DATASHEET

# Dialogic® PowerMedia® XMS

Dialogic's PowerMedia XMS is a highly scalable, software-only media server that enables standards-based, real-time multimedia communications solutions for IP Multimedia Subsystem (IMS), Service Provider, Enterprise, and WebRTC applications on premise or in the cloud. Built on 20+ years of software media processing experience, PowerMedia XMS is trusted by world-class service providers and large enterprises to power millions of rich media sessions.

With an extensive list of successful implementations that include Media Resource Function (MRF) for VoLTE, carrier hosted contact centers, enterprise communications, voice messaging, "mission critical" next-generation 911 services and financial communication systems, PowerMedia XMS has proven to be a key building block to new and innovative applications. When deployed with the Dialogic® PowerMedia® Media Resource Broker (MRB) software component for high availability and redundancy, PowerMedia XMS scales to meet growing service-provider and business requirements. The PowerMedia XMS media processing platform can be deployed as a composite Virtualized Network Function (VNF) to provide both MRF and MRB services in IMS, VoLTE, NGN and cloud environments, such as Amazon AWS.

| Features | Benefits |
|---|---|
| Highly scalable, software media server with advanced multimedia processing functionality with the PowerMedia Media Resource Broker (MRB) software component. | Facilitates the development and deployment of rich communication applications and services across Web, VoIP/SIP, Mobile and PSTN networks with a wide range of connected endpoints. By offloading difficult media handling requirements to PowerMedia XMS, service providers and developers can focus on unique aspects of their applications without the burden and cost associated with developing highly-scalable media expertise in-house. |
| Standards-compliant IMS MRF with full Voice over LTE (IR.92) and Video over LTE (IR.94) support | Conforming to the 3GPP IMS architectural specifications, PowerMedia XMS can be deployed as a Media Resource Function (MRF), providing key media processing capabilities that may be required by IMS-based services such as VoLTE and RCS. Additionally, its conformance to IMS specifications promotes compatibility between legacy telephony networks and evolving IP telecommunication standards. |
| Enable WebRTC applications with robust HD audio and video media support with IETF, 3GPP (incl. EVS, AMRNB and AMRWB) and W3C WebRTC codecs (incl. VP8, VP9 and Opus) | As new codecs are being introduced into the market, PowerMedia XMS can act as a transcoding gateway, providing interworking of a wide variety of audio and video codecs. PowerMedia XMS's software nature also means that new codec support can be rapidly added without changing physical DSPs or necessitating complicated firmware upgrades. |
| Support for Commercial-Off-The-Shelf (COTS), virtualization, cloud and Network Function Virtualization (NFV) deployment models | Reduces both OPEX and CAPEX by utilizing existing datacenter infrastructure and cloud services for deployment of dynamically scalable communication solutions. |
| Media control through open, and industry standards-based APIs | Energizes service provider and communication developers by leveraging industry-standard programmable APIs to rapidly add sophisticated media handling capabilities to their applications. |
| Web-based GUI and HTTP RESTful Management interface for media server management, control and monitoring | Intuitive, yet powerful operator console can reduce OPEX when deploying solutions by enabling the quick resolution of operation issues. The HTTP RESTful web management interface provides seamless integration with existing infrastructure for real-time monitoring, alarms, logging, KPI statistics and tracing. |
| Scalable licensing from ten to thousands of ports per server | The simple, flexible, and scalable licensing model allows paying only for the functionality your application needs and only when you need it. Applications can start with licenses for basic audio services and can later add HD voice or video capabilities when required by the application, thus providing significant CAPEX savings opportunities by allowing solutions to be scaled easily by software upgrade as demand grows. |

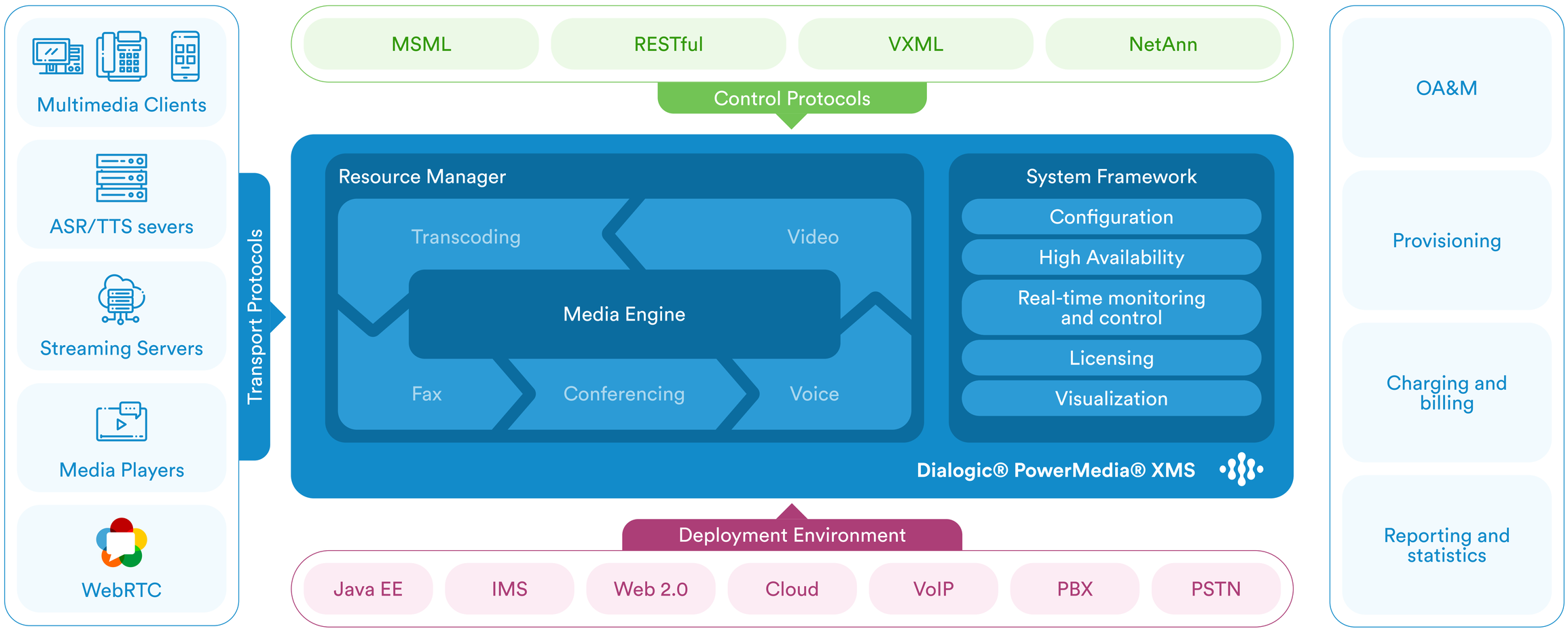
# Overview

PowerMedia XMS allows for rapid integration and development through open, and industry standard APIs, including MSML, VXML, and NetAnn, plus a Dialogic RESTful Call Control API. As a 100% software-based solution with Network Function Virtualization (NFV), PowerMedia XMS allows for installation on commercial off-the-shelf (COTS) servers, virtual machines, or public and private clouds.

PowerMedia XMS supports an extensive range of real-time media processing needs, including:

- Multi-party conferencing – low-latency mixing of audio and video, including HD voice and high-resolution video up to HD 1080p. Multi-point Control Unit (MCU) conferencing for group communications with the ability to adapt individual streams to optimize the experience for each user or Selective Forwarding Unit (SFU) conferencing for multimedia routing to benefit scalability in uniform environments
- Transcoding – any-to-any audio and video codec conversion for a wide-range of fixed, wireless, and web-oriented codecs, including transrating and transizing for video
- Media interworking – conversion of underlying transport protocols and encryption interworking, including support for WebRTC Media Gateway
- Recording/Secure Recording – flexible centralized audio and video recording for mixed conferences, or individual streams, including encrypted recording where the highest level of security is required for recording applications
- Stream processing – analyze, insert, and modify the audio or video stream for speech recognition, DTMF, video overlays, and much more
- Person-to-Machine – connect to computer-controlled interfaces, not just other people, for applications such as Interactive Voice (and Video) Response (IVR and IVVR) systems, and speech interaction

**Mobile and fixed-linve VAS for real-time multimedia communications**



# Technical Specifications

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| **Session Capacity** | Typical media sessions per server (specific per server results will depend on a variety of factors, including but not limited to deployment conditions, configurations, and equipment):<br>Audio — Up to 3000 IVR/Conferencing sessions or 1500 bridged call transcoding sessions<br>Video — Up to 1000 HD 720p sessions. Capacity depends on system specification, codec, resolution, frame rate, transcoding, etc.<br>When multiple servers are deployed with PowerMedia MRB, total scaling can achieve upwards of 150000 audio sessions and 50000 video sessions. |

## Signaling, Protocol, and Control Interfaces

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| **Control Standards/ Specifications/ Protocol Compatibility** | • SIP (RFC3261)<br>• SIP PreConditions (RFC3312, RFC4032)<br>• SIP DNS (RFC3263)<br>• SIP Global Session Identifier (RFC 7329)<br>• SIP TLS (RFC 5630)<br>• GSMA IR.92 for Voice over LTE (VoLTE)<br>• GSMA IR.94 for Video over LTE (ViLTE)<br>• 3GPP TS23.228 for IMS (Mr/Mr' and Cr interfaces)<br>• 3GPP TS26.114 for IMS media interaction<br>• WebRTC JavaScript client library integration<br>• MSRP for multimedia chat and RCS message services<br>• RTSP client support for streaming multimedia content from RTSP servers<br>• MRCP 2.0/v1.0 for connection to speech servers for Automatic Speech Recognition (ASR) or Text-to-Speech (TTS) - see "Third Party Speech Vendor Capability" section |
| **Media Protocols** | • IPv4, IPv6, and mixed-mode IPv4/IPv6 (Multiple-NIC support)<br>• 3GPP Mb (RTP) interface for IMS<br>• RTP, RTCP, RTCP-XR, RTCP-HR<br>• Secure SRTP: DTLS-SRTP (WebRTC), SDES-SRTP (VoIP)<br>• Secure RTCP (SRTCP)<br>• DiffServ/ToS Markings<br>• ICE Lite, Trickle ICE<br>• HTTP/HTTPS |
| **Media Control Interfaces** | • RESTful API - RESTful web services interface (over HTTP/HTTPs/Webhooks)<br>• MSML (RFC5707) – SIP with XML-based Media Server Markup Language<br>• VXML v2.1/v2.0 - W3C industry-standard XML interface for specifying interactive voice dialogs for IVR or speech enabled applications, including video support<br>• NetAnn (RFC4240) – Basic Network Media Services with SIP for announcements, dialogues, and simple conferences |

## Media and Coders

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| **Audio** | • Voice and HD Voice play/record<br>• Tone generation/detection (Inband DTMF, RFC2833/RFC4733 including RFC4734/RFC5244 tone events, Redundant RFC2833 packets)<br>• Call Progress Analysis (CPA) – customizable per environment<br>• Positive Voice Detection (PVD) and Positive Answering Machine Detection (PAMD) |

## Media and Coders

### Audio Codecs

Hardware: Intel Architecture-based server

- Narrowband codecs: G.711u/a, G.723.1, G.726, G.729a, G.729b, iLBC, GSM-FR, GSM-EFR, and AMR-NB (including AMR2)
- Wideband codecs: Opus, G.722 and AMR-WB (G.722.2)
- Enhanced Voice Services (EVS)
  - EVS Primary and EVS AMRWB IO modes
  - All RTP bandwidths (nb, wb, swb, fb)[1]
  - Compact and Header-full packetization
  - TS 26.114 compliant
- Voice activity detection, silence suppression, comfort noise generation, packet loss concealment (PLC)

### Audio Conferencing

- N-way (including HD Voice) audio mixing
- Conference Recording (summed or individual parties)
- Automatic Gain Control (AGC)
- Programmable per party gain/volume control
- Active talker detection
- DTMF clamping
- Coach-pupil (whisper) mode
- Loudest N-party mixing
- Privileged party mixing
- Echo cancellation (including bulk delay EC for AEC)
- Configurable Noise Reduction thresholds
- Up to 1500 parties per conference
- Cascade conferences when deployed with the MRB

### Video

- Play/record, including fast forward, rewind, pause, resume
- Video transcoding, transrating, and transizing
- Video Voice Activated Switched (VAS), MCU and SFU Conferencing
- Video overlays (text and image overlay with scrolling)
- Dialogic patented Video Encoder Sharing technology
- Dialogic patented Encoding Bitrate Control technology
- Dialogic patented Perceptual Processing technology
- Dialogic patented Adaptive Packet Loss Handling technology
- Dialogic patented Packet Loss Concealment (PLC) technology
- Dialogic patented Effective Intra-frame Refresh technology
- Dialogic patented Dynamic Bitrate Adaptive Encoding technology
- Dialogic patented Dynamic Frame Resolution Adaptation technology
- Dialogic patented Estimation of Video Quality of Experience technology
- Dialogic patented Dynamic Framesize and Frame rate adaptation technology
- Dialogic patented Robust handling of Bandwidth changes in SFU conferences

[1] SWB (swb) and Fullband (fb) RTP processed as Wideband (wb) internally

## Media and Coders

### Video Codecs

- H.264 Baseline Profile, up to Level 3.1 (HD 1080p)
- VP9, up to HD 1080p
- Scalable VP8, up to HD 1080p
- MPEG 4 Simple Profile, up to Level 4 (VGA)
- H.263, H.263+, H.263++ Baseline Profile, up to CIF
- Image sizes: HD 1080p, HD 720p, 4CIF, VGA, CIF, QVGA, QCIF, SQCIF (including landscape, portrait and custom resolutions)
- Frame rates: Up to 30 FPS
- Bit rates: Up to 2Mbps
- Video Fast Update (VFU): Configurable responses to I-Frame Update requests
- Fully adaptive video jitter buffer
- Dynamic Video Frame Size Adaptation
- RTCP feedback support (PLI, FIR, REMB, TMMBR, TMMBN, Generic NACK)
- Transport Wide Congestion Control

### Media Handling

File operations: HTTP/HTTPS, and/or NFS; RTSP/RTP; MSRP
Playback/recording: audio-only, video-only, multimedia (audio/video)
Multi-track audio recording: (stereo .wav)
Encrypted Record (AES 256bit): .webm, .mkv

**Audio File Containers:** .wav, .pcm, .vox, .amr, .amb, .evs

- WAV/PCM Codec Formats:
  > 8k lin PCM, 11k lin PCM, 16k lin PCM, 8k alaw PCM, 8k mulaw PCM
- AMR Codec Formats (RFC 4867):
  > AMR-NB (.amr) and AMR-WB (.amb)
- EVS Codec Format (.evs) as specified by TS26.445

**Multimedia File Formats:** .3gp, .mkv, .webm

- 3GP Container Codec Formats:
  > Video: H.264, MPEG4, H.263
  > Audio: AMR-NB, AMR-WB
- MVK Container Codec Formats:
  > Video: VP8, H.264
  > Audio: Opus, G711
- WebM Container Codec Formats:
  > Video: VP8
  > Audio: Opus

### Fax

- Fax Tone Detection & Notification
- Fax Send and Receive
  > G.711 or T.38 (Up to V.34)
  > RFC 6913 – Indicating Fax with SIP
  > TIFF and PDF file formats
  > Configurable Fax page quality thresholds

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| **Language Support** | • Variable content announcement / language phrasing:<br>"date", "digits", "duration", "month", "money", "number", "silence", "time", "weekday"<br>• Customizable to support virtually any language or dialect<br>• Built-in voice files: US English, Mandarin Chinese, Spanish are standard; French, German, Japanese, Italian, Greek and others are available upon request |
| **Virtualization & Cloud** | • VMWare ESXi 6.x & 7.x<br>• Kernel-based Virtual Machine (KVM)<br>• Oracle VM/Oracle Cloud<br>• XEN Virtual Machine<br>• Amazon EC2/AWS<br>• Google Cloud Platform (GCP)<br>• Microsoft Azure<br>• Rackspace Cloud Servers<br>• OpenStack<br>• ETSI-NFV |
| **System Management** | • Intuitive Web GUI<br>• Real-time monitoring and management via HTTP RESTful control interface<br>• Command Line Interface (CLI) Scripting<br>• Remotely managed tracing and logging<br>• SNMP v2c/v3 for management and traps<br>• Call Detail Records (CDR)<br>• Key Performance Indicators (KPI)<br>• Active Call Monitoring<br>• User roles and password rules management<br>• Audit Logging |
| **Licensing** | • Scalable from (10) to thousands of ports (depending on compute platform)<br>• Cloud and network wide licensing<br>• A time-limited trial license is available for evaluation purposes<br>• For more information about development licenses, please contact Dialogic inside sales (sales.dialogic@enghouse.com) |
| **Hardware Support and Minimum System Requirements** | • Hardware: Intel multi-core Xeon Architecture-based server<br>• Memory: 8 GB RAM minimum<br>• Storage: 40 GB HD minimum<br>• Network interface: 1x Gigabit Ethernet (1000Base-T) minimum<br>• Operating System (64-bit OS):<br>CentOS Release 7.x<br>RedHat Enterprise Linux 7.x & 8.1 (or later)<br>Rocky Linux 8.4 (or later)<br>Alma Linux 8.7 (or later)<br>Oracle Enterprise Linux 7.7 & 8.1<br>• Oracle Enterprise Linux 8.5 (or later) |
| **Third Party Speech Vendor Compatibility** | • Amazon Polly (TTS)<br>• Google (TTS)<br>• Lumenvox (MRCP: ASR and TTS)<br>• Nuance (MRCP: ASR and TTS)<br>• Vestec (MRCP: ASR)<br>• File based transcription with Google Speech-to-text or Amazon Transcribe |

## Getting Started

Start building your new innovative application NOW by requesting a download and trial license of PowerMedia XMS: https://www.dialogic.com/xms

PowerMedia XMS Documentation: http://www.dialogic.com/goto?xmsdocs

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