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# Integration Reference Manual

Configuring Asterisk

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# Configuring Asterisk

The Genesys Voicemail Adapter (GVMA) utility is provided by Genesys to propagate the Voicemail configuration from the Configuration Layer to the Asterisk configuration files. GVMA performs the following steps:

1. GVMA starts.
2. GVMA connects to Configuration Server using the SOAP protocol.
3. GVMA makes a backup copy of the Asterisk configuration.
4. GVMA loads the Voicemail configuration from the following configuration objects:
  - DNs
  - Agent Logins
  - Agent Groups
5. GVMA updates Asterisk configuration files with the information retrieved from the Configuration Layer during Step 4.
6. GVMA instructs Asterisk to reload configuration files.
7. GVMA exits.

GVMA can be run manually or scheduled for periodic execution using the OS scheduling tools, such as cron on Linux systems.

The following table provides an overview of the main steps to integrate SIP Server with Asterisk to support the Voicemail solution.

## Configuring Asterisk

Objective	Related Procedures and Actions
1. Define all required parameters in the GVMA configuration file.	See the following sections: <ul style="list-style-type: none"><li>• <a href="#">Prerequisites</a></li><li>• <a href="#">GVMA Location</a></li><li>• <a href="#">Configure the GVMA Configuration File</a></li></ul>
2. Run the GVMA utility on the Asterisk host to configure Asterisk.	Run the GVMA utility by executing the <code>gvma_asterisk76.pl</code> script.

## Prerequisites

### Back Up the Asterisk Configuration

The GVMA utility modifies the following Asterisk configuration files: `extensions.conf`, `sip.conf`, and `voicemail.conf`. To save the original Asterisk configuration, create backup copies of all Asterisk configuration files before using the GVMA utility.

### Perl Interpreter

You must install the Perl interpreter on the Asterisk host to run the GVMA utility, which is written as a perl script. Install these additional perl packages that are required to run GVMA:

- SOAP-Lite
- Net-Telnet

### Enable the Asterisk Manager Interface

Enable the Asterisk Manager Interface (AMI) by setting the following parameters in the `manager.conf` Asterisk configuration file:

```
[general]
enabled = yes
port = 5038
bindaddr = 0.0.0.0
```

### Enable the GVMA Utility to Change the Asterisk Configuration

Enable the GVMA utility to change the Asterisk configuration by adding the following section in the `manager.conf` Asterisk configuration file:

```
[gvma]
secret = genesys1
deny=0.0.0.0/0.0.0.0
permit=127.0.0.1/255.255.255.0
read = system,call,log,verbose,command,agent,user
write = system,call,log,verbose,command,agent,user
```

## GVMA Location

The GVMA utility is located in the `tools` folder of the SIP Server installation utility. Files in the `tools` directory include:

- `gvma_asterisk76.cfg`--The GVMA utility for 7.6 SIP Server.
- `gvma_asterisk76.pl`--The GVMA utility configuration file for 7.6 SIP Server.
- `gvma_asterisk.cfg`--The GVMA utility for 7.5 SIP Server.
- `gvma_asterisk.pl`--The GVMA utility configuration file for 7.5 SIP Server.

Depending on the `mwi-mode` option value set in the SIP Server Application object, you choose which configuration file and script to run. If the `mwi-mode` option is set to `SUBSCRIBE`, use the following files:

- `gvma_asterisk76.cfg`
- `gvma_asterisk76.pl`

If the `mwi-mode` option is set to `REGISTER`, use the following files:

- `gvma_asterisk.cfg`
- `gvma_asterisk.pl`

The `REGISTER` value of the `mwi-mode` option is for backward compatibility with 7.5 releases of SIP Server.

## Configure the GVMA Configuration File

Configure the following sections in the GVMA configuration file before using the utility:

- `cfgserver`
- `gvma_settings`

### Section *cfgserver*

Parameters in the `cfgserver` section define how GVMA connects to Configuration Manager and what information GVMA reads from it.

Note that option `port` refers to the SOAP port of Configuration Server and not to the port where Configuration Manager is connected. The Configuration Server SOAP port is specified in the Configuration Server configuration file as a `port` option in the `[soap]` section.

```
[cfgserver]
```

```
host=<config server hostname or IP>
```

```
port=<config server SOAP port>
```

```
username = <config server username>
```

```
password = <config server password>
```

The second part of the `cfgserver` section provides several examples about how to define a query to allow for the GVMA utility to collect information about DNSs, Agent Logins, and Agent Groups from the Configuration Layer. One query should be chosen for each of these three object types. The following placeholders in the selected queries should be replaced with the information from the Configuration Layer:

- `<Switch DBID>`
- `<tenant DBID>`
- `<tenant name>`
- `<Switch Name>`

#Query examples using DBIDs:

```
#dnquery = CfgDN[(ownerDBID=<Switch DBID>) and (@type=1)]
```

```
#agentquery = CfgAgentLogin[ownerDBID=<Switch DBID>]
```

```
#agentgroupquery = CfgAgentGroup[@tenantDBID=<tenant DBID>]
```

#Query examples using switch and tenant names:

```
dnquery = CfgTenant[@name='<tenant Name>']/switches/CfgSwitch[@name='<switch name>']/DNSs/CfgDN[@type='1']
```

```
agentquery = CfgSwitch[@name='<Switch name>']/agentLogins/CfgAgentLogin
```

```
agentgroupquery = CfgTenant[@name='<tenant name>']/agentGroups/CfgAgentGroup
```

## Section *gvma\_settings*

The first group of parameters in the `gvma_settings` section specifies the location of Asterisk configuration files and what files you have to change:

- `asterisk_cfg_path=/etc/asterisk`
- `asterisk_cfg_file_sip=sip.conf`
- `asterisk_cfg_file_vm=voicemail.conf`
- `asterisk_cfg_file_exten=extensions.conf`

The following parameters define the comments, which GVMA puts as a boundaries around the parts it inserts into the Asterisk configuration files.

- `asterisk_cfg_gvma_begin=; $--GVMA-BEGIN-GVMA--$`
- `asterisk_cfg_gvma_end=; $--GVMA-END-GVMA--$`

GVMA creates backup copies of the configuration files to be modified in the location defined by the `backup_path` parameter:

- `backup_path=./gvma_backup`

GVMA uses the Asterisk Manager Interface port to connect to Asterisk:

- `asterisk_cm_port=5038`

On the Asterisk side, this port is defined in the `manager.conf` file.

Use the `sipserver_host` and `sipserver_port` parameters to specify the host and port, respectively, in the GVM subscription objects created in the `sip.conf` file.

- `sipserver_host=<SIP Server hostname or IP>`
- `sipserver_port=<SIP Server Port>`

Finally, the `gvma_settings` section has a group of parameters specifying how to access different types of voicemail boxes from the agent VOIP phones:

- `vm_dn_ext_prefix=37`
- `vm_agt_ext_prefix=38`
- `vm_grp_ext_prefix=39`
- `vm_voicemail_main_ext=9500`

## GVMA Modifications to Asterisk Configuration Files

You can easily find all modifications the GVMA utility makes to the Asterisk configuration files by searching for the beginning and end key specified in the GVMA configuration file in the parameters `asterisk_cfg_gvma_begin` and `asterisk_cfg_gvma_end`.

### File `extensions.conf`

GVMA creates a new context called `[GVMA]` in the Asterisk dialing plan. This context includes six wildcards. The following wildcard is created to provide access to the agent voicemail boxes from the agent VOIP phones:

```
exten => _37X.,1,Wait(1)
exten => _37X.,2,Set(GVM_DEST=${EXTEN:2})
exten => _37X.,3,GotoIf("${CALLERID(num)}" = "${GVM_DEST}")?4:6)
exten => _37X.,4,VoiceMailMain(${GVM_DEST}@GVMA_DN)
exten => _37X.,5,Hangup
exten => _37X.,6,GotoIf("${GVM_DEST}" = "9500")?7:9)
exten => _37X.,7,VoiceMailMain(@GVMA_DN)
exten => _37X.,8,Hangup
exten => _37X.,9,VoiceMail(${GVM_DEST}@GVMA_DN,u)
```

```
exten => _37X.,10,Hangup
```

Three wildcards of this type are created to provide access to three different types of voicemail boxes: Extensions, Agent Logins, and Agent Groups. Prefixes used in these wildcards are taken from the following GVMA configuration file parameters:

- `vm_dn_ext_prefix`
- `vm_agt_ext_prefix`
- `vm_grp_ext_prefix`

Another three wildcards that are created in the GVMA context are:

- `_gvm-X`
- `_gvm-a-X`
- `_gvm-g-X`

These wildcards are not supposed to be dialed directly, but they are required for the MWI subscription to function properly.

Note: You must manually include a new GVMA context into the existing dialing plan context that is used to process agent calls on Asterisk. If there is no special context created for this purpose, you must include the GVMA context into the default dialing plan context. Include the following parameters: `[default]include => GVMA`

### File *sip.conf*

The GVMA utility creates a block of new GVM SIP entities in the `sip.conf` file. Each SIP entity is associated with one voicemail box. SIP Server activates one MWI subscription for each GVM SIP entity.

```
;$--GVMA-BEGIN-GVMA--$  
  
; Generated by Genesys VoiceMail Configuration Adapter for Asterisk.  
  
; Content generated at Tue Jan 15 20:36:50 2008  
  
[gvm-1111]  
type=friend  
host=192.168.0.200  
port=5060  
mailbox=1111@GVMA_DN  
vmexten=1111  
...
```

```
; $--GVMA-END-GVMA--$
```

The GVMA utility creates multiple `gvm-*` objects in the `sip.conf` configuration file. If Asterisk is also integrated with SIP Server to perform a business call routing, then the `sip.conf` file also contains an object representing a SIP Server. The host and port parameters specified for the SIP Server object are the same as the ones defined for the `gvm-*` entities in the `sip.conf` file. This configuration can cause a problem if the Asterisk dialing plan uses the `host:port` format in the `Dial()` function to send calls to SIP Server. For example:

```
SIP-SERVER_HOST = 10.10.10.1
```

```
SIP-SERVER_PORT = 5060
```

```
exten => 2400,1,Dial(SIP/${EXTEN}@${SIP-SERVER_HOST}:${SIP-SERVER_PORT},30,r)
```

Asterisk can select any `gvm-*` object to send calls, instead of the SIP Server object. In this case, a call is delivered to the correct destination but the call processing depends on the `sip.conf` object parameters, which are different for SIP Server and `gvm-*` objects.

To avoid this problem, Genesys recommends using the dial plan `Dial()` function with reference to the object name defined in the `sip.conf` file instead of using the `host:port` format. For example:

`extensions.conf:`

```
exten => 2400,1,Dial(SIP/${EXTEN}@genesys-sip-server,30,r)
```

`sip.conf:`

```
[genesys-sip-server]
```

```
host=10.10.10.1
```

```
port=10.10.10.1
```

### File *voicemail.conf*

The GVMA utility creates three new Voicemail contexts in the `voicemail.conf` Asterisk configuration file: `GVMA_DN`, `GVMA_AGENT` and `GVMA_AGENTGROUP`. Those contexts contain voicemail boxes created for Extensions, Agent Logins, and Agent Groups, respectively. GVMA takes all parameters that are specified for the GVM voicemail boxes from the configuration of the corresponding the Configuration Layer objects.

```
; $--GVMA-BEGIN-GVMA--$
```

```
; Generated by Genesys VoiceMail Configuration Adapter for Asterisk.
```

```
; Content generated at Tue Jan 15 20:36:50 2008
```

```
; ##### Voicemail Boxes for the Extensions #####
```

```
[GVMA_DN]
```

```
1111 => 1111,1111,,
```



```
; ##### Voicemail Boxes for the Agents #####  
[GVMA_AGENT]  
2222 => 2222, 2222, 2222@192.168.0.200, 2222@192.168.0.200,operator=yes  
; ##### Voicemail Boxes for the Agent Groups #####  
[GVMA_AGENTGROUP]  
3333 => 3333, 3333, 3333@192.168.0.200, 3333@192.168.0.200,operator=yes  
;$--GVMA-END-GVMA--$
```