MiVoice MX-ONE

PSTN Fallback for VoIP Media- Operational Directions

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General

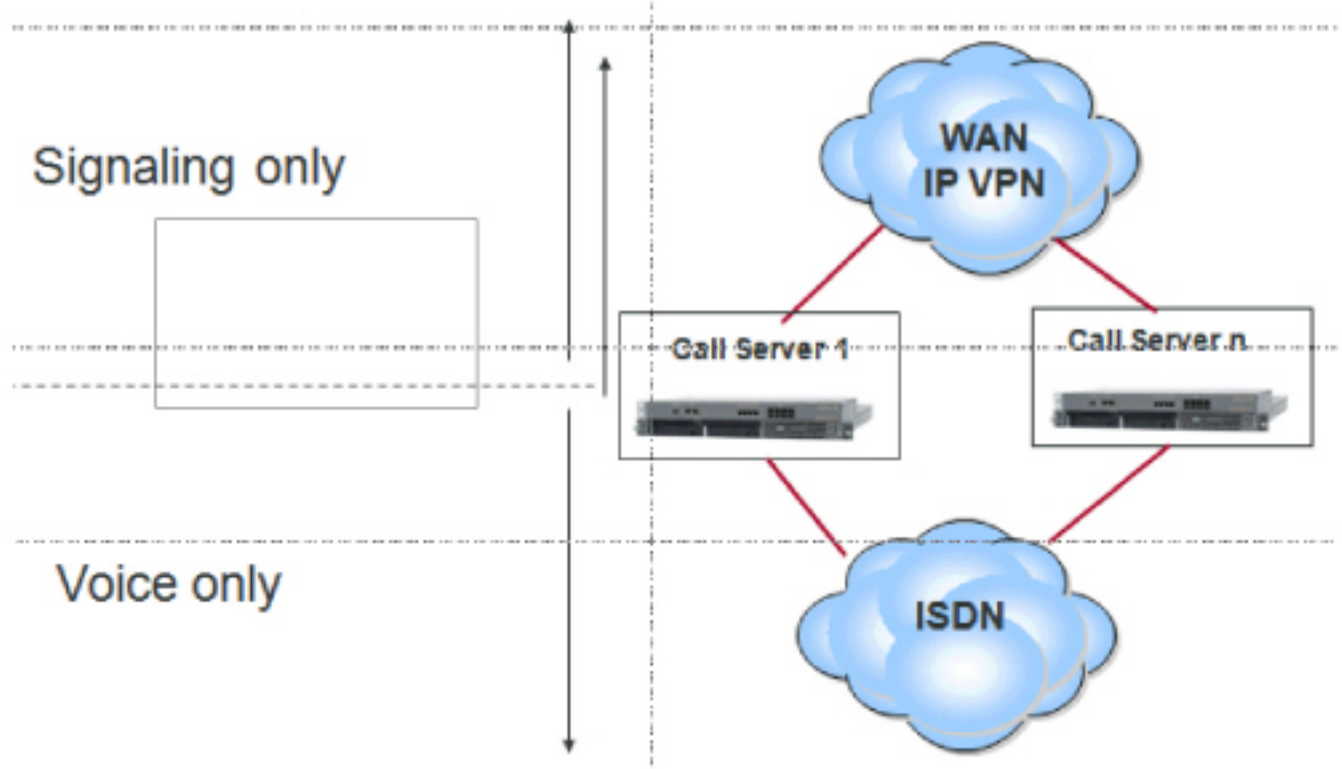
These Operational Directions for PSTN fallback for VoIP media, Inter Gateway Routing, describe how to create a media connection between two gateways using existing ISDN or TL30 CAS routes.

The connection is programmed with first igw_route commands then transport commands, and is used in the same way as RTP connections.

There are two ways to distinguish this function from normal PSTN calls. The first way is to use a special identifier in UUS 1. This can be used only with ISDN.

The second way is to use a designated number type for called number and calling number used as call id. This can be used with both ISDN and TL30 CAS.

The call signaling would still use and require TCP/IP between the servers, but voice media could be routed via public PSTN. The basic scenario could look like the following.



A basic scenario, where Call Server 1 (LIM1) and Call Server n (LIMn) both belong to the same MX-ONE system, but are geographically dispersed, and normally use TCP/IP connection between the servers (LIMs), but also have public PSTN connections.

Prerequisites

One or more PSTN routes between the destinations must exist. It is not necessary to have PSTN trunks in all gateways, but if none exist in the originating and/or the terminating gateway, extra resources will be used.

There are two ways to program this:

- Using UUI. This requires UUS 1 direct in message or embedded in GFP. Can be used with ISDN.
- Using called and calling number. This requires called and calling number to be transferred through the network. Can be used both with ISDN and TL30 CAS.

To best utilize system resources it is recommended that trunks exist in all outgoing gateways and that it is possible to determine the exact incoming gateway on dialed number basis.

The license for Inter Gateway Route must be available.

Since IGWP is an optional program, it will be not be enabled by default. You must manually load this program.

Aids

I/O terminal.

References

In these Operational Directions references are made to the following documents:

- Inter Gateway Route, command description
- Transport, command description

Procedure

1) Creation of locations. (If UUS 1 is used this step is omitted.)
2) Creation of a virtual route. This step will define the originating part of the connection. It contains, a virtual board position, the originating media gateway and the calling number to be presented to the network.
3) Creation of destinations within the virtual route. This step will define the terminating part of the connection. It contains the terminating media gateway, the called number to be sent to the network and a flag stating whether connection is allowed when no free trunks are available in the originating gateway. All existing gateways may be a destination in any virtual route.
4) Programming of transport class and priority. The procedure depends on if the call is using the UUS1 or the calling/called number to identify the call. The procedure consists of three or four steps.

Execution

Initiation using UUS 1

When the UUS 1 method is used parameter –calling-number shall be used when a virtual route is initiated, and the parameter --called-number shall be used when a destination is initiated.

Initiation of Inter-Gateway Virtual Route

1) Key the command `igw_route -i` to initiate the virtual route.
2) Key the command `igw_route -p` to verify initiation of the route.

Initiation of Inter Gateway Route Destination

1) Key the command `igw_route -i` to initiate the destinations within the virtual route.
2) Key the command `igw_route -p` to verify initiation of the destination.
3) Key the command `trsp_connection` to program the destinations class and priority.

Initiation Using Calling/Called Number

When the calling/called number method is used parameter --location shall be used when a virtual route or a destination is initiated.

Initiation of Inter-Gateway Locations

1) Key the command `igw_route -i` to initiate location.
2) Key the command `igw_route -p` to verify initiation of the locations.

Initiation of Inter-Gateway Virtual Route

1) Key the command `igw_route -i` to initiate the virtual route.
2) Key the command `igw_route -p` to verify initiation of the route.

Initiation of Inter Gateway Route Destination

1) Key the command `igw_route -i` to initiate the destinations within the virtual route.
2) Key the command `igw_route -p` to verify initiation of the destination.
3) Key the command `trsp_connection`to program the destinations class and priority.

Erasure of Inter-Gateway Route Destination

1) Key the command `igw_route -e` to erase an inter gateway route destination.
2) Key the command `igw_route -p` to verify erasure of the destination.

Erasure of Inter-Gateway Virtual Route

1) Key the command `igw_route -e` to erase an inter gateway virtual route.
2) Key the command `igw_route -p` to verify erasure of the route.

Erasure of Inter-Gateway Locations

1) Key the command `igw_route -e` to erase an inter gateway location.
2) Key the command `igw_route -p` to verify erasure of the location.

Change

Change of Inter-gateway Route Destination Parameters

1) Key the command `igw_route -c` change an inter gateway route destination parameters.
2) Key the command `igw_route -p` to verify the change.

Change of Inter-Gateway Virtual Route

1) Key the command `igw_route -c` to change an inter gateway virtual routes parameters.
2) Key the command `igw_route -p` to verify the change.

Change of Inter-Gateway Route Destination Transport Data

1) Key the command `trsp_connection` to change transport data.
2) Key the command `trsp_connection` to verify the change.

Printout

Key the command `igw_route -p` to obtain a printout of the inter gateway routes, and destinations and locations.

Use Case - Calling/Called Number Method

This is the same scenario as above but using the other method to set it up.

The called number is used to route the call to the target LIM. The calling number is used as call id to identify the waiting call.

NOTE: *The calling and called numbers do not have any connection to the actual a/b part. This feature simply makes use of numbers possible to transport through the network.*

The location concept:

- An inter gateway location is the network end point.
- A location may reside in multiple LIMs.
- Gateways in the same LIM can belong to different locations.
- A gateway can belong to any number of locations.
- A gateway can belong to the same locations its LIM.
- The location contains called numbers and calling numbers/call ids.
- The calling numbers/call ids are the numbers that can be sent by the caller.

How locations are used:

The transport function will request a virtual board and a destination.

A request is sent to LIM where the destination gateway resides. If the destinations location can not be found the request is rejected. If it is found it will be accepted and the response will contain calling number/call id and called number data.

The gateways in the scenario above can conveniently be split into different locations. This is number plan for the gateways:

Media Gateway 1A

- Is reached by dialing 85687500
- Can provide calling numbers 85687500 - 85687699

Mgw1B

- Is reached by dialing 85687700

- Can provide calling numbers 85687700 - 85687899

Mgw2A

- Is reached by dialing 327217400
- Can provide calling numbers 327217400 - 327217499

The calling numbers that a location can provide will become call id's. The call id's do not need to be unique, several locations may use the same call id's.

NOTE: *The calling numbers/call ids can be abbreviated to the last significant digits.*

Stockholm_1A

- Mgw1A
- Called numbers 85687500
- Call ids 7500 – 7899

Stockholm_1B

- Mgw1B
- Called numbers 85687500
- Call ids 7500 – 7899

Goteborg

- Lim 2 (gateways are not separated in this LIM)
- Called numbers 327217400
- Call ids 7400 – 7499

The call paths will be:

- Stockholm_1A <=> Goteborg
- Stockholm_1B <=> Goteborg

The transport connection choice table in MX-ONE will look this:

Table 1: Registered connection media in media gateway 1A

BPOS/IP	Controller	Logical link	Status	Class	Priority
10.105.64.82	RTPCON	1B	OK	B	two
1A-7-00	IGWP	2A	OK	B	three

Table 2: Registered connection media in media gateway 1B (Sheet 1 of 2)

BPOS/IP	Controller	Logical link	Status	Class	Priority
10.105.64.206	RTPCON	1A	OK	B	two

Table 2: Registered connection media in media gateway 1B (Continued) (Sheet 2 of 2)

BPOS/IP	Controller	Logical link	Status	Class	Priority
1B-7-00	IGWP	2A	OK	B	three

Table 3: Registered connection media in media gateway 2A

BPOS/IP	Controller	Logical link	Status	Class	Priority
10.105.64.123	RTPCON	1A	OK	B	two
10.105.64.123	RTPCON	1B	OK	B	two
2A-7-00	IGWP	1A	OK	B	three
2A-7-00	IGWP	1B	OK	B	three

NOTE: *The 2 different virtual boards for gateway 2A.*

Set up using the locations above:

1) The RTP choices are inherent in MX-ONE and when the RTP resource is programmed, it will automatically be configured. No additional commands are needed unless a different class/priority is desired.

   Locations, containing calling and called numbers/call ids: Called numbers need to be unique at least on a LIM basis and programmed in number analyses.

   Number to reach location Stockholm_1A is 85687500

```
number_initiate -number 7500 -numbertype gr
```

   Number to reach location Stockholm_1B is 85687700

```
number_initiate -number 7700 -numbertype gr
```

   Number to reach location Goteborg is 327217400

```
number_initiate -number 7400 -numbertype gr
```

   Now we can start with inter gateway locations, first the LIMs or gateways:

```
igw_route -i --location Stockholm_1A --media-gateway 1A igw_route -i --
location Stockholm_1B --media-gateway 1B igw_route -i --location Goteborg
--lim 2
```

   Then number to reach each location:

```
igw_route -i --location Stockholm_1A --called_numbers 85687500 igw_route -
i --location Stockholm_1B --called_numbers 85687700 igw_route -i --location
Goteborg --called_numbers 327217400
```

   Then call ids (or calling numbers, also note that they can be abbreviated):

   Stockholm_1A call ids

```
igw_route -i --location Stockholm_1A --call-ids 7500..7899
```

Stockholm_1B call ids

```
igw_route -i --location Stockholm_1B --call-ids 7500..7899
```

Goteborg call ids

```
igw_route -i --location Goteborg --call-ids 7400..7499
```

The inter gateway routing

Media Gateway 1A virtual board, Location Stockholm_1A

```
igw_route -i --media-gateway 1A --route-number 10 --location Stockholm_1A
```

This command will result in assignment of virtual board 1A-7-00-0.

Stockholm_1A to destination at location Goteborg

```
igw_route -i -b 1A-7-00 --media-gateway 2A --location Goteborg
```

Media Gateway 1B virtual board, Location Stockholm_1B

```
igw_route -i --media-gateway 1B --route-number 10 --location Stockholm_1B
```

This command will result in assignment of virtual board 1B-7-00-0

Stockholm_1B to destination at location Goteborg

```
igw_route -i -b 1B-7-00 --media-gateway 2A --location Goteborg
```

Media Gateway 2A virtual board, Location Goteborg

```
igw_route -i --media-gateway 2A --route-number 11 --location Goteborg
```

This command will result in assignment of virtual board 2A-7-00-0.

Goteborg to destination at location Stockholm_1A

```
igw_route -i -b 2A-7-00 --media-gateway 1A --location Stockholm_1A
```

Goteborg to destination at location Stockholm_1B

```
igw_route -i -b 2A-7-00 --media-gateway 1B --location Stockholm_1B
```

Set transport priorities

Media Gateway 1A to 2A

```
trsp_connection -bpos 1A-7-00 -class b -prio 3 -rmgw 2A
```

Media Gateway 1B to 2A

```
trsp_connection -bpos 1B-7-00 -class b -prio 3 -rmgw 2A
```

Media Gateway 2A to 1A

```
trsp_connection -bpos 2A-7-00 -class b -prio 3 -rmgw 1A
```

Media Gateway 2A to 1B

```
trsp_connection -bpos 2A-7-00 -class b -prio 3 -rmgw 1B
```

2) The inter gateway routing

Media Gateway 1A virtual board, Location Stockholm_1A

This command will result in assignment of virtual board 1A-7-00-0.

Stockholm_1A to destination at location Goteborg

3) `igw_route -i -b 1A-7-00 --media-gateway 2A --location Goteborg`
   Media Gateway 1B virtual board, Location Stockholm_1B
4) `igw_route -i --media-gateway 1B --route-number 10 --location Stock-holm_1B`
   This command will result in assignment of virtual board 1B-7-00-0
   Stockholm_1B to destination at location Goteborg
5) `igw_route -i -b 1B-7-00 --media-gateway 2A --location Goteborg`
   Media Gateway 2A virtual board, Location Goteborg
6) `igw_route -i --media-gateway 2A --route-number 11 --location Goteborg`
   This command will result in assignment of virtual board 2A-7-00-0.
   Goteborg to destination at location Stockholm_1A
7) `igw_route -i -b 2A-7-00 --media-gateway 1A --location Stockholm_1A`
   Goteborg to destination at location Stockholm_1B
8) `igw_route -i -b 2A-7-00 --media-gateway 1B --location Stockholm_1B`
9) Set transport priorities
   Media Gateway 1A to 2A
10) `trsp_connection -bpos 1A-7-00 -class b -prio 3 -rmgw 2A`
    Media Gateway 1B to 2A
11) `trsp_connection -bpos 1B-7-00 -class b -prio 3 -rmgw 2A`
    Media Gateway 2A to 1A
12) `trsp_connection -bpos 2A-7-00 -class b -prio 3 -rmgw 1A`
    Media Gateway 2A to 1B
13) `trsp_connection -bpos 2A-7-00 -class b -prio 3 -rmgw 1B`

Termination

When an inter-gateway route has been initiated, changed or erased, inform the person or instance responsible for the customer telecommunications.

Since exchange data have been altered, a dump to backup media is to be effected.

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Powering connections

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