

# Installation and Configuration Guide for GX and EX Controller

APPLICATION NOTE

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## READING INSTRUCTIONS



**Note!** Important information.



**Tip!** Useful information.

## INTRODUCTION

This document describes a typical scenario for a branch office with survivability and local presence.

It contains both the GX and the EX gateways.

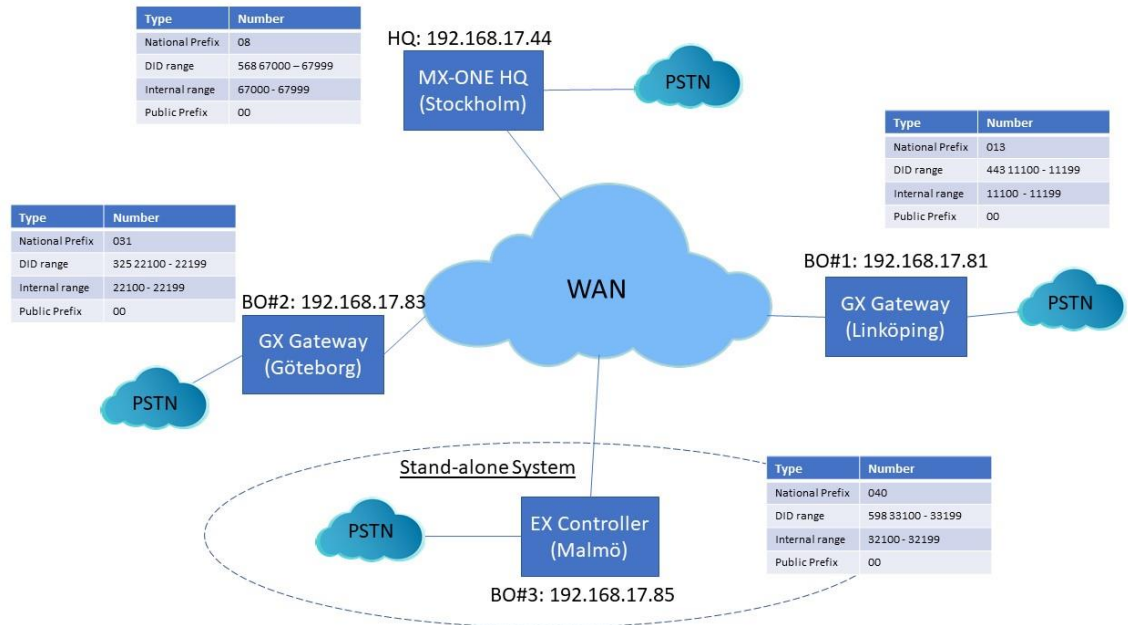


Figure 1 – EX and GX Controller Gateways



**Note!** The EX gateway can only be used as a stand-alone system.

## PRE-REQUISITES

When planning the number series in the branch office following must be considered.

- The extension range must be coherent and matching the local DID number series (if local presence is used).
- MX-ONE SW must be at least version 7.0.
- The firmware level of the EX-Controller and GX-Gateway shall be at least 'Dgw 42.3.1032-MT' with profile 'S100-MT-D2000-45' for GX-Gateway and 'STNL-MT-D2000-65' for EX-Controller.

Other considerations/restrictions:

- VDP logon with SCA/SCABR is not working when assigned to a soft key.
- A SIP outbound proxy address must be assigned in the 'startup.cfg' file, that is, the SIP outbound proxy address is the local address of the EX-Controller / GX-Gateway.

# 1 SETTING UP MX-ONE FOR GX CONTROLLER

## 1.1 NUMBER ANALYSIS

### NUMBER ANALYSIS DATA

TYPE OF SERIES	NUMBER SERIES
EXTENSION NUMBER SERIES	10000 - 31999 33200 - 49999 67000 - 67999
EXTERNAL DESTINATION CODE	068 081 – 088  321 331 81 - 88
LCR ACCESS CODE	00

### CALL DISCRIMINATION DATA

TYPE OF SERIES	NUMBER SERIES
EXTERNAL/INTERNAL NUMBER	CDCAT CUSTOMER
NUMBER ANALYSIS DATA	-

## 1.2 EXTENSION DATA

MDSH> extension -p -d 67820..67822,11101..11106,22101..22106

### Directory Number Profile

Dir	Cust	Lim	Csp	Feature	Lang	Max	Secretary	Max	Security	AMC	Video	BluStar	Third	
Party	Csta	Free	On	Hotline	Hotline	Num	Backup	Num	Area					
			level			Cost		Term	Exception			Client	Mod	SIP
Client	Supp		Second	Line						Code				
1110100	01	1	9	-	-	No	1	Yes	No	No	-	No		
			-	-		08101344311101		013						
1110200	01	1	9	-	-	No	1	Yes	No	No	-	No		
			-	-		08101344311102		013						
1110300	00	1	9	-	-	No	1	Yes	No	No	-	No		
			-	-		08101344311103		013						
1110400	00	1	9	-	-	No	1	Yes	No	No	-	No		
			-	-		-		-						
1110500	00	1	9	-	-	No	4	Yes	No	No	-	No		
			-	-		08101344311105		013						
1110600	00	1	9	-	-	No	4	Yes	No	No	-	No		
			-	-		08101344311106		013						
2210100	00	1	9	-	-	No	4	Yes	No	No	-	No		
			-	-		082031325221101		031						



22102	0	1	9	-	-	No	4	Yes	No	No	-	No
00	0		-	-		082031325221102	031					
22103	0	1	9	-	-	No	4	Yes	No	No	-	No
00	0		-	-		082031325221103	031					
22104	0	1	9	-	-	No	4	Yes	No	No	-	No
00	0		-	-		082031325221104	031					
22105	0	1	9	-	-	No	4	Yes	No	No	-	No
00	0		-	-		082031325221105	031					
22106	0	1	9	-	-	No	4	Yes	No	No	-	No
00	0		-	-		082031325221106	031					
67820	0	1	11	-	-	No	4	Yes	No	No	-	No
00	1		-	-		-	-					
67821	0	1	9	-	-	No	4	Yes	No	No	-	No
00	0		-	-		-	-					
67822	0	1	9	-	-	No	1	Yes	No	No	-	No
00	1		-	-		-	-					

MDSH>

#### Common Service Profile 9:

Cust: 0

Traf : 0103151515

Serv: 111100011001000000000100000300

Cdiv: 111000111010000

Roc: 000001

Npres: 0011000

Offered Time: 0

Forced DisconnectTime: 0

CnnLog: 0

Csp Name: Standard

#### Common Service Profile 11:

Cust: 0

Traf : 0103151515

Serv: 111130011001000000000100000300

Cdiv: 111000111010000

Roc: 000001

Npres: 0011000

Offered Time: 0

Forced DisconnectTime: 0

CnnLog: 0

Csp Name: Intrusion

## 1.3 LEAST COST ROUTING DATA

### LEAST COST DESTINATION DATA

#### EXTERNAL NUMBER TABLE

ENTRY	TRC	PRE	CONF
00013443111	8		N
00031325	8		N
00040598	8		N
00084226	7		N
000856867	7		N

END

### LEAST COST DESTINATION DATA

#### NUMBER LENGTH TABLE

ENTRY	TRC	PRE	CONF	MIN	MAX	ACF
001	0		N	6	18	Y
002	0		N	6	18	Y
003	0		N	6	18	Y
004	0		N	6	18	Y
005	0		N	6	18	Y
006	0		N	6	18	Y
007	0		N	6	18	Y
008	0		N	6	18	Y
009	0		N	6	18	Y

### LEAST COST DESTINATION DATA

#### NUMBER TABLE

ENTRY	TRC	PRE	ACCT	FRCT	TOLL	CBCS	BTON	TNS	OSA
00013	5		0	1	1111111111111111		0		
00031	5		0	2	1111111111111111		0		
00040	5		0	3	1111111111111111		0		
0008	4		0	4	1111111111111111		0		

END

### LEAST COST DESTINATION DATA

#### FICTITIOUS DESTINATION TABLE

FRCT	TZONE	PRE
1	1	081
2	1	083
3	1	085
4	1	088

END

## 1.4 ROUTE DATA

### 1.4.1 ROCAP

#### ROUTE CATEGORY DATA

ROU BCAP	CUST SEL	TRM	SERV	NODG	DIST	DISL	TRAF	SIG
81 001100	7110000000000010	4	3100000001	0	30	128	03151515	0111110000A0
83 001100	7110000000000010	4	3100000001	0	30	128	03151515	0111110000A0
211 001100	7110000000000010	4	3100000001	0	30	128	03151515	0111110000A1

### 1.4.2 RODAP

#### ROUTE DATA

ROU	TYPE	VARC	VARI	VARO	FILTER
81	TL66	H'00000000	H'00000000	H'00000000	NO
83	TL66	H'00000000	H'00000000	H'00000000	NO
211	TL66	H'00000000	H'00000000	H'00000000	NO

### 1.4.3 SIP ROUTE

One SIP route to each branch node is specified.

Route 81 towards BO#1 (Linköping)

route : 81

```

protocol    = tcp
profile     = Default
service     = PUBLIC
uristring0  = sip:?@192.168.17.81
fromuri0    = sip:?@192.168.17.44
remoteport  = 5070
accept      = TRUNK_INFO
match       = user=trunk
register     = NO_REG

```

Route 83 towards BO#2 (Göteborg)

route : 83

```

protocol    = tcp
profile     = Default
service     = PUBLIC
uristring0  = sip:?@192.168.17.83
fromuri0    = sip:?@192.168.17.44
remoteport  = 5070
accept      = TRUNK_INFO

```

match = user=trunk

register = NO\_REG

Route 211 towards BO#3 (Malmö)

route : 211

protocol = udp

profile = MXONE-tieline

service = PRIVATE\_SERVICES

uristring0 = sip:?.@192.168.17.94;tgrp=BO3

fromuri0 = sip:?.@192.168.17.44;tgrp=BO3

accept = ALL

register = SET\_BY\_PROFILE

trusted = TRUST\_BY\_PROFILE



**Note!** BO#3 is only reached by SIP trunks as it is an EX controller system running an own instance of MX-ONE.

## 2 SETTING UP THE GX GATEWAY

This section describes how to setup BO#1 (Linköping).

Setting up BO#2 (Göteborg) is similar, only numbering information and own IP-address is changed.

### 2.1 LOGON

This section describes how to setup BO#1.

Factory Reset the EX Controller and plug in the network cable to the ETH1 port on EX Controller (If DHCP is running in the network).



**Note!** If DHCP is not running into the network then, plug in the network cable to the ETH2 port on EX Controller and use the default IP address of 192.168.0.10 to open the EX Controller Interface.

User Name:

Password:

Login

This section describes how to setup BO#1.

1. Factory Reset the EX Controller and plug in the network cable to the ETH1 port on EX Controller (If DHCP is running in the network).
  - User name/password: public /
  - User name/password: admin/administrator
2. Plug in the analog phone in the FXS port 1 of the EX Controller and dial \*#\*0 to know the IP address of the EX Controller assigned by using DHCP server.
3. Log into the EX Controller by using the above-mentioned IP address and navigate as described below to configure.

### 2.2 NETWORK SETTINGS

#### 2.2.1 HOST

4. Select **Network>Host** and keep the default configuration interface as mentioned below.

System	Network	SIP Proxy	SBC	ISDN	POTS	SIP	Media	Telephony	Call Router	Management	Reboot
Status	Host	Interfaces	VLAN	QoS	Local Firewall	IP Routing	Network Firewall	NAT	DHCP Server		

Automatic Configuration Interface	
Automatic IPv4 config source network:	<input type="text" value="Uplink"/>
Automatic IPv6 config source network:	<input type="text" value="UplinkV6"/>

5. Change to Static IP-address and enter default Gateway (GW).

Default Gateway Configuration	
<b>IPv4</b>	
Configuration Source:	Static
Default Gateway:	192.168.17.1
<b>IPv6</b>	
Configuration Source:	Automatic IPv6
Default Gateway:	

6. Change to static DNS server and enter IP-address or FQDN to DNS server.

DNS Configuration	
Configuration Source:	Static
Primary DNS:	10.105.64.3
Secondary DNS:	
Third DNS:	
Fourth DNS:	

7. Change to static SNTP server, enter time server data.

SNTP Configuration	
Configuration Source:	Static
<b>Static Servers:</b>	
Primary SNTP:	pool.ntp.org
Secondary SNTP:	
Third SNTP:	
Fourth SNTP:	
<b>Synchronization:</b>	
Synchronization Period:	1440
Synchronization Period On Error:	60

8. Set the **Static Time Zone**.

Valid options are:

- Pacific Time (Canada and US) : PST8PDT7,M3.2.0/02:00:00,M11.1.0/02:00:00
- Mountain Time (Canada and US) : MST7MDT6,M3.2.0/02:00:00,M11.1.0/02:00:00
- Central Time (Canada and US) : CST6CDT5,M3.2.0/02:00:00,M11.1.0/02:00:00
- Eastern Time (Canada and US) : EST5EDT4,M3.2.0/02:00:00,M11.1.0/02:00:00
- Atlantic Time (Canada) : AST4ADT3,M3.2.0/02:00:00,M11.1.0/02:00:00
- GMT Standard Time : GMT0DMT-1,M3.5.0/01:00:00,M10.5.0/02:00:00
- W. Europe Standard Time : WEST-1DWEST-2,M3.5.0/02:00:00,M10.5.0/03:00:00
- China Standard Time : CST-8
- Tokyo Standard Time : TST-9
- Central Australia Standard Time : CAUST-9:30DCAUST-10:30,M10.5.0/02:00:00,M3.5.0/02:00:00
- Australia Eastern Standard Time : AUSEST-10AUSDST-11,M10.5.0/02:00:00,M3.5.0/02:00:00
- UTC (Coordinated Universal Time) : UTC0

Time Configuration	
Static Time Zone:	WEST-1DWEST-2,M3.5.0/02:00:00,M10.5.0

- Leave all other items as it is and click **Apply** when finished.

## 2.3 INTERFACES

- Go to **Network>Interface**.

System	<b>Network</b>	SIP Proxy	SBC	ISDN	POTS	SIP	Media	Telephony	Call Router	Management	Reboot
Status	Host	<b>Interfaces</b>	VLAN	QoS	Local Firewall	IP Routing	Network Firewall	NAT	DHCP Server		

- Change **Uplink** to **IpStatic (IPv4 Static)** and enter the static IP-address and Static Default Gateway.

Network Interface Configuration						
Name	Link	Type	Static IP Address	Static Default Router	Activation	
Lan1	eth2-5	IpStatic (IPv4 Static)	192.168.0.10/24		Enable	-
Uplink	eth1	IpStatic (IPv4 Static)	192.168.17.81/24	192.168.17.1	Enable	-
UplinkV6	eth1	Ip6Static (IPv6 Static)			Disable	-
						+

- Leave all other items as it is and click **Apply** when ready.



**Note!** When the IP-address is changed the connection is lost and a new logon must be done with the new IP-address.

## 2.4 LOCAL FIREWALLS

- Go to **Network>Local Firewall**.

System	<b>Network</b>	SIP Proxy	SBC	ISDN	POTS	SIP	Media	Telephony	Call Router	Management	Reboot
Status	Host	Interfaces	VLAN	QoS	<b>Local Firewall</b>	IP Routing	Network Firewall	NAT	DHCP Server		

- If local firewall security is needed change default policy to **Drop**.

Configuration Modified:	
	No

Local Firewall Configuration	
Default Policy:	Drop
Blacklist Timeout:	60
Blacklist Rate Limit Timeout:	60

- Enter the networks for which traffic can enter from.

Local Firewall Rules											
#	Activation	Source Address	Source Port	Destination Address	Destination Port	Protocol	Blacklist enable	Action	Rate Limit Value	Rate Limit Time Period	
1	Enable	192.168.17.0/24		Uplink		All	<input type="checkbox"/>	Accept	10	60	^ v + -
2	Enable	172.17.17.0/24		Uplink		All	<input type="checkbox"/>	Accept	10	60	^ v + -
3	Enable	10.105.0.0/16		Uplink		All	<input type="checkbox"/>	Accept	10	60	^ v + -
											+

- Click **Save** or **Save & Apply** when ready.












## 2.5 SESSION BOARD CONTROLLER (SBC)

### 2.5.1 CONFIGURATION

















1. Go to **SBC>Configuration**. The following Call Agents are present.


System	Network	SIP Proxy	<b>SBC</b>	ISDN	POTS	SIP	Media	Telephony	Call Router	Management	Reboot
Status	Configuration	Rulesets	Live Calls	Running Config	Events	Registration					

Configuration Modified:	no
-------------------------	----

Call Agent Configuration							
Name	Enable	Gateway	Signaling Interface	Media Interface	Peer Host	Peer Network	
local_users_ca	<input checked="" type="checkbox"/>		uplink_s	uplink_m		0.0.0.0/0	 
trunk_lines_ca	<input checked="" type="checkbox"/>	trunk_lines_gw		loop_m			 
remote_users_ca	<input type="checkbox"/>		uplink_s	uplink_m			 
MX-One_LIM1	<input checked="" type="checkbox"/>		uplink_s	uplink_m	192.168.17.44		 
MX-One_LIM2	<input type="checkbox"/>		uplink_s	uplink_m	lim2.mitel.com		 
							

2. Insert A-Number prefix and B-number prefix. These numbers are to be added in front of the numbers in when the GW is in survivable mode, that is, the call is routed to PSTN and thus needs to be prefixed.
3. Enter the number range that is allowed in the branch in the PATTERN parameter. For example, 111[0-9][0-9]\$ means that the allowed number range in this branch is 11100 – 11199.

Routing Rulesets				
Priority	Name	Parameters		
1	MX-One_local_users_failover_to_trunk	ANUMBER=013443BNUMBER=08568	  	
2	MX-One_to_trunk_lines	PATTERN=PATTERN=111[0-9][0-9]\$	  	
3	MX-One_trunk_lines_to_local_users		  	
4	MX-One_routes_with_basic_local_survivability_TCP		  	
5	MX-One_routes_with_basic_local_survivability_UDP		  	
				

4. Configure each call agent (ca).
5. Click  to enter specific data for each call agent.

#### 5.5.1.1 Local\_users\_ca

- Enter the IP-address of MX-ONE to the DOMAIN variable.
- Enter the number range that is allowed in the branch in the PATTERN parameter. For example, 111[0-9][0-9]\$ means that the allowed number range in this branch is 11100 – 11199.
- Insert A-Number prefix and B-number prefix. These numbers are to be added in front of the numbers in when the GW is in survivable mode, that is, the call is routed to PSTN and thus needs to be prefixed.



Configure Call Agent	
	Value
<b>Call Agent Parameters</b>	
Name	local_users_ca
Enable	<input checked="" type="checkbox"/>
Gateway	
Signaling Interface	uplink_s
Media Interface	uplink_m
Peer Host	
Peer Network	0.0.0.0/0
Force Transport	None
<b>Monitoring and Blacklisting Parameters</b>	
Keep-Alive Interval	0
Blacklisting Duration	0
Blacklisting Delay	0
Blacklisting Error Codes	

Call Agent Rulesets			
Priority	Name	Parameters	
1	MX-One_build_RURI_survivability	PATTERN=221[0-9][0-9]\$ DOMAIN=192.168.17.44	⬆ ⬇ ⬇
2	MX-One_Appearance_Prefix	APP_PRFX=SCA-	⬆ ⬇ ⬇
3	MX-One_Appearance_Prefix	APP_PRFX=EDN-	⬆ ⬇ ⬇
4	MX-One_Remove_Outbound_Appearance	PATTERN=221[0-9][0-9]\$	⬆ ⬇ ⬇
5	MX-One_outbound_A_Number_prefix	PATTERN=221[0-9][0-9]\$ A_PRFX=031325 PSTN_PREFIX=00	⬆ ⬇ ⬇
6	MX-One_outbound_B_Number_prefix	BNUMBER=67[0-9][0-9][0-9]\$ B_PRFX=08568	⬆ ⬇ ⬇
7	MX-One_outbound_B_Number_prefix	BNUMBER=111[0-9][0-9]\$ B_PRFX=013443	⬆ ⬇ ⬇
8	MX-One_outbound_B_Number_Override	BNUMBER=330[0-9][0-9]\$ BOVERRIDE=0856867000	⬆ ⬇ ⬇
9	MX-One_local_reg_users_with_survivability	EXT_DIGIT_LENGTH=5	⬆ ⬇ ⬇
			+

### Ruleset MX-ONE\_build\_RURI survivability (ACTIVE ONLY IN SURVIVAL MODE)

PATTERN=111[0-9][0-9]\$

The pattern for the internal range of numbers, in this example the internal range would be 11100 – 11199

Calls to this number range stay always local (do not send to the PSTN in survival mode)

DOMAIN=192.168.17.44

The IP of the headquarter (the main PBX), in this case 192.168.17.44

### Ruleset: MX\_ONE\_Appearance\_Prefix (ACTIVE ONLY IN SURVIVAL MODE)

NEW: APP\_PREFIX=SCA-

This is the prefix for the usernames connected with shared appearance. In this example we have two: "SCA-" and "EDN-"

### Ruleset: MX-ONE\_Remove\_Outbound\_Appearance (ACTIVE ONLY IN SURVIVAL MODE)

PATTERN=111[0-9][0-9]\$

This rule will remove any prefix used for Shared Call Appearance. The pattern for the internal range of numbers, in this example the internal range would be 11100 – 11199

**Ruleset: MX-ONE\_outbound\_A\_Number\_prefix (ACTIVE ONLY IN SURVIVAL MODE)**

PATTERN=111[0-9][0-9]

This defines the local numbers.

A\_PRFX=013443

This is the prefix for the local numbers used on outgoing calls to the PSTN (in this example we received a number block 013443xxxxx from the PSTN provider and add the prefix on outgoing calls, so that the calling party number sent to the PSTN is correct)

PSTN\_PREFIX=00

Dial this prefix to break out to the PSTN. Here we have configured the "00" (not to be mixed up with the "00" for international calls!)

**Ruleset: MX-ONE\_outbound\_B\_Number\_prefix (ACTIVE ONLY IN SURVIVAL MODE)**

This ruleset applies to calls to numbers defined in BNUMBER and will add B\_PRFX to the called party number.

BNUMBER=67[0-9][0-9]\$

Applies to calls to the specific range of extensions,

B\_PRFX=08568

This is the prefix for the Called Party Number. In this case it was build like: National Prefix (08) + Main part of the HQ's local number: (568), in case somebody dials an extension in the HQ

**Ruleset: MX-ONE\_outbound\_B\_Number\_Override (ACTIVE ONLY IN SURVIVAL MODE)**

This ruleset applies to calls to numbers defined in BNUMBER and will use the BOVERRIDE as Called Party Number.

BNUMBER=330[0-9][0-9]\$

Applies to calls to the specific range

BOVERRIDE=0856867000

Calls to extensions like BNUMBER will be sent to BOVERRIDE, in this example they will be sent to 0856867000

**Ruleset: MX-ONE\_local\_reg\_users\_with\_survivability**

(Builds the registration cache for survivability purpose)

EXT\_DIGIT\_LENGTH=5

The length of the internal numbers, in this case set to "5", for numbers like "00001 – 99999"

6. Click **Save** when done.

**2.5.1.1.1 Trunk \_ Lines \_ca**

- Enter the IP-address of MX-ONE to the DOMAIN variable (in two places).
- Enter the number range that is allowed in the branch in the PATTERN parameter. For example, 111[0-9][0-9]\$ means that the allowed number range in this branch is 11100 – 11199.
- Insert a main extension number in MAIN\_EXT parameter, this is could be the local answering position when dialling a vacant number, and so on.
- Enter the PSTN\_PREFIX and STRIPNDIGTS, this is used to remove the public access code when dialling PSTN calls in survivable mode.

Configure Call Agent	
	Value
<b>Call Agent Parameters</b>	
Name	trunk_lines_ca
Enable	<input checked="" type="checkbox"/>
Gateway	trunk_lines_gw
Signaling Interface	
Media Interface	loop_m
Peer Host	
Peer Network	
Force Transport	Tcp
<b>Monitoring and Blacklisting Parameters</b>	
Keep-Alive Interval	0
Blacklisting Duration	0
Blacklisting Delay	0
Blacklisting Error Codes	

Call Agent Rulesets			
Priority	Name	Parameters	
1	200_OK_to_SIP_OPTIONS		⬆ ⬇ ⬅
2	MX-One_remove_prefix	PSTN_PREFIX=00	⬆ ⬇ ⬅
3	MX-One_trunk_lines_to_reception_survivability	MAIN_EXT=11104 PATTERN=111[0-9][0-9]\$ DOMAIN=192.168.1	⬆ ⬇ ⬅
4	MX-One_Set_RURI_User_Type_Parameter	USER_TYPE=trunk	⬆ ⬇ ⬅
5	MX-One_build_RURI_survivability	DOMAIN=192.168.17.44	⬆ ⬇ ⬅
6	MX-One_Appearance_Prefix	APP_PRFX=SCA-	⬆ ⬇ ⬅
7	MX-One_Appearance_Prefix	APP_PRFX=EDN-	⬆ ⬇ ⬅
8	media_relay		⬆ ⬇ ⬅
			+

### Ruleset: MX-One\_remove\_prefix

PSTN\_PREFIX=00

This is the prefix used to dial out to the PSTN

### Ruleset: MX-One\_trunk\_lines\_to\_reception\_survivability

An incoming call in survival mode will be sent to MAIN\_EXT destination if not reachable

MAIN\_EXT=11104

This will receive the incoming call in case the original destination is not reachable (not defined or not registered)

PATTERN=111[0-9][0-9]\$

The pattern for the internal range of numbers, in this example the internal range would be 11100 – 11199

DOMAIN=192.168.17.44

The IP of the headquarter (the main PBX), in this case 192.168.17.44

### Ruleset: MX-One\_Set\_RURI\_User\_Type\_Parameter

Set RURI User Type Parameter

USER\_TYPE=trunk

- Click **Save** when done.

### 2.5.1.1.2 MX-ONE\_Lim1

- Enter the IP-address of the MX-ONE in the **Peer Host** field.

Configure Call Agent	
	Value
<b>Call Agent Parameters</b>	
Name	MX-One_LIM1
Enable	<input checked="" type="checkbox"/>
Gateway	<input type="text"/>
Signaling Interface	uplink_s
Media Interface	uplink_m
Peer Host	192.168.17.44
Peer Network	<input type="text"/>
Force Transport	None
<b>Monitoring and Blacklisting Parameters</b>	
Keep-Alive Interval	30
Blacklisting Duration	60
Blacklisting Delay	0
Blacklisting Error Codes	<input type="text"/>

- Enter the IP-address of the GW in the **RURI\_HOST** parameter.

Call Agent Rulesets			
Priority	Name	Parameters	
1	rewrite_RURI_host	RURI_HOST=192.168.17.81	↑ ↓ -
2	MX-One_core_side		↑ ↓ -
			+

#### Ruleset: rewrite\_RURI\_host

Customize RURI host

RURI\_HOST= 192.168.17.81. This is the local IP address.

- When all the changes for call agents are done, a yellow field is shown indicating that configuration has been modified.
- Click **Save** when ready.

### 2.5.1.1.3 MX-ONE\_TRUNK

- Enter the IP-address of the MX-ONE in the **Peer Host** field.

Configure Call Agent		Value
<b>Call Agent Parameters</b>		
Name	<input type="text" value="MX-One_LIM1"/>	
Enable	<input checked="" type="checkbox"/>	
Gateway	<input type="text" value=""/>	
Signaling Interface	<input type="text" value="uplink_s"/>	
Media Interface	<input type="text" value="uplink_m"/>	
Peer Host	<input type="text" value="192.168.17.44"/>	
Peer Network	<input type="text" value=""/>	
Force Transport	<input type="text" value="None"/>	
<b>Monitoring and Blacklisting Parameters</b>		
Keep-Alive Interval	<input type="text" value="30"/>	
Blacklisting Duration	<input type="text" value="60"/>	
Blacklisting Delay	<input type="text" value="0"/>	
Blacklisting Error Codes	<input type="text" value=""/>	

Call Agent Rulesets			
Priority	Name	Parameters	
1	<input type="text" value="rewrite_RURI_host"/>	<input type="text" value="RURI_HOST=192.168.17.81"/>	<input type="button" value="↑"/> <input type="button" value="↓"/> <input type="button" value="−"/>
2	<input type="text" value="MX-One_core_side"/>	<input type="text" value=""/>	<input type="button" value="↑"/> <input type="button" value="↓"/> <input type="button" value="−"/>
			<input type="button" value="+"/> <input type="button" value="−"/>

- When all the changes for call agents are done, a yellow field is shown indicating that configuration has been modified.
- Click **Save** when ready.

Configuration Modified:
-------------------------

- If the indication is not removed there are some error in the configuration.
- Double check changes described above and correct them.

## 2.6 ISDN

System	Network	SIP Proxy	SBC	<b>ISDN</b>	POTS	SIP	Media	Telephony	Call Router	Management	Reboot
Status	Statistics	Primary Rate Interface	Interop	Timer	Services						

If ISDN trunks are used the first action to do is to press 'Start Sensing'. The system automatically detects certain parameters, for example, number of channels.

### 2.6.1 PRIMARY RATE INTERFACE

System	Network	SIP Proxy	SBC	<b>ISDN</b>	POTS	SIP	Media	Telephony	Call Router	Management	Reboot
Status	Statistics	Primary Rate Interface	Interop	Timer	Services						

1. When sensing is done for several markets, specific parameters can be changed.

Interface Configuration	
Line Type: <a href="#">[Configure]</a>	E1
Endpoint Type:	TE <input type="button" value="v"/>
Clock Mode:	Slave <input type="button" value="v"/>
Port Pinout:	Auto <input type="button" value="v"/>
Monitor Link State:	Enable <input type="button" value="v"/>
Line Coding:	HDB3 <input type="button" value="v"/>
Line Framing:	CRC4 <input type="button" value="v"/>
Signaling Protocol:	DSS1 <input type="button" value="v"/>
Network Location:	User <input type="button" value="v"/>
Preferred Encoding Scheme:	G.711 a-Law <input type="button" value="v"/>
Fallback Encoding Scheme:	G.711 u-Law <input type="button" value="v"/>
Channel Range:	1-30
Channels Reserved for Incoming Calls:	
Channels Reserved for Outgoing Calls:	
Channel Allocation Strategy:	Ascending <input type="button" value="v"/>
Maximum Active Calls:	30
Signal Information Element:	Disable <input type="button" value="v"/>
Inband Tone Generation:	Enable <input type="button" value="v"/>
Inband DTMF Dialing:	Enable <input type="button" value="v"/>
Overlap Dialing:	Disable <input type="button" value="v"/>
Calling Name Max Length:	34
Exclusive B-Channel Selection:	Disable <input type="button" value="v"/>
Sending Complete:	Enable <input type="button" value="v"/>
Send Restart On Startup:	Enable <input type="button" value="v"/>
Link Establishment:	Permanent <input type="button" value="v"/>
Accepted Status Causes:	
Accepted Progress Causes:	1-127
Send Isdn Progress:	Send All <input type="button" value="v"/>
Send Progress Indicator IE:	Send All <input type="button" value="v"/>
Default TON for Calling Party Number IE:	National <input type="button" value="v"/>
Default NPI for Calling Party Number IE:	Isdn Telephony <input type="button" value="v"/>
Default PI for Calling Party Number IE:	Presentation Allowed <input type="button" value="v"/>
Default SI for Calling Party Number IE:	Context Dependent <input type="button" value="v"/>
Default TON for Called Party Number IE:	National <input type="button" value="v"/>
Default NPI for Called Party Number IE:	Isdn Telephony <input type="button" value="v"/>
Notification User Suspended:	Ignore <input type="button" value="v"/>

2. Click **Apply** and restart requested service when done.

## 2.6.2 INTEROP

System	Network	SIP Proxy	SBC	<b>ISDN</b>	POTS	SIP	Media	Telephony	Call Router	Management	Reboot
Status	Statistics	Primary Rate Interface	Interop	Timer	Services						

1. You can change other parameters dependent on market.

Interop Configuration	
Progress Indicator In Setup:	Enable ▾
Progress Indicator In Setup Ack:	Enable ▾
Progress Indicator In Call Proceeding:	Enable ▾
Progress Indicator In Progress:	Enable ▾
Progress Indicator In Alerting:	Enable ▾
Progress Indicator In Connect:	Enable ▾
Maximum Facility Waiting Delay (ms):	0
Use Implicit Inband Info:	Disable ▾
Call Proceeding Delay (ms):	0
Calling Name Delivery:	Signaling Protocol ▾

2. Click **Apply** and restart requested service when done.

## 2.6.3 SERVICES

System Network SIP Proxy SBC **ISDN** POTS SIP Media Telephony Call Router Management Reboot

Status Statistics Primary Rate Interface Interop Timer **Services**

1. Change other parameters dependent on market.

Services Configuration	
Facility Services:	Disable ▾
Calling Line Information Presentation:	Enable ▾
Calling Line Information Restriction:	Disable ▾
Calling Line Information Restriction Override:	Disable ▾
Connected Line Identification Presentation:	Enable ▾
Connected Line Identification Restriction:	Disable ▾
Connected Line Identification Restriction Override:	Disable ▾
Outgoing Notify:	Disable ▾
Maintenance Service Call Termination:	Graceful ▾
Date/Time IE Support:	Disable ▾
AOC-E Support:	No ▾
AOC-D Support:	No ▾
Call Rerouting Behavior:	Unsupported ▾

2. Click **Apply** and restart requested service when done.

## 2.7 POTS

### 2.7.1 CONFIG

System Network SIP Proxy SBC ISDN **POTS** SIP Media Telephony Call Router Management Reboot

Status **Config** FXS Configuration FXO Configuration

1. Set market specific data for Caller Id handling.

General Configuration	
Caller ID Customisation:	EtsDtmf
Caller ID Transmission:	First Ring
Vocal Unit Information:	All

2. Click **Apply** when done and restart service.

## 2.7.2 FXS CONFIGURATION

System	Network	SIP Proxy	SBC	ISDN	POTS	SIP	Media	Telephony	Call Router	Management	Reboot
Status	Config	FXS Configuration	FXO Configuration								

1. Set analog phone specific data according to market.

FXS Configuration	
Line Supervision Mode:	DropOnDisconnect
Disconnect Delay:	0
Auto Cancel Timeout:	0
Inband Ringback:	Disable
Shutdown Behavior:	Disabled Tone
Power Drop On Disconnect Duration:	1000
Service Activation:	Flash Hook

Country Customisation	
Override Country Configuration:	Disable
Country Override Loop Current:	30
Country Override Flash Hook Detection Range:	100-1200

2. Click **Apply** when done and restart service.

## 2.8 SIP

### 2.8.1 GATEWAYS

Following gateways and port numbers are pre-defined.

System	Network	SIP Proxy	SBC	ISDN	POTS	SIP	Media	Telephony	Call Router	Management	Reboot
Gateways	Servers	Registrations	Authentication	Transport	Interop	Misc					

Note that a SIP route must be defined in MX-ONE to handle traffic to and from the 'trunks\_MX-ONE' gateway.

Gateway Configuration						
Name	Type	Signaling Network	Media Networks	Media Networks Suggestion	Port	Secure Port
MX1_analog_ext	Trunk	Uplink		--- Suggestion ---	5080	0
trunk_lines_gw	Trunk	Loop	Loop	--- Suggestion ---	5066	0
trunks_mx-one	Trunk	Uplink		--- Suggestion ---	5070	0



## 2.8.2 SERVERS

System	Network	SIP Proxy	SBC	ISDN	POTS	<b>SIP</b>	Media	Telephony	Call Router	Management	Reboot
Gateways	<b>Servers</b>	Registrations	Authentication	Transport	Interop	Misc					

1. Enter IP-address to MX-ONE in both **Registrar Host** and **Proxy Host** fields.

Default Servers		
Registrar Host:	<input type="text" value="192.168.17.44"/>	
Proxy Host:	<input type="text" value="192.168.17.44"/>	
Messaging Server Host:	<input type="text"/>	
Outbound Proxy Host:	<input type="text"/>	

2. Change **trunk\_lines\_gw** to **Yes** in the drop-down list for Gateway Specific.

Registrar Servers		
Gateway	Gateway Specific	Registrar Host
MX1_analog_ext	<input type="text" value="No"/>	<input type="text" value="192.168.0.10:0"/>
trunk_lines_gw	<input type="text" value="Yes"/>	<input type="text" value="%sbc%"/>
trunks_mx-one	<input type="text" value="No"/>	<input type="text" value="192.168.0.10:0"/>

3. Enter IP-address of MX-ONE in the **Proxy Host** field.
4. Enter IP-address of the gateway in the **Outbound Proxy Host**.

Proxy Servers			
Gateway	Gateway Specific	Proxy Host	Outbound Proxy Host
MX1_analog_ext	<input type="text" value="Yes"/>	<input type="text" value="192.168.17.44"/>	<input type="text" value="192.168.17.81"/>
trunk_lines_gw	<input type="text" value="Yes"/>	<input type="text" value="%sbc%"/>	<input type="text" value="%sbc%"/>
trunks_mx-one	<input type="text" value="No"/>	<input type="text" value="192.168.0.10:0"/>	<input type="text" value="0.0.0.0:0"/>

5. Enter the IP-address of the gateway as **Alternate Destination** for **MX1\_analog\_ext**.
6. Enter the IP-address of MX-ONE as **Alternate Destination** for **trunks\_mx-one**.

Keep Alive Destination	
Gateway	Alternate Destination
MX1_analog_ext	<input type="text" value="192.168.17.81"/>
trunk_lines_gw	<input type="text" value="127.0.0.1"/>
trunks_mx-one	<input type="text" value="192.168.17.44"/>

7. Click **Apply** when done and restart service.

## 2.8.3 REGISTRATIONS

System	Network	SIP Proxy	SBC	ISDN	POTS	<b>SIP</b>	Media	Telephony	Call Router	Management	Reboot
Gateways	<b>Servers</b>	<b>Registrations</b>	Authentication	Transport	Interop	Misc					

1. Enter the extension numbers for the analog extensions.
























Endpoints Registration						
Endpoint	User Name	Friendly Name	Register	Messaging	Gateway Name	
FX01	<input type="text"/>	<input type="text"/>	Disable ▾	Disable ▾	trunks_mx-one ▾	
FX02	<input type="text"/>	<input type="text"/>	Disable ▾	Disable ▾	trunks_mx-one ▾	
FX03	<input type="text"/>	<input type="text"/>	Disable ▾	Disable ▾	trunks_mx-one ▾	
FX04	<input type="text"/>	<input type="text"/>	Disable ▾	Disable ▾	trunks_mx-one ▾	
FXS1	11104	<input type="text"/>	Enable ▾	Disable ▾	MX1_analog_ext ▾	
FXS2	11105	<input type="text"/>	Enable ▾	Disable ▾	MX1_analog_ext ▾	
FXS3	11106	<input type="text"/>	Enable ▾	Disable ▾	MX1_analog_ext ▾	
FXS4	11107	<input type="text"/>	Enable ▾	Disable ▾	MX1_analog_ext ▾	
PRI1	<input type="text"/>	<input type="text"/>	Disable ▾	Disable ▾	trunks_mx-one ▾	

- Click **Apply** or Apply and Refresh when done.

## 2.8.4 AUTHENTICATION

System	Network	SIP Proxy	SBC	ISDN	POTS	<b>SIP</b>	Media	Telephony	Call Router	Management	Reboot
Gateways	Servers	Registrations	<b>Authentication</b>	Transport	Interop	Misc					

- If password is required press  for any item.

Authentication									
Priority	Criteria	Endpoint	Gateway	Username	Criteria	Validate Realm	Realm	User Name	
1	Endpoint	FXS1				Disable		11104	  ▾ + -
2	Unit					Enable			 ^ ▾ + -
3	Unit					Enable			 ^ ▾ + -
4	Unit					Enable			 ^ ▾ + -
5	Unit					Enable			 ^ ▾ + -
6	Unit					Enable			 ^ ▾ + -
7	Unit					Enable			 ^ ▾ + -
8	Unit					Enable			 ^ ▾ + -
9	Unit					Enable			 ^ ▾ + -
10	Unit					Enable			 ^ ▾ + -
11	Unit					Enable			 ^ ▾ + -
12	Unit					Enable			 ^ ▾ + -
13	Unit					Enable			 ^ ▾ + -
14	Unit					Enable			 ^ ▾ + -
15	Unit					Enable			 ^ ▾ + -
16	Unit					Enable			 ^ ▾ + -
17	Unit					Enable			 ^ ▾ + -
18	Unit					Enable			 ^ ▾ + -
19	Unit					Enable			 ^ ▾ + -
20	Unit					Enable			 ^  + -
Number of rows to add: <input type="text" value="1"/>									

- Indicate for which **Endpoint** and **Criteria** the changes are to apply.
- Enter the Auth Code, in the **Password** field.
- Disable **Validate Realm**.

Authentication								
Priority	Criteria	Endpoint	Gateway	Username Criteria	Validate Realm	Realm	User Name	Password
1	Endpoint	FXS1			Disable		11104	*****

- Click **Apply** or Apply and Refresh Registration when done and restart service. The result after 'Registration' and 'Authentication' should be like as follows.

Endpoints Registration Status				
Endpoint	User Name	Gateway Name	Registrar	Status
FXS1	11104	MX1_analog_ext	192.168.17.44:0	Registered
FXS2	11105	MX1_analog_ext	192.168.17.44:0	Registered
FXS3	11106	MX1_analog_ext	192.168.17.44:0	Registered

## 2.8.5 TRANSPORT

System	Network	SIP Proxy	SBC	ISDN	POTS	<b>SIP</b>	Media	Telephony	Call Router	Management	Reboot
Gateways	Servers	Registrations	Authentication	Transport	Interop	Misc					

- Enable UDP if required.

Protocol Configuration					
UDP	UDP QValue	TCP	TCP QValue	TLS	TLS QValue
Enable		Enable		Disable	

- Click **Apply** when done and restart service.

## 2.8.6 INTEROP

System	Network	SIP Proxy	SBC	ISDN	POTS	<b>SIP</b>	Media	Telephony	Call Router	Management	Reboot
Gateways	Servers	Registrations	Authentication	Transport	Interop	Misc					

- Indicate 'trunk' in the **SIP URI User Parameter Value** field.
- This is used in the 'match' parameter for the SIP route in MX-ONE.

SIP Interop	
Secure Header:	Disable
Default Username Value:	Anonymous
OPTIONS Method Support:	None
Ignore OPTIONS on no Usuable Endpoints:	Disable
SIP URI User Parameter Value:	trunk
Behavior on Machine Detection:	Re-INVITE on Fax T38 Only
Registration Contact Matching:	Strict
Transmission Timeout:	32

- Click **Apply** or when done and restart service.

## 2.8.7 MISC

System	Network	SIP Proxy	SBC	ISDN	POTS	<b>SIP</b>	Media	Telephony	Call Router	Management	Reboot
Gateways	Servers	Registrations	Authentication	Transport	Interop	Misc					

1. Enter the IP-address of MX-ONE in the **SIP Domain Override** filed for **trunk\_lines\_gw**.

Gateway Configuration		
Gateway Name	SIP Domain Override	
MX1_analog_ext	<input type="text"/>	
trunk_lines_gw	<input type="text" value="192.168.17.44"/>	
trunks_mx-one	<input type="text"/>	








2. Click **Apply** when done and restart service.

## 2.9 MEDIA

### 2.9.1 CODECS

System	Network	SIP Proxy	SBC	ISDN	POTS	SIP	Media	Telephony	Call Router	Management	Reboot
Codecs	Security	RTP Statistics	Misc								

1. Change **Codecs** according to preference.


Codec	Voice	Data	Advanced
G.711 a-Law	<input type="button" value="Enable"/> ▾	<input type="button" value="Enable"/> ▾	
G.711 u-Law	<input type="button" value="Disable"/> ▾	<input type="button" value="Enable"/> ▾	
G.723	<input type="button" value="Disable"/> ▾		
G.726 16Kbps	<input type="button" value="Disable"/> ▾		
G.726 24Kbps	<input type="button" value="Disable"/> ▾		
G.726 32Kbps	<input type="button" value="Disable"/> ▾	<input type="button" value="Disable"/> ▾	
G.726 40Kbps	<input type="button" value="Disable"/> ▾	<input type="button" value="Disable"/> ▾	
G.729	<input type="button" value="Disable"/> ▾		
T.38		<input type="button" value="Enable"/> ▾	
Clear Mode	<input type="button" value="Disable"/> ▾	<input type="button" value="Disable"/> ▾	
Clear Channel	<input type="button" value="Disable"/> ▾	<input type="button" value="Disable"/> ▾	
X CCD	<input type="button" value="Disable"/> ▾	<input type="button" value="Disable"/> ▾	

2. Click **Apply** when done and restart service.

## 2.10 CALL ROUTER

### 2.10.1 ROUTE CONFIG


System	Network	SIP Proxy	SBC	ISDN	POTS	SIP	Media	Telephony	Call Router	Management	Reboot
Status	Route Config	Auto-routing									

1. Click  for index 1. This is used if the received B-number contains a full number. That is, more digits than the pure DID numbers.


Routes						
Index	Sources	Criteria Property	Criteria Rule	Transformations	Signaling Properties	Destination
1	isdn-PRI1, isdn-PRI2, isdn-PRI3, isdn-PRI4, isdn-PRI5, isdn-PRI6, fxo-FXO1, fxo-FXO2, fxo-FXO3, fxo-FXO4	None		DID_Extension		hunt-sip
2	sip-trunk_lines_gw, sip-trunks_mox-one	None				hunt-Hunt1

- In the **Transformations** field add a name for a transformation rule.

Configure Route 1	
	Suggestion
Sources	isdn-PRI1, isdn-PRI2, isdn-PRI3, isdn-PRI4, isdn-PRI5, isdn-PRI6, fxo-FXO1, fxo-FXO2, fxo-FXO3, fxo-FXO4
Criteria Property	None
Criteria Rule	
Transformations	DID_Extension
Signaling Properties	
Destination	hunt-sip
Config Status	






- Click **Save**.
- Click  in the first Call Property Transformation and enter the same name as above.
- Use **Called E164** for both **Criteria Based On** and **Transformation Applies To** fields.

Configure Transformation 1	
	Value
Name	DID_Extension
Criteria Based On	Called E164
Transformation Applies To	Called E164
Config Status	






- Click **Save** or **Save and Insert Rule**.
- Click  in the second Call Property Transformation and enter the same name as above.
- The 'Criteria Rule' in this case is 443 (111..)\$ and the transformation rule is \1. This means that if a B-number is received containing 44311104, then the 3 first digits (443) are removed before the call is sent to MX-ONE for further processing. (111..)\$ means that the number can only be 5 digits starting with 111.

Configure Transformation Rule 1	
	Suggestion
Type	Called E164 to Called E164
Name	DID_Extension
Criteria Rule	443(111..\$)
Transformation Rule	\1
Next Transformation	
Config Status	

- Click **Save** or Save and Insert Rule. Now, the 'Call Property Transformations' looks like this as shown below.

Transformations				
Index	Name	Criteria Based On	Transformation Applies To	
1	DID_Extension	Called E164	Called E164	   
				





Transformation Rules				
Index	Name	Criteria Rule	Transformation Rule	Next Transformation
1	DID_Extension	443(111..\$)	\1	
				   
				

- Click **Save** if the yellow indication on top of the page is ON.

## 2.11 MANAGEMENT

### 2.11.1 BACKUP/RESTORE

- Click "Activate ....."

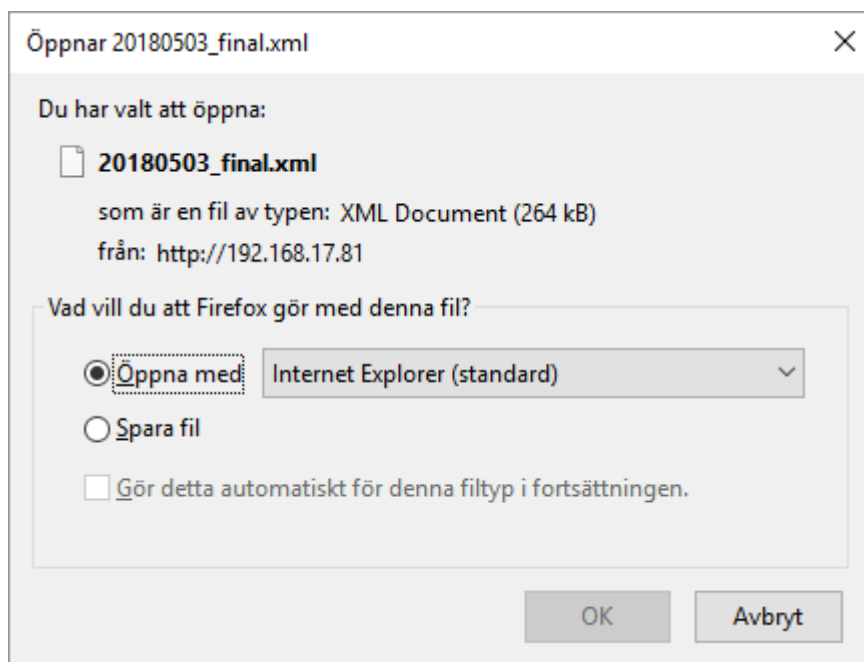
Image Configuration	
<b>Transfer Parameters</b>	
File Name:	<input type="text" value="20180503_final.xml"/> <span>--- Suggestion ---</span> 
Transfer Protocol:	<input type="text" value="File"/> 
Host Name:	<input type="text" value="0.0.0.0:0"/>
Location:	<input type="text"/>
User Name:	<input type="text"/>
Password:	<input type="text"/>
<b>Backup Parameters</b>	
Content:	<input type="text" value="Config And Certificates"/> 
<b>Privacy Parameters</b>	
Privacy Algorithm:	<input type="text" value="None"/> 
Privacy Key:	<input type="text"/>

- Click Apply and Backup Now.

## 2.11.2 FILE

Internal files			
Name	Description	Size	
conf/20180503_final.xml	Automatically generated on 03/05/2018 15:50:11.	264 KB	—
conf/FXO_Country_Defaults.cfg	FXO Country Defaults	1 KB	—
conf/FXO_North-America_3km.cfg	FXO North-America 3km	1 KB	—
conf/PRI_China-DSS1.cfg	China DSS1	3 KB	—
conf/PRI_Default.cfg	PRI default configuration	3 KB	—
conf/PRI_NorthAmerica-NI1.cfg	North America NI1	3 KB	—
conf/PRI_NorthAmerica-NI2.cfg	North America NI2	3 KB	—
conf/Survivability.cfg	Configures the unit to use the SipProxy service for basic use cases.	1 KB	—
sbc/rulesets/200_OK_to_SIP_OPTIONS.crs	Answer 200 OK to inbound SIP OPTIONS message	1 KB	—
sbc/rulesets/MX-One_build_RURI_survivability.crs	Builds the RURI when in survivability mode	6 KB	—
sbc/rulesets/MX-One_core_side.crs	Generic ruleset facing MX-One core	5 KB	—
sbc/rulesets/MX-One_local_reg_users_with_survivability.crs	local registered users ruleset for MX-One with basic local calling survivability	11 KB	—
sbc/rulesets/MX-One_local_users_failover_to_trunk.rrs	Failover route from local_users_ca to trunk_lines_ca	6 KB	—
sbc/rulesets/MX-One_outbound_survivability_prefix.crs	ANumber and BNumber prefix	2 KB	—
sbc/rulesets/MX-One_remove_prefix.crs	Removes prefix from RURI for outbound calls	1 KB	—
sbc/rulesets/MX-One_routes_with_basic_local_survivability_TCP.rrs	MX-One - Basic Routes with Survivability	23 KB	—
sbc/rulesets/MX-One_routes_with_basic_local_survivability_UDP.rrs	MX-One - Basic Routes with Survivability	21 KB	—
sbc/rulesets/MX-One_to_trunk_lines.rrs	Route from MX-One servers to trunk lines	5 KB	—
sbc/rulesets/MX-One_trunk_lines_to_local_users.rrs	Route from trunk_lines_ca to local_users_ca	3 KB	—
sbc/rulesets/MX-One_trunk_lines_to_reception_survivability.crs	Forwards trunk calls to reception number in survivability	2 KB	—
sbc/rulesets/rewrite_RURI_host.crs	Customize RURI host	1 KB	—
21 file(s)		Total: 366 KB / Available: 6 GB	

Find the previously made backup image



### 3      SETTING UP MX-ONE FOR AN EX CONTROLLER

The setting up of MX-ONE is not described in this document since it does not differ from an ordinary MX-ONE setup.



## 4 SETTING UP EX CONTROLLER

### 4.1 LOGON

This section describes how to setup BO#1.

Factory Reset the EX Controller and plug in the network cable to the ETH1 port on EX Controller (If DHCP is running in the network).



**Note!** If DHCP is not running into the network then, plug in the network cable to the ETH2 port on EX Controller and use the default IP address of 192.168.0.10 to open the EX Controller Interface.

User Name:

Password:

Login

This section describes how to setup BO#1.

1. Factory Reset the EX Controller and plug in the network cable to the ETH1 port on EX Controller (If DHCP is running in the network).
  - User name/password: public /
  - User name/password: admin/administrator
2. Plug in the analog phone in the FXS port 1 of the EX Controller and dial \*#\*0 to know the IP address of the EX Controller assigned by using DHCP server.
3. Log into the EX Controller by using the above-mentioned IP address and navigate as described below to configure.

### 4.2 NETWORK SETTINGS

#### 4.2.1 HOST

1. Select **Network>Host** and keep the default configuration interface as mentioned below.

System	Network	SIP Proxy	SBC	ISDN	POTS	SIP	Media	Telephony	Call Router	Management	Reboot
Status	Host	Interfaces	VLAN	QoS	Local Firewall	IP Routing	Network Firewall	NAT	DHCP Server		

Automatic Configuration Interface	
Automatic IPv4 config source network:	Uplink
Automatic IPv6 config source network:	UplinkV6

2. Change to Static IP-address and enter default Gateway (GW).

Default Gateway Configuration	
<b>IPv4</b>	
Configuration Source:	Static
Default Gateway:	192.168.17.1
<b>IPv6</b>	
Configuration Source:	Automatic IPv6
Default Gateway:	

3. Change to static DNS server and enter IP-address or FQDN to DNS server.

DNS Configuration	
Configuration Source:	Static
Primary DNS:	10.105.64.3
Secondary DNS:	
Third DNS:	
Fourth DNS:	

4. Change to static SNTP server and enter time server data.

SNTP Configuration	
Configuration Source:	Static
<b>Static Servers:</b>	
Primary SNTP:	pool.ntp.org
Secondary SNTP:	
Third SNTP:	
Fourth SNTP:	
<b>Synchronization:</b>	
Synchronization Period:	1440
Synchronization Period On Error:	60

5. Set the **Static Time Zone**.

Valid options are:

- Pacific Time (Canada and US) : PST8PDT7,M3.2.0/02:00:00,M11.1.0/02:00:00
- Mountain Time (Canada and US) : MST7MDT6,M3.2.0/02:00:00,M11.1.0/02:00:00
- Central Time (Canada and US) : CST6CDT5,M3.2.0/02:00:00,M11.1.0/02:00:00
- Eastern Time (Canada and US) : EST5EDT4,M3.2.0/02:00:00,M11.1.0/02:00:00
- Atlantic Time (Canada) : AST4ADT3,M3.2.0/02:00:00,M11.1.0/02:00:00
- GMT Standard Time : GMT0DMT-1,M3.5.0/01:00:00,M10.5.0/02:00:00
- W. Europe Standard Time : WEST-1DWEST-2,M3.5.0/02:00:00,M10.5.0/03:00:00
- China Standard Time : CST-8
- Tokyo Standard Time : TST-9
- Central Australia Standard Time : CAUST-9:30DCAUST-10:30,M10.5.0/02:00:00,M3.5.0/02:00:00
- Australia Eastern Standard Time : AUSEST-10AUSDST-11,M10.5.0/02:00:00,M3.5.0/02:00:00
- UTC (Coordinated Universal Time) : UTC0

Time Configuration	
Static Time Zone:	WEST-1DWEST-2,M3.5.0/02:00:00,M10.5.0

- Leave all other items as it is and click **Apply** when finished.

## 4.3 INTERFACES

- Go to **Network>Interface**.

System	Network	SIP Proxy	SBC	ISDN	POTS	SIP	Media	Telephony	Call Router	Management	Reboot
Status	Host	Interfaces	VLAN	QoS	Local Firewall	IP Routing	Network Firewall	NAT	DHCP Server		

- Change **Uplink** to **IpStatic (IPv4 Static)** and enter the static IP-address and Static Default Gateway.

Network Interface Configuration						
Name	Link	Type	Static IP Address	Static Default Router	Activation	
Lan1	eth2-5	IpStatic (IPv4 Static)	192.168.0.10/24		Enable	-
Uplink	eth1	IpStatic (IPv4 Static)	192.168.17.81/24	192.168.17.1	Enable	-
UplinkV6	eth1	Ip6Static (IPv6 Static)			Disable	-
						+

- Leave all other items as it is and click **Apply** when ready.

## 4.4 LOCAL FIREWALLS

- Go to **Network>Local Firewall**.

System	Network	SIP Proxy	SBC	ISDN	POTS	SIP	Media	Telephony	Call Router	Management	Reboot
Status	Host	Interfaces	VLAN	QoS	Local Firewall	IP Routing	Network Firewall	NAT	DHCP Server		

- If local firewall security is needed change default policy to **Drop**.

Configuration Modified:	
	No

Local Firewall Configuration	
Default Policy:	Drop
Blacklist Timeout:	60
Blacklist Rate Limit Timeout:	60

- Enter the networks for which traffic can enter from.

Local Firewall Rules											
#	Activation	Source Address	Source Port	Destination Address	Destination Port	Protocol	Blacklist enable	Action	Rate Limit Value	Rate Limit Time Period	
1	Enable	192.168.17.0/24		Uplink		All	<input type="checkbox"/>	Accept	10	60	^ v + -
2	Enable	172.17.17.0/24		Uplink		All	<input type="checkbox"/>	Accept	10	60	^ v + -
3	Enable	10.105.0.0/16		Uplink		All	<input type="checkbox"/>	Accept	10	60	^ v + -
											+














- Click **Save** or **Save & Apply** when ready.

## 4.5 SBC

















### 4.5.1 CONFIGURATION


1. Go to **SBC>Configuration**. The following Call Agents are present.

System	Network	SIP Proxy	<b>SBC</b>	ISDN	POTS	SIP	Media	Telephony	Call Router	Management	Reboot
Status	<b>Configuration</b>	Rulesets	Live Calls	Running Config	Events	Registration					

Call Agent Configuration							
Name	Enable	Gateway	Signaling Interface	Media Interface	Peer Host	Peer Network	
local_users_ca	<input checked="" type="checkbox"/>		uplink_s	uplink_m		0.0.0.0/0	 
trunk_lines_ca	<input checked="" type="checkbox"/>	trunk_lines_gw		loop_m			 
remote_users_ca	<input type="checkbox"/>		uplink_s	uplink_m			 
MX-One_LIM1	<input checked="" type="checkbox"/>		uplink_s	uplink_m	192.168.17.93		 
MX-One_LIM2	<input type="checkbox"/>		uplink_s	uplink_m	lim2.mitel.com		 
MX-ONE-trunk	<input checked="" type="checkbox"/>		trunk_s	uplink_m	192.168.17.93		 
							

2. Insert A-Number prefix and B-number prefix. These numbers are to be added in front of the numbers when the GW is in survivable mode. That is, the call is routed to PSTN and thus needs to be prefixed.
3. Enter the number range that is allowed in the branch in the PATTERN parameter. For example, 321[0-9][0-9]\$ means that the allowed number range in this branch is 32100 – 32199.

Routing Rulesets			
Priority	Name	Parameters	
1	MX-One_local_users_failover_to_trunk	ANUMBER=013443BNUMBER=08568	  
2	MX-One_to_trunk_lines	PATTERN=PATTERN=111[0-9][0-9]\$	  
3	MX-One_trunk_lines_to_local_users		  
4	MX-One_routes_with_basic_local_survivability_TCP		  
5	MX-One_routes_with_basic_local_survivability_UDP		  
			

4. Configure each call agent (ca).
5. Click  to enter specific data for each call agent.

#### 7.5.1.1 Local\_users\_ca

- Enter the IP-address of MX-ONE to the DOMAIN variable.
- Enter the number range that is allowed in the branch in the PATTERN parameter. For example, 321[0-9][0-9]\$ means that the allowed number range in this branch is 32100 – 32199.
- Insert A-Number prefix and B-number prefix. These numbers are to be added in front of the numbers when the GW is in survivable mode. That is, the call is routed to PSTN and thus needs to be prefixed.

Configure Call Agent	
	Value
<b>Call Agent Parameters</b>	
Name	local_users_ca
Enable	<input checked="" type="checkbox"/>
Gateway	
Signaling Interface	uplink_s
Media Interface	uplink_m
Peer Host	
Peer Network	0.0.0.0/0
Force Transport	None
<b>Monitoring and Blacklisting Parameters</b>	
Keep-Alive Interval	0
Blacklisting Duration	0
Blacklisting Delay	0
Blacklisting Error Codes	

Call Agent Rulesets			
Priority	Name	Parameters	
1	MX-One_build_RURI_survivability	PATTERN=321[0-9][0-9]\$ DOMAIN=192.168.17.94	⬆ ⬇ ⬇
2	MX-One_Appearance_Prefix	APP_PRFX=SCA-	⬆ ⬇ ⬇
3	MX-One_Appearance_Prefix	APP_PRFX=EDN-	⬆ ⬇ ⬇
4	MX-One_Remove_Outbound_Appearance	PATTERN=321[0-9][0-9]\$	⬆ ⬇ ⬇
5	MX-One_outbound_A_Number_prefix	PATTERN=321[0-9][0-9]\$ A_PRFX=anumber_prefix PSTN_PREF	⬆ ⬇ ⬇
6	MX-One_outbound_B_Number_prefix	BNUMBER=67[0-9][0-9][0-9]\$ B_PRFX=08568	⬆ ⬇ ⬇
7	MX-One_outbound_B_Number_prefix	BNUMBER=111[0-9][0-9][0-9]\$ B_PRFX=013443	⬆ ⬇ ⬇
8	MX-One_outbound_B_Number_prefix	BNUMBER=221[0-9][0-9][0-9]\$ B_PRFX= 031325	⬆ ⬇ ⬇
9	MX-One_outbound_B_Number_Override	BNUMBER=440[0-9][0-9]\$ BOVERRIDE=0856867000	⬆ ⬇ ⬇
10	MX-One_local_reg_users_with_survivability	EXT_DIGIT_LENGTH=5	⬆ ⬇ ⬇
			+

### Ruleset MX-One\_build\_RURI survivability (ACTIVE ONLY IN SURVIVAL MODE)

PATTERN=111[0-9][0-9]\$

The pattern for the internal range of numbers, in this example the internal range would be 11100 – 11199

Calls to this number range stay always local (would not send to the PSTN in survival mode)

DOMAIN=192.168.17.94

The IP-address of the MX-ONE instance running on the VM, in this case 192.168.17.94

### Ruleset: MX\_One\_Appearance\_Prefix (ACTIVE ONLY IN SURVIVAL MODE)

NEW: APP\_PREFIX=SCA-

This is the prefix for the usernames connected with shared appearance. In this example, you have two: "SCA-" and "EDN-"

### Ruleset: MX-One\_Remove\_Outbound\_Appearance (ACTIVE ONLY IN SURVIVAL MODE)

PATTERN=321[0-9][0-9]\$

This rule removes any prefix used for Shared Call Appearance. The pattern for the internal range of numbers, in this example the internal range would be 32100 – 32199

**Ruleset: MX-One\_outbound\_A\_Number\_prefix (ACTIVE ONLY IN SURVIVAL MODE)**

PATTERN=321[0-9][0-9]

This defines the local numbers.

A\_PRFX=040598

This is the prefix for the local numbers used on outgoing calls to the PSTN (in this example, received a number block 013443xxxxx from the PSTN provider and add the prefix on outgoing calls, so that the calling party number sent to the PSTN is correct)

PSTN\_PREFIX=00

Dial this prefix to break out to the PSTN. Here, you need to configure the "00" (not to be mixed up with the "00" for international calls!)

**Ruleset: MX-One\_outbound\_B\_Number\_prefix (ACTIVE ONLY IN SURVIVAL MODE)**

This ruleset applies to calls to numbers defined in BNUMBER and will add B\_PRFX to the called party number.

BNUMBER=67[0-9][0-9]\$

Applies to calls to the specific range of extensions,

B\_PRFX=08568

This is the prefix for the Called Party Number. In this case, it was build like: National Prefix (08) + Main part of the HQ's local number: (568), in case somebody dials an extension in the HQ.

**Ruleset: MX-One\_outbound\_B\_Number\_Override (ACTIVE ONLY IN SURVIVAL MODE)**

This ruleset applies to calls to numbers defined in BNUMBER and will use the BOVERRIDE as Called Party Number.

BNUMBER=440[0-9][0-9]\$

Applies to calls to the specific range

BOVERRIDE=0856867000

Calls to extensions like BNUMBER will be sent to BOVERRIDE, in this example they will be sent to 0856867000

**Ruleset: MX-One\_local\_reg\_users\_with\_survivability**

(Builds the registration cache for survivability purpose)

EXT\_DIGIT\_LENGTH=5

The length of the internal numbers, in this case set to "5", for numbers like "00001 – 99999"

6. Click **Save** when done.

#### 4.5.1.1.1 Trunk \_ Lines \_ca

- Enter the IP-address of MX-ONE to the DOMAIN variable (in two places).
- Enter the number range that is allowed in the branch in the PATTERN parameter. For example, 321[0-9][0-9]\$ means that the allowed number range in this branch is 32100 – 32199.
- Insert a main extension number in MAIN\_EXT parameter, this is could be the local answering position when dialling a vacant number, and so on.
- Enter the PSTN\_PREFIX and STRIPNDIGTS, this is used to remove the public access code when dialling PSTN calls in survivable mode.

Configure Call Agent		Value
<b>Call Agent Parameters</b>		
Name	<input type="text" value="trunk_lines_ca"/>	
Enable	<input checked="" type="checkbox"/>	
Gateway	<input type="text" value="trunk_lines_gw"/>	
Signaling Interface	<input type="text"/>	
Media Interface	<input type="text" value="loop_m"/>	
Peer Host	<input type="text"/>	
Peer Network	<input type="text"/>	
Force Transport	<input type="text" value="Tcp"/>	
<b>Monitoring and Blacklisting Parameters</b>		
Keep-Alive Interval	<input type="text" value="0"/>	
Blacklisting Duration	<input type="text" value="0"/>	
Blacklisting Delay	<input type="text" value="0"/>	
Blacklisting Error Codes	<input type="text"/>	

Call Agent Rulesets				
Priority	Name	Parameters		
1	<input type="text" value="200_OK_to_SIP_OPTIONS"/>	<input type="text"/>	<input type="button" value="↑"/>	<input type="button" value="↓"/>
2	<input type="text" value="MX-One_remove_prefix"/>	<input type="text" value="PSTN_PREFIX=00"/>	<input type="button" value="↑"/>	<input type="button" value="↓"/>
3	<input type="text" value="MX-One_trunk_lines_to_reception_survivability"/>	<input type="text" value="MAIN_EXT=11104 PATTERN=111[0-9][0-9]\$ DOMAIN=192.168.1"/>	<input type="button" value="↑"/>	<input type="button" value="↓"/>
4	<input type="text" value="MX-One_Set_RURI_User_Type_Parameter"/>	<input type="text" value="USER_TYPE=trunk"/>	<input type="button" value="↑"/>	<input type="button" value="↓"/>
5	<input type="text" value="MX-One_build_RURI_survivability"/>	<input type="text" value="DOMAIN=192.168.17.44"/>	<input type="button" value="↑"/>	<input type="button" value="↓"/>
6	<input type="text" value="MX-One_Appearance_Prefix"/>	<input type="text" value="APP_PRFX=SCA-"/>	<input type="button" value="↑"/>	<input type="button" value="↓"/>
7	<input type="text" value="MX-One_Appearance_Prefix"/>	<input type="text" value="APP_PRFX=EDN-"/>	<input type="button" value="↑"/>	<input type="button" value="↓"/>
8	<input type="text" value="media_relay"/>	<input type="text"/>	<input type="button" value="↑"/>	<input type="button" value="↓"/>
<input type="button" value="+"/>				

### Ruleset: MX-One\_remove\_prefix

PSTN\_PREFIX=00

This is the prefix used to dial out to the PSTN

### Ruleset: MX-One\_trunk\_lines\_to\_reception\_survivability

An incoming call in survival mode will be sent to MAIN\_EXT destination if not reachable

MAIN\_EXT=11104

This will receive the incoming call in case the original destination is not reachable (not defined or not registered)

PATTERN=321[0-9][0-9]\$

The pattern for the internal range of numbers, in this example the internal range would be 32100 – 32199

DOMAIN=192.168.17.94

The IP of the headquarter (the main PBX), in this case 192.168.17.94

### Ruleset: MX-One\_Set\_RURI\_User\_Type\_Parameter

Set RURI User Type Parameter

USER\_TYPE=trunk

- Click **Save** when done.

#### 4.5.1.1.2 MX-ONE\_Lim1

- Enter the IP-address of the MX-ONE in the **Peer Host** field.

Configure Call Agent	
	Value
<b>Call Agent Parameters</b>	
Name	MX-One_LIM1
Enable	<input checked="" type="checkbox"/>
Gateway	
Signaling Interface	uplink_s
Media Interface	uplink_m
Peer Host	192.168.17.94
Peer Network	
Force Transport	None
<b>Monitoring and Blacklisting Parameters</b>	
Keep-Alive Interval	0
Blacklisting Duration	0
Blacklisting Delay	0
Blacklisting Error Codes	

- Enter the IP-address of the GW in the **RURI\_HOST** parameter.

Call Agent Rulesets			
Priority	Name	Parameters	
1	rewrite_RURI_host	RURI_HOST=192.168.17.85	^ v -
2	MX-One_core_side		^ v -
			+

#### Ruleset: rewrite\_RURI\_host

Customize RURI host

RURI\_HOST= 192.168.17.85. This is the local IP address.

- Click **Save** when ready.

#### 4.5.1.1.3 MX-ONE\_TRUNK

- Enter the IP-address of the MX-ONE in the **Peer Host** field.



Configure Call Agent		Value
<b>Call Agent Parameters</b>		
Name	<input type="text" value="MX-One-trunk"/>	
Enable	<input checked="" type="checkbox"/>	
Gateway	<input type="text" value=""/>	
Signaling Interface	<input type="text" value="trunk_s"/>	
Media Interface	<input type="text" value="uplink_m"/>	
Peer Host	<input type="text" value="192.168.17.94"/>	
Peer Network	<input type="text" value=""/>	
Force Transport	<input type="text" value="None"/>	
<b>Monitoring and Blacklisting Parameters</b>		
Keep-Alive Interval	<input type="text" value="0"/>	
Blacklisting Duration	<input type="text" value="0"/>	
Blacklisting Delay	<input type="text" value="0"/>	
Blacklisting Error Codes	<input type="text" value=""/>	

Call Agent Rulesets			
Priority	Name	Parameters	
1	<input type="text" value="media_relay"/>	<input type="text" value=""/>	<input type="button" value="↑"/> <input type="button" value="↓"/> <input type="button" value="−"/>
2	<input type="text" value="MX-One_core_side"/>	<input type="text" value=""/>	<input type="button" value="↑"/> <input type="button" value="↓"/> <input type="button" value="−"/>
			<input type="button" value="+"/> <input type="button" value="−"/>

- When all the changes for call agents are done, a yellow field is shown indicating that configuration has been modified.
- Click **Save** when ready.

Configuration Modified:
-------------------------

- If the indication is not removed there are some error in the configuration.
- Double check changes described above and correct them.

## 4.6 ISDN

System	Network	SIP Proxy	SBC	<b>ISDN</b>	POTS	SIP	Media	Telephony	Call Router	Management	Reboot
Status	Statistics	Primary Rate Interface	Interop	Timer	Services						

If ISDN trunks are used the first action to do is to click **Start Sensing**. The system automatically detects certain parameters, for example, number of channels.

### 4.6.1 PRIMARY RATE INTERFACE

System	Network	SIP Proxy	SBC	<b>ISDN</b>	POTS	SIP	Media	Telephony	Call Router	Management	Reboot
Status	Statistics	<b>Primary Rate Interface</b>	Interop	Timer	Services						

3. When sensing is done for several markets, specific parameters can be changed.

Interface Configuration	
Line Type: <a href="#">[Configure]</a>	E1
Endpoint Type:	TE <input type="button" value="v"/>
Clock Mode:	Slave <input type="button" value="v"/>
Port Pinout:	Auto <input type="button" value="v"/>
Monitor Link State:	Enable <input type="button" value="v"/>
Line Coding:	HDB3 <input type="button" value="v"/>
Line Framing:	CRC4 <input type="button" value="v"/>
Signaling Protocol:	DSS1 <input type="button" value="v"/>
Network Location:	User <input type="button" value="v"/>
Preferred Encoding Scheme:	G.711 a-Law <input type="button" value="v"/>
Fallback Encoding Scheme:	G.711 u-Law <input type="button" value="v"/>
Channel Range:	1-30
Channels Reserved for Incoming Calls:	
Channels Reserved for Outgoing Calls:	
Channel Allocation Strategy:	Ascending <input type="button" value="v"/>
Maximum Active Calls:	30
Signal Information Element:	Disable <input type="button" value="v"/>
Inband Tone Generation:	Enable <input type="button" value="v"/>
Inband DTMF Dialing:	Enable <input type="button" value="v"/>
Overlap Dialing:	Disable <input type="button" value="v"/>
Calling Name Max Length:	34
Exclusive B-Channel Selection:	Disable <input type="button" value="v"/>
Sending Complete:	Enable <input type="button" value="v"/>
Send Restart On Startup:	Enable <input type="button" value="v"/>
Link Establishment:	Permanent <input type="button" value="v"/>
Accepted Status Causes:	
Accepted Progress Causes:	1-127
Send Isdn Progress:	Send All <input type="button" value="v"/>
Send Progress Indicator IE:	Send All <input type="button" value="v"/>
Default TON for Calling Party Number IE:	National <input type="button" value="v"/>
Default NPI for Calling Party Number IE:	Isdn Telephony <input type="button" value="v"/>
Default PI for Calling Party Number IE:	Presentation Allowed <input type="button" value="v"/>
Default SI for Calling Party Number IE:	Context Dependent <input type="button" value="v"/>
Default TON for Called Party Number IE:	National <input type="button" value="v"/>
Default NPI for Called Party Number IE:	Isdn Telephony <input type="button" value="v"/>
Notification User Suspended:	Ignore <input type="button" value="v"/>

4. Click **Apply** and restart requested service when done.

## 4.6.2 INTEROP

System	Network	SIP Proxy	SBC	ISDN	POTS	SIP	Media	Telephony	Call Router	Management	Reboot
Status	Statistics	Primary Rate Interface	Interop	Timer	Services						

3. You can change other parameters dependent on market.

Interop Configuration		
Progress Indicator In Setup:	Enable	▼
Progress Indicator In Setup Ack:	Enable	▼
Progress Indicator In Call Proceeding:	Enable	▼
Progress Indicator In Progress:	Enable	▼
Progress Indicator In Alerting:	Enable	▼
Progress Indicator In Connect:	Enable	▼
Maximum Facility Waiting Delay (ms):	0	
Use Implicit Inband Info:	Disable	▼
Call Proceeding Delay (ms):	0	
Calling Name Delivery:	Signaling Protocol	▼

4. Click **Apply** and restart requested service when done.

## 4.6.3 SERVICES

System	Network	SIP Proxy	SBC	ISDN	POTS	SIP	Media	Telephony	Call Router	Management	Reboot
Status	Statistics	Primary Rate Interface	Interop	Timer	Services						

1. Change other parameters dependent on market.

Services Configuration		
Facility Services:	Disable	▼
Calling Line Information Presentation:	Enable	▼
Calling Line Information Restriction:	Disable	▼
Calling Line Information Restriction Override:	Disable	▼
Connected Line Identification Presentation:	Enable	▼
Connected Line Identification Restriction:	Disable	▼
Connected Line Identification Restriction Override:	Disable	▼
Outgoing Notify:	Disable	▼
Maintenance Service Call Termination:	Graceful	▼
Date/Time IE Support:	Disable	▼
AOC-E Support:	No	▼
AOC-D Support:	No	▼
Call Rerouting Behavior:	Unsupported	▼

2. Click **Apply** and restart requested service when done.

## 4.7 POTS

### 4.7.1 CONFIG

System	Network	SIP Proxy	SBC	ISDN	<b>POTS</b>	SIP	Media	Telephony	Call Router	Management	Reboot
Status	Config	FXS Configuration	FXO Configuration								

1. Set market specific data for Caller Id handling.

General Configuration		
Caller ID Customisation:	EtsIDtmf	▼
Caller ID Transmission:	First Ring	▼
Vocal Unit Information:	All	▼

2. Click **Apply** when done and restart service.

### 4.7.2 FXS CONFIGURATION

System	Network	SIP Proxy	SBC	ISDN	<b>POTS</b>	SIP	Media	Telephony	Call Router	Management	Reboot
Status	Config	FXS Configuration	FXO Configuration								

3. Set analog phone specific data according to market.

FXS Configuration		
Line Supervision Mode:	DropOnDisconnect	▼
Disconnect Delay:	0	
Auto Cancel Timeout:	0	
Inband Ringback:	Disable	▼
Shutdown Behavior:	Disabled Tone	▼
Power Drop On Disconnect Duration:	1000	
Service Activation:	Flash Hook	▼

Country Customisation		
Override Country Configuration:	Disable	▼
Country Override Loop Current:	30	
Country Override Flash Hook Detection Range:	100-1200	

4. Click Apply when done and restart service.

## 4.8 SIP

### 4.8.1 GATEWAYS

Following gateways and port numbers are pre-defined.

System Network SIP Proxy SBC ISDN POTS **SIP** Media Telephony Call Router Management Reboot

Gateways Servers Registrations Authentication Transport Interop Misc

Note that a SIP route must be defined in MX-ONE to handle traffic to and from the 'trunks\_MX-ONE' gateway.

Gateway Configuration							
Name	Type	Signaling Network	Media Networks	Media Networks Suggestion	Port	Secure Port	
MX1_analog_ext	Trunk	Uplink		--- Suggestion ---	5080	0	-
trunk_lines_gw	Trunk	Loop	Loop	--- Suggestion ---	5066	0	-
trunks_mx-one	Trunk	Uplink		--- Suggestion ---	5070	0	-
							+

### 4.8.2 SERVERS

System Network SIP Proxy SBC ISDN POTS **SIP** Media Telephony Call Router Management Reboot

Gateways **Servers** Registrations Authentication Transport Interop Misc

1. Enter IP-address to MX-ONE in both **Registrar Host** and **Proxy Host** fields.

Default Servers			
Registrar Host:		192.168.17.44	
Proxy Host:		192.168.17.44	
Messaging Server Host:			
Outbound Proxy Host:			

2. Change **trunk\_lines\_gw** to **Yes** in the drop-down list for Gateway Specific.

Registrar Servers		
Gateway	Gateway Specific	Registrar Host
MX1_analog_ext	No	192.168.0.10:0
trunk_lines_gw	Yes	%sbc%
trunks_mx-one	No	192.168.0.10:0

3. Enter IP-address of MX-ONE in the **Proxy Host** field.
4. Enter IP-address of the gateway in the **Outbound Proxy Host**.

Proxy Servers			
Gateway	Gateway Specific	Proxy Host	Outbound Proxy Host
MX1_analog_ext	Yes	192.168.17.44	192.168.17.81
trunk_lines_gw	Yes	%sbc%	%sbc%
trunks_mx-one	No	192.168.0.10:0	0.0.0.0:0

5. Enter the IP-address of the gateway as **Alternate Destination** for **MX1\_analog\_ext**.
6. Enter the IP-address of MX-ONE as **Alternate Destination** for **trunks\_mx-one**.

Keep Alive Destination		
Gateway	Alternate Destination	
MX1_analog_ext	192.168.17.85	
trunk_lines_gw	127.0.0.1	
trunks_mx-one	192.168.17.94	

- Click **Apply** when done and restart service.

### 4.8.3 REGISTRATIONS

System	Network	SIP Proxy	SBC	ISDN	POTS	<b>SIP</b>	Media	Telephony	Call Router	Management	Reboot
Gateways	Servers	<b>Registrations</b>	Authentication	Transport	Interop	Misc					

- Enter the extension numbers for the analog extensions.






































































































Endpoints Registration						
Endpoint	User Name	Friendly Name	Register	Messaging	Gateway Name	
Slot1/E1T1			Disable	Disable	trunks_mx-one	
Slot2/E1T1			Disable	Disable	trunks_mx-one	
Slot3/FXS1	32104		Enable	Disable	MX1_analog_ext	
Slot3/FXS2	32105		Enable	Disable	MX1_analog_ext	
Slot3/FXS3	32106		Enable	Disable	MX1_analog_ext	
Slot3/FXS4	32107		Disable	Disable	MX1_analog_ext	
Slot4/E1T1			Disable	Disable	trunks_mx-one	
Slot5/E1T1			Disable	Disable	trunks_mx-one	

- Click **Apply** or Apply and Refresh when done.

### 4.8.4 AUTHENTICATION

System	Network	SIP Proxy	SBC	ISDN	POTS	<b>SIP</b>	Media	Telephony	Call Router	Management	Reboot
Gateways	Servers	<b>Registrations</b>	<b>Authentication</b>	Transport	Interop	Misc					

- If password is required, click  for any item.

Authentication									
Priority	Criteria	Endpoint	Gateway	Username	Criteria	Validate	Realm	User Name	
1	Endpoint	FXS1				Disable		11104	    
2	Unit					Enable			    
3	Unit					Enable			    
4	Unit					Enable			    
5	Unit					Enable			    
6	Unit					Enable			    
7	Unit					Enable			    
8	Unit					Enable			    
9	Unit					Enable			    
10	Unit					Enable			    
11	Unit					Enable			    
12	Unit					Enable			    
13	Unit					Enable			    
14	Unit					Enable			    
15	Unit					Enable			    
16	Unit					Enable			    
17	Unit					Enable			    
18	Unit					Enable			    
19	Unit					Enable			    
20	Unit					Enable			    
Number of rows to add: <input type="text" value="1"/>									

2. Indicate for which **Endpoint** and **Criteria** changes are applicable.
3. Enter the Auth Code, in the **Password** field.
4. Disable **Validate Realm**.

Authentication									
Priority	Criteria	Endpoint	Gateway	Username	Criteria	Validate	Realm	User Name	Password
1	Endpoint	Slot3/FXS1				Disable		32104	*****

5. Click **Apply** or Apply and Refresh Registration when done and restart service. The result after 'Registration' and 'Authentication' should be like as follows.

Endpoints Registration Status				
Endpoint	User Name	Gateway Name	Registrar	Status
Slot3/FXS1	32104	MX1_analog_ext	192.168.17.93:0	Registered
Slot3/FXS2	32105	MX1_analog_ext	192.168.17.93:0	Registered
Slot3/FXS3	32106	MX1_analog_ext	192.168.17.93:0	Registered

## 4.8.5 TRANSPORT

System	Network	SIP Proxy	SBC	ISDN	POTS	<b>SIP</b>	Media	Telephony	Call Router	Management	Reboot
Gateways	Servers	Registrations	Authentication	Transport	Interop	Misc					

1. Enable UDP if required.

Protocol Configuration					
UDP	UDP QValue	TCP	TCP QValue	TLS	TLS QValue
<input type="button" value="Enable"/>	<input type="text"/>	<input type="button" value="Enable"/>	<input type="text"/>	<input type="button" value="Disable"/>	<input type="text"/>

- Click **Apply** when done and restart service.

## 4.8.6 MISC

System	Network	SIP Proxy	SBC	ISDN	POTS	<b>SIP</b>	Media	Telephony	Call Router	Management	Reboot
Gateways	Servers	Registrations	Authentication	Transport	Interop	<b>Misc</b>					

- Enter the IP-address of MX-ONE in the **SIP Domain Override** filed for **trunk\_lines\_gw**.

Gateway Configuration	
Gateway Name	SIP Domain Override
MX1_analog_ext	<input type="text"/>
trunk_lines_gw	192.168.17.94
trunks_mx-one	<input type="text"/>

- Click **Apply** when done and restart service.

## 4.9 MEDIA

### 4.9.1 CODECS

System	Network	SIP Proxy	SBC	ISDN	POTS	SIP	<b>Media</b>	Telephony	Call Router	Management	Reboot
<b>Codecs</b>	Security	RTP Statistics	Misc								

- Change **Codecs** according to preference.

Codec	Voice	Data	Advanced
G.711 a-Law	<input type="button" value="Enable"/>	<input type="button" value="Enable"/>	
G.711 u-Law	<input type="button" value="Disable"/>	<input type="button" value="Enable"/>	
G.723	<input type="button" value="Disable"/>		
G.726 16Kbps	<input type="button" value="Disable"/>		
G.726 24Kbps	<input type="button" value="Disable"/>		
G.726 32Kbps	<input type="button" value="Disable"/>	<input type="button" value="Disable"/>	
G.726 40Kbps	<input type="button" value="Disable"/>	<input type="button" value="Disable"/>	
G.729	<input type="button" value="Disable"/>		
T.38		<input type="button" value="Enable"/>	
Clear Mode	<input type="button" value="Disable"/>	<input type="button" value="Disable"/>	
Clear Channel	<input type="button" value="Disable"/>	<input type="button" value="Disable"/>	
X CCD	<input type="button" value="Disable"/>	<input type="button" value="Disable"/>	


- Click **Apply** when done and restart service.














## 4.10 CALL ROUTER







### 4.10.1 ROUTE CONFIG


System	Network	SIP Proxy	SBC	ISDN	POTS	SIP	Media	Telephony	<b>Call Router</b>	Management	Reboot
Status	Route Config	Auto-routing									

1. Click  for index 1. This is used if the received B-number contains a full number. That is, more digits than the pure DID numbers.


Routes						
Index	Sources	Criteria Property	Criteria Rule	Transformations	Signaling Properties	Destination
1	isdn-Slot1/E1T1, isdn-Slot2/E1T1, isdn-Slot3/E1T1, isdn-Slot4/E1T1, isdn-Slot5/E1T1, isdn-Slot6/E1T1, isdn-Slot7/E1T1, isdn-Slot8/E1T1, r2-Slot1/E1T1, r2-Slot2/E1T1, r2-Slot3/E1T1, r2-Slot4/E1T1, r2-Slot5/E1T1, r2-Slot6/E1T1, r2-Slot7/E1T1, r2-Slot8/E1T1, e&m-Slot1/E1T1, e&m-Slot2/E1T1, e&m-Slot3/E1T1, e&m-Slot4/E1T1, e&m-Slot5/E1T1, e&m-Slot6/E1T1, e&m-Slot7/E1T1, e&m-Slot8/E1T1, fxo-Slot2/FXO1, fxo-Slot2/FXO2, fxo-Slot2/FXO3, fxo-Slot2/FXO4, fxo-Slot3/FXO1, fxo-Slot3/FXO2, fxo-Slot3/FXO3, fxo-Slot3/FXO4, fxo-Slot4/FXO1, fxo-Slot4/FXO3, fxo-Slot4/FXO2, fxo-Slot4/FXO4, fxo-Slot5/FXO1, fxo-Slot5/FXO2, fxo-Slot5/FXO3, fxo-Slot5/FXO4, fxo-Slot6/FXO1, fxo-Slot6/FXO2, fxo-Slot6/FXO3, fxo-Slot6/FXO4, fxo-Slot7/FXO1, fxo-Slot7/FXO2, fxo-Slot7/FXO3, fxo-Slot7/FXO4, fxo-Slot8/FXO1, fxo-Slot8/FXO2, fxo-Slot8/FXO3, fxo-Slot8/FXO4	None		DID_Extension		sip-trunk_lines_gw     
2	sip-trunks_mx-one, sip-trunk_lines_gw	None				hunt-Hunt1     
						

2. In the **Transformations** field add a name for a transformation rule.


Configure Route 1		
	Value	Suggestion
Sources	isdn-Slot1/E1T1, isdn-Slot2/E1T1, isdn-Slot3/E1T1, isdn-Slot4/E1T1, isdn-Slot5/E1T1, isdn-Slot6/E1T1, isdn-Slot7/E1T1, isdn-Slot8/E1T1, r2-Slot1/E1T1, r2-Slot2/E1T1, r2-Slot3/E1T1, r2-Slot4/E1T1, r2-Slot5/E1T1, r2-Slot6/E1T1, r2-Slot7/E1T1, r2-Slot8/E1T1, e&m-Slot1/E1T1, e&m-Slot2/E1T1, e&m-Slot3/E1T1, e&m-Slot4/E1T1, e&m-Slot5/E1T1, e&m-Slot6/E1T1, e&m-Slot7/E1T1, e&m-Slot8/E1T1, fxo-Slot2/FXO1, fxo-Slot2/FXO2, fxo-Slot2/FXO3, fxo-Slot2/FXO4, fxo-Slot3/FXO1, fxo-Slot3/FXO2, fxo-Slot3/FXO3, fxo-Slot3/FXO4, fxo-Slot4/FXO1, fxo-Slot4/FXO3, fxo-Slot4/FXO2, fxo-Slot4/FXO4, fxo-Slot5/FXO1, fxo-Slot5/FXO2, fxo-Slot5/FXO3, fxo-Slot5/FXO4, fxo-Slot6/FXO1, fxo-Slot6/FXO2, fxo-Slot6/FXO3, fxo-Slot6/FXO4, fxo-Slot7/FXO1, fxo-Slot7/FXO2, fxo-Slot7/FXO3, fxo-Slot7/FXO4, fxo-Slot8/FXO1, fxo-Slot8/FXO2, fxo-Slot8/FXO3, fxo-Slot8/FXO4	--- Suggestion --- 
Criteria Property	None 	
Criteria Rule		--- Suggestion --- 
Transformations	DID_Extension	--- Suggestion --- 
Signaling Properties		--- Suggestion --- 
Destination	sip-trunk_lines_gw	--- Suggestion --- 
Config Status		

3. Click **Save**.
4. Click  in the first Call Property Transformation and enter the same name as above.
5. Use **Called E164** for both **Criteria Based On** and **Transformation Applies To** fields.

Configure Transformation 1	
	Value
Name	<input type="text" value="DID_Extension"/>
Criteria Based On	<input type="text" value="Called E164"/>
Transformation Applies To	<input type="text" value="Called E164"/>
Config Status	

- Click **Save** or Save and Insert Rule.
- Click  in the second Call Property Transformation and enter the same name as above.
- Use **Called E.164** for both **Criteria Based On** and **Transformation Applies To** fields.






Configure Transformation 1	
	Value
Name	<input type="text" value="DID_Extension"/>
Criteria Based On	<input type="text" value="Called E164"/>
Transformation Applies To	<input type="text" value="Called E164"/>
Config Status	

- Click **Save** or Save and Insert Rule.
- Click  in the second Call Property Transformation, and enter the same name as above.
- The **Criteria Rule** in this case is 443(111..)\$ and the transformation rule is \1.






This means that if a B-number is received containing 44311104, then the 3 first digits (443) are removed before the call is sent to MX-ONE for further processing. (111..)\$ means that the number can only be 5 digits starting with 111.

Configure Transformation Rule 1		
	Value	Suggestion
Type	Called E164 to Called E164	
Name	<input type="text" value="DID_Extension"/>	<input type="text" value="--- Suggestion ---"/>
Criteria Rule	<input type="text" value="598(321..\$)"/>	<input type="text" value="--- Suggestion ---"/>
Transformation Rule	<input type="text" value="\1"/>	<input type="text" value="--- Suggestion ---"/>
Next Transformation	<input type="text" value=""/>	<input type="text" value="--- Suggestion ---"/>
Config Status		

- Click **Save** or Save and Insert Rule. Now, the 'Call Property Transformations' looks like this as shown below.

Transformations				
Index	Name	Criteria Based On	Transformation Applies To	
1	DID_Extension	Called E164	Called E164	   
				

Transformation Rules				
Index	Name	Criteria Rule	Transformation Rule	Next Transformation
1	DID_Extension	598(321..\$)	\1	
   				
				

- Click **Save** if the yellow indication on top of the page is ON.

## 4.11 MANAGEMENT

System	Network	SIP Proxy	SBC	ISDN	POTS	SIP	Media	Telephony	Call Router	Management	Reboot
Configuration Scripts	Backup / Restore	Firmware Upgrade	Certificates	SNMP	CWMP	Access Control	File	Misc			

### 4.11.1 BACKUP/RESTORE

1. Click the "Activate unsecure script transfers through web browser" link.

Image Configuration	
<b>Transfer Parameters</b>	
File Name:	<input type="text" value="Backup_2018-07-30_85.xml"/> <input type="button" value="Suggestion"/>
Transfer Protocol:	<input type="button" value="File"/>
Host Name:	<input type="text" value="0.0.0.0"/>
Location:	<input type="text"/>
User Name:	<input type="text"/>
Password:	<input type="text"/>
<b>Backup Parameters</b>	
Content:	<input type="button" value="Config And Certificates"/>
<b>Privacy Parameters</b>	
Privacy Algorithm:	<input type="button" value="None"/>
Privacy Key:	<input type="text"/>

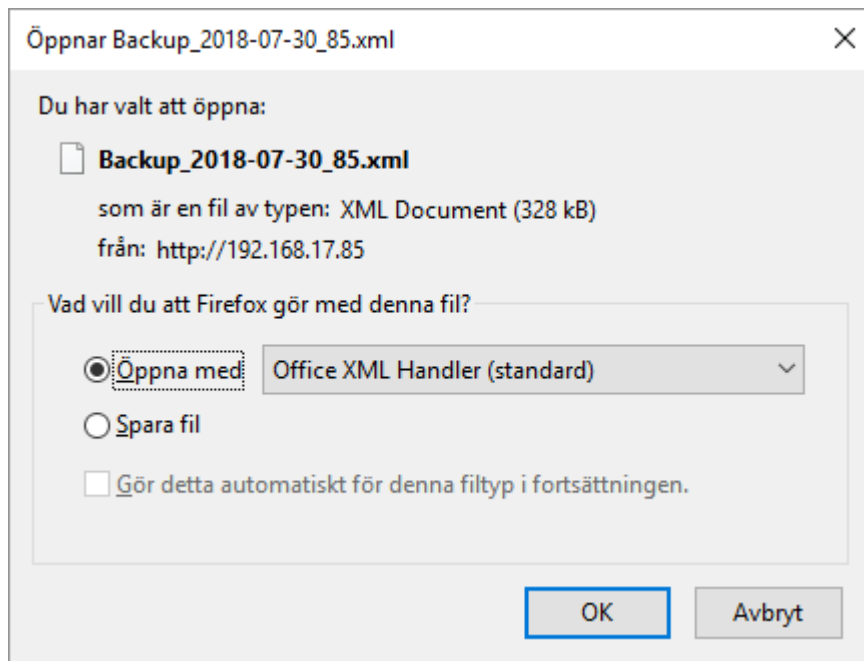
2. Click **Apply** and Backup Now.

### 4.11.2 FILE

System	Network	SIP Proxy	SBC	ISDN	POTS	SIP	Media	Telephony	Call Router	Management	Reboot
Configuration Scripts	Backup / Restore	Firmware Upgrade	Certificates	SNMP	CWMP	Access Control	File	Misc			

Internal files			
Name	Description	Size	
<a href="#">conf/Backup_2018-07-30_85.xml</a>	Automatically generated on 24/08/2018 08:29:46.	149 KB	<input type="button" value="-"/>
<a href="#">conf/FXO_Country_Defaults.cfg</a>	FXO Country Defaults	1 KB	<input type="button" value="-"/>
<a href="#">conf/FXO_North-America_3km.cfg</a>	FXO North-America 3km	1 KB	<input type="button" value="-"/>
<a href="#">conf/PRI_China-DSS1.cfg</a>	China DSS1	3 KB	<input type="button" value="-"/>
<a href="#">conf/PRI_Default.cfg</a>	PRI default configuration	3 KB	<input type="button" value="-"/>
<a href="#">conf/PRI_NorthAmerica-NI1.cfg</a>	North America NI1	3 KB	<input type="button" value="-"/>
<a href="#">conf/PRI_NorthAmerica-NI2.cfg</a>	North America NI2	3 KB	<input type="button" value="-"/>
<a href="#">conf/Survivability_Enable.cfg</a>	Configures the EX Controller for MX-ONE survivability environment.	29 KB	<input type="button" value="-"/>
<a href="#">conf/Survivability.cfg</a>	Configures the unit to use the SipProxy service for basic use cases.	1 KB	<input type="button" value="-"/>
<a href="#">vm/drives/mxone7.iso</a>	Bootable disc file	6.2 GB	<input type="button" value="-"/>
<b>10 file(s)</b>	Total: 6.2 GB / Available: 2.4 GB		

1. Find the previously made backup image.



2. Download and store on a secure place.

## 5 KNOWN LIMITATIONS

Below are some known limitations when using the EX-Controller or GX-Gateway.

- When MX-ONE is installed as a virtual machine in the EX-Controller, Provisioning Manager is not allowed to be installed.
- When EX-Controller is used in a multi-server configuration the EX-controller can never be the master server.
- Maximum 5 servers can exist in a multi-server configuration, where at least one of the servers is an EX-controller.
- When deploying a MX-ONE as a virtual machine the maximum amount of RAM is 7168 Mbytes.