# Dialogic® PowerMedia® HMP for Windows

## Host Media Processing Software for Voice IP Solutions

**Dialogic® PowerMedia® HMP for Windows (HMP Windows)** is scalable, feature-rich media processing software for building innovative and cost-effective voice solutions suitable for enterprise or service provider deployment. HMP Windows can enable basic SIP or hybrid connectivity, audio play/record, transcoding, automated interactive voice response (IVR), and high-end live interactions, such as contact centers and audio conferencing or speech portals. With HMP Windows, 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 to create completely new interactive applications.

HMP Windows extends the capabilities of software-based IP media processing with security features that scale up to 5,000 SIP signaling sessions or 2,000 concurrent voice user sessions per system. HMP Windows 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 HMP Interface Boards* allows PSTN connectivity in a "single-box" solution with gateway functionality. Programming interfaces for HMP Windows include Dialogic® R4 and Global Call APIs for low-level media and signaling control.

| Features | Benefits |
|---|---|
| **Supports up to 2,000 channels of G.711 RTP with voice play or record on COTS servers** | Allows high-density media processing on COTS servers |
| **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 |
| **VMware ESXi virtualization support** | Promotes low CAPEX, and deployment of communications solutions on virtual machines |
| **Security support of SRTP and SIP TLS** | Provides encryption protection at the media layer with SRTP and at the signaling layer with TLS |
| **Support for local Dialogic® Global Call API for Call Control and Dialogic® R4 API for Media** | R4 and Global Call APIs allow easy migration of existing applications by providing compatibility at the API level with other telecom products using these APIs |
| **Voice features, such as wideband audio codec support (G.722, G.722.2 and EVS), 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 AMR-WB and Enhanced Voice Services (EVS) media for VoLTE IMS. |
| **Conferencing features include coaching, active talker notification, tone clamping, echo cancellation, and scalability** | Facilitates development of advanced conferencing applications |

*\* HMP Interface Boards were formerly sold by Dialogic and are now sold by Sangoma Technologies*

## Applications

- IVR and speech-enabled IVR
- Voice announcement server
- Voicemail server
- Unified messaging (voice, speech, fax)
- Audio conferencing server
- Prepaid/debit card services
- Contact center
- Outbound dialing
- Speech-enabled applications
- Transcoding server (TDM-IP, IP-IP, voice)
- IP media gateways
- TDM/IP gateways
- Converged PBX and IP-PBX

## How PowerMedia HMP Windows Works

HMP Windows performs media processing tasks on general-purpose processors running on common server architecture without requiring specialized hardware. HMP Windows 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 Windows is complimented by support for other products and technologies, including:

- **Dialogic® Global Call and R4 APIs** — enables existing applications written for other products using these APIs to move easily from TDM to IP and to HMP Windows
- **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
- **HMP Interface Boards** — enables PSTN connectivity in a variety of densities

## Security Features

HMP Windows supports 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.

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

HMP Windows uses the network interface in host server platforms to enable IP connectivity, and supports the IETF RFC 3261 SIP standard for voice call session establishment.

When combined with HMP Interface Boards for PSTN connectivity, HMP Windows provides a cost-effective platform for building TDM solutions, and then later migrating them easily to hybrid platforms, and ultimately to pure-IP deployments. Hybrid platforms can be deployed as IP media gateways, enhanced service platforms, or converged PBX solutions.

To help customers reduce their time-to-market and migrate existing applications to IP, HMP Windows supports two direct APIs: the Dialogic® R4 API for media processing (i.e., RTP) and the Dialogic® Global Call API for call control (i.e., SIP call control). Customers with applications supporting these APIs can easily migrate from a board-based platform to a platform based on HMP Windows.

## 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 Windows supports RTP/RTCP protocols for streaming over IP using G.711, G.726, G.723.1, G.729, GSM-FR, GSM-EFR, AMR-NB, AMR-WB (G.722.2), G.722, and Enhanced Voice Services (EVS).

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

- Threshold alarms
- Packet loss reduction/concealment
- RTP and RTCP timeouts

- Type of Service (ToS)/DiffServ byte setting
- Detection and reporting of timeouts in RTP and RTCP sessions to applications

## Conferencing

Audio conferencing features in HMP Windows facilitate the development of advanced conferencing applications. These features include:

- Coaching and Whisper Mode
- Active talker notification

- Tone clamping
- Echo cancellation

## Other Notable Features

HMP Windows also includes the following notable features:

- Support for HD voice messaging using wideband audio codecs G.722, AMR-WB (G.722.2), and EVS
- 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 allowing integration with automatic speech recognition (ASR) engines
- Support for fax send and receive over IP (T.38 and G.711 fax pass-through) and PSTN (V.17) networks

  (**Note**: HMP fax functionality is provided for low capacity fax applications, such as unified communications, see release update for restrictions)

## Configurations

Applications developed on HMP Windows often serve as an 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 Windows include network announcement, IVR, voicemail, and conferencing server.

### Service Provider Configuration

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

An IP-PSTN gateway terminates PSTN connections. A softswitch manages 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 IP media server, IP endpoints, and IP-PSTN gateway when to establish or drop connections.
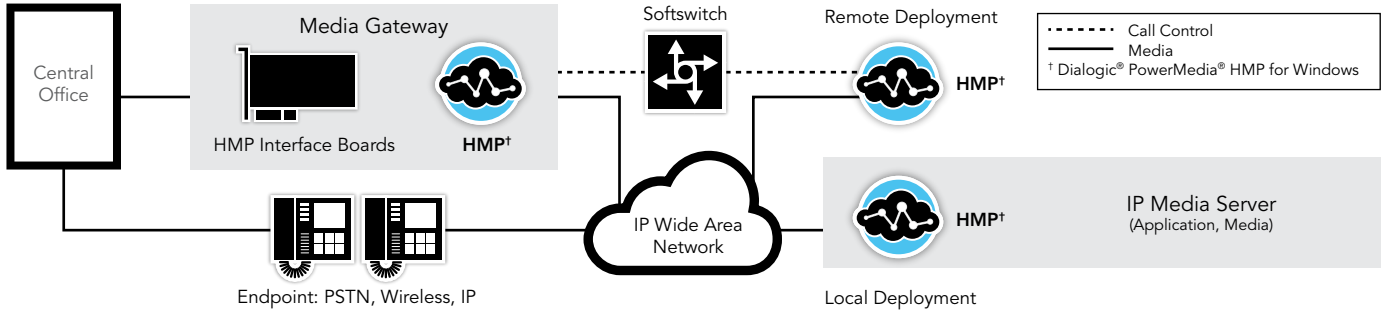
*Figure 1. Dialogic® PowerMedia® HMP for Windows in a Service Provider Environment*

## Enterprise Configurations

Figure 2 shows an example of how HMP Windows can be deployed in a media gateway or a converged PBX in an enterprise environment for IVR, auto attendant, voicemail, unified messaging, speech, or conferencing services.
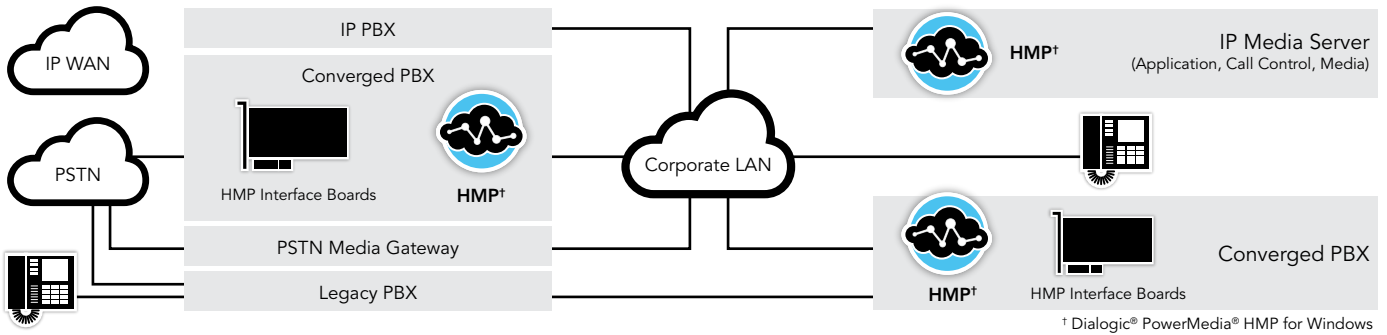


*Figure 2. Dialogic® PowerMedia® HMP for Windows in an Enterprise Environment*

Figure 3 provides a more detailed architectural view of the converged PBX element shown in Figure 2. HMP Windows presents the media and API to the application. It also controls the HMP Interface Boards.
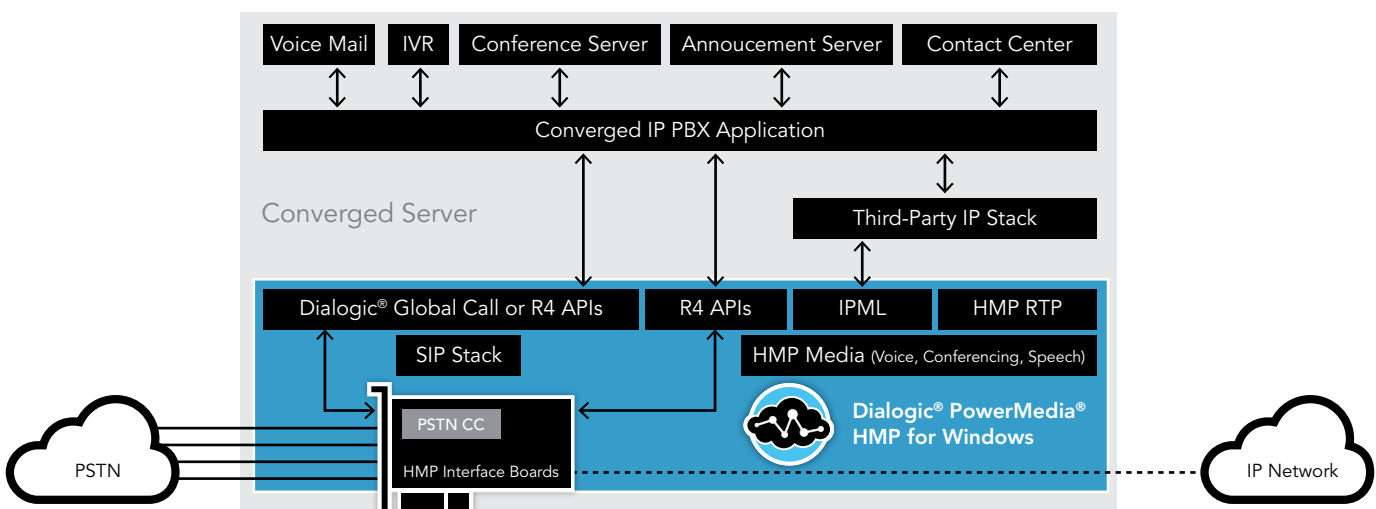


*Figure 3. Dialogic® PowerMedia® HMP for Windows in a Converged PBX*

In the converged architecture of Figure 3, 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 applications based on HMP Interface Boards into additional market segments.

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## Technical Specifications

### Channel Density

Using G.711, a maximum of 2,000 concurrent user sessions per system of voice, or 580 conferencing. 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.

### Network Interface

IP over a network connection

Multiple network interfaces (for signaling or media)

### Call Control over IP and TDM

| | |
|---|---|
| Protocols | SIP |
| | Transport Layer Security (TLS) |
| | Dialogic® DSI SIGTRAN SS7 Stacks or TDM Dialogic® DSI SS7 Stack running on an HMP Interface Board with combined SS7 / media, or the Dialogic® DSI SS7 Boards |
| | 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 |
| | Secure RTP (SRTP) |
| Audio codecs | G.711 A-Law, μ-law (10ms, 20ms, 30ms) |
| | G.722 |
| | G.723.1 |
| | G.726 |
| | G.729a, G.729b, G.729ab |
| | GSM-FR |
| | GSM-EFR |
| | AMR-NB |
| | AMR-WB (G.722.2) |
| | AMR2 (AMR-NB and AMR-WB change mode restrictions) |
| | Enhanced Voice Services (EVS) |
| QoS | Alarms |
| | Frames per packet control |
| | RTP/RTCP timeouts |
| | Ability to modify the default DiffServ/ToS byte setting |
| Tone generation and detection | In-band DTMF |
| | User-defined global tone generation and detection (GTG, GTD) |
| | RFC 2833/4733 |
| Media control over RTP | Programmatic control of inbound RTP stream gain and outbound RTP stream volume |

# Dialogic® PowerMedia® HMP for Windows
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## 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 (wav and pcm) |
| | Linear PCM 16b 16K (wav and pcm) |
| | AMR Codec Formats (RFC 4867): AMR-NB (.amr) and AMR-WB (.amb) |
| | EVS Codec Format (.evs) as specified by TS26.445 |

## Conferencing Features

| | |
|---|---|
| Total parties per server | 580 |
| Advanced features | N-way summing |
| | Coach/pupil mode |
| | DTMF detection |
| | DTMF clamping |
| | Active talker notification |
| | Automatic gain control (AGC) |
| | Echo cancellation (EC) |

## 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_) |
| Conferencing | R4 conferencing (cnf_) |
| | R4 conferencing (dcb_) |
| Continuous Speech Processing | R4 speech (ec_) |
| Fax | R4 fax (fx_) |
| Multimedia | R4 multimedia (mm_) |
| Virtual CT Bus routing | R4 routing (sc_) |
| System Event reporting | R4 SRL (sr_) |

## Virtualization Support

| | |
|---|---|
| Hypervisors | VMWare ESXi 5.x and 6.x |
| | Kernel Virtual Machine (KVM) |

## Licensing

| | |
|---|---|
| Enabling methods | Node-locked |

# Dialogic® PowerMedia® HMP for Windows
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## System Requirements

**Hardware**

| | |
|---|---|
| Processor | Intel and AMD processors, including multi-processor, multi-core versions |
| Memory | 12 GB or above recommended for voice applications; 16 GB or above recommended for high density applications |
| Disk Space | 40 GB required for full installation of HMP Windows |

**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 HMP Interface Boards or gateways

HMP Windows 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 Dialogic account manager for help in configuring your system and for detailed system configuration information.

## Operating System Requirements

HMP Windows is a standalone product and can function with the following (64bit-version only) operating systems:

• Windows Server 2019 (64-bit version)

• Windows Server 2016 (64-bit version)

• Windows Server 2012 R2 (64-bit version)

• Windows Server 2012 (64-bit version)

• Windows Server 2008 R2 (64-bit version)

• Windows Server 2008 (64-bit version)

• Windows 10 Enterprise (64-bit version)

## 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 Windows 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 Windows, contact the VoiceAge Corporation at licensing@voiceage.com.

**Dialogic**