Dialogic® PowerMedia™ Host Media Processing Software Release 5.0

Distributed Voice and Video Processing

Datasheet

Dialogic® PowerMedia™ Host Media Processing Software Release 5.0 (PowerMedia HMP 5.0) is distributed multimedia processing software for building innovative and cost-effective voice and video solutions suitable for enterprise or service provider deployments. PowerMedia HMP 5.0 supplies advanced video (H.264) and HD voice (G.722 and G.722.2) for Windows-based applications via the Dialogic® Remote R4 API, which interfaces with a Linux-based resource server. HMP 5.0 also supports virtualization and runs on general-purpose servers without the need for specialized hardware, allowing it to provide multimedia processing at a significantly reduced total cost of ownership and with exceptional efficiency and flexibility. HMP 5.0 has the ability to scale up to 5000 simultaneous SIP connections or 1500 voice sessions.

PowerMedia HMP 5.0 enables SIP connectivity, audio and video play/record, multimedia streaming, transcoding, automated interactive audio and video solutions (IVR and IVVR), and high-end live interaction applications, such as contact centers and video portals. Because of Dialogic's decades of experience and continued support for the Dialogic® Global Call and R4 APIs, HMP 5.0 allows developers to transition many existing applications to software-based IP-enabled solutions or create completely new mobile interactivity and other multimedia applications. In addition, HMP 5.0 incorporates patent-pending Dialogic® technology that enhances video quality through improved bit-rate control.

Features	Benefits
Multimedia features, such as video streaming, video transcoding (H.264, MPEG-4, and H.263), and video resizing	Enables multimedia solutions, such as video portals and video-enabled contact centers
Voice features, such as wideband audio coder support, play/record, DTMF detection, and Call Progress Analysis	Enables advanced voice applications with PSTN and IP endpoints that require support for a wide array of coders
Additive licensing	Allows easy density and feature upgrades
Software-based engine that runs on standard servers with scalability and density dependent on host processor capacity and application demands	Can reduce total cost of ownership significantly, providing exceptional efficiency and flexibility while supporting thousands of concurrent sessions
Virtualization support	Allows single server deployment
Web-based management	Provides easy configuration and management through a web interface
Secure RTP (SRTP) and SIP Transport Layer Security (TLS)	Enables encryption security at the media layer with SRTP and at the signaling layer with TLS

Note: Service updates that add support for Linux applications in the Remote R4 API, continuous presence multimedia conferencing (applications up to 2000 sessions), IPv6, and fax (T.38, G.711 pass-through, and V.17) are planned.

Dialogic® PowerMedia™ Host Media Processing Software Release 5.0

Distributed Voice and Video Processing

Datasheet

Applications

Mobile Interactivity

- Personalization
  - — Video Ring Tones and CRBT
  - — Video, Voice, and Text SMS
  - — Video and Voice Chat
  - — Video Wallpapers
  - — Video and Voice Messaging
  - — Video Mail
- Entertainment
  - — Video Portal
  - — Gaming
  - — Integration of Video and Voice with Social Networking
  - — Televoting
  - — Mass Calling
- Mobile Commerce
  - — Mobile Banking
  - — Mobile Payments
- Information
  - — Stock Quotes
  - — News
  - — Video Sharing
  - — Video Portal
- IVVR and IVR
- Video Surveillance

Enterprise

- Contact Center
  - — Switching
  - — ACD
  - — IVR
- Unified Communications
  - — Messaging (Voice, Video)
  - — IP-PBX
  - — Multimedia Enablement
- Data Center Infrastructure
  - — Transcoding (IP-IP, Voice, Video)

Advanced Distributed Architecture

PowerMedia HMP 5.0 is the first Dialogic® PowerMedia™ Software release with an advanced distributed architecture. Applications are now run on a remote client server while media processing takes place on a dedicated Linux-based resource server. An immediate benefit of this architecture is that it brings to Windows-based applications many of the multimedia capabilities that were previously only available in Linux versions of Dialogic's HMP software. A distributed architecture also adds greater flexibility, and HMP 5.0 can be run on two separate physical servers, or on a single server because of HMP 5.0's support for virtualization. Applications written for Dialogic® PowerMedia™ Host Media Processing Software Release 3.0WIN will run on HMP 5.0 with minimal changes. New features, such as video and HD voice support, can be added and used in new Windows-based applications.

Figure 1 provides a schematic view of the distributed architecture of PowerMedia HMP 5.0. For clarity, the Remote Client and Resource Server are shown separately, but can be located in a single physical server when virtualization is used as in Figures 3 and 4.

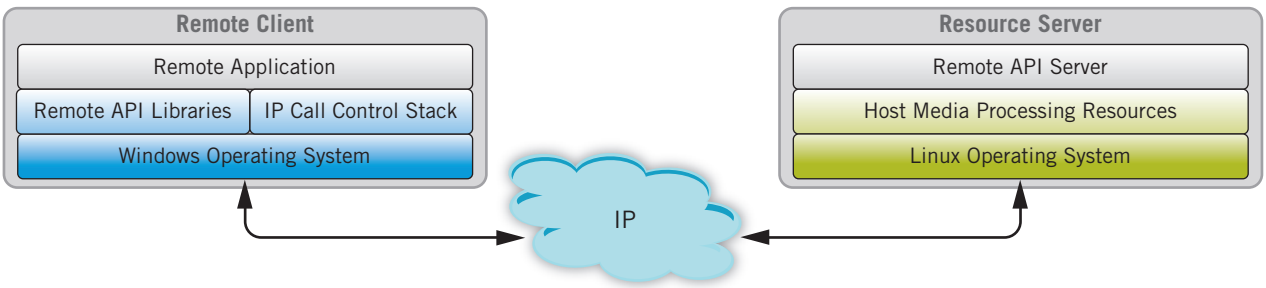

Figure 1. Distributed Architecture

Web-Based Configuration and Management

Release 5.0 brings web-based configuration and management to Dialogic® PowerMedia™ Host Media Processing Software. The Resource Server in PowerMedia HMP 5.0 is delivered as an ISO image for easy installation and includes the Linux operating system for added convenience. An expert-level understanding of the Linux operating system is not required to install, configure, and manage HMP 5.0.

Figure 2 shows a screen shot of the new web-based interface.

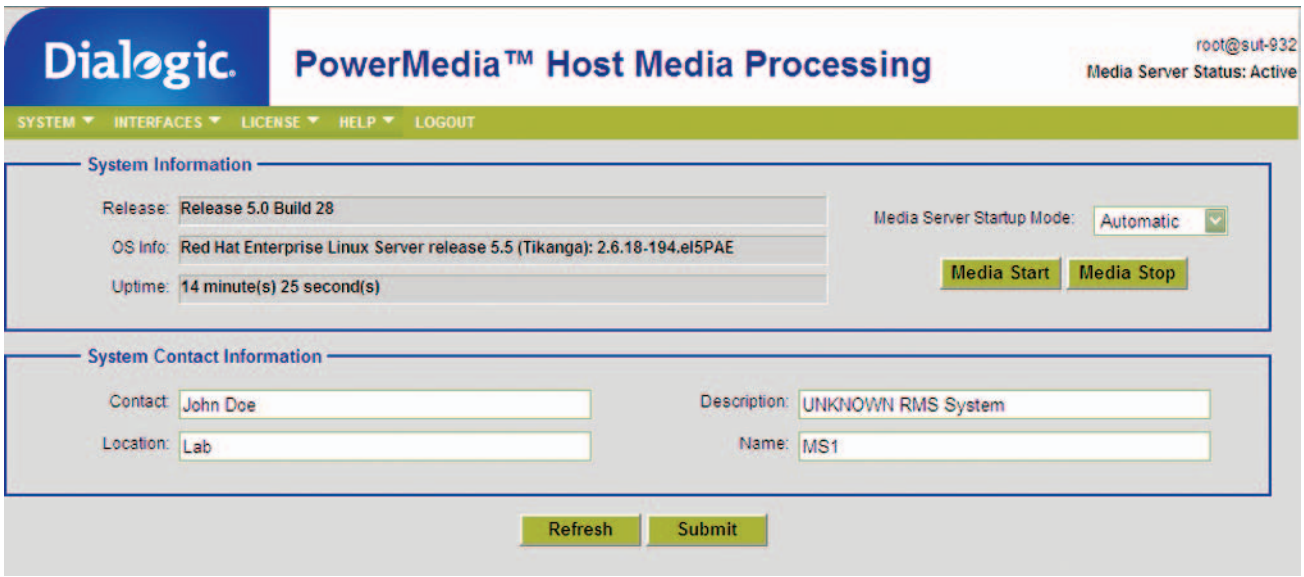

Figure 2. Web-Based Interface for Dialogic® PowerMedia™ Host Media Software Release 5.0

Multimedia Features

PowerMedia HMP 5.0 supports H.264, MPEG-4, and H.263 video transcoding and video transrating for building applications such as video portals and video streaming servers of various densities. HMP 5.0 also supports video streaming, video transcoding, and audio transcoding (AMR-NB) capabilities for 3G applications.

In addition, PowerMedia HMP 5.0 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 network endpoints
- **Enhanced DVR controls** such as pause, resume, and fast forward during video playback operations

Security Features

PowerMedia HMP 5.0 includes security features using Secure RTP (SRTP) and SIP Transport Layer Security (TLS) to encrypt media and signaling information and keep media transactions secure. Because 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.

Compatibility

To help customers accelerate their time-to-market and easily migrate existing board-based applications using the Dialogic® DM3 architecture to IP, PowerMedia HMP 5.0 supports the Dialogic® R4 API (remote version) for media processing and the Dialogic® Global Call API for call control, both of which execute locally on the Remote Client. The use of these APIs can also facilitate quick application development and easy migration from HMP 3.0WIN to HMP 5.0.

Interoperability

To provide the interoperability needed for high-quality media streaming with a wide variety of industry-standard IP gateways and endpoints, PowerMedia HMP 5.0 supports RTP and RTCP protocols for streaming over IP using G.711 (frame size of 10 ms, 20 ms, or 30 ms), G.726, G.723.1, G.729ab, AMR-NB, and AMR-WB (G.722.2) and G.722.

To improve Quality of Service (QoS) and reduce latency, PowerMedia HMP 5.0 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, PowerMedia HMP 5.0 supports High Resolution RTCP reports for applications that require extended data assessments of VoIP delivery within the network.

Other Important Features

PowerMedia HMP 5.0 also includes the following important features:

- Support for HD voice via wideband audio coders (G.722 and G.722.2) for messaging
- Ability to use Dialogic's IP call control API or integrate another IP call control protocol stack
- 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, 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 mechanisms
- Support for outbound call progress analysis with positive voice detection and positive answering machine detection algorithms
- Support for multi-CPU, multi-core configurations, and hyper-threading

Configurations

An IP media server is the endpoint that terminates an IP connection in a network, and it is deployed differently in service provider and enterprise environments. Applications that can be developed with PowerMedia HMP 5.0 in either environment include video transcoding, video portal, network announcements, IVR, and voice mail.

The following sections discuss example deployment configurations in two different environments.

Service Provider Configuration

Figure 3 illustrates an example of how an IP media server based on PowerMedia HMP 5.0 can be deployed in a service provider environment to deliver messaging, IVR, announcements, voice mail, and many other applications. PowerMedia HMP 5.0 also enables video versions of many of these applications.

An IP-PSTN or 3G-324M video gateway can provide connections for PowerMedia HMP 5.0 applications. Because an application using HMP 5.0 controls connections with SIP call control while voice and video use RTP, HMP 5.0 can provide service for a variety of endpoints, including traditional PSTN phones, 3G-324M video-capable mobile handsets, and 3G/4G smartphones with SIP video clients.

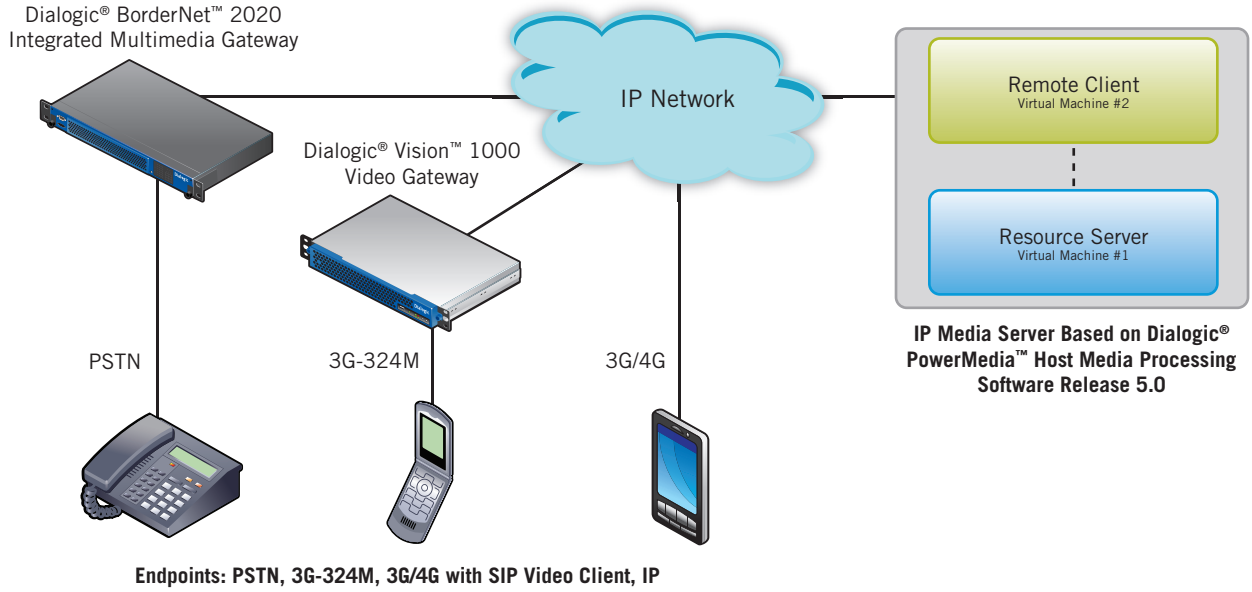

Figure 3. Dialogic® PowerMedia™ Host Media Processing Software Release 5.0 in a Service Provider Environment

Enterprise Configurations

Figure 4 shows an example of how PowerMedia HMP 5.0 can be deployed in an enterprise environment for IVR, video portal, auto attendant, voice mail, unified messaging services, and many other applications.

An IP-PSTN gateway terminates PSTN connections and provides IP connection to PowerMedia HMP 5.0 applications. Because an application using HMP 5.0 controls connections with SIP call control while voice and video use RTP, HMP 5.0 can provide service for traditional PSTN phones and IP endpoints with HD voice and video capability.

Dialogic® PowerMedia™ Host Media Processing Software Release 5.0

Distributed Voice and Video Processing

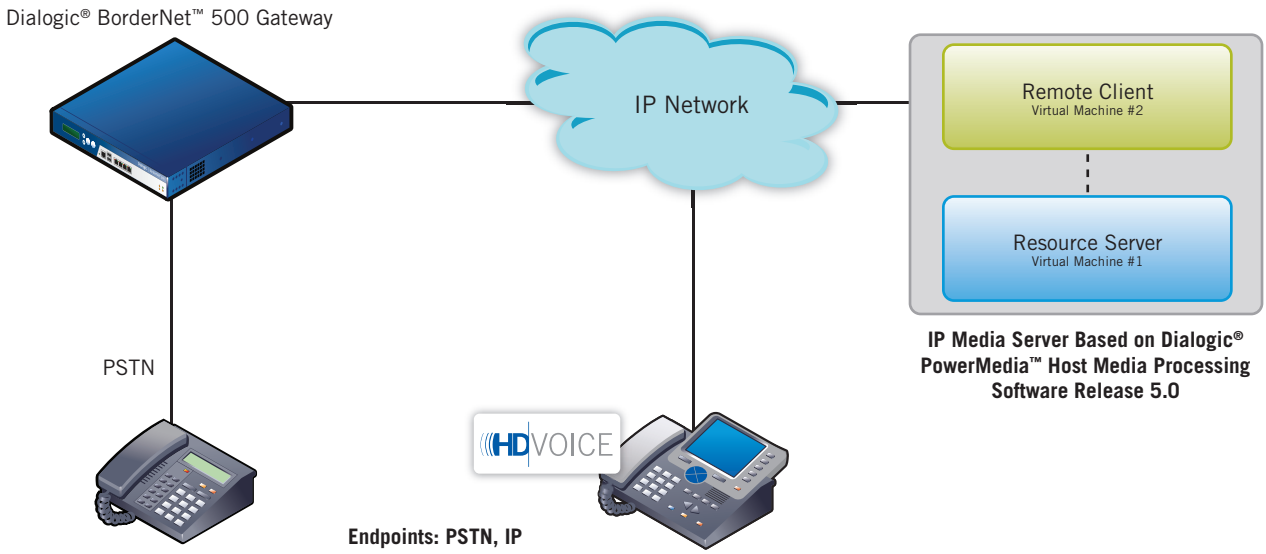

Figure 4. Dialogic® PowerMedia™ Host Media Processing Software Release 5.0 in an Enterprise Environment

Dialogic® PowerMedia™ Host Media Processing Software Release 5.0

Distributed Voice and Video Processing

Technical Specifications

Network Interface

	IP over a standard Ethernet connection

Call Control over IP

Protocols	SIP Transport Layer Security Integration with third-party call and connection control stacks using the Dialogic® IP Media Library

Media Streaming over IP

Protocols	IPv4 RTP RTCP Secure RTP NbUP over IP (H.223/3G-324M, G.711 5ms/20ms, AMR-NB)
Coders	G.711u/a G.722 G.723.1 G.726 G.729a G.729b AMR-NB AMR-WB (G.722.2)
QoS	Alarms Frames per packet control RTP/RTCP timeouts
Tone generation and detection	RFC 2833
Media control over RTP	Programmatic control of inbound RTP stream gain and outbound RTP stream volume

API Support

Multimedia	MM (mm_)
Call control	Dialogic® Global Call API for SIP Third-party stack integrated via Dialogic® IP Media Library
Security	Transport Layer Security (TLS) for SIP messages Secure RTP
Voice processing	R4 voice (dx_)
IP media (QoS, etc.)	R4 IPML (ipm_)
Event reporting, device enumeration, and other related functionality	R4 SRL (sr_)

Technical Specifications *(continued)*

Channel Density

Number of concurrent user sessions depends on the host processor and the application in use. Dialogic tests the capacities of new processors, and current density test results are available on the Dialogic website. Typically, thousands of concurrent sessions with G.711 are supported.

Video Processing Features

Features supported	Play, Record I-frame update (video fast update or VFU) Video transcoding Stream control (pause, resume, fast forward, rewind)
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 image formats	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
Video frame rates	30, 15, 10, or 6 frames per second
Multimedia file formats	Proprietary format Audio file (.wav/.pcm): Linear PCM 16b 8K Audio file (.wav/.pcm): Linear PCM 16b 16K Audio file (.aud): HMP native codec format (all supported codecs) Video file (.vid); HMP native codec format (H.263 bit-stream data; H.264 bit stream data; MPEG-4 bit-stream data) Multimedia file (.3gp): MPEG-4/AMR-NB Image file (.jpeg/.yuv)
Video stream format	H.263, H.263+, H.263++ (Baseline profile up to level 30) H.264 (Baseline profile levels 1, 1b, 1.1, 1.2, 1.3) MPEG-4 (Simple Profile levels 0, 1, 2, 3)

Voice Processing Features

Features supported	Play, record, and tone generation and detection
Play	Volume control and index play
Record	AGC

Technical Specifications *(continued)*

Audio file formats for play/record	OKI ADPCM 24 k, 32 k G.711 A-law, µ-law 48 k, 64 k All of the above in WAVE format Linear PCM 8b 11 k (WAVE format only) Linear PCM 8b 8 k GSM 13 k
Tone generation and detection	Inband DTMF generation and detection User-defined global tone generation and detection (GTG, GTD) RFC 2833 tone generation and detection
Licensing	
Enabling method	Node-locked using FlexNet licensing utility

System Requirements

Hardware

PowerMedia HMP 5.0 requires two general-purpose physical servers, which may be combined in a single physical server with virtualization.

Processor: Intel and AMD processors, including multi-core versions

Memory: 1 GB recommended for voice applications; 2 GB recommended for audio/video applications; 4 GB recommended for high-density applications

Disk Space: 500 MB required for full installation of PowerMedia HMP 5.0

System

IP-only solutions — Single- or dual-processor, single- or multi-core platform with an Ethernet NIC (**Note:** 1000Base-T recommended)

Note: PowerMedia HMP 5.0 provides a very high level of flexibility in choosing media processing configurations. Contact your local Dialogic sales representative for help in configuring your system and in obtaining detailed system information specific to your configuration.

Operating System Support

Two servers are required. One server, running Windows, provides an interface to a second core media and signaling resource server, running Linux, which supplies the host media processing resources needed to benefit from the rich feature set and powerful functionality of PowerMedia HMP 5.0.

Remote Client

- Windows Server 2008 R2, 64-bit version
- Windows Server 2008 (with Service Pack 2), 64-bit or 32-bit versions
- Windows 7, 64-bit or 32-bit versions

Resource Server

- CentOS 5 Update 4 or later, 32-bit version or 64-bit running in 32-bit compatibility mode
- Red Hat Enterprise Linux Release 5.0 Update 4 or later, 32-bit version or 64-bit running in 32-bit compatibility mode

Order Information

PowerMedia HMP 5.0 is available in individual resource licenses. The tables below are provided as a guide. For full details, contact your Dialogic account manager or Dialogic sales representative.

Obtaining Third-Party Licenses

Using the AMR-NB and/or AMR-WB resource in connection with a Dialogic® product described herein does not grant the right to practice the standard(s). To seek a patent license agreement to practice the standard(s), contact the VoiceAge Corporation at http://www.voiceage.com/licensing.php.

Individual Resources

Order Code	Type of Resource	Features
DMIPS10I50	IP Call Control	Provides call control stacks for SIP protocols
DMIPS10V50	Voice	Provides play with volume control, and record with AGC, DTMF, or user-defined tone detection and generation
DMIPS10NS50	Basic RTP Streaming	Provides a streaming digitized RTP or SRTP interface that enables hairpinning and is required for streams and for native play/record
DMIPS10R50	G.711, G.726 Coders	Provides the capability of transcoding the G.711 coder with 10 ms, 20 ms, and 30 ms frames. Requires a Basic RTP Streaming Resource.
DMIPS10E50	G.729, G.723 Coders	Adds the capability of transcoding a single channel using the G.723.1, G.729a, and G.729b coders. Requires a Basic RTP Streaming Resource.
DMIPS10G722Coder50	HD voice — G.722 Coder	Provides the capability of transcoding the G.722 coder
DMIPS10G722_2Coder50	HD voice — G.722.2 Coder	Provides the capability of transcoding the G.722.2 (AMR-WB) coder
DMIPS10AMR50	AMR-NB Coder	Provides AMR-NB coder capability
DMIPS10NP50	Native Play/Record	Provides audio only multimedia (native play/record). Requires a Basic RTP Streaming Resource.
DMIPS10M50	Multimedia	Provides audio and video resource for multimedia messaging; video format H.263 (Profile 0 level 10, 20, 30), MEPG-4 (Simple Profile levels 0, 1, 2, 3), and H.264 (Baseline profile levels 1, 1b, 1.1, 1.2, 1.3). Requires a Basic RTP Streaming Resource.
DMIPSLVL1VS50	Video streaming aggregate port	Provides 1 video streaming unit supporting up to Level 1 (H.263, MPEG-4, H.264 at CIF/QVGA) capability [includes 1 unit of Basic RTP and 1 unit of half duplex H.263, H.264, and MPEG-4 transcoding].
DMIPSLVL1VM50	Video messaging aggregate port	Provides 1 video messaging unit supporting up to Level 1 (H.263, MPEG4,H.264 at CIF/QVGA) capability [includes 1 unit of Basic RTP, 1 unit of multimedia (play/record), 1 unit of voice and 1 unit of half-duplex H.263, H.264, and MPEG-4 transcoding, and 1 unit of G.711, G.722 transcoding].
DMIPS10VM50	HD voice messaging aggregate port	1 HD voice messaging unit [includes 1 unit of Basic RTP, 1 unit of voice, 1 unit of audio-only multimedia (play/record), and 1 unit of G.711, G.722 voice transcoding].

Dialogic®

www.dialogic.com

Dialogic Inc
1504 McCarthy Boulevard
Milpitas, California 95035
USA

10/11 12679-01