



A MITEL  
PRODUCT  
GUIDE

# MiVoice MX-ONE

## Capacity - Description

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This chapter contains the following sections:

- [Definitions](#)

This document lists the line / device related capacities for the MX-ONE.

For service related capacities, see the description for *MIVOICE MX-ONE FEATURE MATRIX*.

For a complete list of abbreviations and glossary, see the description for *ACRONYMS, ABBREVIATIONS AND GLOSSARY*.

**Note:**

Most capacity figures are related to the software. This should be considered carefully, especially for the number of extensions and trunk lines per MX-ONE Service Node where the maximum number may be limited by the capacity of the installed hardware.

## 1.1 Definitions

### MX-ONE Classic

MX-ONE Classic is provided as one 7U high, 19-inch wide sub-rack with 16 board positions for different functions and interfaces. This media gateway is based on the MGU boards.

### MX-ONE Lite

MX-ONE Lite is provided as one 3U high, 19-inch wide sub-rack with 5 board positions with MGU2/MGU2-X, or 4 board positions with MGU. The MX-ONE Lite with the MGU board can have hidden optional TMU or MFU board.

### MX-ONE 1U

MX-ONE 1U is provided as one 1U high, 19-inch wide sub-rack. The MX-ONE 1U Media gateway with MGU2/MGU2-X board has room for one interface board. With the MGU board a hidden optional TMU or MFU board can be used. With the MGU2/MGU2-X, one board slot is available for optional device board, e.g. ELU34, TMU/12 etc.

### The MX-ONE Media Server

This is a software based media gateway for MX-ONE. This media gateway is for pure SIP scenarios only, i.e. it cannot be used with TDM type of parties. Thus many of the capacity figures in this document are of no relevance when MX-ONE Media Server is used. MX-ONE Media Server can be mixed with other media gateway types in the same server.

## Media Gateway Classic Stackable (obsolete)

Stackable and pre-stackable building practice cannot be used together with MX-ONE 7.0 or later releases because these releases do not support LSU-E.



### Note:

All Classic chassis retained with migration from TSW, and all MX-ONE releases that have LSU or LSU-E and DSUs must be upgraded with MGU. LSU/LSU-E, DSU and IPLU must be removed.

## 1.1.1 Server Requirements in MX-ONE 7.X

The tables below show the MX-ONE 7.x requirements for RAM Memory, CPU or vCPU, the clock speed and the required disk space when running combinations of the following MX-ONE applications: Service Node (SN), Service Node Manager (SNM), Provisioning Manager (PM), Database (Cassandra) and Media Server (MS). In some cases, Mitel strongly recommend running Provisioning Manager, Cassandra and/or the Media Server applications in different servers/VMs to avoid performance constraints.

For the database disks, SSD disks are highly recommended to avoid performance issues both in bare metal or virtualized systems. ECC RAM should always be used with Cassandra database.

For information about IOPS and Bandwidth requirements, see the document IOPS Disk and Network Bandwidth Requirements, 33/1551-ASP11301.

### General and Service Node Requirements

**Table 1: Service Node 1 and Service Node 1 Standby. Physical server (bare metal)**

Number of Users (SIP Users with TLS and SRTP)	Memory (GB)	CPU (Min. Cores)	Disc Size (GB)	Disc Size (> 3 Servers)	Applications	Max Traffic (Calls/s)
500	8	2	100 GB	120 GB	SN, SNM, Cassandra and Media Server	1
500	8	3	100 GB	120 GB	SN, SNM, PM, Cassandra and Media Server	1
1000	8	4	100 GB	120 GB	SN, SNM, Cassandra and Media Server	2

Number of Users (SIP Users with TLS and SRTP)	Memory (GB)	CPU (Min. Cores)	Disc Size (GB)	Disc Size (> 3 Servers)	Applications	Max Traffic (Calls/s)
1000	10	4	100 GB	120 GB	SN, SNM, PM, Cassandra and Media Server	2
2500	10	4	100 GB	120 GB	SN, SNM, Cassandra and Media Server	5
5000	12	6	100 GB	120 GB	SN, SNM, Cassandra	10
7500	14	6	100 GB	120 GB	SN, SNM, Cassandra	15
10000	16	8	150 GB	180 GB	SN, SNM, Cassandra	20
15000	20	8	150 GB	180 GB	SN, SNM, Cassandra	30

**Table 2: Other Service Node and other Service Node Standby, with other applications co-located. Physical server (bare metal)**

Number of Users (SIP Users with TLS and SRTP)	Memory (GB)	CPU (Min. Cores)	Disc Size (GB)	Disc Size (> 3 Servers)	Applications
500	6	2	100 GB	SN, Cassandra and Media Server	1
500	8	3	100 GB	SN, PM, Cassandra and Media Server	1
1000	8	3	100 GB	SN, Cassandra and Media Server	2

Number of Users (SIP Users with TLS and SRTP)	Memory (GB)	CPU (Min. Cores)	Disc Size (GB)	Disc Size (> 3 Servers)	Applications
1000	10	4	100 GB	SN, PM, Cassandra and Media Server	2
2500	10	4	100 GB	SN, PM, Cassandra and Media Server	5
5000	12	6	100 GB	SN, Cassandra	10
7500	12	6	100 GB	SN, Cassandra	15
10000	14	8	150 GB	SN, Cassandra	20
15000	16	8	150 GB	SN, Cassandra	30

**Table 3: Other Service Node and other Service Node Standby, with PM. Physical server (bare metal)**

Number of Users (SIP Users with TLS and SRTP)	Memory (GB)	CPU (Min. Cores)	Disc Size (GB)	Disc Size (> 3 Servers)	Applications
500	6	3	100 GB	SN, PM	1
1000	8	4	100 GB	SN, PM	2



**Table 4: Other Service Node and other Service Node Standby, without any other applications co-located. Physical server (bare metal)**

Number of Users (SIP Users with TLS and SRTP)	Memory (GB)	CPU (Min. Cores)	Disc Size (GB)	Disc Size (> 3 Servers)	Applications
500	6	2	100 GB	SN	1
1000	8	3	100 GB	SN	2
2500	8	4	100 GB	SN	5
5000	10	4	100 GB	SN	10
7500	12	4	100 GB	SN	15
10000	14	6	100 GB	SN	20
15000	16	6	100 GB	SN	30

## Media Server Requirements

In larger networks with lots of SIP end-point traffic, it may be beneficial to have the Media Server (MS) reside in a separate server or VM to avoid putting load on the Service Node. Also, if there is a need to have more than one Media Server controlled by the same MX-ONE Service Node, the other MS instances would have to run in separate Linux server / VM, although managed by the same Service Node.

**Table 5: Media Server Standalone. Physical server (Bare metal)**

Number of Users (SIP users with TLS and SRTP)	Memory (GB)	CPU (Min. Cores)	Disc Size (GB)	Application
500	6	2	100 GB	Media Server
1000	8	3	100 GB	Media Server

Number of Users (SIP users with TLS and SRTP)	Memory (GB)	CPU (Min. Cores)	Disc Size (GB)	Application
2000	10	4	100 GB	Media Server

### Provisioning Manager Stand-Alone Server Requirements

This configuration with the Provisioning Manager (PM) on a separate standalone server/VM from Service Node 1 is optional and recommended for networks with more than 2000 users. This is to avoid creating load on the SN itself, in particular when things like back-up or bulk provisioning are done. It is also the preferred configuration when a customer has more than one MiVoice MXONE sub-system (multiple networked MX-ONE systems) to manage, as it removes any dependency any given system. This is especially important when the customer's MX-ONE systems are running different SW versions, as provisioning manager can support connecting and managing different MX-ONE versions concurrently. Additionally, in this setup, the PM SW version can be kept to the latest release without affecting any given MX-ONE system in the network

**Table 6: Provisioning Manager Standalone. Physical server (bare metal)**

Number of Users (SIP Users with TLS and SRTP)	Memory (GB)	CPU (Min. Cores)	Disc Size (GB)	Application
500	4	2	100 GB	Provisioning Manager standalone
1000	4	2	100 GB	Provisioning Manager standalone
2500	6	2	100 GB	Provisioning Manager standalone
5000	6	4	100 GB	Provisioning Manager standalone
7500	6	4	100 GB	Provisioning Manager standalone

Number of Users (SIP Users with TLS and SRTP)	Memory (GB)	CPU (Min. Cores)	Disc Size (GB)	Application
10000	8	4	100 GB	Provisioning Manager standalone
15000	8	4	100 GB	Provisioning Manager standalone
30000	12	6	100 GB	Provisioning Manager standalone
50000	16	6	100 GB	Provisioning Manager standalone
70000	20	6	100 GB	Provisioning Manager standalone
100000	24	6	100 GB	Provisioning Manager standalone

### Database Server (Cassandra) Standalone Requirements

This configuration with the Cassandra DB on a standalone server from the Service Node is optional and typically only used for larger networks to avoid load on the Service Node itself or if there is a desire to connect more than one Service Node to the same database.

For the database, SSD disks are highly recommended to reduce latency.

ECC RAM should always be used with Cassandra database.

**Table 7: Cassandra node Standalone. Physical server (bare metal)**

Number of Users/ (Number of SIP Extensions with 40 Keys)	Memory (GB)/ Minimum Memory Required	CPU/Minimum Number of Cores	Disc Size (GB)	Type of Server/ Application
500	4	2	100 GB	Cassandra standalone
1000	4	3	100 GB	Cassandra standalone
2500	4	3	100 GB	Cassandra standalone
5000	7	3	100 GB	Cassandra standalone
7500	7	3	100 GB	Cassandra standalone
10000	9	4	100 GB	Cassandra standalone
15000	12	4	100 GB	Cassandra standalone
30000	15	4	100 GB	Cassandra standalone
50000	24	8	100 GB	Cassandra standalone
70000	28	8	100 GB	Cassandra standalone
100000	32	8	100 GB	Cassandra standalone

## 1.1.2 Capacity for Different Servers in MX-ONE 7.x

- **DELL PowerEdge R4X0 using Xeon processor family Skylake or newer:** The DELL server can handle up to 15000 end-points and 15 Media Gateway. Solid State Discs (SSD) disks or storage with equivalent performance are highly recommended.
- **DELL Servers using Xeon processor older than the family Skylake:** The DELL server can handle up to 7500 end-points and 15 Media Gateways. Solid State Discs (SSD) disks or storage with equivalent performance are highly recommended.
- **Mitel ASU-II:** ASU-II is an embedded server board that can handle up to 7500 end-points and 15 Media Gateways. It is VMware 7.0 U3 verified, and available with one or two hard disc drives or solid state discs. The ASU-II processor is an I7-4700EQ 2.4 GHz Quad-core with 16GB memory. Solid State Discs (SSD) are highly recommended.
- **Mitel ASU-III:** ASU-III is an embedded server board that can handle up to 10000 end-points and 15 Media Gateways. It is VMware 6.7, 7.0 and 8.0 verified, and available with one or two SSD solid state discs. The ASU-III processor is an I7-8665UE 2.4/4.4 GHz Quad-core processor with 32GB memory. Solid State Discs (SSD) are highly recommended.
- **Mitel ASU Lite:** ASU Lite is an embedded server board that can handle up to 1.000 end-points and 5 Media Gateways. The processor is an Intel Celeron J1900 2.0 GHz Quad core with 8 GB memory. Solid State Discs (SSD) disks are highly recommended.
- **Mitel EX Controller:** The Mitel EX Controller contains an embedded server board that can handle up to 1000 end-points and a maximum of 2 Media Gateways. The processor is an Intel Celeron 2.0 GHz Quad-core with 7 GB memory available to be used with MX-ONE Service Node.



### Note:

An unknown server type would be allowed a default maximum of 15000 end-points, but the maximum can be lowered by O&M command, which also works for the known server types. Please verify always the Server requirements to MX-ONE system before deploying an unknown server.

## 1.1.3 Physical Servers not Supported in MX-ONE 7.1

Due to capacity limitations the following server hardware is no longer supported (phased out) in MX-ONE 7.1, for use as Service Node and Database nodes (Cassandra), but they might be used as Provisioning Manager stand-alone or Media Server stand-alone depending on the system size:

- ASU - ROF 137 6307/1, ROF 137 6307/11, ROF 137 6307/21, ROF 137 6307/22, with processor Intel P8400, 2.27 GHz and 4 or 8 GB RAM.
- ASU-Lite - ROF ROF1376307/31 R1C or early, with processor Intel Atom, CPU D525, 1.80 GHz and 4 GB RAM.
- Old HP and Dell Servers using Xeon processor older than the family Sandy Bridge - EP.

## 1.1.4 Capacity for Different Media Gateways

- **MX-ONE 1U**- MX-ONE 1U is a Media Gateway with MGU2/MGU2-X and optional TMU it supports up to 2.100 IP terminals or 700 mobile terminals. It has one slot for optional device board e.g. ELU34, TMU etc. The MX-ONE 1U with MGU did host one hidden optional TMU or MFU board, but as there are no board slots available, no additional TDM trunk or extension boards can be used. Using MGU2/MGU2-X, one board slot is available for one trunk or extension board.
- **MX-ONE Lite**- MX-ONE Lite is a 3U Media Gateway with MGU. It supports up to 2.100 IP terminals or 700 mobile terminals. It can host up to five optional boards (TMU, MFU, TLU, ELU) with MGU2/MGU2-X (four with MGU). The old MX-ONE Lite, based on LBP24 can host up to four optional boards.
- **MX-ONE Classic**- MX-ONE Classic is a 7U Media Gateway with MGU and one or more optional TMU it supports up to 2.100 IP terminals or 700 mobile terminals. It can host up to 15 additional boards.
- **MX-ONE Media Server** supports up to 2000 RTP resources. The resources are only needed for multi-party features, recorded announcements and for forced gateway cases.

### Note:

Capacities for other extension types than IP and mobile terminals, when applicable, are shown in [MX-ONE Service Node Features](#) on page 11.

### Note:

The MGU2 has approximately half the capacity of the MGU regarding RTP resources and ISDN trunks. MGU2-X has the same capacity as the MGU2 except it does not have any PRI ports. See *MGU and MGU2/MGU2-X DESCRIPTIONS* for details.

# MX-ONE Service Node Features

## 2

This chapter contains the following sections:

- [Extensions](#)
- [Groups](#)
- [External lines](#)

## 2.1 Extensions

### 2.1.1 General Capacities

Number of Extensions	MX-ONE Classic, MX-ONE Lite, MX-ONE 1U <sup>7)</sup> , MX-ONE Media Server <sup>8)</sup>
Directory numbers per server	15000 <sup>2</sup>
Total number of extensions per server	15000 <sup>6</sup>
H.323 extensions per server	1000
SIP extensions per server	15000 <sup>6</sup>
- SIP Extra Directory Numbers per server	15000, one EDN counted as one extension
- SIP Shared Call Appearance numbers	See Feature Matrix description
Analog extensions per server	2 560 <sup>6</sup>
Digital extensions per server <sup>1)</sup>	640
- Additional Directory Numbers per server <sup>1)</sup>	500

Number of Extensions	MX-ONE Classic, MX-ONE Lite, MX-ONE 1U <sup>7)</sup> , MX-ONE Media Server <sup>8)</sup>
- Multiple Represented Directory Numbers per server <sup>1)</sup>	1000
Mobile extensions per server	5000 <sup>10)</sup>
Cordless extensions (DECT) per server	640 <sup>9)</sup>
ISDN S0 extensions per server	320
CAS extensions per server	1920
IP-DECT extensions per server <sup>4)</sup>	15000 <sup>6)</sup>
VoWiFi extensions per server <sup>4)5)</sup>	15000 <sup>6)</sup>

1)	The relationship between different types of digital extensions can be calculated as follows: $a+2b+3c+4d \leq 1920$ and $a+b+c+d \leq 640$ a = one key strip extension b = two key strip extension c = three key strip extension d = four key strip extension
2)	The total number of extensions in the server. The other values only indicates how many extensions, of each type of extension, there can be in a server.
3)	This value is 0 for certain application systems.
4)	Is treated as SIP extensions in the system.
5)	VoWiFi extensions includes both WiFi extensions and 3G/GSM WiFi extensions.



6)	Requires multiple media servers or gateways. The extension capacity also depends on the server capacity, and the number of available public trunks, and is shared.
7)	Using the MX-ONE 1U gateway, the extension capacities stated here are not applicable simultaneously, due to the limited number of available board positions.
8)	If only MX-ONE Media Server is used, the system has to be IP only (no TDM lines).
9)	This is the number of DECT extensions with the HLR in this server, but the total number of registered DECT terminals (including visitors) is 1000.
10)	Requires multiple media gateways. The mobile extension capacity depends on the server capacity, the number of available public trunks, and is shared. 5000 Mobile extensions is thus a flexible maximum, that would require approximately 2000 trunks if 0.2 Erlang is the traffic intensity.

## 2.1.2 Combinations of Extensions

SIP	H.323	DECT	Digital	Analog	Mobile	S <sub>0</sub>	CAS ext	Total
15000								15000
14000	1000							15000
13360	1000	640						15000
12720	1000	640	640					15000
10160	1000	640	640	2560				15000

SIP	H.323	DECT	Digital	Analog	Mobile	S <sub>0</sub>	CAS ext	Total
5160	1000	640	640	2560	5000			15000
4840	1000	640	640	2560	5000	320		15000
4200	1000	640	640	2560	5000	320	1920	15000

Any combination of the above extension types can be mixed, but:

- The total number of extensions (including EDNs, ADNs, and additional terminals due to forking) cannot exceed 15000.
- The maximum number stated per user type cannot be exceeded.
- The total capacity of 15000 extensions per server furthermore includes virtual extensions, the HLR redundancy/back-up 'guests' if that feature is active, and also TDM DECT visitors.
- Thus, if SIP (or H.323) or DECT extensions are used, and the HLR redundancy 'guest' and DECT 'visitor' functionality shall work, it is necessary to reserve some capacity for those functions, and deduct a certain number of initiated extensions from the total maximum 15000 HLRs. The maximum is 15000 for SIP, 1000 HLRs for H.323, 5000 HLRs for Mobile extension, and 1000 HLRs for DECT, where the sum of all types can be maximum 15000.
- Reserve circa 3500-7500 (maximum 15000), for HLR redundancy guests if SIP is used, 200-300 if H.323 is used and 200-300 for DECT visitors. Note that except for ISDN PRI, the TDM capacity is limited to one TDM board if MGU2/MGU2-X is used in the MX-ONE 1U chassis and with MGU, there is no room for an additional board. Use the Classic or Lite chassis when several TDM boards are needed in each gateway.

## 2.1.3 DECT

The following values are capacity limitations and recommendations for the DECT system including Cordless extensions. They are valid for the MX-ONE Service Node MX-ONE Classic or with legacy MD110 hardware, or for relevant figures also MX-ONE Lite.

**Table 8: For ELU31 with 32 individuals (ELU31/2, ELU31/3 and ELU31/4)**

Maximum number of Cordless extensions initiated in one server (given there are no other extension types initiated since the resources are shared), Home Location Registers (HLR)	640
Maximum number of Cordless extensions that may be located in one server simultaneously, Home and Visitor location Register (VLR)	1000

Maximum number of ELU31 per Media Gateway	15
Maximum number of ELU31 per Server	60
Maximum number of Base stations per ELU31 (ELU31/2, CORE, only sustaining)	6
Maximum number of Base stations per ELU31	8
Recommended number of portable telephones handled by one ELU31(at 0.2 Erlang).  See Cordless Phone Installation Planning	Varies
Recommended number of portable telephones handled by one Base station.  See Cordless Phone Installation Planning	Varies
Maximum number of messages (Message Waiting) stored in the Home Location Register for one user	8
Number of simultaneous calls per Base station	8
Number of simultaneous calls to or from one single ELU31 with 32 individuals position on backplane	32
Number of ELU31 boards per magazine (ACM) with internal power	5
Number of ELU31 boards per magazine (IFM/PSM) with internal power	5
Number of ELU31 boards per magazine (IFM/PSM) with external power	5
Number of ELU31 boards per sub-rack (LBP22) with internal power	10

Number of ELU31 boards per sub rack (LBP22) with external power	10
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**Table 9: For ELU31 with 16 individuals (i.e. ELU31/1 or if configured for only 16 individuals, also valid for ELU31/2, /3 or /4)**

Maximum number of Cordless extensions initiated in one server (given there are no other extension types initiated since the resources are shared), Home Location Register (HLR)).	640
Maximum number of Cordless extensions that may be located in one server simultaneously, HLR and Visitor Location Register (VLR).	1000
Maximum number of ELU31 boards per Media Gateway	15
Maximum number of ELU31 boards per server	60
Maximum number of Base stations per ELU31 (/1 and /2 CORE, only sustaining)	6
Maximum number of Base stations per ELU31 (for ELU31/1 with BS330, BS340)	8
Recommended number of portable telephones handled by one 16-individual ELU31 (at 0.2 Erlang).  See Cordless Phone Installation Planning	Varies
Recommended number of portable telephones handled by one Base station.  See Cordless Phone Installation Planning.	Varies
Maximum number of messages (Message Waiting) stored in the HLR for one user	8
Number of simultaneous calls per Base station	8

Number of simultaneous calls to or from one single ELU31 (with 16 individuals)	16
Number of ELU31 boards per magazine (ACM) with internal power	5
Number of ELU31 boards per magazine (IFM/PSM) with internal power	5
Number of ELU31 boards per magazine (IFM/PSM) with external power	5

**Note:**

ELU31/1 and ELU31/2 are not allowed in a sub-rack for LBP22, and shall be replaced by ELU31/4.

For more information, see the installation instruction for *CORDLESS PHONE*.

## 2.2 Groups

### Group Call Pick-up

Max. number of extensions per group:	48
Max. number of groups per server (LIM):	3000
Max. number of unanswered calls to call pick-up groups:	1000
Max. number of extensions per server (LIM) which can be pick-up group members:	15000
Max. number of extensions per system which can be pick-up group members:	All

## 2.2.1 Group Hunting

Maximum number of members per group:	160
Max.number of groups per server (LIM): (Shared with Ring group)	10000
Max.number of groups per system: (Shared with Ring group)	Only limited by licenses and number of servers
Max.number of queued calls per server: (Shared with Ring group)	25000
Max. number of queued calls per group:	30
Max. number of extensions per server (LIM) which can be group members:	15000
Max. number of groups in which an extension can be a member:	4
Max. number of simultaneous calls to an external destination when overflow or External Follow Me is active per hunt group	63

## 2.2.2 Ring Group (Cascade Ring Group)

Maximum number of members per group (rung in parallel):	16
Max.number of groups per server (LIM): (Shared with Hunt group)	10000

Max.number of groups per system (Shared with Hunt group):	Only limited by licenses and number of servers
Max.number of queued calls per server: (Shared with Hunt group)	25000
Max. number of queued calls per group:	30
Max. number of extensions per server (LIM) which can be group members:	15000
Max. number of groups in which an extension can be a member:	4
Max. number of extensions in a group that can be alerted simultaneously over the same DECT base station:	5
Max. number of simultaneous calls to an external destination when overflow or External Follow Me is active per hunt group	63

## 2.2.3 Automatic Call Distribution

The following table shows the capacities for the ACD feature. The group and queue capacities are also valid for CTI-groups, while the agent/member and backup group related capacities are not relevant.

Maximum number of ACD groups	
per server (LIM)	1024
per system	2048
Maximum number of Agent positions	
per server (LIM)	75

per system	1000
Maximum number of ACD members	
per ACD group	250
per server (LIM)	500
per system	4000
Maximum number of ACD groups with name display	250
Number of ACD groups an ACD member/ADN can belong to	1
Maximum number of ACD groups per agent position	8
Maximum number of simultaneous calls to an external destination when overflow or External Follow Me is active per ACD group	63
Maximum number of calls in queue	
per ACD group	250
per server (LIM)	5000
Maximum number of call back missions towards an ACD group per server (LIM)	25
Highest constant the number of queue positions can be altered per ACD group	50
Maximum number of queue priorities per system	32



Maximum number of digits in a PIN code	4
Maximum clerical time duration (in seconds)	999
Maximum number of back-up groups per ACD group	1

## 2.3 External lines

### General

External lines	<b>MX-ONE Classic /MX-ONE Lite/MX-ONE 1U/MX-ONE Media Server<sup>1)</sup></b>
External lines per system (124 servers assumed)	238080
External lines per server	1920 (E1) <sup>2)/</sup> 2001 (T1) <sup>2)</sup>
External lines per route and server using SIP	1920
External lines per route and per server	1920 (E1&H.323) <sup>2)/</sup> 2001 (T1) <sup>2)</sup>
Routes per server	999
Routes per system	999
External destinations per system	2500
1)	MX-ONE Media Server is for SIP gateway traffic only.

2)	Applies for ISDN/H.323 with MGU. Other trunks have lower maximum number of lines. There are maximum 1800 E1 and 1380 T1 lines with MGU2. With MGU2-X there are no E1 or T1 lines supported.
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**Note:**

The total number of trunks per server can only be as high as the maximum sum (even if there are mixed or different trunks in the same server).

**Note:**

The MX-ONE Media Server media gateway only supports SIP trunks, so most of the information in this section is not relevant when MX-ONE Media Server is used.

## 2.3.1 SIP DECT System

For more information, see the installation instruction for *SIP - DECT OM SYSTEM MANUAL, Installation, Administration and Maintenance*.

## 2.3.2 IP DECT System

For more information, see the feature description for *IP DECT SYSTEM*.

## 2.3.3 IP Wi-Fi

For more information on WiFi extensions, see the feature description for *SINGLE MODE WI-FI DESCRIPTION*.

## 2.3.4 ISDN

E1 (30B+D)	MX-ONE Classic/MX-ONE Lite/MX-ONE 1U
External lines per server	1920 <sup>*)</sup>
Interfaces per server	64 <sup>*)</sup>

*)	Valid with MGU. Maximum 1800 lines and 60 i/f with MGU2. With MGU2-X there are no E1 or T1 lines supported.
<b>BRI, both E and T i/f (2B+D)</b>	<b>MX-ONE Classic/MX-ONE Lite/MX-ONE 1U</b>
External lines per server	1920
Interfaces per server	960
<b>T1 (23B+D)</b>	<b>MX-ONE Classic/MX-ONE Lite/MX-ONE 1U</b>
External lines per server	2001 <sup>*)</sup>
Interfaces per server	87 <sup>*)</sup>
*)	Valid with MGU. Maximum 1380 lines and 60 i/f with MGU2. With MGU2-X there are no E1 or T1 lines supported.

**Note:**

The total number of trunks per server can only be as high as the maximum sum (even if there are mixed or different trunks in the same server).

## 2.3.5 IP Trunks - H.323 and SIP

<b>H.323 (IP Networking)</b>	<b>MX-ONE Classic/MX-ONE Lite/MX-ONE 1U</b>
External lines per server (LIM)	1920
External lines per system	238080

SIP (SIP networking or public routes)	<b>MX-ONE Classic/MX-ONE Lite/MX-ONE 1U/MX-ONE Media Server</b>
Routes per server (SIP trunks)	999
Media channels per server	1920 <sup>*)</sup>
<sup>*)</sup>	SIP trunk could allow more, but the same limit as for ISDN and H.323 is currently valid.

## 2.3.6 DASS/DPNSS

<b>DASS</b>	<b>MX-ONE Classic /MX-ONE Lite/MX-ONE 1U</b>
DASS external lines per server (E1)	240
DASS external lines per server (T1)	184
DASS interfaces per server	8

  

<b>DPNSS</b>	<b>MX-ONE Classic /MX-ONE Lite/MX-ONE 1U</b>
DPNSS external lines per server (E1)	240
DPNSS external lines per server (T1)	184
DPNSS interfaces per server	8

## 2.3.7 CAS

<b>E1 (2 Mbit/s)</b>	<b>MX-ONE Classic /MX-ONE Lite/MX-ONE 1U<sup>1)</sup></b>
CAS external lines per server	90

For TL30 and MGU/MGU2	240
CAS interfaces per server	3
For TL30 and MGU/MGU2	8

  

<b>T1 (1.5 Mbit/s)</b>	<b>MX-ONE Classic /MX-ONE Lite/MX-ONE 1U</b>
CAS external lines per server	230
CAS interfaces per server	10

  

1)	Only MGU internal software based CAS is supported if MX-ONE 1U chassis is used. One MFC board can be used, hidden board with MGU, normal MFU with MGU2.
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### 2.3.8 CCS S7

<b>CCS S7</b>	<b>MX-ONE Classic /MX-ONE Lite</b>
TUP external lines per server	240
TUP interfaces per server	8

### 2.3.9 MFC

<b>MFC</b>	<b>MX-ONE Classic/MX-ONE Lite/MX-ONE 1U<sup>1)</sup></b>
MFC external lines per server, with TL30	240
MFC external lines per server, with other TLs	90
MFC receivers per server, with TL30	72

MFC receivers per server, with other TLs	24
Maximum number of MFU boards per server, using TL30	12
Maximum number of MFU boards per server, using other TLs	4
Number of senders per MFU board	6
Number of receivers per MFU board	6
1)	Only MGU internal software based CAS is supported along with one MFU board (/13 variant) if MX-ONE 1U chassis with MGU is used. With MGU2, the additional board slot is used for an MFU/11.

### 2.3.10 Analog Trunks

Analog trunks	MX-ONE Classic/MX-ONE Lite/MX-ONE 1U
Software external lines per server	96
Hardware external lines per board	12
Maximum number of boards per server (theoretical value)	8

### 2.3.11 Tone and Multiparty Resources

Limits for the TMU board in Media Gateway MX-ONE Classic / MX-ONE Lite / MX-ONE 1U:

Tone and Multiparty Unit boards (TMU) per server	120 <sup>1) 3)</sup>
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Number of keycode receivers per server (4 ind * 15 GW * 8 TMU)	480 <sup>2)</sup>
Number of keycode senders per server (6 ind * 15 GW * 8 TMU)	720
Number of dial tone receivers per TMU board.	3
Number of tone message senders per board	24
Number of multi-party inlets per board	24
Number of multi-party inlets per server (24 ind * 15 GW * 8 TMU)	2 880, if 24 MP individuals per board are used
<p>The 30 individuals on the TMU board can be shared between multi-party and tone sender resources that can be configured per site.</p> <p>The configuration can be, for example:</p> <p>Number of tone senders per board: 4</p> <p>Number of Music-on-Hold/Wait inlets per board: 2</p> <p>Number of multi-party inlets per board: 24</p>	
1)	Theoretically there can be 120 TMU boards per server, i.e. 8 TMU boards per GW, times 15.
2)	Additional keycode receivers are available by the SPU4 (DTMF32) board. Each SPU4 board has 32 keycode receivers. A maximum of 6 SPU4 boards can be supported in a server.
3)	If TMU boards are used and TDM type of extensions (analog or DTS), the following recommendations on number of TMUs are valid (per MGW).
<b>Number of TDM type extensions</b>	<b>Number of TMUs</b>

1-80 <sup>4)</sup>	1
81-320 <sup>4)</sup>	2
321-416 <sup>4)</sup>	3
4)	The values depend on the processor capacity.

**Table 10: Limits for the MGU2/MGU2-X board in Media Gateway MX-ONE Classic / MX-ONE Lite / MX-ONE 1U**

Number of keycode receivers	400 <sup>5)</sup>
Number of keycode senders	400 <sup>5)</sup>
Number of tone message senders	400 <sup>5)</sup>
Number of multi-party inlets per server	64
p5)	Each MGU can have up to circa 400 (the maximum is processor load dependent) resources. See 1/1551-ANF 901 36 MGU Description for details. The MGU resources can also be combined with key code receivers on TMU boards.

**Table 11: Limits for the MGU2 board in Media Gateway MX-ONE Classic / MX-ONE Lite / MX-ONE 1U**

Number of keycode receivers	160 <sup>6)</sup>
Number of keycode senders	160 <sup>6)</sup>
Number of tone message senders	160 <sup>6)</sup>
Number of multi-party inlets per server	64



6)	Each MGU2/MGU2-X can have up to circa 160 (the maximum is processor load dependent) resources. See 2/1551-ANF 901 36 MGU2/MGU2-X Description for details. The MGU2/MGU2-X resources can also be combined with key code receivers on TMU boards.
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**Table 12: Limits for the Tone and Multi-party resources in one MX-ONE Media Server**

Number of MX-ONE Media Servers per server	15 <sup>6)</sup>
Number of tone message senders per MX-ONE Media Server	256
Number of receivers in sunfan (e.g. Music on Hold) Server	256
Number of conference ports	512
Number of conference participants in one connection	8
Number of RTP resources	2000 <sup>7)</sup>
7)	The RTP resources is a shared pool used by conference and intrusion, Recorded Announcements, forced gateway and tone sending.

## 2.3.12 PBX Operator

Operators per server	10
Operators per system	250
Multiparty inlets per operator	4

Maximum number of call origin groups per system	250
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For information about the capacities for PBX Operator, see the description for *MIVOICE MX-ONE FEATURE MATRIX*.

See also the description for *Mitel InAttend*, if that operator type is used.

## 2.3.13 Paging

Number of pageable extensions	10000 per system (1000 per server)
Number of common and extra paging numbers	5000
Simultaneous paging calls	500 per system (50 per server)

For information on system and end-user telephony feature capacities and the associated terminal types, see the description for *MIVOICE MX-ONE FEATURE MATRIX*.

For more information, see the description for *SYSTEM HARDWARE RELIABILITY*.

- BHCC Busy Hour Call Completion - The number of completed calls in an uninterrupted period of one hour, during which the average intensity of traffic is at its maximum.
- Using DELL PowerEdge R4x0 server with Xeon processor family Skylake or newer - BHCC, for a MX-ONE Service Node with a DELL PowerEdge R4x0 server is  $\leq 30$  calls/second.
- Using DELL PowerEdge R440 server with Xeon processor older than the family Skylake - BHCC, for a MX-ONE Service Node with a DELL PowerEdge R4x0 server is  $\leq 15$  calls/second.
- Using Mitel ASU-II based server - BHCC, for a MX-ONE Service Node with Mitel ASU-II = 15 calls/second.
- Using Mitel ASU-III based server - BHCC, for a MX-ONE Service Node with Mitel ASU-III  $\leq 30$  calls/second. With multiple Service Nodes running virtualized on one ASU-III the combined maximum BHCC is 30 calls/second.
- Using Mitel ASU Lite based server - BHCC, for a MX-ONE Service Node with Mitel ASU Lite = 2 calls/second.

# SIP Devices Capacity

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The following table shows the number of extensions supported per server for 15000 devices based on the number of users per device.

Max SIP Devices Capacity	Devices Per User	Max Number of Extensions Per Server
15000	1	15000
15000	2	7500
15000	3	5000
15000	4	3750
15000	8	1875

The following table shows registration measurements results (registration times) in an idle system, without any traffic or other functions loading the CPU.

MX-ONE Platform	Number of Users	Time taken for Registration (in seconds)		
		TCP	UDP	TLS 1.2
EX Gateway	500	10	10	26
	1000	18	18	49
	2500	40	40	68
ASU II	500	9	9	24
	1000	18	18	48

	2500	40	40	68
	5000	52	52	102
	7500	62	62	112
ASU III	500	9	9	24
	1000	18	18	47
	2500	27	28	65
	5000	50	50	101
	10000	67	67	121
VM	500	9	9	24
	1000	17	17	48
	2500	27	28	63
	5000	51	50	101
	10000	68	68	121
	15000	81	80	145

# Line Lengths

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Analog phones, connected to a Media Gateway MX-ONE Classic/Lite/1U, or legacy MD110 hardware= 9 000 meters when using a 0.5 mm twisted pair cable.

Digital phones = 1 000 meters when using 0.5 mm twisted pair cable.



