

# Dialogic® PowerMedia™ Host Media Processing Software Release 3.0Win

Datasheet

Security-Enhanced Media Processing Software for Cost-Effective IP and TDM-Based Telephony Solutions

Dialogic® PowerMedia™ Host Media Processing Software Release 3.0Win (PowerMedia HMP 3.0) extends the capabilities of software-based IP media processing by introducing security features, video messaging, and remote interface support. In addition, PowerMedia HMP 3.0 scales up to 5000 SIP signaling sessions or 1000 concurrent voice user sessions per system.



## Features

**Supports up to 1000 channels of G.711 and voice play and record on standard server platforms**

**Supports rich media processing on Dual-Core and Quad-Core Intel Xeon processor-based platforms, and Dual-Core AMD Opteron processors**

**Supports play, record, and synchronization of voice and H.263-format video in a multimedia stream that includes video I-frame detection to trigger start of record as well as transmit-of-tone notification when recording begins**

**Supports Dialogic® HMP Interface Boards (DNI Boards) for T1/E1**

**Security support of SRTP and SIP TLS**

**Support for local Dialogic® Global Call API and Dialogic® R4 API and MSML for remote support**

**Conferencing features include coaching, active talker notification, tone clamping, echo cancellation, and scalability with a maximum of 580 conferees per system**

## Benefits

Allows high-density media processing on standard servers

Presents a broad choice of processing platforms on which to build cost-effective IP and TDM telephony solutions

Enables media processing for video-based messaging and content delivery media servers

Enables converged solutions in enterprise and service provider environments with easy migration to pure IP platforms

Provides encryption protection at the media layer with SRTP and at the signaling layer with TLS

Uses MSML to allow a remote application to use an HMP-based media server in an IMS environment. R4 API and Global Call API allow easy migration of existing applications by providing compatibility at the API level with other Dialogic® telecom products.

Facilitates development of advanced conferencing applications

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## Applications

- IP media gateways
- IVR and announcements
- Voice mail and unified messaging server
- Converged PBX
- Video messaging server
- Video portal
- Prepaid/debit card services
- Contact center and outbound dialing
- Conferencing server
- Speech-enabled applications

PowerMedia HMP 3.0 performs media processing tasks on general-purpose servers based on Intel architecture without requiring specialized hardware. The software provides media services for building flexible, scalable, and cost-effective next-generation IP media servers and converged telephony applications. Because it is implemented as a software-only product with a variety of media processing configurations, PowerMedia HMP 3.0 minimizes investment, development, deployment, and operational costs.

In order to provide real-time media processing performance, PowerMedia HMP 3.0 is implemented as a Windows® operating system kernel-mode driver that runs at real-time priority. PowerMedia HMP 3.0 is optimized to run on Dual-core and Quad-core Intel Xeon processor-based platforms and Dual-Core AMD Opteron processors.

To help customers accelerate their time-to-market and migrate existing applications to IP, the software also supports two direct application programming interfaces (APIs): Dialogic® R4 API for media processing and Dialogic® Global Call API for call control. These APIs are consistent with Dialogic® DM3 architecture to enable quick development and migration to a platform using PowerMedia HMP 3.0.

## Security Features

PowerMedia HMP 3.0 introduces security features to encrypt media and signaling information for media transactions. Secure RTP (SRTP) provides encryption, message authentication, and integrity and replay protection to RTP data so that conversations cannot be stolen for later playback. Transport Layer Security (TLS) is available in SIP to protect signaling data so that dialing or keypad input information cannot be stolen.

## Multimedia Support

When deployed in an IP network, PowerMedia HMP 3.0 supports the initiation and termination of a multimedia (audio/video) call, which includes SIP-based call control and H.263 video format. PowerMedia HMP 3.0 synchronizes voice and video streams for playback on IP video phones and video-enabled soft clients and connection to a 3G-324M gateway on a 3G network. PowerMedia HMP 3.0 can also deliver only the audio portion of a video call to an audio-only endpoint.

## Easy Migration to Hybrid TDM-IP and Pure IP Solutions

When combined with Dialogic® HMP Interface Boards (DNI Boards), PowerMedia HMP 3.0 provides a cost-effective platform for developers to build TDM solutions and later migrate them easily to hybrid platforms and then to pure IP deployments. The hybrid platforms can be deployed as IP media gateways, enhanced services platforms, and converged PBX solutions.

When deployed in the TDM network with DNI Boards, PowerMedia HMP 3.0 supports a wide range of PSTN protocols including ISDN and CAS. The boards are software-selectable T1 and E1 trunks, and extend the flexible software model with downloadable firmware.

PowerMedia HMP 3.0 uses a built-in Network Interface Card (NIC) and digital interface boards to provide IP and PSTN connectivity. It supports the industry-standard SIP protocol for voice and video call session establishment. The H.323 protocol is supported for voice calls along with H.450.2 for supplementary services.

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## Interoperability

PowerMedia HMP 3.0 is compliant with important industry standards (including the IETF RFC 3261 SIP standard and ITU H.323 and H.450.2 specifications), which allow easy interoperability for call control with a wide range of gateways, gatekeepers, and other IP endpoints.

Support for streaming over IP using RTP G.711 (packet size 10 ms, 20 ms, and 30 ms), G.723.1, G.726, G.729a, and G.729b voice coders provides the interoperability needed for high-quality media streaming with a wide variety of industry-standard IP gateways and endpoints.

## Other Important Features

PowerMedia HMP 3.0 adds remote interface support via Media Sessions Markup Language (MSML), which allows a remote application to control and invoke services on a media server running HMP for additional flexibility.

PowerMedia HMP 3.0 also supports RTP/RTCP protocols for media streaming over IP using G.711, G.726, G.723.1, and G.729ab formats and a standard Ethernet NIC for network connectivity. To improve the quality of media streaming over the network, PowerMedia HMP 3.0 supports frame sizes of 10 ms, 20 ms, and 30 ms (for G.711), and features such as Quality of Service (QoS) threshold alarms and packet loss concealment. Additional QoS features include the ability to detect and report timeouts in RTP and RTCP sessions to an application and change the default TOS byte setting in the Windows® Registry during installation.

Additional features include:

- The ability to integrate any third-party call or connection control protocol stack
- The ability to programmatically control the volume of RTP sessions in order to improve the end-user experience
- Support for a variety of media processing functions for building high-quality voice applications:
  - 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 and H.245 User Input Indication (UII) mechanisms
- Support for outbound call progress analysis with positive voice detection and positive answering machine detection algorithms
- Support for continuous speech processing functionality with APIs fully compatible with other Dialogic boards so PowerMedia HMP 3.0 can integrate with Automatic Speech Recognition (ASR) and Text-To-Speech (TTS) engines
- Ability to scale up to 750 concurrent user sessions per system of voice conferencing using G.711 and up to 580 conferees per server using G.711

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## Licensing

Since PowerMedia HMP 3.0 is implemented as a software-only product, it can be installed and upgraded as easily as other software. PowerMedia HMP 3.0 is licensed using an industry-standard model that node locks the software using FlexNet software from Macrovision.

PowerMedia HMP 3.0 can be licensed and deployed in any combination of call control and media processing channels, enabling customers to choose the combination of media processing resources they need. Locate the media processing channel modes you require in Table 1 and reference the Product Code when ordering.

Product Code	Type of Resource	Features
DMIPS10C30W	Conferencing	Includes advanced features such as coach/pupil mode, tone clamping, and active talker notification
DMIPS10E30W	Enhanced RTP	Adds the capability of streaming voice over RTP using the G.723.1, G.729a, and G.729b coders to the RTP G.711 resource. <i>Add on top of the RTP G.711 resource.</i>
DMIPS10F30W	Fax termination	Allows V.17 and T.38 fax termination (over UDP)
DMIPS10I30W	IP call control	Provides call control stacks for the H.323 with H.450.2 supplementary services, and SIP protocols, with Global Call API support. <i>Can only be used together with the RTP G.711 resource.</i>
DMIPS10R30W	RTP G.711	Provides the capability of streaming digitized voice over RTP, using the G.711 coder with 10 ms, 20 ms, 30 ms frames as well as SRTP. <i>Required for each RTP session.</i>
DMIPS10S30W	Speech integration	Integrates HMP with speech engines for ASR and TTS support by using the continuous speech processing APIs. <i>Add on top of the voice resource.</i>
DMIPS10V30W	Voice	Allows play with volume control, record with AGC, DTMF, user-defined tone detection and generation, including RFC 2833 and H.245 UII
DMIPS10M30W	Multimedia	Provides audio and video resources for multimedia messaging. Video format is H.263 (profile 0 level 30).
DMIPS10A20W	HMP maintenance	Adds one-year of maintenance with upgrades for future Windows® releases

Table 1. Dialogic® PowerMedia™ Host Media Processing Software Release 3.0Win Resources

## Configurations

Sample configurations for IP media servers developed with PowerMedia HMP 3.0 include network announcements, Interactive Voice Response (IVR), voice mail, and conferencing servers.

An IP media server is always the endpoint that terminates an IP connection in the network. Depending on the customer environment (service provider or enterprise), the IP media server can be deployed in a number of ways. The following figures illustrate typical deployment environments.

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## Service Provider Configuration

Figure 1 illustrates how an IP media server based on PowerMedia HMP 3.0 can be deployed in a typical service provider environment for IVR, announcements, voice mail/messaging, speech, or conferencing applications.

An IP-PSTN gateway terminates PSTN connections. 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.

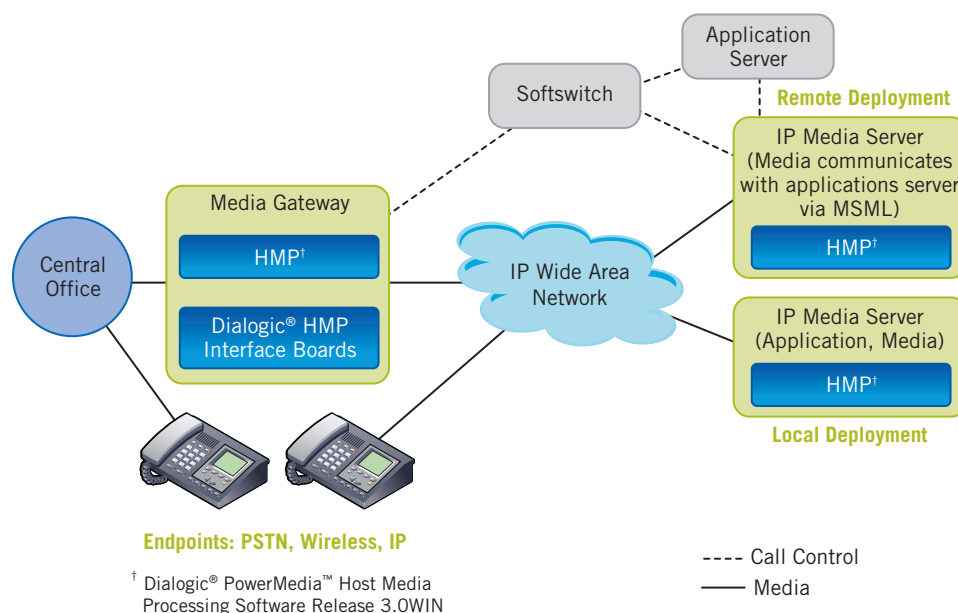


Figure 1. Dialogic® PowerMedia™ Host Media Processing Software Release 3.0Win in a Service Provider Environment

IP media servers are deployed according to two main models:

- **Local** — The application resides in the media server and controls the media processing functionality of PowerMedia HMP 3.0 via direct APIs such as R4 API and Global Call API.
- **Remote** — The application server controls the IP media server via remote interfaces via MSML

Service providers often use remote deployment because scalability and availability can easily be increased by adding more servers. Remote deployments also work better in the hosted environments frequently used by service providers. See Figures 5 and 6 in the Functional Description section for illustrations of remote and local implementations.

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## Enterprise Configurations

Figure 2 shows how PowerMedia HMP 3.0 can be deployed in a media gateway or a converged PBX in an enterprise environment for IVR, video portal, auto attendant, voice mail, unified messaging, speech, or conferencing services.

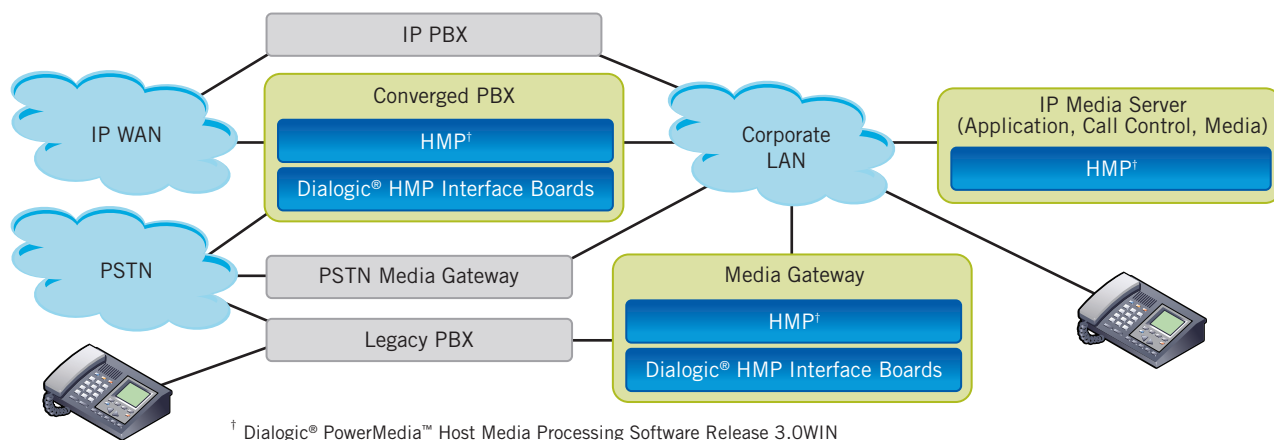


Figure 2. Dialogic® PowerMedia™ Host Media Processing Software Release 3.0Win in an Enterprise Environment

Figure 3 provides a more detailed architectural view of the converged PBX element shown in Figure 2. PowerMedia HMP 3.0 presents the media and API to the application. It also controls the DNI Boards for T1 and E1 connectivity.

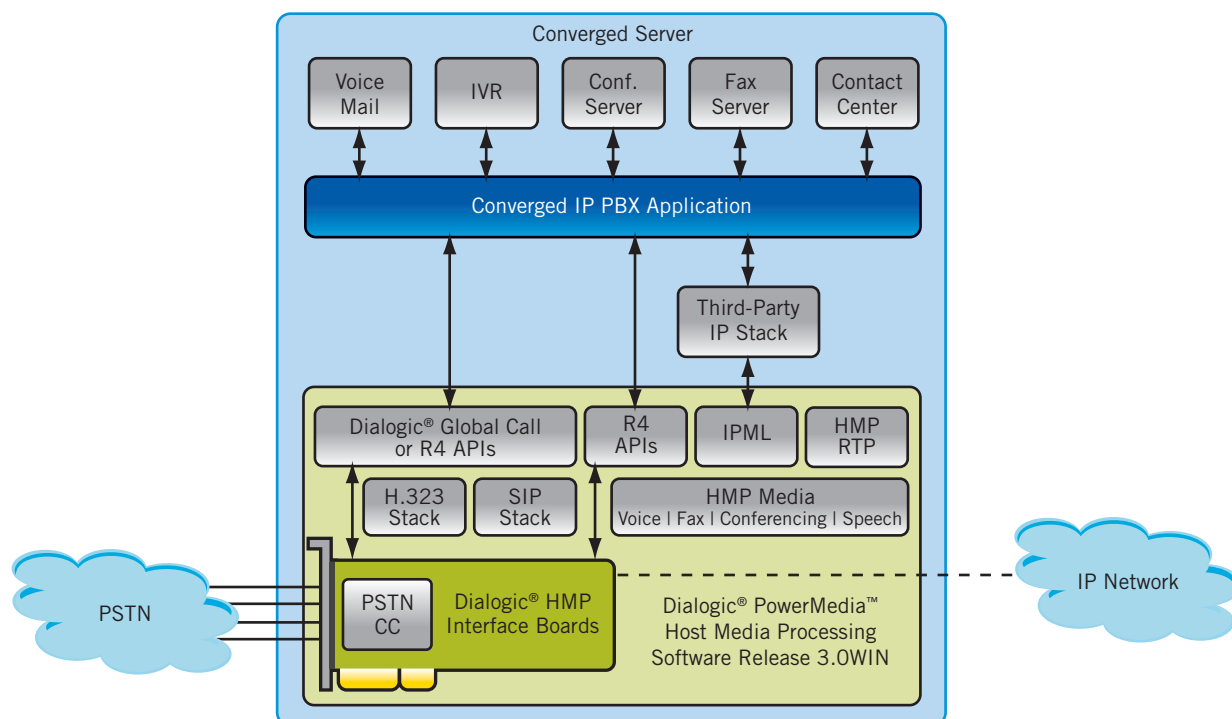


Figure 3. Dialogic® PowerMedia™ Host Media Processing Software Release 3.0Win in a Converged PBX

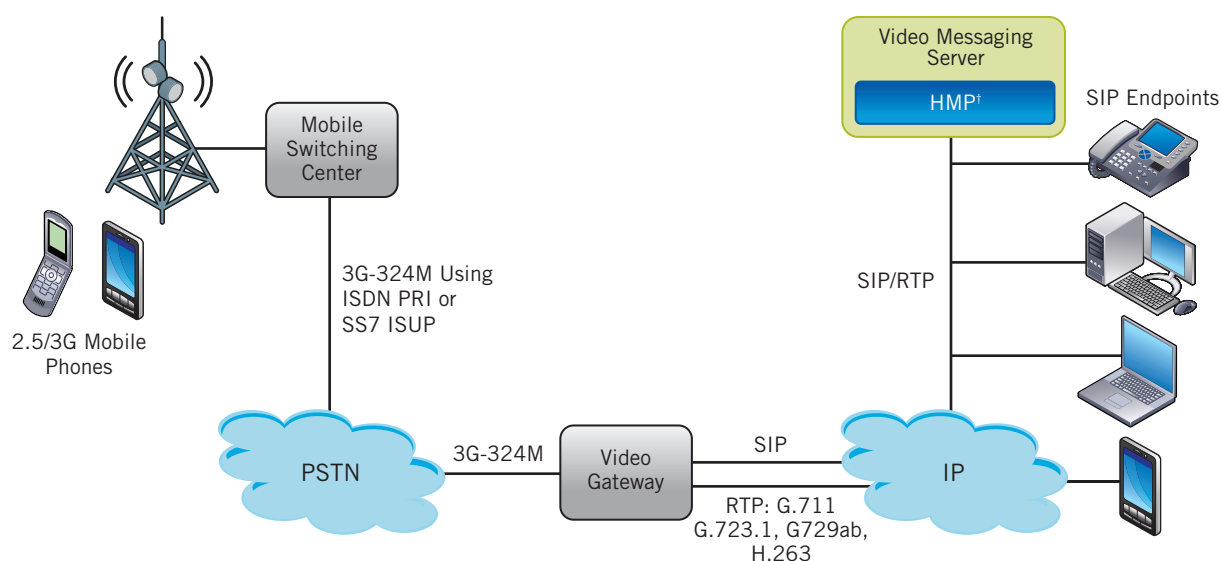
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In this converged architecture, the application can support IP and TDM trunking, as well as drive IP phones or softphones, all from a single platform. This ability delivers a remarkable level of deployment flexibility, and the opportunity to extend current Dialogic technology-based applications into additional market segments.

Figure 4 illustrates how PowerMedia HMP 3.0 can be deployed in the IP network to deliver video messaging or services to 3G wireless users.



† Dialogic® PowerMedia™ Host Media Processing Software Release 3.0WIN

Figure 4. Dialogic® PowerMedia™ Host Media Processing Software Release 3.0 Win Delivering Video in a 3G Network

PowerMedia HMP 3.0 runs on the video messaging server, providing the play, record, playback, and synchronization required to display video on 3G wireless, IP soft clients, and IP video phones. PowerMedia HMP 3.0 requires a separate video gateway to provide 3G-324M termination and transcoding as the video traffic crosses into the IP network.

## Software Support

PowerMedia HMP 3.0 is a standalone product. It requires only Windows® 7, Windows® Server 2008, Windows® XP, Windows Server® 2003, Windows® Server Web Edition SP2, or Windows Server® 2003 R2 Enterprise Edition to function.

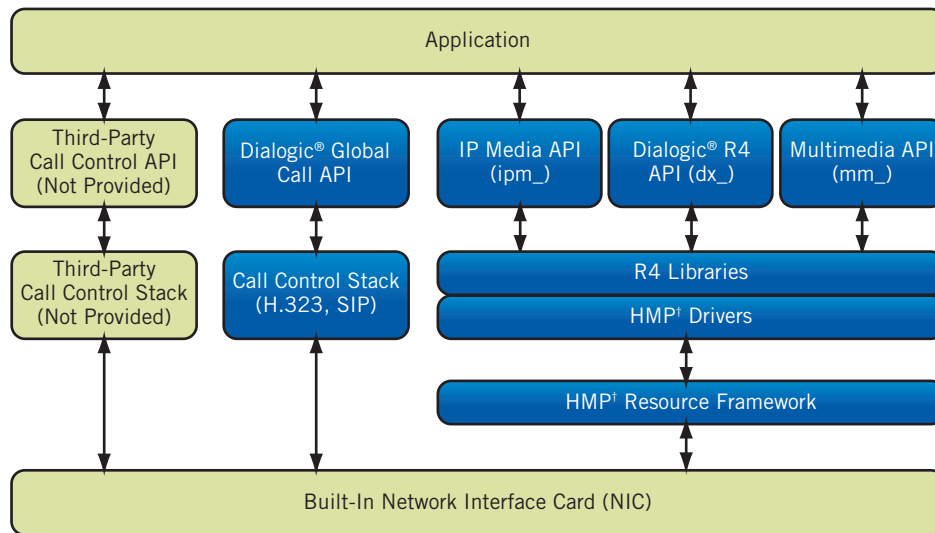
## Functional Description

Figure 5 shows a block diagram for a local implementation of PowerMedia HMP 3.0 where the application and HMP reside on the same server. Figure 6 shows a remote implementation where the media server and the application reside on separate servers and communicate using MSML.

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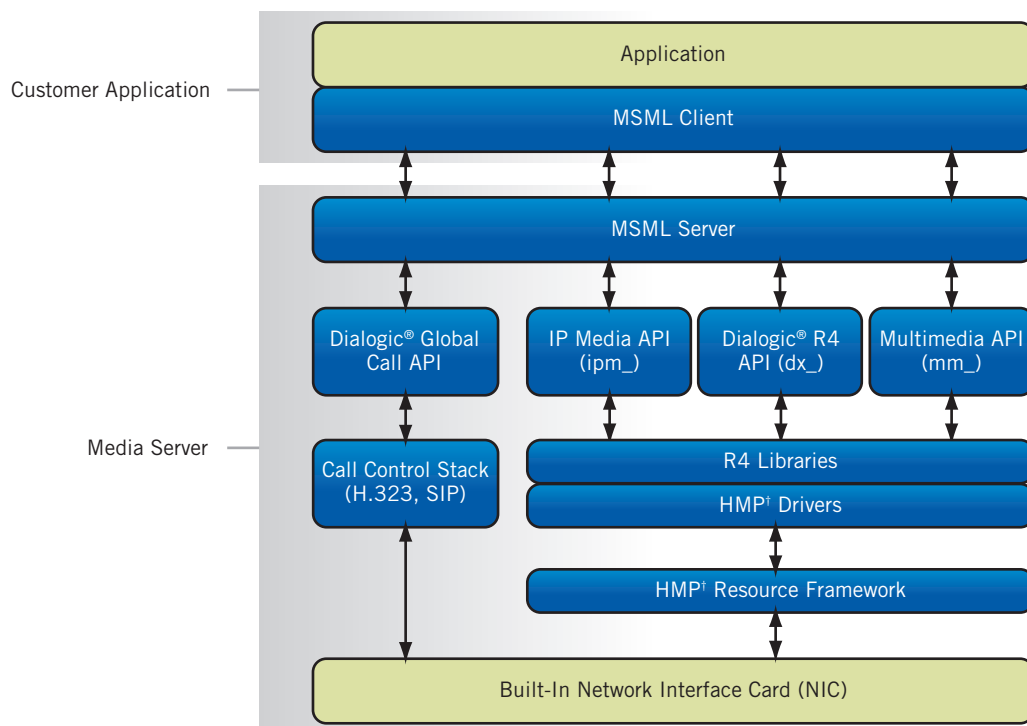
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<sup>†</sup> Dialogic® PowerMedia™ Host Media Processing Software Release 3.0WIN

Figure 5. Local Implementation



<sup>†</sup> Dialogic® PowerMedia™ Host Media Processing Software Release 3.0WIN

Figure 6. Remote Implementation



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The application deployed on top of PowerMedia HMP 3.0 is written to the same R4 API and Global Call API that are used for Dialogic® telephony boards with DM3 architecture. In fact, for an application there is no noticeable difference between using a Dialogic board with DM3 architecture or PowerMedia HMP 3.0.

For media processing, the application will use the R4 API.

For call control, there are two options:

1. The H.323 or SIP stacks, distributed as part of the PowerMedia HMP 3.0 product, and the Global Call API simplify development and help in the migration of existing applications.
2. A third-party call or connection control protocol stack (SIP, MGCP, H.248) and the IP media library provide the functionality necessary to integrate the third-party call control stack with R4 APIs.

The PowerMedia HMP 3.0 APIs are enabled through the same libraries and drivers as Dialogic® telephony boards with DM3 architecture. The drivers sit on top of the PowerMedia HMP 3.0 resource framework, which is the core of the product. The framework implements media processing algorithms such as DTMF detection and generation, media stream mixing, etc. The algorithms, in turn, are aggregated into resources (such as player and recorder) in the same way as they are on Dialogic telephony boards with DM3 architecture.

The call control stacks and the resource framework sit on top of the standard network drivers and the NIC that are built into the computer.

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## Technical Specifications

### Network Interface

IP over a standard Ethernet connection

### Call Control over IP

Call control protocol

SIP

H.323

H.450.2

Integration with third-party call and connection control stacks

Provided via the IP media library

### Media Streaming over IP

Protocols

RTP

Encoding formats: G.711 A-law,  $\mu$ -law 8-bit 8K (64 kbps); frame sizes 10 ms, 20 ms, and 30 ms

Secure RTP (SRTP)

G.723.1

G.726

G.729a

G.729b

G.729ab

QoS

Alarms

Frames per packet control

Packet loss concealment

RTP/RTCP timeouts

Ability to modify the default TOS byte setting

Tone generation and detection

RFC 2833

H.245 UII

Media control over RTP

Programmatic control of inbound RTP stream gain and outbound RTP stream volume

### API Support

Call control

Global Call over H.323, SIP, H.450.2

Third-party stack integrated via IP Media Library

Security

Transport Layer Security (TLS)

Remote control of media server

*Media Sessions Markup Language (MSML)*, Internet Engineering Task Force (IETF), draft-melanchuk-sipping-msml-06, October 21, 2005

Voice processing

R4 voice (dx\_)

Virtual CT Bus routing

R4 routing (sc\_)

Conferencing

R4 conferencing (cnf\_)

R4 conferencing (dcb\_)

Fax

R4 fax (fx\_)

Continuous speech processing

R4 EC (ec\_)

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## Technical Specifications *(continued)*

IP media (QoS, etc.) R4 IPML (ipm\_)

Event reporting, device enumeration, and other related functionality R4 SRL (sr\_)

Multimedia R4 multimedia (mm\_)

### Channel Density

A maximum of 1000 concurrent user sessions per system of voice or 580 conferencing using G.711. A wide variety of other configurations that combine RTP streaming, voice, fax, speech, multimedia, and conferencing resources are also available, and the maximum number of concurrent sessions per system is configuration-dependent.

### Voice Processing Features

Features supported	Play, record, and tone generation and detection
Play	Volume control and index play
Record	AGC
Audio file formats for play/record	OKI ADPCM 24K, 32K G.711 A-law, $\mu$ -law 48K, 64K All of the above in Wave format Linear PCM 8b 11K (Wave format only) Linear PCM 8b 8K
Tone generation and detection	In-band DTMF generation and detection User-defined global tone generation and detection (GTG, GTD) RFC 2833 tone generation and detection H.245 UII tone generation and detection

### Video Processing Features

Features supported	Play, record
Play	Playback of voice and video or voice only Synchronization of voice and video
Record	Store synchronized voice and video to a file
Video stream format	H.263 (profile 0 level 30)
Picture sizes	CIF, QCIF, sub-QCIF
File formats	Proprietary video file format Audio file (.pcm): Linear PCM 16b 8K Video file (.vid): H.263 bit-stream data
Offline conversion tool	Convert AVI Type-2 (DVSD or DV25) files (PAL or NTSC) <b>to</b> proprietary format Convert proprietary format <b>to and from</b> 3GP Release 4 file format (.3gp)
Tone generation and detection	RFC 2833 In-band

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## Technical Specifications *(continued)*

### Conferencing Features

Total parties per server	580
Advanced features	N-way summing Coach/pupil mode DTMF detection DTMF clamping Active talker notification

### Supported Dialogic® HMP Interface Boards (DNI Boards)

Network Interface	Dialogic® DNI/300TEPHMP Digital Network Interface Board – one span with 24 T1 or 30 E1 channels Dialogic® DNI/310TEPHMPQ Digital Network Interface Board – one span with 24 T1 or 30 E1 channels Dialogic® DNI/601TEPHMP Digital Network Interface Board – two span with 48 T1 or 60 E1 channels Dialogic® DNI/610TEPHMPQ Digital Network Interface Board – two span with 48 T1 or 60 E1 channels Dialogic® DNI/1200TEPHMP Digital Network Interface Board – four span with 96 T1 or 120 E1 channels Dialogic® DNI/1210TEPHMPQ Digital Network Interface Board – four span with 120 T1 or 120 E1 channels Dialogic® DNI/2410TEPHMPQ Digital Network Interface Board – eight span with 192 T1 or 240 E1 channels
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### Licensing

Enabling method	Node-locked using FlexNet licensing utility
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## Hardware System Requirements

### Memory Requirements

1000 MB recommended

### System Requirements

IP-only solutions — Single- or dual-processor platform with an Ethernet NIC (Note: 100BaseT is recommended)

Converged solutions — Single- or dual-processor PIC platform with an Ethernet NIC and digital interface boards for HMP from Dialogic

### Processors Supported

Pentium III, Pentium 4, Pentium M, Pentium Extreme Edition, Celeron M, and single- and dual-core Intel Xeon processor-based platforms

PowerMedia HMP 3.0 provides a very high level of flexibility in choosing media processing configurations, making it impossible 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 Requirements

Windows® 7, Windows Server® 2008, Windows® XP (including Service Pack 3), Windows Server® 2003, Windows® 2003 Web Edition SP2, or Windows Server® 2003 R2 Enterprise Edition.

[www.dialogic.com](http://www.dialogic.com)

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