



# Aastra MX-ONE™ Telephony System

**Aastra MX-ONE™ Telephony System, a complete IP-based communications system, has evolved from a voice centric system into a true multimedia communication system that can route and provide services to media sessions like video, instant messaging etc. It is the core component of the MX-ONE solution, which provides the necessary applications to offer true mobility and Unified Communications and Collaboration (UCC).**

MX-ONE Telephony System (TS) is based on an open software and hardware environment, using standard servers with a LINUX SUSE operating system. MX-ONE TS focuses on enhanced SIP implementations to target our strategy regarding openness, cloud computing and video support. Customers can also benefit from SIP end-user services and the management solution with its single point of entry approach, offering a simple and efficient way of managing the system.

## Building Blocks

The MX-ONE Telephony System consists of three basic components: MX-ONE Telephony Server, MX-ONE Media Gateway and MX-ONE Manager Suite.

### MX-ONE Telephony Server options

High-capacity Telephony Server software, running on a standard server platform, can handle up to 15,000 SIP users and 15 media gateways. Servers and media gateways can be combined to form either a complete centralized system or a large multi-server distributed system over a geographically dispersed area. Up to 124 servers can be combined in a single system with up to 500,000 users.

✦ **Turn-key server solution**, based on HP ProLiant DL360 and Dell PowerEdge R310 servers. Both the LINUX operating system and Telephony Server application software are installed and pre-configured

Main technical characteristics (HP ProLiant DL360):

- Intel Xeon Processor E5620: Quad Core, 2.40 GHz
- 6 GB RAM, 300 GB HDD, redundant fans

- Redundancy options:
  - > RAID hot-plug disk drives
  - > Redundant power supply

Main technical characteristics (Dell PowerEdge R310):

- Intel Xeon X3450 processor (2.66 GHz Quad Core processor)
- 8 GB RAM (DDR3)
- 2 x 300 GB SAS HDD (RAID 1)
- 2 LAN ports (100 or 1000 Mb/s)
- Internal DVD reader
- Redundant power supply

✦ **Aastra Server Unit - Embedded (ASU-E)** can be delivered as a part of MX-ONE Lite GW or MX-ONE Classic GW version or separately in a 1U chassis, making extra space in the Lite and Classic for 2 more extension boards. It can also be used to host a variety of applications, such as messaging applications or any other Aastra certified applications you may want to install. The server board requires little space and only 35 W of power. It is able to monitor CPU temperature and send an alarm if the predefined level has been exceeded.

Main characteristics:

- Core 2 Duo Processor 2.26 GHz
- 8 GB RAM
- One SATA HDD with min 160 GB, expandable to 2 x 160 GB SATA HDD (the HDD can be changed to SSD, 80 GB each)
- 2 Ethernet ports
- 1 VGA port
- 4 USB 2.0 ports



MX-ONE 1U chassis with ASU-E

✦ **A software only** option is available with media kits for use with standard servers or as virtual appliance for VMware environments. For more detailed information on server requirements, please, see the table on page 4

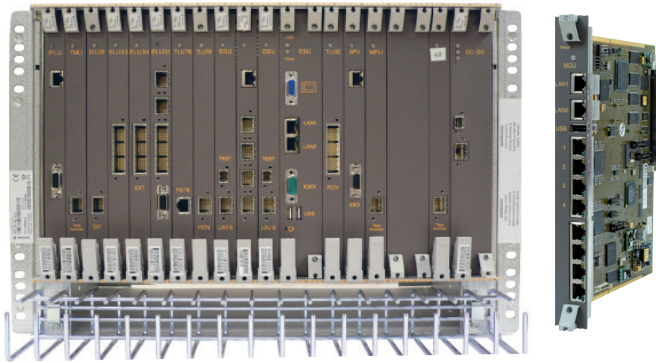
## MX-ONE Media Gateways

MX-ONE Media Gateways come in different configurations and sizes, offering scalability and flexibility to meet the needs of enterprises. In a multi-gateway configuration up to 15 Media Gateways can be associated to one server. There are two different versions of MX-ONE Media Gateway chassis:



MX-ONE Lite

- ✦ **MX-ONE Lite** – 3U chassis, more suitable for the IP environments and branch office scenarios with the space for one MGU board, one ASU-E, plus two or four TDM boards, depending on whether an external server is used or not
- ✦ **MX-ONE Classic** – 7U chassis, targeted mainly for mixed environments with space for up to 16 TDM boards



MX-ONE Classic MGU

The MGU board is always present and has the following characteristics:

- 8 E1/T1 PRI interfaces
- 2 10/100 LAN ports
- 256 RTP resources (concurrent gateway calls)
- DTMF reception/detection
- Manages TDM boards inserted in the chassis

## MX-ONE Manager Suite

MX-ONE Manager Suite offers a complete range of applications for administrators and end-users. From the perspective of end-user administrators, MX-ONE TS appears as one single system regardless of the number of servers and media gateways. MX-ONE Manager is a complete management suite consisting of:

- ✦ **MX-ONE Manager Telephony System (MTS)** for configuration of system functions
- ✦ **MX-ONE Manager Provisioning (MP)** for user configuration data
- ✦ **MX-ONE Manager System Performance (MSP)** for system resources performance management
- ✦ **MX-ONE Manager Availability (MA)** for fault and system performance management of MX-ONE Telephony Systems and applications

## Main Functionality

### Powerful range of features

- ✦ Support for full range of SIP terminals and soft phones, as well as H.323 terminals, Mobile Extension, Wi-Fi, DECT/SIP DECT, analog and digital terminals
- ✦ 500 system and end-user features such as different types of diversion, free seating and executive/secretary services
- ✦ Attendant services, like PC-based workstation, directory search, as well as traditional services including camp-on busy
- ✦ System-based services such as IP and QSIG based networking with full feature transparency, routing, number analysis, call information logging, CSTA version 3 and a wide range of applications
- ✦ Full range of public trunk interfaces including ISDN, CAS/MFC, DPNSS and analog trunks
- ✦ Full support for SIP trunking with certification from many service providers worldwide

### MX-ONE Telephony System redundancy

#### Server redundancy

MX-ONE Telephony Server redundancy is using the n+1 redundancy technique: If an active server fails, the back-up server starts with its copy of the data that belongs to the failed server. Alias IP addressing is used, so clients and remaining server(s) can continue to use their configured IP addresses.

#### Network redundancy

By Network Interface Card (NIC) bonding, two or more Ethernet interfaces look like one logical interface to the MX-ONE Telephony Server and Media Gateways, all in order to improve availability and performance. Thanks to this method, MX-ONE Telephony System offers a higher level of reliability. In the case one network interface or switch fails, the other one takes over without affecting service.

#### HLR/VLR redundancy

IP/SIP extension implementation in MX-ONE Telephony System is designed in accordance with the HLR/VLR (Home/Virtual Location Register) architecture used in mobile networks. An IP user has a "home server", HLR, but it can be handled by any server in the system by creating a VLR through synchronization of the user data between LDAP databases in all servers. If that home server fails, the gatekeeper/SIP proxy database redundancy feature creates a back-up HLR on another server in the system to allow the IP user to continue to operate.

#### Enhanced redundancy using VMware options

The failover time can be reduced by using VMware's High Availability (HA) option. Furthermore, MX-ONE TS has full support for VMware's Fault Tolerance (HA/FT) option, enabling complete hot standby capability for the communications server.

## UC deployments with third-party products

### CSTA V3 – XML support

MX-ONE TS supports CTI monitoring in accordance with Computer-Supported Telecommunications Applications 3 (CSTA Phase 3). The CSTA Phase 3 is based on the ECMA-269 standard. TR87 (CSTA over SIP) is also supported as well as the existing CSTA Phase 1/TSAPI, as it was the case in previous releases.

### Microsoft Certification

MX-ONE TS has Direct SIP certification from Microsoft to enable integration with the Microsoft Lync as well as Microsoft Exchange Server 2010 UM, providing end-user services like voice mail and auto attendant. MX-ONE Telephony Server can also be integrated with the Microsoft Office Communications Server (OCS) 2007 as a complementary solution, providing end-user services like instant messaging and integrated presence.

### IBM Lotus Sametime

MX-ONE TS has been verified with IBM Lotus Sametime Unified Telephony (SUT1) middleware, offering a direct SIP integration between MX-ONE TS and IBM Lotus Sametime. A further level of integration is provided through our A2P2

certification of iLink's TeamCall middleware and Sametime client plug-in, offering third party call control of MX-ONE terminals with the IBM Lotus Sametime client.

## Virtualization

With the latest MX-ONE TS version it is possible to run Telephony Servers and UCC applications as virtual machines in a customer VMware environment. This enables IT departments to integrate their real-time communications as a service in the cloud. Based on virtualization, "cloud services" or "Software as a Service" (SaaS) eliminates the need for organizations to build or buy the IT infrastructure themselves. The consolidation of server hardware through virtualization reduces the server footprint, offering lower power consumption and cooling requirements as well as decreased physical space requirements. Virtualization also offers the possibility to take advantage of high availability options that can provide increased resiliency for real time applications. Currently, MX-ONE relies on VMware software as part of its virtualization solution. Aastra has verified MX-ONE Telephony Server software as well as Aastra UCC applications, such as CMG, Solidus eCare and OneBox, included as part of the MX-ONE solution, running as virtual machines in a VMware infrastructure.

User Capacity* for MX-ONE/Server									
Config.	SIP	H.323	DECT	Digital	Analog	Mobile	S0	CAS ext	Total
1	15,000								15,000
2	14,000	1,000							15,000
3	13,360	1,000	640						15,000
4	12,720	1,000	640	640					15,000
5	10,160	1,000	640	640	2,560				15,000
6	5,160	1,000	640	640	2,560	5,000			15,000
7	4,840	1,000	640	640	2,560	5,000	320		15,000
8	4,200	1,000	640	640	2,560	5,000	320	640	15,000

\* Dependent on server and gateway capacity

MX-ONE Telephony System 5.0 Technical Data	
<b>Supported standards</b>	
	SIP V2*
	H.323 v4 ; both extension and trunk side
	IPv4
	T.38 Fax
	DHCP, HTTP, HTTPS, Telnet, TFTP, SNMP, FTP, SSH, TLS, SRTP Web Services: CSTA Phase 1 and 3; TR87, XML, ASN.1, TSAPI, TAPI
<b>Supported voice codecs</b>	
	G.711 with a-law and $\mu$ -law, G.729a, G.729ab with voice activity detection (silence suppression & comfort noise generation), G.722 (extension side) and G.168 (echo cancellation)
<b>Quality of Service</b>	
	Diffserv (RFC 2474) for trunks and extensions
	IEEE802.1 p/Q extension-side only
	Compatible with cRTP header compression algorithms
<b>Call accounting</b>	
	CDR/SMDR records compatible with third party accounting systems

\* Full support for SIP V2 for both extension and trunk-side applications. Compliance with more than 40 SIP RFCs, providing interoperability with a wide variety of SIP terminals and SIP trunking service providers

System Capacity:	Per Server	Per System
Servers	-	124
Media Gateway Units (MGUs)	15	1,860
PRIs (ISDN or QSIG)	64 E1 or 87 T1	7,936 / 10,799
Users	15,000	500,000

MX-ONE Lite and MX-ONE Classic - Power Supply			
	Input Voltage	Output Voltage (V DC)	Max Power Consumption
<b>External AC/DC (Classic)</b>			
	110-230 V AC	-48	700-800 W/power module
<b>Built-in AC/DC (Lite)</b>			
	90-240 V AC or -40 - 56 V DC	-48	700-800 W/module when DC 130 W when AC

Minimum Requirements for «Software-Only» Option	
Up to 2,500 Users	Up to 15,000 Users
SUSE LINUX Enterprise Server 10 SP4	SUSE LINUX Enterprise Server 10 SP4
CPU, 2 GHz Core 2 Duo Processor	CPU, 2.4 GHz Core Quad Processor
RAM, 4 GB	RAM, 6 GB
Hard Drive, 72 GB	Hard Drive, 72 GB
Intel x86 architecture	Intel x86 architecture
LAN ports: 2 (100/1000 Mb/s)	LAN ports: 2 (100/1000 Mb/s)
2 USB 2.0 ports	2 USB 2.0 ports
DVD: internal or USB	DVD: internal or USB

MX-ONE Optional Applications	MX-ONE Manager Suite
OneBox (unified messaging)	MX-ONE Manager Telephony System (MTS)
CMG (contact management)	MX-ONE Manager Provisioning (MP)
Solidus eCare (contact center)	MX-ONE Manager System Performance (MSP)
Aastra Mobile Clients (AMC/AMC+)	MX-ONE Manager Availability (MA)
BluStar for PC (soft phone)	
InAttend (attendant console)	
Aastra Collaboration Link	
Hospitality solution	

See separate data sheets for details about functions and features

Terminals
Analog phones: Aastra Dialog 4100 and Aastra 7100a series
Digital phones: Aastra Dialog 4200
IP phones: Aastra Dialog 4400 IP and Aastra 7400ip (incl. Dialog 5446 Premium) series
Aastra SIP phones: Aastra 6700i family, BluStar 8000i
Aastra Cordless Phones: DT69x, DT390, DT4x2, DT4x3
SIP DECT: Aastra 142d, Aastra 610d, Aastra 620d, Aastra 630d, Aastra 650c

\*See terminal datasheets for functionality with MX-ONE Telephony System

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