IP Extension

OPERATIONAL DIRECTIONS

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1 GENERAL

Unless otherwise is stated, the information in this document concerns both the ITU-T H.323 standard and the SIP standard.

An initiation and registration distribution function is available where the MX-ONE Telephony System can distribute the IP extensions to the most suited MX-ONE Service Node based on server capacities. This can be used when it is desired to spread the initiations and/or registrations among different servers in a geographical domain.

It is still possible to set the IP extensions to register to selected (LIM) servers.

This function is an improved version of the load distribution feature, earlier only available for H.323.

1.1 INTRODUCTION

The IP extension feature makes use of a data network to transmit voice communications, permitting the merge of the voice & data infrastructures in a single one.

The IP extension is integrated in the MX-ONE Telephony System architecture by connecting the IP terminals through an IP network (a local area network, typically). Networks based on a 10 Mbit/s or 100 Mbit/s Ethernet interface can be connected directly to the MX-ONE Telephony System.

An IP terminal is a telephone or a PC with specific software and must be compliant to ITU-T H.323 or SIP standards.

The MX-ONE Telephony System is connected to the data network by a dual connection. On one hand, the Network Interface Card (NIC) of the MX-ONE Service Node is used for call control of Media Gateways, IP terminals and other MX-ONE Service Nodes. On the other, the NIC of the Media Gateway Lite, or MX-ONE Classic is used for connecting media between IP terminals and traditional phones. The typical setup is shown in figure 1.

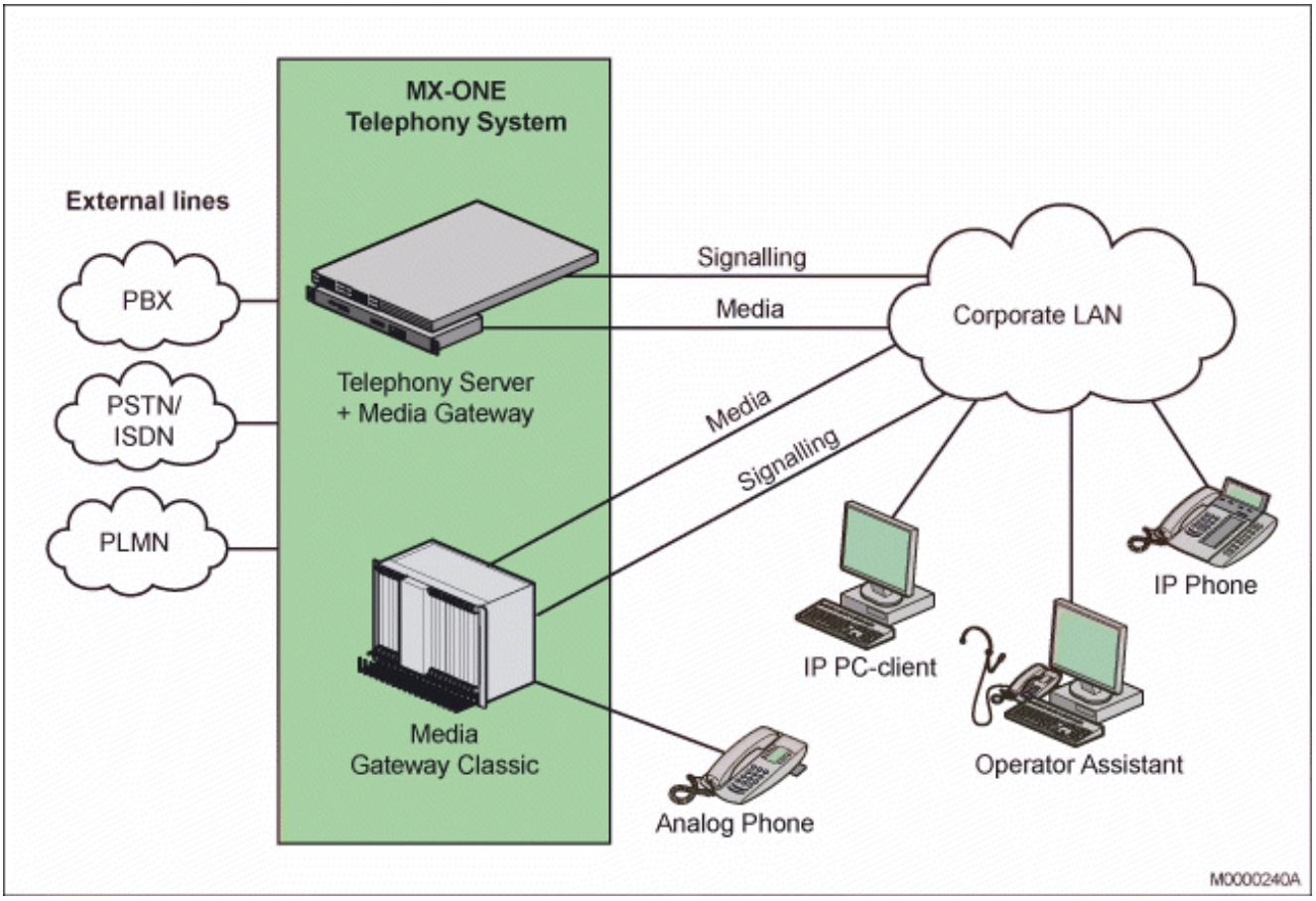

Figure 1: The signalling and media setup for MX-ONE Telephony System

1.2 GLOSSARY

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

2 PREREQUISITES

This section states the prerequisites for H.323 and SIP extensions.

The generic extension directory numbers and related data must be initiated by the *extension* commands.

If initiation or registration distribution is used, IP domains should be used.

3 AIDS

The initiation and configuration of IP extensions is done via an SSH session offering terminal emulation towards the MX-ONE Service Node.

4 REFERENCES

In these operational directions, references are made to the following documents:

Command Descriptions:	*extension_profile* *extension_info* *extension_registration_distribution* *extension_unregistration* *ip_domain* *ip_gatekeeper* *ip_extension* *ip_extension_info* *license_status* *media_gateway_info* *number_initiate* *auth_code* *parallel_ringing* *vdp_data (if a SIP terminal supports the VDP function)* all in the *Technical Reference Guide, unix commands*
Installation Instructions:	*IP Telephones/Terminals* *IP Clients*
Operational Directions:	*Generic Extension* *Call Admission Control* *Emergency Calls, SOS calls* *Call Park Pool*

5 PROCEDURE

5.1 INITIATION

The following work flow must be followed when initiating the IP extension feature:

1. Configuration of IP-related, system-wide data.
2. Configuration of the gatekeeper data.
3. Initiation of an IP terminal.
4. Configuration of the IP terminal.

5.2 REMOVAL

The following work flow must be followed when removing IP extensions or the IP extension feature completely:

1. Removal of IP terminals.

6 EXECUTION

6.1 CONFIGURATION OF IP-RELATED, SYSTEM-WIDE DATA

6.1.1 JITTER BUFFER

IP packets do not always take exactly the same amount of time to be transferred from their source to their destination; there is a variance in these times which is known as jitter. While jitter is usually low, it can be significant in heavily loaded networks.

High jitter causes a significant decrease in voice quality. To alleviate the negative effects of jitter, the FW/SW controlling the DSPs in the Media Gateway and MX-ONE Classic make use of a jitter buffer. Incoming RTP packets are kept in the buffer until it becomes full. The full buffer is then sent over to processing.

The jitter buffer is adaptive by default, but there is a slight trade-off for the size value. A too short buffer will cause voice packets to be dropped, whereas a too long buffer will introduce a noticeable delay in the voice communication.

A configurable static jitter buffer is supported. To change the adaptive jitter buffer into a static one requires high knowledge of the system effects so such modification of the jitter buffer should only be performed by system experts.

6.1.2 CHANGE OF THE SERVICE DISCRIMINATOR FOR AUDIO AND SIGNALLING

It is possible to assign different priorities to packets in an IP network by means of the Differentiated Services (DS) field, formerly known as Type of Service (ToS), in the IP packet header. The Differentiated Services (DS) field is also called Diffserv. Audio and signalling packets are assigned to a higher priority than ordinary, non-real-time data traffic.

The Diffserv value is not meant to be modified by the user. Its value is defined in the system.conf file, which is distributed to all LIMs at system initiation.

6.1.3 CHANGE OF VLAN ID FOR AUDIO (RTP MEDIA PACKETS)

6.1.3.1 General

It is possible to assign different VLAN id on audio packets in an Ethernet network by means of the VLAN tagging field.

Note: Only supported on MGU.

6.1.3.2 Prerequisites

MGU

6.1.3.3 Execution

1. Key the command *media_gateway_info* with the parameter *--attrib* to set the attribute “VLANTagValue” on the media gateway.
2. Key command *media_gateway_info* with the parameter *--commit* to confirm the new parameter settings.
3. Key the command *media_gateway_info* with parameters *-get* and *-nam*e to verify the result.

6.2 CONFIGURATION OF THE GATEKEEPER DATA

6.2.1 GATEKEEPER IDENTIFIER

This section is applicable for both H.323 and SIP. For SIP the gatekeeper should be seen as the Registrar.

6.2.1.1 General

A gatekeeper is known throughout the system by its identifier. This means that every gatekeeper identifier must be unique.

Gatekeeper identifiers are initiated in the exchange with a default value (the word LIM plus the number of the MX-ONE Service Node where they are located). If there is more than one MX-ONE Telephony System connected to the very same IP network, using the default configuration means there would be duplicated gatekeeper names. For this reason, and to allow the system administrator to use whichever naming policy that is chosen, it is possible to change the name of the gatekeeper.

6.2.1.2 Prerequisites

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6.2.1.3 Execution

1. Key the command *ip_gatekeeper -c* with the parameter *--gatekeeper-id* to change the identifier for the chosen gatekeeper (that is, the media gateway of the LIM).
2. Key the command *ip_gatekeeper -p* to verify the result.

6.3 AREA CODE PER EXTENSION

6.3.1 CONFIGURATION OF THE AREA CODE PER EXTENSION

6.3.1.1 General

It is possible to associate an area code to an individual IP extension. When an IP extension dials or is re-directed to a number with a Least Cost Routing access code (LAC), and provided that LCR tables are programmed, the area code is added between the LAC and the rest of the digits. See the description for *LEAST COST ROUTING*.

This is useful in the branch office scenarios where it is required to access the PSTN through local gateways placed at the branch offices. Then, the area code can be used to choose the IP route between the main office and the local gateway.

6.3.1.2 Prerequisites

The area code per individual extension only takes effect when the LAC and the LCR Number Length Table (NLT) are correctly programmed.

The area code per extension must be programmed consistently. For example, in the branch office scenario, the public access code has to be set as LAC so a public number dialled by any extension in the main and branch offices will be translated according to the LCR tables. Then, for non IP extensions and for IP extensions not associated to a domain extension area code, the area code per domain or media gateway or LIM must be set if needed.

Following is the priority order of choosing area code to be added:

1. Home (Extension) area code.
2. Domain area code.
3. Media gateway area code.
4. LIM area code.

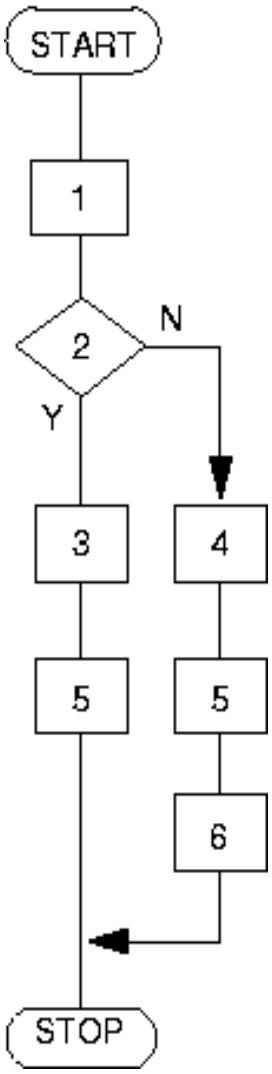
Note: The priority list is valid for “normal calls”. Home area code is not used when the user makes an emergency call.

See the description for *LEAST COST ROUTING*.

6.3.1.3 *Execution*

Follow this flow for each IP domain extension to be assigned to an area code.

Table 1 Configure area code per individual extension

Flow		Measure/Question	Observation/ Comment
	1	Key the command *extension -p* to check if the individual area code is already initiated.	
	2	Is the IP extension's area code already initiated?	
	3	Key the command *extension -c --area-code* to set the area code.	
	4	Key the command *extension -i* to initiate the IP extension's directory number and set the area code.	
	5	Key the command *extension -p* to verify the result.	
	6	Key the command *ip_extension -i* to initiate the extension. Re-register the IP extensions by using the command *extension_unregistration*.	

6.3.2 CHANGE THE NETWORK AREA CODE PER EXTENSION

6.3.2.1 General

It is possible to change the area code associated to an IP extension.

6.3.2.2 Prerequisites

The IP extension’s area code is already initiated.

6.3.2.3 Execution

Key the command *extension -c --area-code* with the new area code.

6.3.3 REMOVE THE NETWORK AREA CODE PER DOMAIN EXTENSION

6.3.3.1 General

To remove the area code associated to an individual IP extension it is needed to remove the IP extension and then initiate it again without area code.

Notice that when the area code is removed for an IP extension but the LAC and LCR Number Length Table (NLT) are kept, the area code used in the LCR translation will be, from now on, the area code of the domain or media gateway or LIM which the IP extension belongs to, of course only when the LAC is dialled.

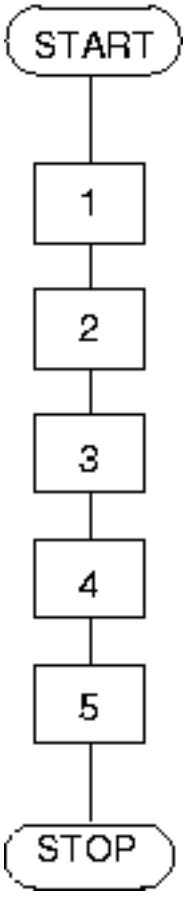
6.3.3.2 Prerequisites

The IP extension’s area code is already initiated.

6.3.3.3 *Execution*

Follow this flow for each IP extension where the area code is to be removed.

Table 2 Remove network area code per extension

Flow		Measure/Question	Observation/ Comment
	1	Key the command *extension -p* to print the area code data.	
	2	Key the command *extension -e* to remove the area code (and extension).	
	3	Key the command *extension -i* to initiate the extension number with the same data and without the area code. Key the *ip_extension -i* command to initiate the IP extension.	
	4	Key the command *extension -p* to verify the result.	
	5	Re-register the IP extensions by using the command *extension_unregistration*.	

6.4 AREA CODE PER DOMAIN

6.4.1 CONFIGURATION OF THE AREA CODE PER DOMAIN

6.4.1.1 *General*

It is possible to associate an area code to a IP domain. When an IP extension of the domain makes an emergency a call, the area code is used to prefix the calling party number sent to the public network.

This is useful in the branch office scenarios where it is required to access the PSTN through local gateways placed at the branch offices. Then, the domain area code can be used to choose the IP route between the main office and the local gateway.

6.4.1.2 Prerequisites

The area code per domain only takes effect when making emergency calls, and in the Call Admission Control function.

The area code per domain must be programmed consistently. For example, in the branch office scenario, the public access code has to be set so a public number dialled/accessed by any extension in the main and branch offices will be prefixed according to the domain associated area code, so a return call from the emergency center can address the correct physical location.

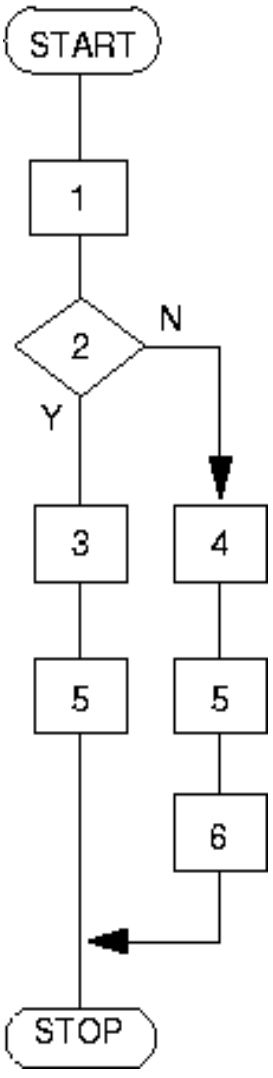
For non IP extensions and for IP extensions not associated to a domain, the area code per Media gateway or LIM must be set if needed.

See operational directions for *EMERGENCY CALLS, SOS CALLS*.

6.4.1.3 *Execution*

Follow this flow for each IP domain to be assigned to an area code.

Table 3 Configure area code per domain

Flow		Measure/Question	Observation/ Comment
	1	Key the command *ip_domain -p* to check if the domain is already initiated.	
	2	Is the IP domain already initiated?	
	3	Key the command *ip_domain -c --area-code* to set the area code.	
	4	Key the command *ip_domain -i* to initiate the IP domain and set the area code.	
	5	Key the command *ip_domain -p* to verify the result.	
	6	Re-register the IP extensions by using the command *extension_unregistration*.	

6.4.2 CHANGE THE NETWORK AREA CODE PER DOMAIN

6.4.2.1 General

It is possible to change the area code associated to an IP domain.

6.4.2.2 Prerequisites

The IP domain is already initiated.

6.4.2.3 Execution

Key the command *ip_domain -c --area-code* with the new area code.

6.4.3 REMOVE THE NETWORK AREA CODE PER DOMAIN

6.4.3.1 General

To remove the area code associated to an IP domain it is needed to remove the IP domain and then initiate it again without area code.

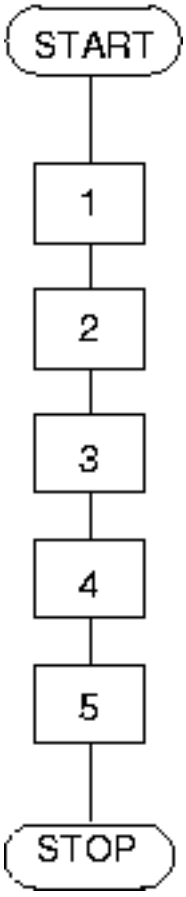
6.4.3.2 Prerequisites

The IP domain is already initiated.

6.4.3.3 *Execution*

Follow this flow for each IP domain where the area code is to be removed.

Table 4 Remove network area code per domain

Flow		Measure/Question	Observation/ Comment
	1	Key the command *ip_domain -p* to print the network domain data.	
	2	Key the command *ip_domain -e* to remove the IP domain.	
	3	Key the command *ip_domain -i* to initiate the IP domain with the same data and without the area code.	
	4	Key the command *ip_domain -p* to verify the result.	
	5	Re-register the IP extensions by using the command *extension_unregistration*.	

6.5 INITIATION AND REGISTRATION DISTRIBUTION

6.5.1 CONFIGURATION OF THE DISTRIBUTION FACILITY

6.5.1.1 General

The initiation and/or registration distribution function has two parts, distributed initiation of extensions, and optionally, distributed registration. The administrator can select to use this function or to initiate the extensions to explicit servers.

When the distribution function is used terminals and servers are to be defined area-wise in IP domains (with arbitrary location names). The servers are first defined with the *ip_gatekeeper* command and then the location is defined with the *ip_domain* command. The same identifying name should be used in both commands.

6.5.1.2 Initiation

When the IP terminals are initiated (by the *extension -i* command) a Home Location Register (HLR) for the IP terminal will be created in the server selected by the system. The server is selected on priority based on location and server capacity.

6.5.1.3 Registration

When registration distribution is enabled the ULR can be created in another server, which increases the probability of a successful login. Registration distribution is disabled by default. The first choice will always be to put the ULR in the same server as the HLR. If there is no capacity to register in this server another server in the same domain will be selected. If there is no capacity there a server with free capacity in the system will be selected.

6.5.1.4 *Scenarios*

Site with Servers

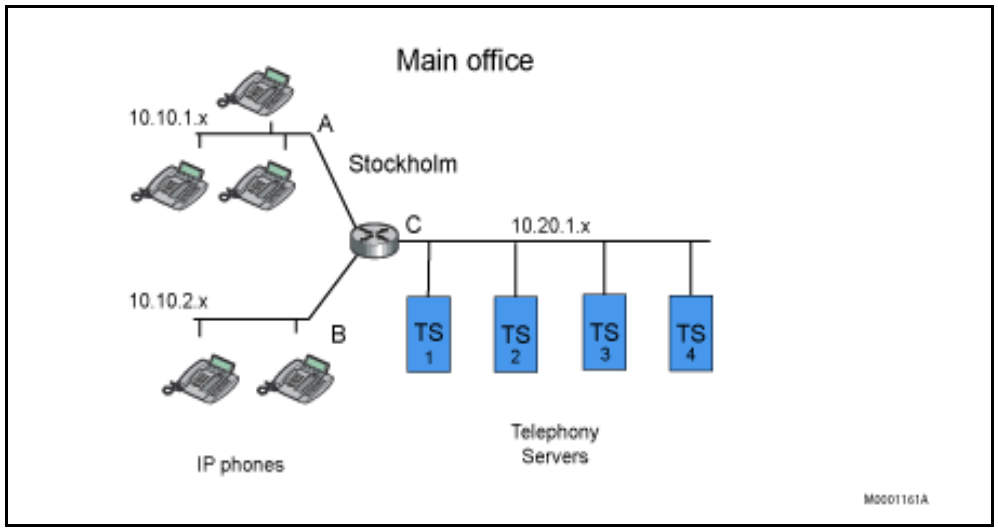


Figure 2: Node with servers and IP phones

There could be a main office with both IP terminals and MX-ONE Service Nodes that belong to the same geographical area. Here the servers should first be defined to be part of the site. This is handled with the *ip_gatekeeper* command. The terminal networks and the server networks should be defined to belong to the same IP domain, by defining the same site identifier name as used for the gatekeeper/registrar. Use the command *ip_domain*.

In Figure the commands would be:

```
ip_gatekeeper -c --lim 1 --gatekeeper-id Stockholm
ip_gatekeeper -c --lim 2 --gatekeeper-id Stockholm
ip_gatekeeper -c --lim 3 --gatekeeper-id Stockholm
ip_gatekeeper -c --lim 4 --gatekeeper-id Stockholm
ip_domain -i --domain-name Stockholm --ip-net 10.10.1.0/24, \
10.10.2.0/24, 10.20.1.0/24
```

Note: If *--domain-name* is used in command *extension*, then the value in the scenario above is Stockholm.

Branch Office with Servers

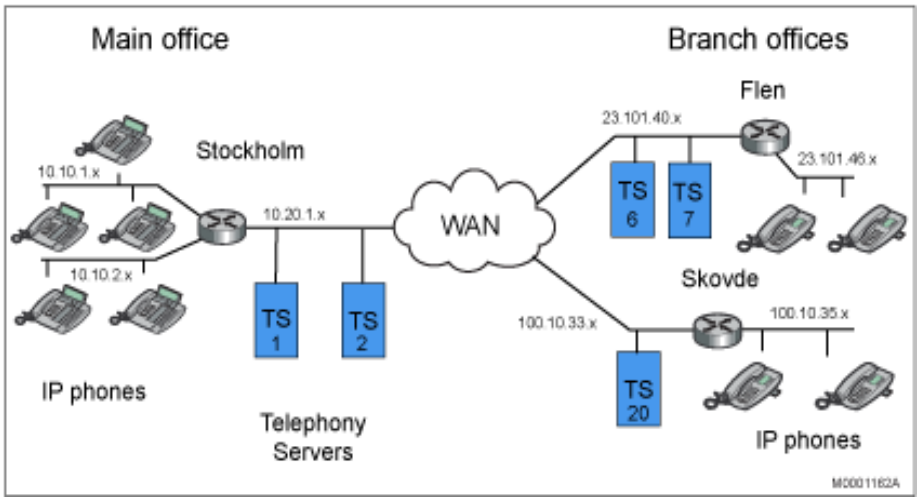


Figure 3: Site with branch offices

There could be a branch office with IP terminals and a small number of servers. The networks for these entities should be defined to belong to the same IP domain. If the bandwidth to the main site is limited Call Admission Control can be defined by selecting the codec priority list. For reference, see chapter 6.6 Call admission control on page 24.

In Figure the commands would be:

```
ip_gatekeeper -c --lim 1 --gatekeeper-id Stockholm
ip_gatekeeper -c --lim 2 --gatekeeper-id Stockholm
ip_gatekeeper -c --lim 6 --gatekeeper-id Flen
ip_gatekeeper -c --lim 7 --gatekeeper-id Flen
ip_gatekeeper -c --lim 20 --gatekeeper-id Skovde
```

Plus the following commands:

```
ip_domain -i --domain-name Stockholm --ip-net 10.10.1.0/24, \
10.10.2.0/24, 10.20.1.0/24
ip_domain -i --domain-name Flen --ip-net 23.101.40.0/24, \
23.101.46.0/24
ip_domain -i --domain-name Skovde --ip-net 100.10.33.0/24, \
100.10.35.0\24
```

Note: If *--domain-name* is used in command *extension*, then the value in the scenario above is Stockholm, Flen or Skovde.

Server Farm

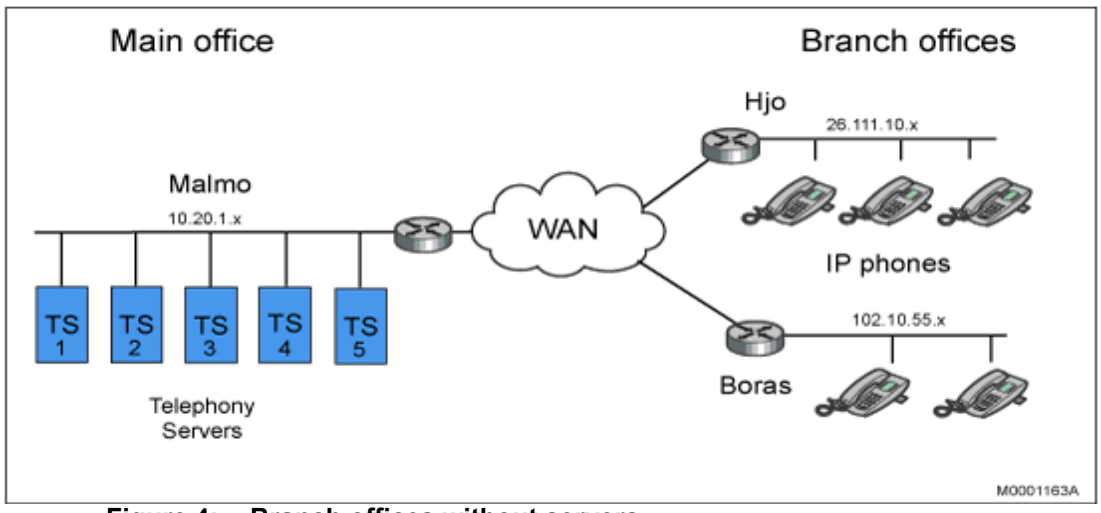


Figure 4: Branch offices without servers

In the server farm case, where all servers are located at one geographical area and the user terminals are located at different areas, the terminal networks should be defined as IP domains that correspond to the respective area. The servers can use the default domain and need not be defined explicitly.

In Figure the setup could be like this:

ip_domain -i -domain-name Hjo ip-net 26.111.10.0/24
ip_domain -i -domain-name Boras -ip-net 102.10.55.0/24

If registration distribution is used, the administrator can decide how many IP extensions that may register to an individual server. In this case use the command:

extension_registration_distribution -c --lim x --max-terminals y

Note: If *--domain-name* is used in command *extension*, then the value in the scenario above is DEFAULT.

More then one domain per server

If more then one IP domain shall be initiated on the same server the following command shall be used:

ip_domain -i --domain-name Karlstad --ip-net 27.111.10.0/24 --server-ip-net 27.111.12.10/32

ip_domain -i --domain-name Hjo --ip-net 27.111.11.0/24 --server-ip-net 27.111.12.10/32

Where the '--server-ip-net' holds the server net.

Note: If *--domain-name* is used in command extension, then the value in the scenario above is Karlstad or Hjo. However both names will return the same server (LIM).

6.5.1.5 Prerequisites

It is mandatory to use an IP domain (a site name) when using initiation/registration distribution, even if only one domain is used. It is important to define the IP networks that are part of the domain. There is a default domain for the whole system. The gatekeeper (registrar) should be given the same site identity as the IP domain.

The initiation/registration distribution facility also requires terminals with support for the load distribution mechanism, for example, DBC 446, DBC 434, DBC 433, DBC 425, DBC 422, DBC 420 in H.323 mode, and Mitel 6700/6800/6900 SIP phones.

6.5.1.6 Execution

Follow this flow for every terminal that should take part in the initiation/registration distribution.

Initiation

1. Set the gatekeeper/registrar identity for all servers in the domain to the same site name as is intended for the IP domain (in step 2). Use the command **ip_gatekeeper -c --lim --gatekeeper-id**
2. Set the IP domain name. Use the command **ip_domain -i --ip-domain-name --ip-net**, where ip-domain-name is the site name.
3. Verify the setup by the command **ip_domain -p**.
4. Define the Common Service Profiles (CSPs) to be used by different extensions. Use the command **extension_profile -i**.
5. Initiate the extensions in their domains. Use the command *extension -i --domain-name* or use the command *extension -i -lim* for the LIM servers in the domain.

   If *--domain-name* is used the Telephony System will distribute where the HLR is created depending on the server characteristics on maximum number of IP extensions.
6. Initiate the extensions as IP extensions. Use the command *ip_extension -i.* See chapter 6.7 IP terminal on page 25.
7. Verify that the IP extensions have been properly defined. Use the command *ip_extension -p*

Registration

8. If is desired, enable registration distribution by using the command *extension_registration_distribution -i*

   The command makes it possible for the ULR to be created in an other (LIM) server than where the HLR was initiated.

After terminal logon the ULR, HLR distribution can be seen.

9. Use the command *extension_info --terminal-type h323,sip -p*

6.5.2 REMOVAL OF THE REGISTRATION DISTRIBUTION FACILITY

6.5.2.1 General

The registration distribution facility, where the ULRs are distributed to the HLR servers or to some other MX-ONE Service Nodes, may be removed.

6.5.2.2 Prerequisites

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6.5.2.3 Execution

Use the command *extension_registration_distribution -e*

6.6 CALL ADMISSION CONTROL

6.6.1 CONFIGURE CALL ADMISSION CONTROL

6.6.1.1 General

The purpose of this facility is to control the number of calls through a low-bandwidth link, used by a remote branch office to link its IP extensions to the exchange, in order to maintain a certain QoS in the calls where the media goes through this low-bandwidth link.

The bandwidth is set for the outgoing IP calls for each “IP domain”. The number of calls per MX-ONE Service Node in a domain is controlled by means of a codec priority-ordered list. Each inter-domain IP call takes a part of the available bandwidth.

See the operational directions for *CALL ADMISSION CONTROL* for more information on how this feature works and further considerations on how to set it up.

6.6.1.2 Prerequisites

The call admission control facility is closely tied to the configuration of the system.

All the IP extensions located in the remote branch office must be registered in the same domain. The IP extensions of the remote branch office might be registered in different MX-ONE Service Nodes, but there always has to be IP connectivity between all the IP extensions registered in the same domain.

6.6.1.3 Execution

1. Key the command *ip_domain -p* to check if the IP domain has already been initiated.
2. If the domain has already been initiated, key the command *ip_domain -c* to change the bandwidth and possibly the codec priority-ordered list for the IP calls. If not, take the next command.
3. Key the command *ip_domain -i* to initiate a network domain name with the included LAN segments and the supported bandwidth for outgoing IP calls.
4. Key the command *ip_domain -p* to verify that the IP domain has been properly defined.

Iterate step 1 to step 4 for all the cooperating IP domains.

6.6.2 CHANGE IP DOMAIN BANDWIDTH AND CODEC PRIORITY ORDER FOR CALL ADMISSION CONTROL

6.6.2.1 General

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6.6.2.2 Prerequisites

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6.6.2.3 *Execution*

1. Key the command *ip_domain -p* to list the MX-ONE Service Nodes that are serving the IP domain.
2. Key the command *ip_domain -c* to change the bandwidth for the IP domain and possibly the priority order between the codecs.
3. Key the command *ip_domain -p* to verify the result.

6.6.3 REMOVE CALL ADMISSION CONTROL

6.6.3.1 *General*

The call admission control facility may be removed.

6.6.3.2 *Prerequisites*

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6.6.3.3 *Execution*

Put the bandwidth to zero. This will restore the default, unlimited, bandwidth.

1. Key the command *ip_domain -p* to list the MX-ONE Service Nodes that are serving the IP domain.
2. Key the command *ip_domain -c* to change the bandwidth to zero for the IP domain.
3. Key the command *ip_domain -p* to verify the result.

6.7 IP TERMINAL

6.7.1 INITIATION OF AN IP TERMINAL

6.7.1.1 *General*

A generic extension directory number is initiated as an IP terminal by the *ip_extension* command.

6.7.1.2 *Prerequisites*

The directory number must be initiated as a generic extension (number_initiate, extension_profile, and extension -i), with an appropriate Common Service Profile (CSP). See the operational directions for *GENERIC EXTENSION*.

A licence for IP terminals (IP-EXTENSION) must be available. Use the license_status command to verify this fact.

6.7.1.3 Execution

1. Key the command *extension -p* to verify the directory number data.
2. Key the command *ip_extension -i -d* to initiate the directory number as an IP terminal and, optionally, state a backup answering position for it.
3. Key the command *ip_extension -p* to verify the result.

Note: The backup answering position is optional. It is typically used to provide an alternative access, usually through the PSTN, to IP extensions in a branch office when the IP link between the branch office and the MX-ONE is down.

6.7.2 INITIATION OF MULTIPLE IP TERMINALS ON ONE NUMBER (FORKING)

6.7.2.1 General

A generic extension directory number can be initiated to allow several IP terminals (also other generic extension types can be allowed) by options on maximum number of manually registered terminals in the *ip_extension* command.

6.7.2.2 Prerequisites

The directory number must be initiated as a generic extension (number_initiate, extension_profile, and extension -i), with an appropriate Common Service Profile (CSP). See the operational directions for *GENERIC EXTENSION*.

A license for IP terminals (IP-EXTENSION) must be available. Use the license_status command to verify this fact. Also other licenses may have to be available, for example video media permission or BluStar client license(s), if such functionality is intended to be used.

6.7.2.3 Execution

1. Key the command *extension -p* to verify the directory number data.
2. Key the command *ip_extension -i -d* to initiate the directory number as an IP terminal and set the *-max-terminals* parameter > 1.
3. Key the command *ip_extension -p* to verify the result.
4. Key the command *parallel_ringing -i -d* if the extensions should ring simultaneously.
5. Key the command *parallel_ringing -p* to verify the result.

Note: The extension will now allow the stated maximum number of IP terminals/clients to register on that number. However, the maximum cannot exceed the equivalent parameter in the command *extension*, or the value 4, and is shared with other generic extension types.

6.7.3 REMOVAL OF AN IP TERMINAL

6.7.3.1 General

A generic extension directory number is ended as an IP extension by the ip_extension -e command.

The ip_extension -e command will remove an IP extension regardless of if it is registered or not and regardless of its traffic state: ongoing calls will be terminated at once and the IP extension removed when the command is issued.

6.7.3.2 Prerequisites

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6.7.3.3 Execution

1. Key the command *ip_extension -p* to check that the directory number has been initiated as an IP terminal.
2. Key the command *ip_extension -e* to terminate the directory number as an IP terminal.
3. Key the command *ip_extension -p* to verify the result.
4. If the IP extension was a Mitel 6x00 SIP terminal, key the command *vdp_data -p* to check if there is Visitor Desk Phone data.
5. If the IP extension was a Mitel 6x00 SIP terminal, key the command *vdp_data -e* to remove the Visitor Desk Phone data.

Note: If the automatic gatekeeper discovery facility is not used, the maintenance personnel should remember to remove the newly removed terminal from the list.

Note: The fact that IP terminals are removed regardless of their registration or traffic status, and calls in progress are terminated, may be useful to protect the system from unwanted IP terminal users (that is, crackers)

6.7.4 DEREGISTRATION OF AN IP TERMINAL

This section is applicable for the:

- SIP 6900 terminal family.
- SIP 6800 terminal family.
- SIP 6700 terminal family.
- H.323 terminals: MiVoice DBC 425, DBC 422, DBC 420, DBC 433, DBC 434, DBC 444, and DBC 446.

6.7.4.1 General

An IP terminal that is registered in the system can be deregistered by using the *extension_unregistration* command. A parameter in this command can force the deregistration of the IP terminal even if it is not free, clearing all the calls the terminal may have. If this parameter is omitted, the deregistration is not performed if the terminal is busy. The main differences between *extension_unregistration* and *extension -e* are: (valid for extension_unregistration) - the IP terminal needs to be registered in the system - the IP terminal is not terminated in the MX-ONE Service Node as such (it keeps being an IP terminal) - there is no need to initiate the extension again (by extension -i) to be able to use the IP terminal. It is only necessary to register it in the system.

This function may be used to update the firmware in the MX-ONE IP terminal. When deregistered by the MX-ONE Service Node, the terminal will automatically search for the latest version of its firmware. It may also be used by the system administrator to protect the system from unwanted IP terminal users (crackers), to force the refreshment of a not responding terminal, to force a new registration of a user when the PIN code has been changed, and so on.

Note: Registered (Logged On) Mitel 6700/6800/6900 terminals will clear the local cfg file when the --forced parameter is used.
This means that the user has to manually enter extension number and optional PIN code to register in the MX-ONE system again.

6.7.4.2 Prerequisites

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6.7.4.3 Execution

1. Key the command *ip_extension -p* to check that the terminal associated to a directory number is registered.
2. Key the command *extension_unregistration* to deregister the IP terminal.
3. Key the command *ip_extension -p* to verify the result.

6.7.5 SET THE PIN CODE OF AN IP TERMINAL

6.7.5.1 General

It is possible to assign a PIN code to an IP terminal which was initiated without one.

The Regional (Individual) Authorization Code (RAC) is used as PIN code.

6.7.5.2 Prerequisites

All permitted authorization codes, with range 1 - 7 digits, must have been initiated with the *auth_code* command.

6.7.5.3 Execution

Key the procedure for locking the extension with RAC:

* 76 * authorization code #

6.7.6 CHANGE THE PIN CODE OF AN IP TERMINAL

6.7.6.1 General

It is possible to change the PIN code associated to an IP terminal.

It is possible to assign a PIN code to an IP terminal which was initiated without one.

It is also possible to completely remove the PIN code.

The RAC is used as PIN code.

6.7.6.2 Prerequisites

All permitted authorization codes, with range 1 - 7 digits, must have been initiated with the *auth_code* command.

6.7.6.3 Execution

Key the procedure for changing RAC for the extension:

* 74 * previous authorization code * new authorization code #

6.7.7 CHANGE OF THE BACKUP ANSWERING POSITION FOR AN IP TERMINAL

6.7.7.1 General

It is possible to change the backup answering position number for an IP terminal.

It is also possible to assign a backup answering position to an IP terminal which was initiated without one.

6.7.7.2 Prerequisites

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6.7.7.3 Execution

1. Key the command *ip_extension -p* to check that the directory number has been initiated as an IP terminal.
2. Key the command *extension -c --backup-number* to change the backup answering position number for the IP terminal, or to assign one.
3. Key the command *ip_extension -p* to verify the result.

6.7.8 PRINT THE IP TERMINAL DATA

6.7.8.1 General

The data regarding an IP terminal can be printed by using the *ip_extension -p* command.

Depending on whether the IP terminal is registered in the system (the gatekeeper has information about the terminal), the printout will be different:

- If the IP terminal is not registered, only the directory number and the backup answering position number will be displayed (backup position will only be shown if it has been assigned).
- If the IP terminal is registered, the printout will display information about the number of registered terminals allowed, the registration type, the IP address the terminal has been assigned, and the board ports the terminal is using for communication with the MX-ONE.

See the command description for *IP_EXTENSION*.

6.7.8.2 Prerequisites

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6.7.8.3 Execution

Key the command *ip_extension -p* to verify the data regarding the IP terminal.

6.7.9 PRINT THE IP TERMINAL REGISTRATION DATA

This section is only applicable for MX-ONE IP terminals.

6.7.9.1 General

The registration information regarding an IP terminal can be printed by using the *ip_extension_info* command.

Depending on whether the IP terminal is registered in the system (the gatekeeper has information about the terminal), the printout will be different:

- In case the IP terminal is not registered, only the directory number will be displayed.
- If it is registered, the printout will display the ULR LIM, the IP address, and port number(s) of the IP terminal. RAS port is only used by H.323 terminals.

See the command description for *IP_EXTENSION_INFO*.

6.7.9.2 Prerequisites

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6.7.9.3 Execution

Key the command *ip_extension_info* to print the registration data regarding the IP terminal.

6.7.10 PRINT THE IP TERMINAL REVISION AND TYPE DATA

This section is only applicable for MX-ONE IP terminals.

6.7.10.1 General

The revision data, type and vendor identity regarding an IP terminal can be printed by using the *extension_info* command.

Depending on whether the IP terminal is registered in the system (the gatekeeper has information about the terminal), the printout will be different:

- In case the IP terminal is not registered, only the directory number will be displayed.
- If it is registered, the printout will display the revision data, terminal identity, type, and the vendor identity of the IP terminal.

See the command description for *EXTENSION_INFO*.

6.7.10.2 Prerequisites

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6.7.10.3 *Execution*

Key the command *extension_info* to print the protocol version, number of ULRs, HLR location, revision data and the vendor identity regarding the IP terminal.

6.8 IP TERMINAL CONFIGURATION

The configuration of the IP terminal depends on the type of terminal, since it can vary from a telephone to a PC with software compliant to the recommendation.

For details, see installation and administrator instructions for *IP TELEPHONES/CLIENTS*.

6.9 CALL PARK POOL

The Call Parking Pool feature is available for IP extensions, if configured. The function provides a possibility for ‘remote’ parking of a call at a dedicated hunt group with SIP extension members, which must be configured specifically for the purpose. See operational directions for *CALL PARK POOL*.

6.10 EMERGENCY CALLS, SOS CALLS

See operational directions for *EMERGENCY CALLS, SOS CALLS*.

7 TERMINATION

Inform the department/person responsible for telephony matters if any alteration is made.

If any exchange data have been changed, a dump to backup media must be performed.