_CONNECT_INFO data structure must be turned on. For more information on native features, see [Section 6.9, “Dialogic® IP Media API Library”](#), on page 44 and [Section 6.10, “Dialogic® Multimedia API Library”](#), on page 45.

Enhanced device connection capabilities

This feature enables a connection between one or more transmit ports and one or more receive ports, using the following new API functions:

- **dev_GetTransmitPortInfo()**
- **dev_GetReceivePortInfo()**
- **dev_PortConnect()**
- **dev_PortDisconnect()**

Enhanced resource reservation capabilities

The following new API functions are supported for reserving resources:

- **dev_GetResourceReservationInfoEx()**
- **dev_ReleaseResourceEx()**
- **dev_ReserveResourceEx()**

These functions supercede and should be used instead of the non _Ex() versions, namely **dev_GetResourceReservationInfo()**, **dev_ReleaseResource()**, **dev_ReserveResource()**. The new functions provide improved information about available resources.

6.6 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). Support for this API library is new in this release.

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

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.

6.7 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 1.5 for Linux.

6.8 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 H.323, SIP, and PSTN protocols
- Provides a consistent application interface for the various protocols and technologies

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.

Note: To play/record multimedia with the multimedia API, you must configure and use the Global Call library for third party call control mode (3PCC mode). In this mode, the application is responsible for capability negotiation by accessing and manipulating the SDP contents passed with call control exchanges.

The generic functionality of Global Call 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*.

Dialogic® Global Call API Functions Not Supported

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

- **gc_Attach()**
- **gc_CallProgress()**
- **gc_GetANI()**
- **gc_GetBilling()**
- **gc_GetCallProgressParm()**
- **gc_GetConfigData()**
- **gc_GetDNIS()**
- **gc_GetInfoElem()**
- **gc_GetNetworkH()**
- **gc_GetUserInfo()**
- **gc_GetVoiceH()**
- **gc_LoadDxParm()**
- **gc_Open()**
- **gc_QueryConfigData()**
- **gc_ReleaseCall()**
- **gc_ReqANI()**
- **gc_SetBilling()**
- **gc_SetCallProgressParm()**

New Features

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

SIP Transport Layer Security (TLS)

This feature 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*.

SIP Provisional Response ACKnowledgement (PRACK) (RFC 3262)

This feature provides the reliable transmit of a provisional response in the public SIP network.

For more information, see the Documentation Updates chapter of the *Release Update*.

SIP Session Timer

This feature provides a keepalive mechanism for SIP to determine whether a session is still active using an extension defined in RFC 4028.

For more information, see the Documentation Updates chapter of the *Release Update*.

6.9 Dialogic® IP Media API Library

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

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

New Features

The Dialogic® IP media library supports the following new features in this release:

Secure RTP (SRTP)

The payload (and padding) of RTP packets may be encrypted using secure RTP (SRTP). The IP media library now includes the **ipm_SecurityGenMasterKeys()** function that generates master and salt keys.

Native RTP hairpinning

The RTP media stream received from one IP media session can be retransmitted to the outgoing RTP media stream of another IP media session. The RTP media stream in both incoming and outgoing directions is not processed or transcoded by Dialogic HMP Software.

New audio coder types

Audio coder types to support native RTP play and record have been added to the `IPM_AUDIO_CODER_INFO` structure. These audio coder types include `_NATIVE` as part of the value name.

Nb UP protocol support

An internal media device may be connected to an external IP network device using the 3GPP narrowband interface user plane (Nb UP) protocol. The Nb UP protocol is a packet-based interface, which is available as an alternative transport for bearer traffic between media gateways in the core network. In this case the Nb UP is intended to transport one or more 3G-324M payloads and each 3G-324M payload is the same as that used with PSTN TDM links (such as E1) except that the underlying transport technology is based on the Internet Protocol stack.

6.10 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:

Native RTP play and record

The RTP media stream in both incoming and outgoing directions is not processed or transcoded by Dialogic HMP Software. With this feature, the RTP data is stored directly by and retrieved directly from software without application data handling.

New proprietary native audio file format

This new format is used for native RTP play and record. Several new defines are added to the MM_AUDIO_CODEC structure. For more information on the proprietary native audio format, 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.

Multimedia buffer I/O

This feature enables applications to directly play and record RTP data via memory.

Multimedia runtime control

This feature allows multimedia play and record functions to be terminated on certain conditions such as digits received. These conditions are specified in the new MM_RUNTIME_CONTROL data structure.

New functions and data structures

Functions and data structures have been added to support native RTP play and record, multimedia user I/O, multimedia buffer I/O. New functions include:

- **mm_StreamClose()**
- **mm_StreamGetStat()**
- **mm_StreamOpen()**
- **mm_StreamRead()**
- **mm_StreamReset()**
- **mm_StreamSetWaterMark()**
- **mm_StreamWrite()**

6.11 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 functions are 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 1.5 for Linux.

6.12 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 supports the following new features in this release:

Support for speed control

Users can adjust the speed of a playback via DTMF or via other conditions set using `dx_adjsv()`. The following coders are now supported for speed control:

- 24 kbps and 32 kbps OKI ADPCM (6 kHz 4-bit and 8 kHz 4-bit)
- 48 kbps and 64 kbps G.711 A-law PCM (6 kHz 8-bit and 8 kHz 8-bit)
- 48 kbps and 64 kbps G.711 mu-law PCM (6 kHz 8-bit and 8 kHz 8-bit)

- 128 kbps linear PCM (8 kHz 16-bit)

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

This chapter describes applications supported by Dialogic® Host Media Processing Software Release 3.1LIN (also referred to as Dialogic® HMP Software 3.1LIN).

- [MSML Media Server Software 48](#)

7.1 MSML Media Server Software

The MSML media server software has been designed and implemented as an integral part of the Dialogic® Host Media Processing software.

When the Dialogic® HMP Software 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 and MOML languages, as defined in their respective IETF drafts. The current implementation is based on Media Sessions Markup Language (MSML) IETF Draft version -06 and Media Objects Markup Language (MOML) IETF Draft version -06.

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

Features

The MSML media server software features are being introduced in a phased approach. The supported features map to corresponding IETF drafts as follows:

- MSML Core Module
- MSML Stream Management Module
- MSML Dialog Module
- MSML Audit Package
- MOML Core Module
- MOML Group Module (parallel topology only)
- MOML Basic Primitives Module
- MOML Transform Primitives Module (gain only)

For more information on MSML media server software and supported features, see the *Dialogic® MSML Media Server Software User's Guide*.

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

This chapter provides information about demonstration programs provided in Dialogic® Host Media Processing Software Release 3.1LIN (also referred to as Dialogic® HMP Software 3.1LIN).

- [New Demo Programs](#) 49
- [Other Supported Demo Programs](#) 51

8.1 New Demo Programs

The following new demo programs are included in this release. These demo programs are new since Dialogic® Host Media Processing Software Release 1.5 for Linux. The demo programs are located in the demos directory under INTEL_DIALOGIC_DIR, which is the environment variable for the directory in which the Dialogic® HMP Software was installed.

3G-324M Multimedia Gateway Demo

The 3G-324M multimedia gateway demo is composed of two parts:

- The m3g-sip_gateway demo application, which demonstrates 3G mobile connectivity to a remote 3G-324M endpoint using the 3G-324M API library. The demo starts a 3G call session and bridges 3G calls to a SIP endpoint.
- The multimedia demo application, when configured to work with the m3g-sip_gateway demo application, provides multimedia streaming to a remote 3G mobile endpoint.

For more information on the 3G-324M multimedia gateway demo, see the *Dialogic® 3G-324M Multimedia Gateway Demo Guide* documentation accompanying the source code in the demo program directory.

Dialogic® CNF Conferencing Demo

The CNF Conferencing demo is an audio conferencing application based on the Dialogic® CNF Conferencing API. The demo uses the Dialogic® Global Call API to handle call control, the Dialogic® Voice API to detect digits and play files, and the Dialogic® CNF Conferencing API to maintain conferences.

See the *ConferenceDemo.doc* file provided with the CNF Conferencing demo in the demos directory for additional information.

Dialogic® Command Line Interface (CLI) Script

The CLI script can be used as a tool to automate repetitive tasks, such as issuing commands to the CLI. The CLI script can only be used to automate CLI commands. The following files are provided:

Demonstration Software

- *cte.pl* file, the PERL script which handles CLI session, command parsing/processing, and logging
- *.*cfg* files, which represent the basic configuration commands and should be modified to suit your operating environment
- *cte_readme.txt*, which provides instructions for using the *cte.pl*

Note: Before using the CLI script, the Net-Telnet package and the PERL binary itself must be installed. On most Linux distributions, the PERL binary is installed with a regular OS install, but it is not part of the basic package install. On Windows®, the PERL binary is not part of the OS install, and must be installed separately.

Dialogic® IP Gateway (Global Call) Demo

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

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

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

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

Dialogic® MSML Demo

The Remote Media Control Client Sample Application provides a means to demonstrate and exercise features of an MSML Media Server as supported on Dialogic HMP Software. Remote control of a MSML Media Server by application servers is accomplished using the SIP based Media Session Markup Language (MSML) and Media Object Markup Language (MOML) protocols. Additionally, the sample application demonstrates best known methods (BKM) for software architecture, design, and API usage.

The sample application server implements simple voice and video mail functionality using MSML scripts and media recording files to perform all media functions on the Media Server. The Application Server uses Dialogic HMP Software in SIP 3PCC mode for call control.

See the *readme.txt* file provided with the Remote Media Control Application Server Sample Application for additional information about the MSML Demo.

8.2 Other Supported Demo Programs

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

Dialogic® Audio Conferencing (DCB) Demo

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

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

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

Note: This demo is not supported by Dialogic® HMP Interface Boards.

Dialogic® Continuous Speech Processing (CSP) Demo

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

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

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

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

Note: This demo is not supported by Dialogic® HMP Interface Boards.

Dialogic® Global Call API Demo

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

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

When the Global Call API demo program is run, one device waits for calls while another device makes calls. The sequence of function calls, events received, and the call states are displayed as the program proceeds. When the user presses Ctrl-C to interrupt the process, the program prints a summary of the activity including

Demonstration Software

information such as, the total number of inbound calls, the total number of outbound calls, the amount of time the demo program was running.

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

Note: This demo is not supported by Dialogic® HMP Interface Boards.

Dialogic® IP Media Server Demo

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

The IP Media Server demo supports the following features:

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

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

Note: This demo is not supported by Dialogic® HMP Interface Boards.

Dialogic® Multimedia Demo

The Multimedia demo application features the video capabilities of the Dialogic HMP Software. The application is based on the Dialogic® Global Call API for Session Initiation Protocol (SIP) call control and uses the Dialogic® IP Media Library (IPML) for Real-Time Transport Protocol (RTP) media manipulation, the Dialogic® Multimedia API for playing and recording audio/video streams, and the Dialogic® Voice API for Dual-Tone Multi-Frequency (DTMF) detection and generation.

The Multimedia demo application demonstrates two use cases:

- Video mail - users can record an audio/video clip and play it back at a later time
- Video portal - users can select video clips from a menu

The key features of the Multimedia demo are:

- Terminates and answers an incoming SIP call
- Plays video clips (menus and/or short clips)
- Records an audio/video message to disk
- Detects inband and RFC 2833 DTMF digits in the RTP stream

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

This section lists the boards supported in Dialogic® Host Media Processing Software Release 3.1LIN.

- [Dialogic® HMP Interface Boards](#) 53
- [Dialogic® SS7 Boards](#) 53

9.1 Dialogic® HMP Interface Boards

The following Dialogic® HMP Interface Boards are supported in this release:

- Dialogic® DNI310TEPEHMP Digital Network Interface Boards
- Dialogic® DNI610TEPEHMP Digital Network Interface Boards
- Dialogic® DNI1210TEPEHMP Digital Network Interface Boards
- Dialogic® DNI2410TEPEHMP Digital Network Interface Boards
- Dialogic® DNI300TEPHMP Digital Network Interface Boards
- Dialogic® DNI601TEPHMP Digital Network Interface Boards
- Dialogic® DNI1200TEPHMP Digital Network Interface Boards

For technical specifications, see http://www.dialogic.com/products/ip_enabled/hmp_enabled_boards.htm.

9.2 Dialogic® SS7 Boards

The following Dialogic® SS7 PCI boards are supported in this release:

- Dialogic® SPCI2S SS7 Interface Boards
- Dialogic® SPCI4 SS7 Interface Boards
- Dialogic® SS7HDP SS7 Interface Boards

For technical specifications, see http://www.dialogic.com/products/signalingip_ss7components/signaling_boards.htm.

This chapter provides information about the documentation that supports the Dialogic® Host Media Processing Software Release 3.1LIN (also referred to as Dialogic® HMP Software 3.1LIN). This information is organized into the following sections:

- Documentation Support for Dialogic® HMP Software Features 54
- Release Documentation 57
- Installation and Configuration Documentation 57
- OA&M Documentation 58
- Programming Libraries Documentation 58
- Supported Applications Documentation 59
- Demonstration Software Documentation 59

10.1 Documentation Support for Dialogic® HMP Software Features

The following table lists Dialogic® HMP Software 3.1LIN features and the user documentation containing information about these features.

Table 3. User Documentation Feature Support

Dialogic® HMP Software Feature	User Documentation
Software Installation	<ul style="list-style-type: none">• Dialogic® Host Media Processing Software Release 3.1LIN Installation Guide
Software and Board Configuration <ul style="list-style-type: none">• Command Line Interface (CLI) tool• SNMP tool	<ul style="list-style-type: none">• Dialogic® System Configuration Guide
Resource Licensing	<ul style="list-style-type: none">• Dialogic® Host Media Processing Software Release 3.1LIN Installation Guide <p>Note: Resource licensing information is now included in the Installation Guide, rather than in a separate Licensing Guide. License activation is described in the Installation Guide and the Configuration Guide.</p>

Table 3. User Documentation Feature Support (Continued)

Dialogic® HMP Software Feature	User Documentation
IP Call Control Using Global Call API <ul style="list-style-type: none"> • RFC2833 • H.245 UII • Low Bit Rate Coder Reservation 	<ul style="list-style-type: none"> • Dialogic® Global Call API Library Reference • Dialogic® Global Call API Programming Guide • Dialogic® Global Call IP Technology Guide • Dialogic® IP Media Server Demo Guide
IP Call Transfer	<ul style="list-style-type: none"> • Dialogic® Global Call API Library Reference • Dialogic® Global Call IP Technology Guide
Digital Network Interface	<ul style="list-style-type: none"> • Dialogic® Digital Network Interface Software Reference • Dialogic® Global Call ISDN Technology Guide • Dialogic® Global Call E1/T1 CAS/R2 Technology Guide
Media Streaming Compatibility with a Third-Party Stack for IP Call Control <ul style="list-style-type: none"> • RFC2833 • H.245 UII • Low Bit Rate Coder Reservation 	<ul style="list-style-type: none"> • Dialogic® IP Media Library API Programming Guide and Library Reference • Dialogic® Device Management API Library Reference
SS7 technology with Global Call API	<ul style="list-style-type: none"> • Dialogic® Global Call SS7 Technology Guide • Dialogic® Global Call API Library Reference • Dialogic® Global Call API Programming Guide
IP Multicast	<ul style="list-style-type: none"> • Dialogic® IP Media Library API Programming Guide and Library Reference
Multimedia/Video	<ul style="list-style-type: none"> • Dialogic® Multimedia API Programming Guide and Library Reference • Dialogic® Multimedia Demo Guide • Dialogic® Device Management API Library Reference

Table 3. User Documentation Feature Support (Continued)

Dialogic® HMP Software Feature	User Documentation
Remote Media Processing	<ul style="list-style-type: none"> • Dialogic® MSML Media Server Software User's Guide • Dialogic® Global Call API Library Reference • Dialogic® Global Call API Programming Guide • Dialogic® Global Call IP Technology Guide
Voice Features	<ul style="list-style-type: none"> • Dialogic® Voice API Library Reference • Dialogic® Voice API Programming Guide
CNF Conferencing	<ul style="list-style-type: none"> • Dialogic® Conferencing API Library Reference • Dialogic® Conferencing API Programming Guide
DCB Conferencing	<ul style="list-style-type: none"> • Dialogic® Audio Conferencing API Library Reference • Dialogic® Audio Conferencing API Programming Guide • Dialogic® Audio Conferencing Demo Guide
Speech Integration	<ul style="list-style-type: none"> • Dialogic® Continuous Speech Processing API Library Reference • Dialogic® Continuous Speech Processing API Programming Guide • Dialogic® Continuous Speech Processing API Demo Guide
Fax Using Global Call API	<ul style="list-style-type: none"> • Dialogic® Global Call IP Technology Guide • Dialogic® Fax Software Reference
Fax Using Third-Party Stack	<ul style="list-style-type: none"> • Dialogic® IP Media Library API Programming Guide and Library Reference • Dialogic® Device Management API Library Reference • Dialogic® Fax Software Reference

Table 3. User Documentation Feature Support (Continued)

Dialogic® HMP Software Feature	User Documentation
Event Handling	<ul style="list-style-type: none"> Dialogic® Standard Runtime Library API Library Reference Dialogic® Standard Runtime Library API Programming Guide
Diagnostics	<ul style="list-style-type: none"> Dialogic® Host Media Processing Software Diagnostics Guide

10.2 Release Documentation

The following release documentation is provided for this release:

- *Dialogic® Host Media Processing Software Release 3.1LIN Release Guide* (this document) †
- *Dialogic® Host Media Processing Software Release 3.1LIN Release Update* †

Note: The Release Update includes issues that may affect the performance of the Dialogic® Host Media Processing (HMP) Software and lists both resolved and known issues. The Release Update also includes corrections and changes to the user documentation that could not be made to the documents prior to the release.

Note: A dagger (†) next to a document title indicates that the document is new or has been updated since Dialogic® Host Media Processing Software Release 1.5 for Linux.

10.3 Installation and Configuration Documentation

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

- *Dialogic® Host Media Processing Software Release 3.1LIN Installation Guide* †
- *Dialogic® System 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® Host Media Processing Software Release 1.5 for Linux.

10.4 OA&M Documentation

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

- *Dialogic® Host Media Processing Diagnostics Guide*

Note: A dagger (†) next to a document title indicates that the document is new or has been updated since Dialogic® Host Media Processing Software Release 1.5 for Linux.

Note: Additional OA&M information such as SNMP agent software is described in the *Dialogic® System Configuration Guide*.

10.5 Programming Libraries Documentation

The following programming libraries documentation is provided for this release:

- *Dialogic® 3G-324M API Library Reference †*
- *Dialogic® Audio Conferencing API Library Reference*
- *Dialogic® Audio Conferencing API Programming Guide*
- *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® 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® Host Media Processing Software Release 1.5 for Linux.

10.6 Supported Applications Documentation

The following supported application 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® Host Media Processing Software Release 1.5 for Linux.

10.7 Demonstration Software Documentation

The following demo documentation is provided for this release:

- *Dialogic® 3G-324M Multimedia Gateway Demo Guide †*
- *Dialogic® Audio Conferencing API Demo Guide*
- *Dialogic® Continuous Speech Processing API Demo Guide †*
- *Dialogic® Global Call API Demo Guide*
- *Dialogic® IP Media Server Demo Guide*
- *Dialogic® IP Gateway (Global Call) Demo Guide*
- *Dialogic® Multimedia Demo Guide †*

Note: A dagger (†) next to a document title indicates that the document is new or has been updated since Dialogic® Host Media Processing Software Release 1.5 for Linux.