Dialogic’s PowerMedia XMS is a highly scalable, software-only media server that enables standards-based, real-time multimedia communications solutions for IMS, MRF, Enterprise, and WebRTC applications on premise or in the cloud. Built on 15+ 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 and “mission critical” next-generation 911 services, PowerMedia XMS has proven to be a key building block to new and innovative applications. When deployed with the optional Dialogic® PowerMedia® Media Resource Broker (MRB), 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 Media Resource Functionality (MRF) and Media Resource Broker (MRB) services in IMS, VoLTE, NGN and cloud environments.

### Features

<table>
<thead>
<tr>
<th>Features</th>
<th>Benefits</th>
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<tbody>
<tr>
<td>Highly scalable, software media server with advanced multimedia processing functionality with an optional PowerMedia Media Resource Broker (MRB)</td>
<td>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.</td>
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<tr>
<td>Standards-compliant IMS MRF with full Voice over LTE (IR.92) and Video over LTE (IR.94) support</td>
<td>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.</td>
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<td>Robust HD audio and video media support with IETF, 3GPP (incl. EVS, AMRNB and AMRWB) and W3C WebRTC codecs (incl. VP8, VP9 and Opus)</td>
<td>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.</td>
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<td>Support for Commercial-Off-The-Shelf (COTS), virtualization, and Network Function Virtualization (NFV) deployment models</td>
<td>Reduces both OPEX and CAPEX by utilizing existing datacenter infrastructure and cloud services for deployment of dynamically scalable communication solutions.</td>
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<td>Media control through open, and industry standards based APIs</td>
<td>Energizes service provider and communication developers by leveraging industry-standard programmable APIs to rapidly add sophisticated media handling capabilities to their applications.</td>
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<tr>
<td>Web-based GUI and HTTP RESTful Management interface for media server management, control and monitoring</td>
<td>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, and tracing.</td>
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<tr>
<td>Scalable licensing from ten to thousands of ports per server</td>
<td>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.</td>
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</tbody>
</table>
Overview

PowerMedia XMS allows for rapid integration and development through open, and industry standard APIs, including MSML, VXML, NetAnn, and JSR 309, plus a Dialogic RESTful 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 720p. 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 a WebRTC Media Gateway
- **Recording/Secure Recording** – flexible centralized audio and video recording for mixed conferences, or individual streams, including encrypted record 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

![Diagram of Dialogic® PowerMedia® XMS: Interfaces, Functions, and Deployment Environments](image-url)
Technical Specifications

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):

Audio — Up to 2000 sessions of G.711 or 1000 sessions with full-duplex (RTP-RTP) transcoding
Video — Up to 1000 HD 720p sessions (with SFU) or 500 sessions (with MCU transcoding). Capacity depends on system specification, codec, resolution, frame rate, etc.

When multiple servers are deployed with PowerMedia MRB, total scaling can achieve upwards of 50,000 audio sessions and 4800 video sessions.

Signaling, Protocol, and Control Interfaces

Control Protocols and Specification (i.e., Standards) Compatibility
SIP (RFC3261)
SIP PreConditions (RFC3312, RFC4032)
SIP DNS (RFC3263)
SIP Global Session Identifier (RFC 7329)
GSMA IR.92 for Voice over LTE (VoLTE)
GSMA IR.94 for Video over LTE (VoLTE)
3GPP TS23.228 for IMS (Mr/Mr’ and Cr interfaces)
3GPP TS26.114 for IMS media interaction
WebRTC JavaScript API
MSRP for multimedia chat and RCS message services
RTSP client support for streaming multimedia content from RTSP servers
MRCP v2.0/v1.0 for connection to speech servers for ASR/TTS - see "Third Party MRCP Speech Vendor Capability” section

Media Protocols
IPv4, IPv6, and mixed-mode IPv4/IPv6 (Multiple-NIC support)
3GPP Mb (RTP) interface for IMS
RTP, RTCP, RTCP-XR, RTCP-HR
Secure SRTP: DTLS-SRTP (WebRTC), SDES-SRTP (VoIP)
Secure RTCP (SRTCP)
DiffServ/ToS Markings
ICE Lite, Trickle ICE
HTTP/HTTPS

Media Control Interfaces
RESTful API - HTTP-based RESTful web services interface
MSML (RFC5707) – SIP with XML-based Media Server Markup Language
JSR 309 Connector – Industry-standard Java media server control API for multimedia application development
VXML v2.1/v2.0 - W3C industry-standard XML interface for specifying interactive voice dialogs for IVR or speech enabled applications, including video support
NetAnn (RFC4240) – Basic Network Media Services with SIP for announcements, dialogues, and simple conferences

Media and Coders

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

Audio Conferencing
N-way (including HD Voice) audio mixing
Conference Recording (summed or individual parties)
Automatic Gain Control (AGC)
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)

Video
Play/record, including fast forward, rewind, pause, resume
Video transcoding, transrating, and transizing
Video 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 patent-pending Dynamic Bitrate Adaptive Encoding technology
Dialogic patent-pending Dynamic Frame Resolution Adaptation technology

Video Codecs
H.264 Baseline Profile, up to Level 3.1 (HD 720p)
VP9, up to HD720p
VP8, up to HD720p
MPEG 4 Simple Profile, up to Level 4 (VGA)
H.263, H.263+, H.263++ Baseline Profile, up to CIF
Image sizes: 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
Dialogic patent-pending Packet Loss Concealment (PLC) technology
Dialogic patent-pending Dynamic Bitrate Adaptive Encoding technology
Dialogic patented Encoding Bitrate Control technology
RTCP feedback support (PLI, FIR, REMB, TMMBR, TMMBN, Generic NACK)
Dialogic® PowerMedia® XMS

Media Handling

File operations: HTTP/HTTPS, and/or NFS, RTSP/RTP, MSRP
Multi-track audio recording: (stereo .wav)
Encrypted Record (AES 256bit): .webm, .mkv
Audio File Containers: .wav, .pcm, .vox, .aud, .amr, .amb, .evs
WAIV/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 (.eva) as specified by TS26.445

Multimedia File Formats:
3GP Container Codec Formats:
Video: H.264, MPEG4, H.263
Audio: AMR-NB, AMR-WB
MP4 Container Codec Formats:
Video: H.264
Audio: AMR-NB, AMR-WB
MVK Container Codec Formats:
Video: VP8, H.264
Audio: Opus
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

Language Support
Variable content announcement / language phrasing: “date”, “digits”, “duration”, “month”, “money”, “number”, “silence”, “time”, “weekday”
Customizable to support virtually any language or dialect 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 5.x and 6.x
Kernel-based Virtual Machine (KVM)
Oracle VM/Oracle Cloud
XEN Virtual Machine
Amazon Web Services (AWS)
Rackspace Cloud Servers
OpenStack
NFV

System Management
Intuitive Web GUI
Real-time monitoring and management via HTTP RESTful control interface
Command Line Interface (CLI) Scripting
Remotely managed tracing and logging
SNMP v2c/v3 for management and traps
Call Detail Records (CDR)
Key Performance Indicators (KPI)
Active Call Monitoring
Audit Logging

Licensing
Scalable from (10) to thousands of ports per server
A time-limited trial license is available for evaluation purposes
For more information about development licenses, please contact Dialogic inside sales (insidesales@dialogic.com)
Hardware Support and Minimum System Requirements

- **Hardware:** Intel Architecture-based server
- **Operating System (64-bit OS):**
  - ISO image installation:
    - CentOS Release 7.x
  - rpm package installation:
    - CentOS Release 6.4 (or higher) & 7.x
    - RedHat Enterprise Linux 6.4 (or higher) & 7.x
    - Oracle Enterprise Linux 6.4
    - Oracle Enterprise Linux 7.2 wUEKv4
- **Processor:** Intel Xeon E5-1620 or greater
- **Memory:** 12 GB RAM minimum
- **Storage:** 60 GB HD minimum
- **Network interfaces (minimum):** Signaling/Media/Mgmt. - 1x Gigabit Ethernet (1000Base-T)

Third Party MRCP Speech Vendor Compatibility

- Lumenvox (ASR and TTS)
- Nuance (ASR and TTS)
- Vestec (ASR)

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

Getting Started

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


PowerMedia XMS Product Page: https://www.dialogic.com/xms

PowerMedia XMS Developer Portal: https://www.dialogic.com/developer

PowerMedia Media Resource Broker (MRB) Datasheet:
https://www.dialogic.com/~media/products/docs/media-server-software/14160-powermediamrb-ds.pdf