Datasheet

Dialogic® PowerMedia™ HMP for Linux

Host Multimedia Processing Software for Voice and Video IP Solutions

Dialogic® PowerMedia™ HMP for Linux (HMP Linux) is scalable, feature-rich multimedia processing software for building innovative and cost-effective voice and video solutions suitable for enterprise or service provider deployment. HMP Linux can enable basic SIP or hybrid connectivity, audio and video play/record, multimedia streaming, transcoding, fax, automated interactive audio and video solutions (IVR and IVVR), and complex live interactions, such as contact centers and audio and video conferencing or video portals. With HMP Linux, Dialogic brings decades of media processing and signaling development experience to a pure software media engine, allowing developers to transition many existing Dialogic hardware-based applications to software-based IP-enabled solutions, or create completely new mobile interactivity and other multimedia applications.

HMP Linux includes H.264 and VP8 video support up to HD720p resolution, continuous presence video conferencing, HD Voice with G.722, AMR Wideband (G.722.2), and OPUS codecs, media server virtualization, and scales up to 5000 SIP connections and 2000 conference parties. HMP Linux also contains patented and patent-pending software that enhances video quality through improved bit-rate control and dynamic feedback algorithms. HMP Linux runs on general-purpose servers without the need for specialized hardware. Along with virtualization support, this reduces total cost of ownership and provides greater efficiency and deployment flexibility. Adding Dialogic® HMP Interface Boards (DNI Boards) allows PSTN connectivity in a "single box" solution with gateway functionality. Programming interfaces for HMP Linux include Dialogic® R4 and Global Call APIs for low-level media and signaling control.

Features	Benefits
Support for IETF and WC3 WebRTC codecs (Opus audio, VP8 video) and technologies to provide real-time video and audio media mixing, security, and NAT/firewall traversal with WebRTC-enabled HTML5 browsers	Facilitates the development and deployment of rich communication applications and services across Web, VoIP/SIP, and PSTN networks to virtually all connected endpoints
Multimedia features such as video streaming and transcoding (H.264, VP8, MPEG-4 , and H.263), video resizing, conferencing, and text/image overlay up to HD720p resolution	Enables multimedia solutions, such as video portals, continuous presence multimedia conferencing, and video-enabled contact centers
Voice features, such as wideband audio codec support (G.722, G.722.2 and OPUS), play, record, transaction record, DTMF detection, and Call Progress Analysis (CPA)	Enables advanced voice applications, such as IVR and contact centers with PSTN and IP endpoints that require support for a wide array of codecs, including WebRTC media.
Applications scale according to processor performance, memory and co-resident application demands on the host server platform	Allows for high density, cost-effective IP and TDM solutions that typically can support several thousand concurrent sessions
Secure RTP (SRTP), DTLS-SRTP and SIP Transport Layer Security (TLS)	Enables encryption security at the media layer with SRTP, DTLS-SRTP for WebRTC media and at the signaling layer with TLS
Supports Dialogic® HMP Interface Boards (DNI Boards) for T1/E1	Enables converged solutions in enterprise and service provider environments with easy migration to pure IP platforms
HD Voice Conferencing for narrowband and wideband audio mixing	Facilitates development of any to any conferencing, maintaining optimal audio fidelity with PSTN, WebRTC and IP endpoint

Applications

- IVR and speech-enabled IVR
- Voice announcement server
- Voice mail server
- Unified Messaging (Voice, Video, Fax, Speech)
- Audio Conferencing Server
- Prepaid/debit card services
- Contact center
- Outbound dialing
- Speech-enabled applications
- Video Ring Tones and CRBT
- Video mail/messaging server
- Video Portal and IVVR
- Video Surveillance
- Video Conferencing Server
- Transcoding Server (TDM-IP, IP-IP, Voice, Video)
- IP Media gateways
- TDM/IP gateways
- Converged PBX and IP-PBX

How PowerMedia HMP Linux Works

HMP Linux performs media processing tasks on general-purpose processors running on common server architecture without requiring specialized hardware. HMP Linux provides media services and functionality for building flexible, scalable, and cost-effective converged telephony applications, next-generation multimedia servers and gateway solutions for TDM, IP, 3G/4G wireless and IMS networks. HMP Linux is complimented by support for other Dialogic products and technologies, including:

- **Dialogic® Global Call and R4 APIs** — enables existing applications written for other Dialogic® products (for example, board products) to move easily from TDM to IP and to HMP Linux.
- **Dialogic® HMP Interface Boards (DNI Boards)** — enables PSTN (T1/E1) connectivity in a variety of densities
- **Dialogic® DSI SS7 Boards, Dialogic® DSI Signaling Servers, and Dialogic® DSI Protocol Stacks**
  - provides TDM or IP SS7 interfaces using Global Call API for SS7 Signaling
  - supports single-server solutions, such as for pre-paid wireless and CRBT

Security Features

HMP Linux includes security features using Secure RTP (SRTP), DTLS-SRTP and SIP Transport Layer Security (TLS) to encrypt media and signaling information and keep media transactions secure. Because SRTP and DTLS-SRTP provides encryption, message authentication and integrity, and replay protection for RTP data, conversations are secure and cannot be stolen for later playback. TLS prevents the theft of dialing information on outbound calls because it secures SIP signaling information.

Multimedia Features

HMP Linux supports video transcoding and video transrating for building applications such as continuous presence video conferencing, video portals, and video streaming servers of different densities. Video codecs supported include H.264 and VP8 (up to HD720p resolution at 2Mbps) as well as MPEG-4 and H.263 (up to CIF resolution, 30fps and 384kbps). IP video endpoints can be inter-connected with transcoding between a supported codec or in a pass-through (native) mode using the same video codec. HMP Linux also supports video streaming, video transcoding, and audio transcoding (AMR-NB and AMR-WB) capabilities for 3GPP wireless applications and can deliver only the audio portion of a video call to an audio-only endpoint for gateway functionality between multimedia endpoints.

In addition, HMP Linux supports:

- **Initiation and termination** of a multimedia (audio/video) call, which includes SIP-based call control
- **Synchronization** of voice and video streams for playback on IP video phones, video-enabled soft clients, and connections to 3G/4G network endpoints
- **Enhanced DVR controls** such as pause, resume, and fast forward during video playback operations

Easy Migration to Hybrid TDM-IP and Pure IP Solutions

HMP Linux uses the Ethernet Network Interface Card (NIC) typically present in host server platforms to enable IP connectivity, and supports the IETF RFC 3261 SIP standard for voice and video call session establishment.

When combined with Dialogic® HMP Interface Boards (DNI Boards) for PSTN connectivity, HMP Linux provides a cost-effective platform for building TDM solutions, and then later migrating them easily to hybrid platforms, and ultimately to pure IP deployments. The DNI Boards are software-selectable T1 and E1 trunks supporting a range of PSTN protocols, including ISDN and CAS. Hybrid platforms can be deployed as IP media gateways, enhanced service platforms, or converged PBX solutions.

To help customers accelerate their time-to-market and migrate existing applications to IP, HMP Linux supports two direct APIs: the Dialogic® R4 API for media processing and the Dialogic® Global Call API for call control. Because these APIs are consistent with the APIs for Dialogic boards with DM3 architecture, Dialogic customers can facilitate quick application development and easy migration from a board-based platform to a platform based on HMP Linux.

Interoperability

To provide interoperability for high-quality media streaming with a wide variety of IP gateways and endpoints that comply with IETF and ITU standards, HMP Linux supports RTP/RTCP protocols for streaming over IP using G.711, G.726, G.723.1, G.729, iLBC, GSM-FR, GSM-EFR, AMR-NB, AMR-WB (G.722.2), G.722 and OPUS.

To further provide high voice quality and low latency, HMP Linux supports:

- Threshold alarms
- Packet loss reduction/concealment
- RTP and RTCP timeouts
- Type Of Service (TOS) byte setting
- Detection and reporting of timeouts in RTP and RTCP sessions to applications

To enable advanced network QoS monitoring and analysis, HMP Linux supports High Resolution RTCP (RTCP-HR) reports for applications that require extended data assessments of VoIP delivery within the network.

Conferencing

Conferencing features in HMP Linux facilitate the development of advanced multimedia conferencing applications. These features include:

- Coaching and Whisper Conferencing
- Active talker notification
- Tone clamping
- Echo cancellation
- HD Voice conferencing (wideband n-way mixing)
- Video Mixing and tiling (including custom layouts)
- Video active talker switching
- Video transcoding and resizing
- Video text and image captioning

Other Notable Features

HMP Linux also includes the following notable features:

- Support for WebRTC media technologies, including audio and video transcoding security, STUN messaging and codecs (such as OPUS and VP8) to integrate with WebRTC endpoints and media streams for deployment in virtually any network environment.
- Support for HD Voice via wideband audio codecs (G.722, AMR-WB, OPUS) for messaging and conferencing
- Ability to use Dialogic's IP call control API or, at developers' preference, to integrate another IP call control protocol stack
- Ability to programmatically control the volume of RTP sessions in order to benefit the end-user experience
- Support for a variety of media processing functions, such as:
  - Play with volume control
  - Record with Automatic Gain Control (AGC)
  - Dual-Tone Multi-Frequency (DTMF)
  - User-defined tone detection and generation, including industry-standard RFC 2833/RFC 4733 mechanisms
- Support for outbound call progress analysis with positive voice detection and positive answering machine detection algorithms
- Support for Dialogic® Continuous Speech Processing (CSP) functionality with APIs that are compatible with Dialogic® boards, allowing integration with Automatic Speech Recognition (ASR) engines
- Support for fax store and forward for IP (T.38 and G.711 fax pass-through) and PSTN (V.17) networks.

Configurations

Applications developed on HMP Linux often serve as a voice or video IP Media Server, a network entity that terminates IP signaling and media connections in a network, which can be deployed differently in service provider and enterprise environments. Configurations for IP media servers that can be developed with HMP Linux include video transcoding gateway, video transcoding media server, video portal, network announcement, IVR, voice mail, and conferencing server.

Service Provider Configuration

Figure 1 illustrates how an IP media server based on HMP Linux can be deployed in a typical service provider environment to deliver messaging, IVR, announcements, voice mail, speech, or conferencing applications. HMP Linux also enables video versions of many of these applications.

An IP-PSTN gateway terminates PSTN connections, and a softswitch manages all aspects of call establishment and teardown over IP. Once the call is established, an RTP connection is created between the IP media server and an endpoint. The softswitch tells the media server, IP endpoints, and IP-PSTN gateway when to establish or drop connections.

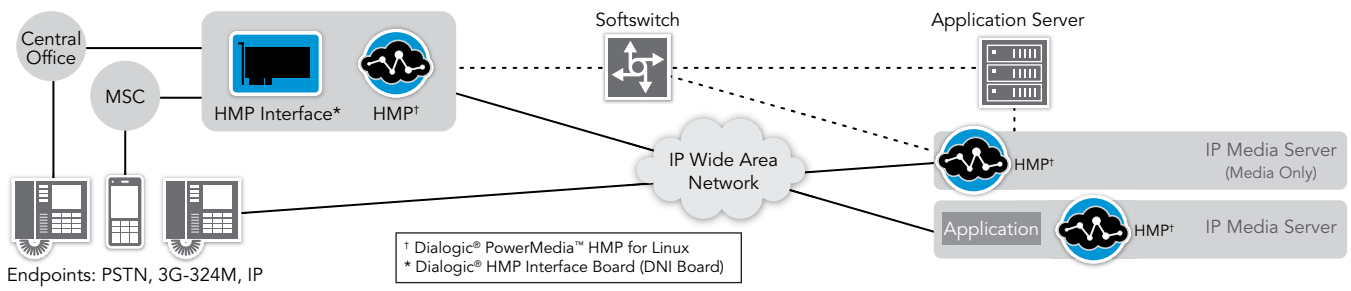

Figure 1. Dialogic® PowerMedia™ HMP for Linux in a Service Provider Environment

Enterprise Configurations

Figure 2 shows an example of how HMP Linux can be deployed in an enterprise environment for IVR, video portal, auto attendant, voice mail, unified messaging, speech, or conferencing services.

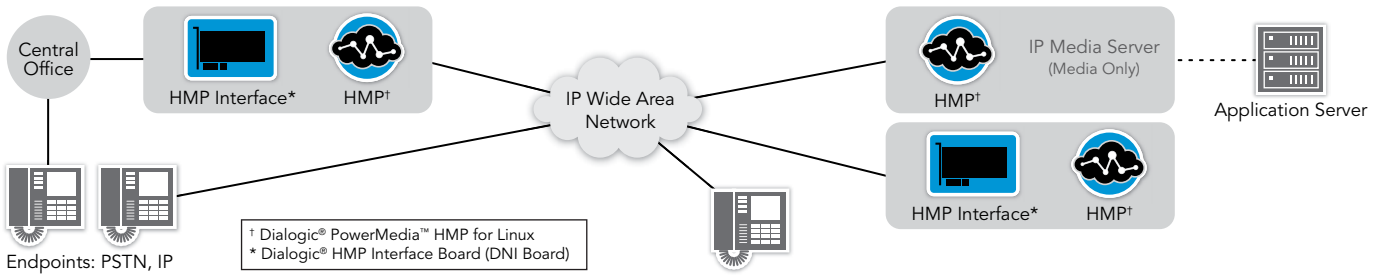

Figure 2. Dialogic® PowerMedia™ HMP for Linux in an Enterprise Environment

Technical Specifications

Channel Density

Up to 2000 concurrent user sessions. Number of concurrent user sessions depends on the host processor and the application in use. Current density test results are available on the Dialogic website.

Network Interface

IP over an Ethernet NIC connection
Multiple NIC interfaces (for signaling or media)

Call Control over IP and TDM

Protocols	SIP
	Transport Layer Security (TLS)
	3G-324M for TDM (T1/E1) and for IP (NbUP)
	3G-324M support includes H.324 Annex K (Media Oriented Negotiation Acceleration or MONA) and WNSRP
	Dialogic® DSI SIGTRAN SS7 Stacks or TDM Dialogic® DSI SS7 Stack running on DNI with combined SS7 / media, or the Dialogic® DSI SS7 Boards,
	CAS, ISDN
	Integration with third-party call and connection control stacks using the IP media library

Media Streaming over IP

Protocols	IPv4, IPv6, and mixed mode IPv4/IPv6
	RTP
	RTCP (incl. AVP/AVPF), RTCP-XR, RTCP-HR
	Secure RTP (SRTP)
	DTLS-SRTP
	STUN Messaging
	NbUP over IP (H.223/3G-324M, G.711 5ms/20ms, AMR-NB, AMR-WB)
Audio Codecs	G.711 A-Law, μ-law (10ms, 20ms, 30ms)
	G.722
	G.723.1
	G.726
	G.729a, G.729b, G.729ab (up to 60ms)
	GSM-FR
	GSM-EFR
	iLBC
	OPUS
	AMR-NB
	AMR-WB (G.722.2)
	AMR2 (AMR-NB and AMR-WB change mode restrictions)

QoS	Alarms Frames per packet control RTP/RTCP timeouts Ability to modify the default DiffServe/TOS byte setting
Tone generation and detection	Inband DTMF User-defined global tone generation and detection (GTG, GTD) RFC 2833/4733 (events 0-255) RFC 4734 (modem and text tones) RFC 5244 (channel oriented signaling tones)
Media control over RTP	Programmatic control of inbound RTP stream gain and outbound RTP stream volume

Voice Processing Features

Features supported	Play, record, and tone generation and detection
Play	Volume control and index play
Record	Automatic Gain Control (AGC)
Audio file formats for play/record	OKI ADPCM 24K, 32K (vox and wav formats) G.711 A-law, μ-law 48K, 64K (vox and wav formats) Linear PCM 8b 11K (wav format only) Linear PCM 8b 8K Linear PCM 16b 16K GSM 13K

Conferencing Features

Total parties per server	Number of conferees dependent on host processor and application in use
Advanced features	N-way summing Coach/pupil mode Privileged party DTMF detection DTMF clamping Active talker notification Automatic Gain Control (AGC) Echo Cancellation (EC)

Video Processing Features

Video Codecs	H.264 (Baseline profile levels 1, 1b, 1.1, 1.2, 1.3, 2.0, 2.1, 2.2, 3.0, 3.1) VP8 H.263, H.263+, H.263++ (Baseline profile up to level 30) MPEG-4 (Simple Profile levels 0, 1, 2, 3)
Video image formats	H264 & VP8: HD720p(16:9), 720(4:3), 4CIF, VGA, QVGA Common Intermediate Format (CIF) PAL at 352 by 288 pixels, Quarter Common Intermediate Format (QCIF) PAL at 176 by 144 pixels, Sub-QCIF PAL at 128 by 96 pixels
Features supported	Play, Record I-frame update (video fast update or VFU) Video transcoding Video conferencing Stream control (pause, resume, fast forward, rewind) Image & Text overlay
Play	Playback of voice and video, voice only, video only Synchronization of voice and video
Record	Stores synchronized voice and video to a file
Video conferencing	Video and audio synchronization 1, 4, 6, 9 image tiling Custom application defined layouts Number of conferees dependent on host processor and the application in use
Video frame rates, bitrates	Up to 30 frames per second (Video frame rates), up to 2Mbps (bitrates)

Multimedia file formats	Audio file (.wav/.pcm): Linear PCM 16b 8K Audio file (.wav/.pcm): Linear PCM 16b 16K Audio file (.aud): Dialogic HMP native codec format Video file (.vid); Dialogic HMP native codec format (H.263 bit-stream data; H.264 bit stream data; MPEG-4 bit-stream data) Multimedia file (.3gp): – Video: H.264, MPEG4, H.263 – Audio: AMR-NB, AMR-WB Image file (.jpeg/.yuv)

API Support

Call control	Global Call API for TDM, SIP, Global Call Software for SS7 signaling Third-party stack integrated via IP Media Library
Voice processing	R4 voice (dx_)
IP media (RTP, QoS, etc.)	R4 IPML (ipm_)
HD Voice Conferencing	R4 conferencing (cnf_)
Continuous Speech Processing	R4 speech (ec_)
Fax	R4 fax (fx_)
Multimedia	R4 multimedia (mm_)
3G-324M	3G-324M (m3g_)
Video Stream Processing Toolkit	Media toolkit (mtk_) Overlay builder (ob_) Layout builder (lb_) Stream manipulation (sm_)
System Event reporting	R4 SRL (sr_)

Virtualization Support

Hypervisors	VMWare ESXi 5.x and 6.x Kernel Virtual Machine (KVM) Oracle VM

Supported Dialogic® HMP Interface Boards (DNI Boards)

Network Interface (DNI Boards)	Single, Dual, Quad and Octal T1/E1 Digital Network Interface (DNI) Boards See Dialogic HMP Interface Boards for more details

Licensing

Enabling methods	Node-locked using FlexNet licensing utility Additive licensing for incremental feature upgrade Standalone License Server model for distributed licensing

System Requirements

Hardware

Processor	Intel and AMD processors, including multi-processor, multi-core versions
Memory	8 GB or above recommended for voice applications; 12 GB or above recommended for audio/video applications; 16 GB or above recommended for high density applications
Disk Space	1 GB required for full installation of HMP Linux

System

- **IP-only solutions** — Multi-processor, multi-core platforms with an Ethernet NIC (Note: 1000Base-T recommended)
- **Converged solutions** — Multi-processor, multi-core PCI platform with an Ethernet NIC and Dialogic® HMP Interface Boards (DNI Boards) or gateways

Note: *HMP Linux provides a very high level of flexibility in choosing media processing configurations; therefore it is not feasible to list all the available combinations of media processing resources here. Contact your authorized Dialogic distributor or account manager for help in configuring your system and for detailed system configuration information.*

Operating System Support

64-bit operating system

- Red Hat Enterprise Linux Release 7 or greater (AS/ES/WS)
- Red Hat Enterprise Linux Release 6 Update 2 or greater (AS/ES/WS)
- Red Hat Enterprise Linux Release 5 Update 4 or greater (AS/ES/WS)
- Community ENTerprise Operating System (CentOS) 7 or greater
- Community ENTerprise Operating System (CentOS) 6 Update 2 or greater
- Community ENTerprise Operating System (CentOS) 5 Update 4 or greater
- Oracle Enterprise Linux 6.2 64-bit with Unbreakable Linux Kernel (UEK)
- SUSE Linux Enterprise Server 11 Service Pack 3

32-bit operating system

- Red Hat Enterprise Linux Release 6 Update 2 or greater (AS/ES/WS)
- Red Hat Enterprise Linux Release 5 Update 7 or greater (AS/ES/WS)
- Community ENTerprise Operating System (CentOS) 6 Update 2 or greater
- Community ENTerprise Operating System (CentOS) 5 Update 4 or greater
- SUSE Linux Enterprise Server 11

Ordering Information

Please see the Ordering Information tab for this product

Obtaining Third-Party Licenses

Using the AMR-NB resource in connection with Dialogic's PowerMedia™ HMP for Linux product does not grant the right to practice the AMR-NB standard. To seek a patent license agreement to practice the standard in connection with PowerMedia HMP for Linux, contact the VoiceAge Corporation at licensing@voiceage.com.

www.dialogic.com

For a list of Dialogic locations and offices, please visit: https://www.dialogic.com/contact.aspx

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