



# 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 offering services to media sessions like video, instant messaging etc. It is the core component of the MX-ONE solution, which provides users with 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.



MX-ONE 1U chassis with ASU

✦ **Turn-key server solution**, based on Dell PowerEdge R320 servers. Both the LINUX operating system and Telephony Server application software are installed and pre-configured.

Main technical characteristics (Dell PowerEdge R320):

- Intel Xeon E5-2407 (2.20 GHz Quad 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 - ASU** can be delivered as a part of MX-ONE Lite or MX-ONE Classic or separately in a 1U chassis, making space 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 application. 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.

✦ **ASU Lite** is available as an optional server model for remote MX-ONE units with a single MGW i.e. branch offices with MX-ONE Lite or MX-ONE Classic and also for small stand alone MX-ONE systems. This server is limited to 1,000 users.

Main characteristics:

- Core 2 Duo Processor 2.26 GHz (for ASU Lite: D525 – 1.8 GHz ATOM dual core)
- 8 GB RAM (for ASU Lite: 4 GB)
- One SATA HDD with minimum 160 GB, expandable to 2 x SATA HDD (the HDD can be changed to SSD, minimum 80 GB each)
- 2 Ethernet ports
- 1 VGA port
- 4 USB 2.0 ports

✦ **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 three different versions of MX-ONE Media Gateway chassis:

- ✦ **MX-ONE Slim** – 1U chassis, containing one MGU board, is the excellent choice for pure IP environments
- ✦ **MX-ONE Lite** – 3U chassis, more suitable for the IP environments and branch office scenarios with the space for one MGU board, one ASU Lite, 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

The MGU board has the following characteristics:

- 8 E1/T1 PRI interfaces
  - 2 10/100 LAN ports
  - 256 RTP resources (concurrent gateway calls)
  - DTMF reception/detection
  - Manages RVA and TDM boards inserted in the chassis
- ✦ **Software-based MGU** – For new installations that are IP/SIP only, it is possible to have a software-based media gateway to handle media services such as conferences, tone detection, RVA and forced gateway calls. The media gateway software resides in the TS server. With this option, SIP trunking is used for access to the PSTN and Aastra SIP-based terminal adapters can be used for analog phones and faxes

## 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
- ✦ Native multimedia support by the communications server enabling a variety of multimedia SIP devices to choose between voice, video or IM sessions without the need for additional servers or MGUs
- ✦ Together with the BluStar Server, MX-ONE TS provides support for the whole family of UCC multimedia end-points. Services offered include a mixture of voice, video, instant messaging and presence information
- ✦ 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, presence information, 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 Phase III 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 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 Suite consists 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



### 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

### CSTA Phase III – XML support

MX-ONE TS supports both CTI monitoring in accordance with Computer-Supported Telecommunications Applications 3 (CSTA III) and TR/87 (CSTA over SIP).

### Microsoft Certification

MX-ONE TS has Direct SIP certification from Microsoft to enable integration with the Microsoft Lync 2013 as well as Microsoft Exchange Server 2013 UM, providing end-user services like voice mail and auto attendant.

### 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.

## 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) eliminate 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 (BluStar Server, BluStar Collaboration Management CMG, Solidus eCare, OneBox etc.), included as part of the 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*; both extension and trunk side
	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 I and III; TR/87, 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 Slim, MX-ONE Lite and MX-ONE Classic - Power Supply			
	Input Voltage	Output Voltage (V DC)	Max Power Supply
<b>External 2U height AC/DC</b>			
MX-ONE Slim, MX-ONE Lite & MX-ONE Classic	90 to 240 V AC	-48 V	800 W / module
<b>Internal AC/DC</b>			
MX-ONE Lite (3U)	90 to 240 V AC -42 to -56 V DC	No output	130 W AC internal 250 W DC
MX-ONE Slim (optional)	90 to 240 V AC -42 to -56 V DC	No output	125 W AC internal 150 W DC

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, 2.2 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 (100/1,000 Mb/s)	LAN ports: 2 (100/1,000 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
BluStar Collaboration Management (CMG)	MX-ONE Manager Telephony System (MTS)
InAttend (attendant console)	MX-ONE Manager Provisioning (MP)
Solidus eCare (contact center)	MX-ONE Manager System Performance (MSP)
Aastra Mobile Client (AMC)	MX-ONE Manager Availability (MA)
OneBox (unified messaging)	
BluStar Server (UCC, directory and presence federation)	
Hospitality solution	

End-points	
Analog phones	Aastra 7100a series, TA7102i (SIP terminal adapter)
Digital phones	Aastra Dialog 4200
IP phones	Aastra Dialog 4400 IP and Aastra 7400ip (incl. Dialog 5446 Premium) series
SIP phones	Aastra 6700i series, BluStar 8000i, BluStar for Conference Room
UCC clients	BluStar for PC, BluStar for iPad/iPhone
Cordless Phones	Aastra 6x2d/650c/142d and DT390/69x/4x3

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