

MultiTech Gateway Application Note

Note: For MaxCS 7.0 and above, refer to this document.

The MultiTech MVP410 provides a cost-effective voice over IP gateway for small branch offices of up to 15 users. The MVP410 extends the AltiServ System solution to small branch offices over an IP infrastructure, using analog or IP phones. Three applications for the MultiTech MVP410 are described in this application note:

Note: 5.0A Update 1 is needed to support remote analog trunks accessed via IP tie-trunks.

Figure 1. Topology for dialing using remote MultiTech IP Gateway

for Use with AltiServ over IP Tie-Trunks

The MultiTech Gateway can be placed in a remote location. By adding this gateway into the AltiServ IP Dialing Table, the remote analog trunks on the MVP410 can be accessed by the extension users on the AltiServ system. Out Call Routing routes can then be configured to achieve least cost routing. If remote trunks are busy, Out Call Routing can use alternate routes to reach the destination (if it is configured). Calls received from the remote analog trunks can be routed to the AltiServ system, or to an extension user.

Notes:

- To install, setup, configure and debug the MultiTech device, refer to the MultiTech MVP410 manual.
- The correct MultiTech MVP410 firmware version to use with AltiServ should be 6.07. Download this firmware version to the PC that is connected to the MultiTech MVP410 device.

- The COM port (1 or 2) for the MultiTech MVP410 device MUST be set up to run at 115,200KB. Under Start>Program>multiVoIP, double-click “Configuration Port Setup” to setup the MultiTech MVP410's COM port speed.
- For any and all configuration changes to take effect, click the Save & Reboot button on the MultiTech MVP410 configuration screen.
- Use Altiserv (Out Call Routing) for any and all digit manipulation instead of the MultiTech MVP410.

Configure IP address for MultiVOIP

After connecting all cables and installing the MultiTech MVP410 gateway device, go to the IP Parameters page of MultiVOIP Configuration, configure the IP address, IP Mask and Gateway used by the MVP410. If you require that the MVP410 get its IP address from DHCP server, select the Enable DHCP option. The DHCP server must be located at the same site as the MVP410 so it is available in the event of WAN link failure. Then click OK.

Figure 2. MultiTech MultiVOIP Configuration – IP Parameters

Create an Inbound Phone Book entry to enable the MultiTech Gateway to filter Altiserv's outgoing IP calls (made from extensions in Altiserv, through the MultiTech Gateway).

In the Inbound Phone Book page of MultiVOIP Configuration, click the Add button. In the Add Inbound Phone Book screen, add the entry as follows:

Accept AnyNumber option – Check the check box Remove Prefix field – Let it default to “Any Number” Add Prefix field – Leave empty Channel Number field – Leave default or hunting Description field – Leave empty

Then click OK.

Figure 3. Inbound Phone Book Add Entry

In the Interface page of MultiVOIP Configuration, enable the Caller ID checkbox in the Caller ID field, then click OK.

Notes:

When the MultiTech channels are configured as FXO and interfaced with CO analog trunks from a channel bank which does not properly support analog loop start signaling, disconnect/signaling problems may be encountered. The following are examples of problems that may occur.

- When the “Current Loss” Parameter on the “interface” screen of the MultiTech is enabled, calls coming from the PSTN through the MultiTech device to an extension on Altiserv will be dropped when answered 50% of the time.

When the “Current Loss” Parameter on the “interface” screen of the MultiTech is NOT enabled, calls coming from the PSTN through the MultiTech device to auto attendant, system line park and/or voice mail will experience the first few words of the prompt being cut off. When the “Current Loss” Parameter on the “interface” screen of the MultiTech is NOT enabled, calls coming from the PSTN through the MultiTech device to a system line park will stay connected if the caller hangs up before the call is answered.

In the Save Setup Page, click the Save & Reboot button to reboot the MultiTech Gateway.

Figure 4. MultiVOIP Configuration - Interface

AltAdmin Configuration

1. Configure Out Call Routing Access Code.

In the Number Plan page of System Configuration, in the First Digit Assignment field, use the drop-down list to assign a digit as Route Access, then click OK.

Figure 5. Altiserv System Configuration – Number Plan Page

2. Add a location in the IP Dialing Table.

In the VoIP Dialing Table of VoIP Configuration, click the Add button to add a location for the MultiTech gateway. In the IP Dialing Table Entry, set:

- a. Location ID: 6 or any number
- b. Location Name: Name of Location
- c. Server IP Address: 10.10.0.245 (MultiTech Gateway IP Address)
- d. Remote Ext Length: None
- e. Dialing Scheme: Enblock (MUST BE ENBLOCK)

Then click OK.

Figure 6. IP Dialing Table Entry

Figure 7. IP Dialing Table – Location ID Digit Length

Create a route to reach remote MultiVOIP via IP tie-trunks.

In the Route Definition window of Out Call Routing Configuration, click Add to create a Route definition “IP to PSTN” to route the call from an IP trunk to a PSTN trunk. Under Digit Manipulation, enable the Insert to Head checkbox and set Insert Digits to 6, (remote Location’s ID). Select the desired IP trunks that will be used as Member Trunks. Then click Apply.

In this case, when an IP extension user dials to a remote location using the Out Call Routing Access code plus an 11-digit number, 9-1-408-5551212 for example, the number 6 will be inserted as the location ID to access the MultiTech gateway. All 11 digits will be sent out to the remote gateway. In the case where only 7-digit local numbers should be dialed by the gateway, the Out Call Routing Access should also be configured to delete the long distance prefix and area code, e.g. 1-408, from the dialing string.

Figure 8. Out Call Routing Configuration – Route Definition page

In the Dialing Pattern page of Out Call Routing Configuration, click Add to create an entry for dialing pattern prefix “1408” and pattern length including prefix set to 11. Assign the Route Priority 1 for IP to PSTN in the Route Priority field, then click Apply.

Figure 9. Add an Entry Dialog Box

Figure 10. Out Call Routing Configuration – Route Priority

Create an alternate route to reach remote MultiVOIP when its trunks are not available.

In the Route Definition table of Out Call Routing Configuration, click Add to create another Route Definition name (Trunk to PSTN) to route the call from a Trunk to PSTN as an alternate route. Select the desired trunks that will be used as Member Trunks. Then click Apply. When MultiTech gateway’s trunks are busy or not available, the alternate route is taken and calls are dialed through local PSTN trunks.

Figure 11. Route Definition – Trunk to PSTN Route Name

- b. In the Dialing Pattern page of Out Call Routing Configuration, Assign the Route Priority 2 for Trunk to PSTN in the Route Priority field, then click OK.

Figure 12. Out Call Routing Configuration – Dialing Pattern for Route Priority 1

Now, when callers make an outbound call through Multi-Tech Gateway, they can dial 9 + 1 + area code + outside numbers (In our example: 9-1-408-xxx-xxxx). The digit 6 is inserted and the calls are routed through IP tie-trunks to MultiVOIP Gateway to hop-off through its analog trunks. In the case where the WAN connection is down or no trunks are available, the calls are routed through PSTN, as specified in the alternate route.

Receiving Inbound Calls through Gateway

Extensions can receive an incoming call from the PSTN to the MultiTech Gateway, through Altiserv to an extension. (See Figure 13)

Figure 13. Topology for dialing using remote MultiTech IP Gateway

Create Outbound Phone Book entries to enable the MultiTech Gateway to filter incoming calls (coming from PSTN, through MultiTech Gateway, to IP extension in Altiserv). To configure:

In the Outbound Phone Book page of MultiVOIP Configuration, click the Add button.

Figure 14. MultiVOIP Configuration – Add Outbound Phone Book Entry

In the Add Outbound Phone Book Add Entry:

Accept AnyNumber – Enable checkbox Destination Pattern – set as “Any Number” Total Digits – set as “0”
Remove Prefix field – leave blank Add Prefix field – leave blank IP Address – enter IP address of Altiserv

Then click OK.

Notes:

Go to the MultiVOIP Configuration and under the Voice/Fax screen, set the parameter Auto Call / OffHook Alert to Auto Call and type in an extension in Altiserv. The MultiTech Gateway will now pass the PSTN call to

this Altiserv extension.

- If the incoming trunk calls are to be answered by the operator, then the operator's extension can be typed in. Otherwise, a virtual extension can be used for Trunk In Call Routing purposes by configuring this virtual extension's call forwarding target, such as AA, Line Park, extension, group, voice mail or outside number. The incoming trunk calls will be routed to the specified forwarding target.

2. In the Save Setup page, click Save & Reboot button to reboot the MultiTech Gateway. The Outbound Phone Book Entry will appear in the Outbound Phone Book field.

Figure 15. MultiVOIP Configuration – Outbound Phone Book, List Entries

Now, when an outside number dials the extension, the call will route through the MultiTech Gateway, to the Altiserv system, then to the remote IP extension.

Application II - Emergency Number Dialing for Remote IP Phones

For a business with multiple offices, connecting headquarters with remote workers using IP phones over WAN as extensions to the IP-PBX is a cost effective solution. However, remote dialing of an emergency number, 911, for example, can be a problem if the remote worker is not in the same emergency Public Safety Answering Point (PSAP).

For PSTN emergency service, the local exchange carrier (LEC) processes 911 calls by routing them from the central office (CO) to the nearest PSAP. A PSAP operator verifies or obtains the caller's Automatic Location Information (ALI), determines the nature of the emergency and decides which emergency response teams should be notified. The ALI database helps associate a physical location with a telephone number and may include information such as name, phone number, address, nearest cross street, etc.

In a situation where Altiserv is in a different 911 service area than IP extensions, and the remote IP phone user is making an emergency call, the ALI will be delivered to the wrong 911 center. The local 911 center where system trunk is connected to will get the emergency call instead of the 911 center near the remote IP extension.

Altigen software release 5.0A (OE/ACC and ACM) or above provides two solutions for a remote IP extension user dialing the emergency number.

- Using Dialed Digit Translator to translate 911 to a remote 911 center DID number
- Using Dialed Digit Translator to make a 911 call hop-off through remote FXO gateway. (MultiTech System's MVP410 is tested and certified with Altiserv's OE/ACC or ACM 5.0 system. Please see MultiTech gateway configuration section for more information.)

Note: A MultiTech gateway is not required in this case.

Figure 16. Translate IP Extension 911 call to 911 center DID number

Figure 16 shows how Altiserv translates a remote IP extension's 911 call to a 911 center 10-digit DID number and is answered by PSAP agent.

Note: Each local 911 center has an alternate 10 digit DID number. To obtain this DID number for your local area, dial your local 411 directory service and ask for the "911 center DID number".

Assuming a company with headquarters' system in San Francisco, CA and a branch office with an IP extension 104 located at Fremont, CA and its 911 center DID number is 5102520911. The following configuration steps show how to setup Dialed Digits Translator to make a 911 DID call for remote IP extension.

1. From the AltWare Administrator main menu, go to System Management > System Configuration > Number Plan
2. Enable Dialed Digits Translator and click on Setup.
3. Select Extension Dialed Digit Translator.
4. Add a new Extension Group for remote IP extension(s) and assign extensions to this group.
5. Configure dial number "911" and translate to "Trunk access code + 1+Area Code + 911 DID number"

Figure 17. Translate 911 to a DID number

Figure 17 shows when Extension 104 dials 911; the number will be translated to 915102520911. "9" can be either the trunk access code or route access code. If out call routing access code is used, make sure the out call routing table is properly configured.

Figure 18. Extension Configuration for sending Caller ID to 911 Center

Figure 18 is an example of how to configure an extension to send the caller ID to the 911 center. If PRI or CAMA trunks are used, the E911 CID will be transmitted to the 911 center.

Using Dialed Digit Translator to make 911 call hop-off through remote FXO gateway

Figure 19. 911 Dialing using Remote Gateway

In Figure 19, the MultiTech gateway and “IP Extension 104” are collocated in the branch office. When a user uses IP Extension 104 to dial an emergency number, e.g. “911”, the IP extension will send the emergency number digits to Altiserv and Altiserv will use “extension dialed digit translator” to convert “9 1 1” into “IP trunk access code + Location ID for GW + 911” digit stream.

Altiserv system configurations:

In the IP dialing table, add a new location, 510 for example, and enter the GW IP address.

Assuming a business with headquarters’ system in San Francisco and a branch office with an IP extension 104 located in Fremont, CA. The gateway at the branch office has a permanent IP address and is configured in the IP dialing table as Location ID 510. The gateway has four analog trunks connected to its location CO. The following configuration steps show how to setup Dialed Digits Translator to make a 911 call hop-off from the remote gateway.

1. From the Altiserv Administrator main menu, go to System Management=>System Configuration=>Number Plan
2. Enable Dialed Digits Translator and click on setup.
3. Select Extension Dialed Digit Translator.
4. Add a new Extension Group for remote IP extension(s) and assign extension to this group.
5. Configure dial number “911” and translate to “IP Trunk access code + Location ID + 911”

Figure 20. Translate 911 to hop-off from remote GW

For MultiTech settings, refer to the MultiTech MVP 410 manual. The correct firmware version should be 6.07.

For dialing 911 from Altiserv through the MultiTech gateway, the settings are listed as follows:

Go to “phone book/phone book modify/inbound phone book” to add an entry. Use the following settings:

- a) Accept AnyNumber option – enable the checkbox
- b) Remove Prefix field – let default to “Any Number”

- c) Add Prefix field – Leave blank
- d) Channel Number field – set to Hunting
- e) Description field – leave empty

Figure 21. MultiTech GW setting for 911 application

To allow incoming calls from PSTN through the MultiTech gateway FXO port to Altiserv IP port, the settings are listed as follows:

1. Go to “phone book/phone book configuration,” and remove the Gateway Name (See Figure 22). Otherwise, if this field is not left blank, the caller name is always the Gateway Name, instead of the caller name coming from CO.

Figure 22. Removing Gateway Name field

Go to “phone book/out bound phone book” to add a new entry. Use the following settings: Accept AnyNumber – enable checkbox Destination Pattern field – Set to Any Number Total Digits field – Leave to default Remove Prefix field – leave empty Add Prefix field – leave empty IP Address field – enter Altiserv’s IP address Description field – leave empty

Figure 23. Add New Entry

Go to “configuration/voice fax/auto call/offhook alert.” Set Auto Call/ Offhook Alert field to Auto Call. Then set the Phone Number field to extension “3000” as an example. Apply the changes to ALL the channels. Go to “configuration/interface/caller ID.” Set Caller ID type as BellCore and enable the Caller ID check box. Also apply the changes to ALL the channels.

In Altiserv, Extension 3000 can be a physical, virtual, IP, or workgroup extension. To have the call go to AA/IVR, operator, or other destination, set up the extension forwarding in the Answering page of Extension Configuration.

To verify the configuration, make a call to the MultiTech gateway from the PSTN to its FXO port. The gateway should forward the call through VOIP to Altiserv with the number “3000.” You should also see the correct caller ID and caller name from Altiserv or AltiservAgent.

Application III - Making a call (including emergency call) on an IP phone through the FXO gateway when WAN connection fails or AltiServ is shut down for maintenance.

Figure 24. 911 dialing using remote MultiTech IP Gateway when IP phone is not able to connect to server

The AltiGen IP phone LCD displays “BASIC” when the connection with AltiServ is down. This may happen when the WAN connection is down, or when AltiServ is shut down for maintenance. Figure 24 shows the topology for 911 dialing using remote MultiTech IP Gateway. If extension 104 dials 911 or a PSTN number, the call will be directly routed through the MultiTech gateway to PSTN. Setting up a 911 emergency number and GW on IP phone is given as an example below:

1. Press * * 7 and go to “SYSTEM=>EMERGENCY NUM” and set the number to 911.

Go to “SYSTEM=>EMERGENCY GW” and enter MultiTech gateway’s IP address.

To verify the setting, press #26 to change the IP phone to BASIC mode. Dial ‘911’ or a PSTN number (with 1 + area code + local number) from the IP phone. The outbound call should be made through the MultiTech Gateway.

MTGAN-V1.6-02/2005

Copyright©2005 AltiGen Communications

<https://know.altigen.com/questions/793/>