Interactive Voice Gateway (IVG) Configuration Guide Version 3.0.0

This page was not added to the PDF due to the following tag(s): article:topic-guide

Required IVG Avaya Configuration

The Avaya components for use with the Interactive Voice Gateway (IVG) application must be configured correctly for calls to be handled by IVG. The following procedures use the Avaya Site Administration (other comparable terminal emulators can be use if necessary) and System Manager applications to configure the Avaya components. Once configured, vectors must be programmed in Avaya Communication Manager to load on the additional VDN that is needed. Refer to Building Vectors for IVG for more information.

Avaya Site Administrator

From the Avaya Site Administrator, perform the following:

1. Create a dialing plan that is set to handle the appropriate dialed strings with each string set to a call type of **UDP**.
2. Configure the matching patterns for this dialing plan to use **Automatic Alternative Routing**.
3. Configure the dialed strings for the matching patterns to use the appropriate route pattern and a call type of **aar**. Output of the Avaya Site Administrator should contain results similar to the following excerpts:

```
Dialplan and AAR

display dialplan analysis                           Page   1 of  12
                     DIAL PLAN ANALYSIS TABLE
                          Location: all          Percent Full: 3
   Dialed   Total  Call    Dialed   Total  Call    Dialed   Total  Call
   String   Length Type    String   Length Type    String   Length Type
   1         5   ext     9          1   fac
   2         2   fac     *          3   fac
   3         5   ext     #          3   fac
   400       7   udp
   41        2   fac
   45        5   ext
   480       5   udp
   4804      5   udp
   487       5   udp
   488       5   udp
   489       5   ext
   5         5   ext
   6         5   ext
   7         3   dac
   8         6   ext


display uniform-dialplan 1                          Page   1 of   2
                UNIFORM DIAL PLAN TABLE
                                          Percent Full: 0
```

```
 Matching                Insert           Node
 Pattern      Len Del    Digits     Net Conv Num
48            5   0               aar  n
480           5   0               aar  n

display aar analysis 4                          Page   1 of   2
                     AAR DIGIT ANALYSIS TABLE
                          Location: all          Percent Full: 1
       Dialed          Total     Route    Call   Node  ANI
       String         Min  Max  Pattern   Type   Num   Reqd
   4                  7    7     999      aar         n
   400xxxx             7    7     6        aar         n
   4801x               5    5     3        aar         n
   4802x               5    5     3        aar         n
   4803x               5    5     5        aar         n
   4804x               5    5     5        aar         n
   4805x               5    5     5        aar         n
   4806x               5    5     5        aar         n
   4807x               5    5     5        aar         n
   487xx               5    5     1        aar         n
   488xx               5    5     1        aar         y
   5                  7    7     999      aar         n
   53xxx               5    5     1        aar         n
   54xxx               5    5     1        aar         n
   6                  7    7     999      aar         n

display trunk-group 5                           Page   2 of  22
     Group Type: sip

TRUNK PARAMETERS

     Unicode Name: auto
                        Redirect On OPTIM Failure: 5000

          SCCAN? n                      Digital Loss Group: 18
                 Preferred Minimum Session Refresh Interval(sec): 600

 Disconnect Supervision - In? y  Out? y

           XOIP Treatment: auto    Delay Call Setup When Accessed Via IGAR? n

                          display trunk-group 5           Page   3 of  22
TRUNK FEATURES
         ACA Assignment? n           Measured: none
                                        Maintenance Tests? y

                  Numbering Format: private
                                      UUI Treatment: shared
                                    Maximum Size of UUI Contents: 128
                                      Replace Restricted Numbers? n
                                      Replace Unavailable Numbers? n
```

```
                    Modify Tandem Calling Number: no
            Send UCID? y
Show ANSWERED BY on Display? y
DSN Term? n

display trunk-group 5                              Page   4 of  22
                    SHARED UUI FEATURE PRIORITIES

                      ASAI: 1

      Universal Call ID (UCID): 2

MULTI SITE ROUTING (MSR)

                  In-VDN Time: 3
                    VDN Name: 4
              Collected Digits: 5
          Other LAI Information: 6
               Held Call UCID: 7

display trunk-group 5                              Page   5 of  22
                      PROTOCOL VARIATIONS

                    Mark Users as Phone? n
            Prepend '+' to Calling Number? n
      Send Transferring Party Information? n
              Network Call Redirection? y
                Send Diversion Header? n
              Support Request History? y
            Telephone Event Payload Type:

        Convert 180 to 183 for Early Media? n
   Always Use re-INVITE for Display Updates? n
       Identity for Calling Party Display: P-Asserted-Identity
Block Sending Calling Party Location in INVITE? n
                    Enable Q-SIP? n


display trunk-group 5                              Page   6 of  22
                      TRUNK GROUP
                         Administered Members (min/max):   1/24
GROUP MEMBER ASSIGNMENTS              Total Administered Members:  24

     Port          Name
  1: T00019          IGV to
  2: T00020          IVG to
  3: T00021          IVG to
  4: T00022          IVG to
  5: T00023          IVG to
  6: T00024          IVG to
```

```
 7: T00025           IVG to
 8: T00026           IVG to
 9: T00027           IVG to
10: T00028           IVG to
11: T00054           IVG to
12: T00055           IVG to
13: T00056           IVG to
14: T00057           IVG to
15: T00058           IVG to


display trunk-group 5                              Page   7 of  22
                         TRUNK GROUP
                             Administered Members (min/max):   1/24
GROUP MEMBER ASSIGNMENTS                 Total Administered Members:  24

     Port           Name
16: T00059          IVG to
17: T00060          IVG to
18: T00061          IVG to
19: T00062          IVG to
20: T00063          IVG to
21: T00064          IVG to
22: T00065          IVG to
23: T00066          IVG to
24: T00067          IVG to
25:


display route-pattern 5                            Page   1 of   3
                 Pattern Number: 5   Pattern Name: IVG to SM
                       SCCAN? n     Secure SIP? n
   Grp FRL NPA Pfx Hop Toll No.  Inserted                      DCS/ IXC
   No         Mrk Lmt List Del  Digits                        QSIG
                        Dgts                              Intw
1: 5    0                                                  n   user
2:                                                         n   user
3:                                                         n   user
4:                                                         n   user
5:                                                         n   user
6:                                                         n   user
    BCC VALUE  TSC CA-TSC    ITC BCIE Service/Feature PARM  No. Numbering LAR
    0 1 2 M 4 W     Request                     Dgts Format
                                             Subaddress
1: y y y y y n  n           rest                          lev0-pvt  none
2: y y y y y n  n           rest                                none
3: y y y y y n  n           rest                                none
4: y y y y y n  n           rest                                none
5: y y y y y n  n           rest                                none
6: y y y y y n  n           rest                                none
```

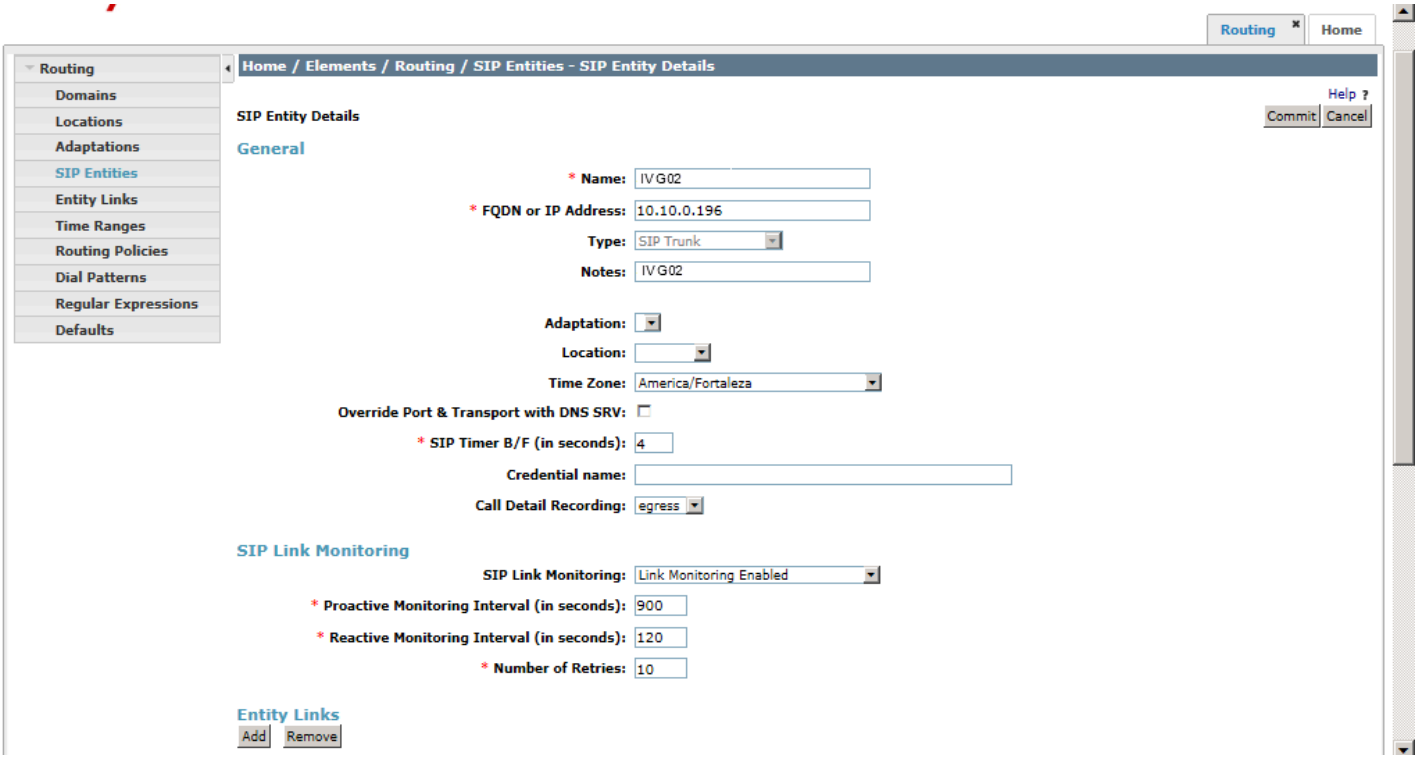
4. Configure the route pattern to link to a trunk group.
5. Configure the trunk group to be of the type **SIP** (routes calls from the Avaya Communication Manager to the System Manager). Output of the Avaya Site Administrator should contain results similar to the following excerpts:

```
Trunk Group and Signalling Group

display trunk-group 5                               Page   1 of  22
                         TRUNK GROUP
Group Number: 5                 Group Type: sip          CDR Reports: y
  Group Name: IVG to SM              COR: 1       TN: 1       TAC: 726
   Direction: two-way       Outgoing Display? n
 Dial Access? n                              Night Service:
Queue Length: 0
Service Type: tie                 Auth Code? n
                                  Member Assignment Method: auto
                                        Signaling Group: 5
                                       Number of Members: 24

display signaling-group 5
                          SIGNALING GROUP
 Group Number: 5             Group Type: sip
  IMS Enabled? n       Transport Method: tls
       Q-SIP? n
    IP Video? n                          Enforce SIPS URI for SRTP? y
  Peer Detection Enabled? y  Peer Server: SM

   Near-end Node Name: CLAN01A04           Far-end Node Name: S8800SM
 Near-end Listen Port: 5061              Far-end Listen Port: 5061
                                 Far-end Network Region: 1
                           Far-end Secondary Node Name:
Far-end Domain:
                                      Bypass If IP Threshold Exceeded? n
Incoming Dialog Loopbacks: eliminate                RFC 3389 Comfort Noise? n
        DTMF over IP: rtp-payload          Direct IP-IP Audio Connections? y
Session Establishment Timer(min): 3                  IP Audio Hairpinning? n
        Enable Layer 3 Test? y               Initial IP-IP Direct Media? n
H.323 Station Outgoing Direct Media? n          Alternate Route Timer(sec): 6
```

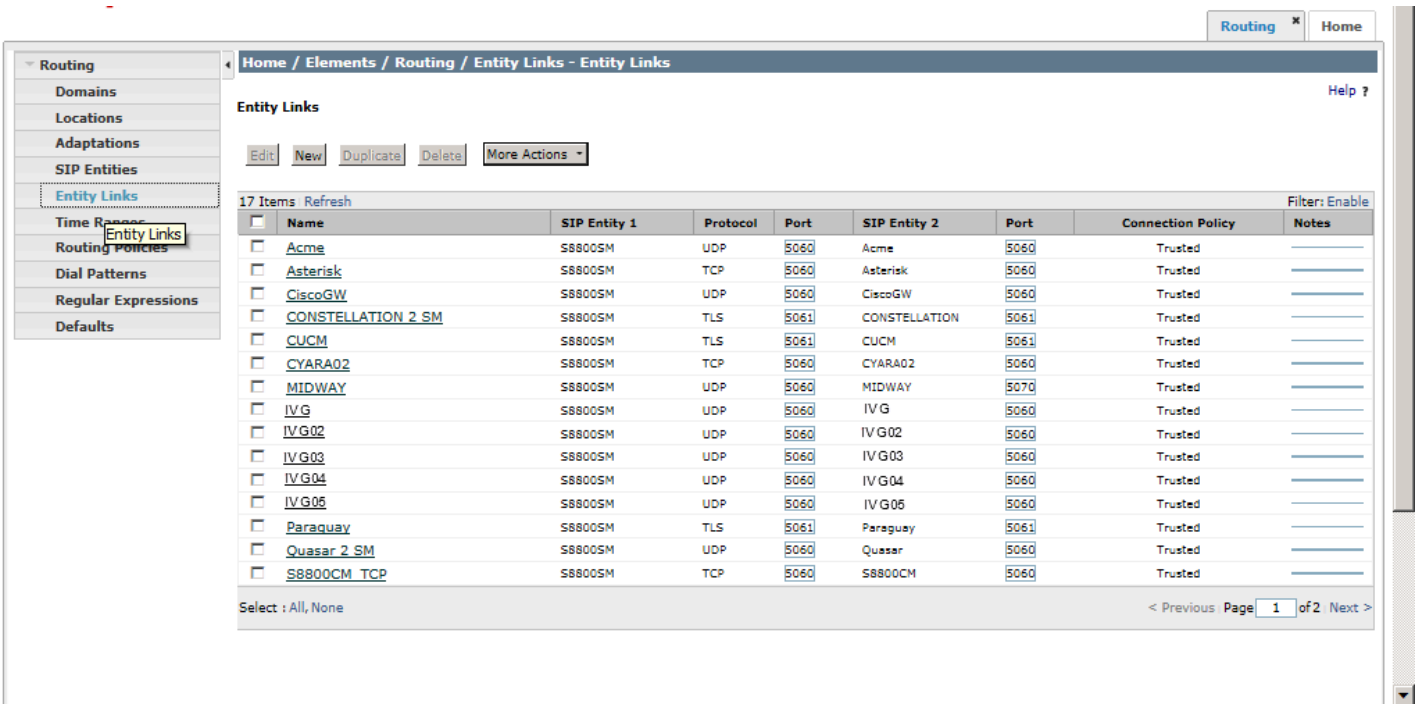
Avaya System Manager

From the Avaya System Manager, perform the following:

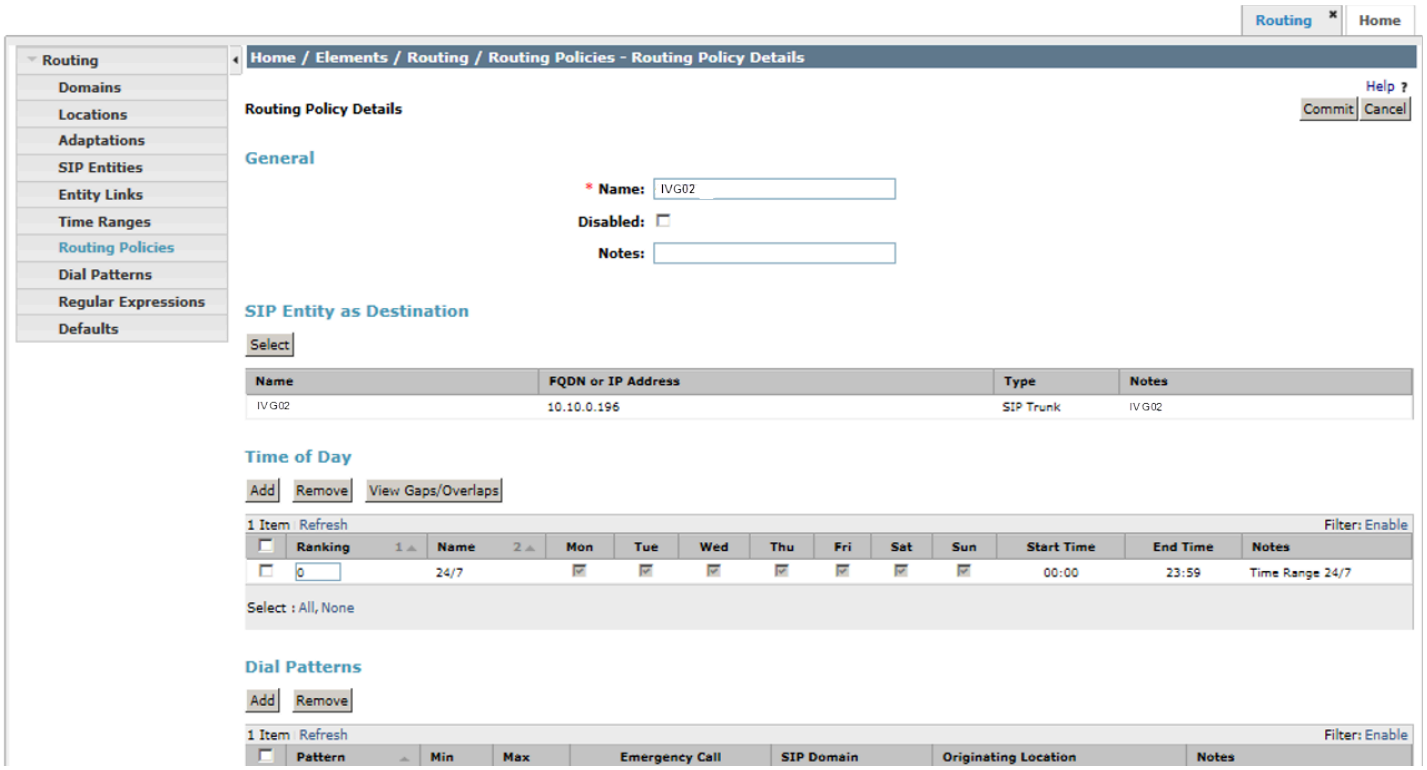
1. For the IVG in the network routing plan, create a SIP entity and set the type to **SIP Trunk** and SIP Link Monitoring to **Link Monitoring Enabled**.



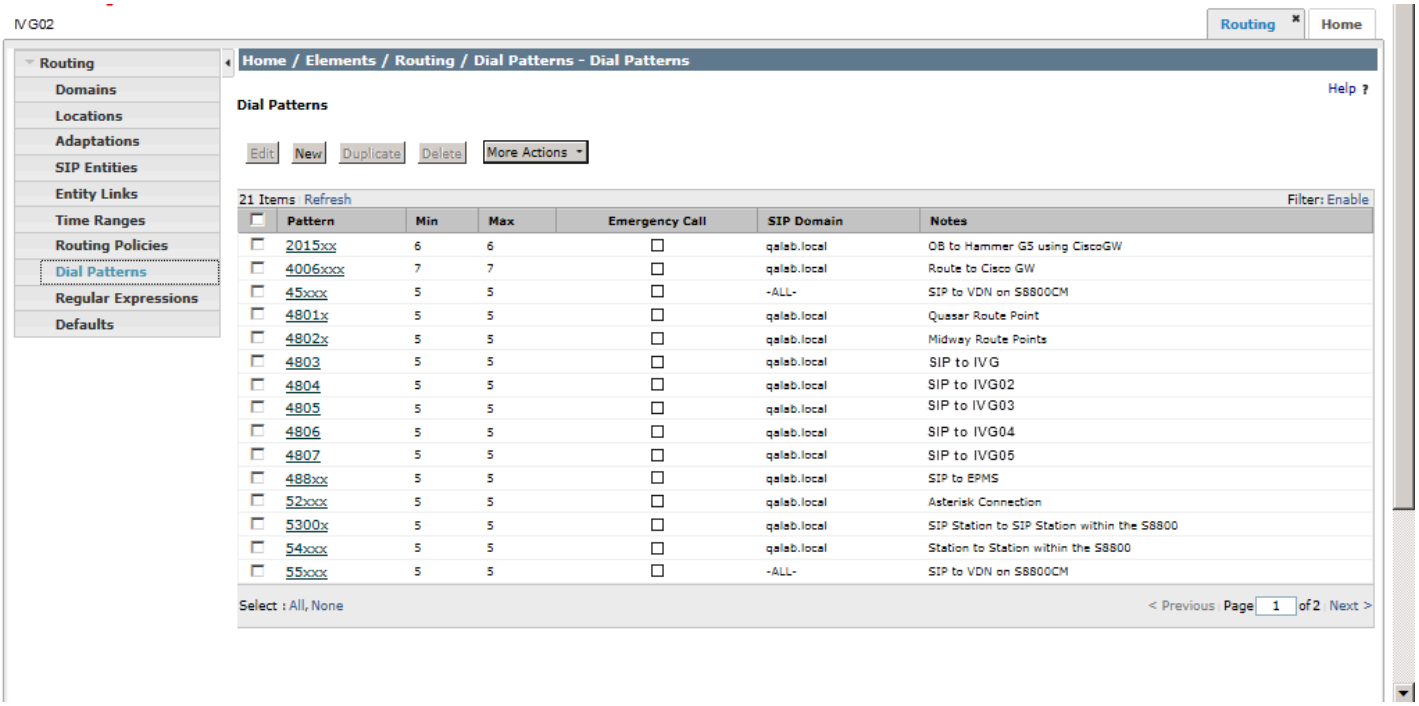
2. For the IVG in the network routing plan, create an Entity Link that uses the UDP protocol.

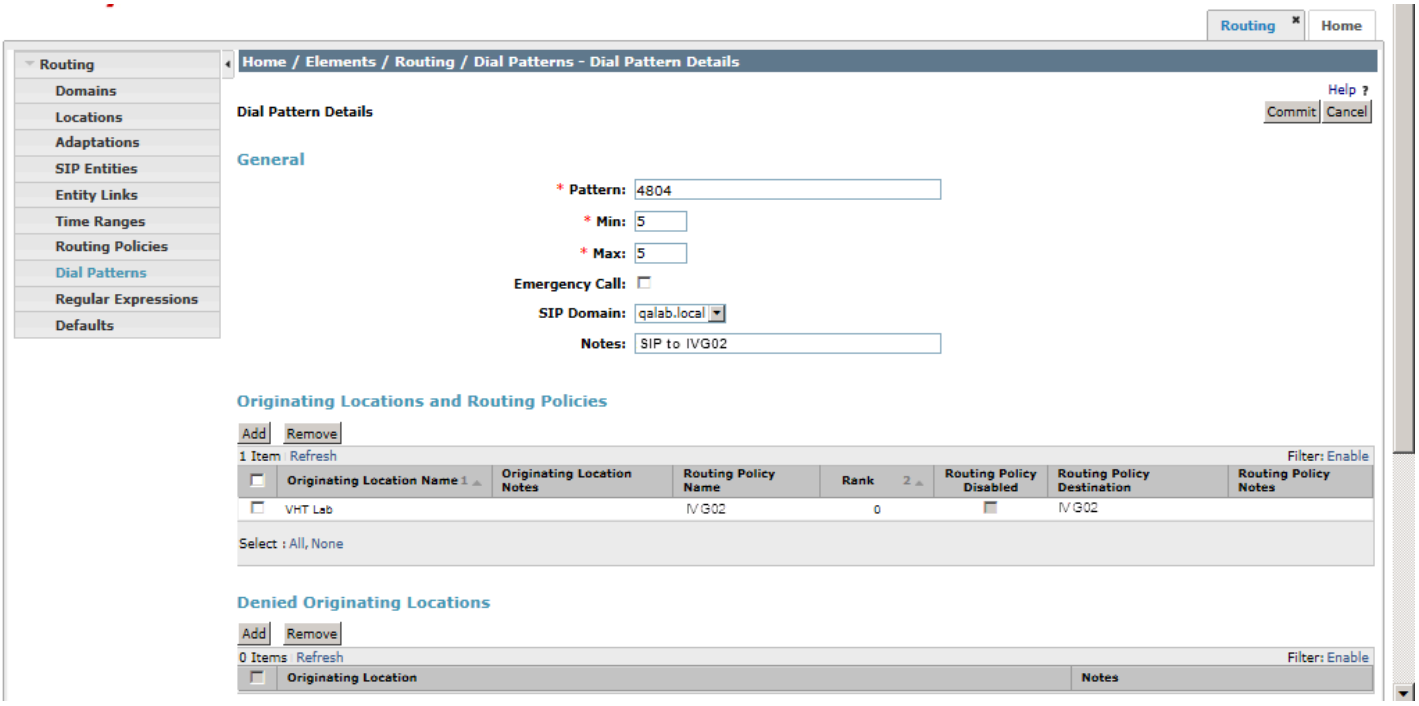


3. Configure the IVG destination in the routing policy to the IVG SIP entity.



4. Configure the required dial patterns, with the Originating Location and Routing Policy Names, for those created for IVG usage.





Building Avaya Vectors for IVGs (Samples)

You must build vectors for your VDNs in Avaya Communication Manager. Vectors provide routing instructions for the VDNs. This integration requires four VDNs, because calls below threshold are routed directly from the Entry VDN to the Holding VDN. Calls above threshold are routed from the Entry VDN to the Routing VDN for IVR treatment and then sent to the Holding VDN, a skill, or through an Interactive Voice Gateway (IVG) to the Callback VDN. The four are:

Entry

VDN

```
VECTOR DIRECTORY NUMBER

                Extension: 55190
                   Name*: VHT IVG Entry
              Destination: Vector Number       90
          Attendant Vectoring? n
         Meet-me Conferencing? n
          Allow VDN Override? y
                     COR: 1
                      TN*: 1
                Measured: none


    VDN of Origin Annc. Extension*:
                  1st Skill*:
                  2nd Skill*:
                  3rd Skill*:



* Follows VDN Override Rules


                  VECTOR DIRECTORY NUMBER

                  AUDIX Name:
```

```
                Return Destination*:
          VDN Timed ACW Interval*:      After Xfer or Held Call Drops*? n
                BSR Application*:
       BSR Available Agent Strategy*: 1st-found      Used for BSR Polling? n
                BSR Tie Strategy*: system

              Observe on Agent Answer? n

   Send VDN as Called Ringing Name Over QSIG? n

             Display VDN for Route-To DAC*? n
          VDN Override for ASAI Messages*: no

                   BSR Local Treatment*? n

             Reporting for PC or POM Calls? n
           Pass Prefixed CPN to VDN/Vector*? system
* Follows VDN Override Rules


                        VECTOR DIRECTORY NUMBER

                          VDN VARIABLES*

                    Var  Description       Assignment
                    V1
                    V2
                    V3
                    V4
                    V5
                    V6
                    V7
                    V8
                    V9

                    VDN Time-Zone Offset*: + 00:00
                    Daylight Saving Rule*: system
   Use VDN Time Zone For Holiday Vectoring*? n
     Apply Ringback for Auto Answer calls*? y

* Follows VDN Override Rules
```

Vector

```
                           CALL VECTOR

    Number: 90              Name: VHT IVG Ent
 Multimedia? n      Attendant Vectoring? n    Meet-me Conf? n          Lock? n
```

```
    Basic? y   EAS? y   G3V4 Enhanced? y   ANI/II-Digits? y   ASAI Routing? y
 Prompting? y   LAI? y  G3V4 Adv Route? y   CINFO? y   BSR? y   Holidays? y
 Variables? y   3.0 Enhanced? y
01 wait-time    0   secs hearing ringback
02 set          A     = digits ADD   12345
03 adjunct      routing link 5
04 wait-time    5   secs hearing ringback
05 route-to     number 55202           with cov n if unconditionally
06 disconnect   after announcement none
07 stop
08
09
10
11
12
```

Note:

It is recommended that adjunct be set to **routing link 1** for TSAPI integrations and **routing link 5** for CVLAN integrations.

Routing

If the number of concurrent calls reaches the limit configured in the HMS for inboundmaxcalls (default value = 40), all the excessive calls are rejected by the IVG, so Avaya Communication Manager can route those calls to Holding Queue VDN . This is handled via Routing VDN and instructions to handle this scenario are provided in the following sample Routing Vector.

VDN

```
VECTOR DIRECTORY NUMBER

                Extension: 55200
                   Name*: VHT IVG Rte to 48050
              Destination: Vector Number        5200
    Attendant Vectoring? n
   Meet-me Conferencing? n
    Allow VDN Override? y
                    COR: 1
                    TN*: 1
               Measured: none


  VDN of Origin Annc. Extension*:
```

```
                    1st Skill*:
                    2nd Skill*:
                    3rd Skill*:



* Follows VDN Override Rules


                    VECTOR DIRECTORY NUMBER

                    AUDIX Name:
               Return Destination*:
          VDN Timed ACW Interval*:      After Xfer or Held Call Drops*? n
                BSR Application*:
      BSR Available Agent Strategy*: 1st-found      Used for BSR Polling? n
               BSR Tie Strategy*: system

          Observe on Agent Answer? n

  Send VDN as Called Ringing Name Over QSIG? n

          Display VDN for Route-To DAC*? n
        VDN Override for ASAI Messages*: no

                BSR Local Treatment*? n

          Reporting for PC or POM Calls? n
       Pass Prefixed CPN to VDN/Vector*? system
* Follows VDN Override Rules


                    VECTOR DIRECTORY NUMBER

                      VDN VARIABLES*

              Var  Description       Assignment
              V1
              V2
              V3
              V4
              V5
              V6
              V7
              V8
              V9

              VDN Time-Zone Offset*: + 00:00
              Daylight Saving Rule*: system
  Use VDN Time Zone For Holiday Vectoring*? n
    Apply Ringback for Auto Answer calls*? y
```

> * Follows VDN Override Rules

Vector

```
          CALL VECTOR

    Number: 5200            Name: VHT IVG 48050
Multimedia? n      Attendant Vectoring? n    Meet-me Conf? n          Lock? n
     Basic? y   EAS? y   G3V4 Enhanced? y   ANI/II-Digits? y   ASAI Routing? y
 Prompting? y   LAI? y  G3V4 Adv Route? y   CINFO? y   BSR? y   Holidays? y
 Variables? y   3.0 Enhanced? y
01 wait-time    0   secs hearing ringback
02 route-to     number 48050           with cov n if unconditionally
03 wait-time    5   secs hearing ringback
04 route-to     number 55202           with cov n if unconditionally
05 disconnect   after announcement none
06 stop
07
08
09
10
11
12
```

Holding

VDN

```
                    VECTOR DIRECTORY NUMBER

                 Extension: 55202
                    Name*: VHT IVG Hold
               Destination: Vector Number        82
        Attendant Vectoring? n
      Meet-me Conferencing? n
        Allow VDN Override? n
                       COR: 1
                       TN*: 1
                  Measured: internal
Acceptable Service Level (sec): 20

VDN of Origin Annc. Extension*:
                  1st Skill*:
                  2nd Skill*:
```

3rd Skill*:

* Follows VDN Override Rules

VECTOR DIRECTORY NUMBER

AUDIX Name:
Return Destination*:
VDN Timed ACW Interval*: After Xfer or Held Call Drops*? n
BSR Application*:
BSR Available Agent Strategy*: 1st-found Used for BSR Polling? n
BSR Tie Strategy*: system

Observe on Agent Answer? n

Send VDN as Called Ringing Name Over QSIG? n

Display VDN for Route-To DAC*? n
VDN Override for ASAI Messages*: no

BSR Local Treatment*? n

Reporting for PC or POM Calls? n
Pass Prefixed CPN to VDN/Vector*? system
* Follows VDN Override Rules

VECTOR DIRECTORY NUMBER

VDN VARIABLES*

Var Description Assignment
V1
V2
V3
V4
V5
V6
V7
V8
V9

VDN Time-Zone Offset*: + 00:00
Daylight Saving Rule*: system
Use VDN Time Zone For Holiday Vectoring*? n
Apply Ringback for Auto Answer calls*? y

* Follows VDN Override Rules

Vector

```
                              CALL VECTOR

    Number: 82               Name: VHT IVG Hold
Multimedia? n      Attendant Vectoring? n    Meet-me Conf? n          Lock? n
     Basic? y   EAS? y   G3V4 Enhanced? y   ANI/II-Digits? y   ASAI Routing? y
 Prompting? y   LAI? y  G3V4 Adv Route? y   CINFO? y   BSR? y   Holidays? y
 Variables? y   3.0 Enhanced? y
01 wait-time    0   secs hearing ringback
02 queue-to     skill 5    pri m
03 wait-time    30  secs hearing ringback
04 goto step    3            if unconditionally
05 disconnect   after announcement none
06 stop
07
08
09
10
11
12
```

Callback

VDN

```
                          VECTOR DIRECTORY NUMBER

                     Extension: 55203
                        Name*: VHT IVG CB
                   Destination: Vector Number        83
              Attendant Vectoring? n
             Meet-me Conferencing? n
              Allow VDN Override? n
                           COR: 1
                           TN*: 1
                      Measured: none


        VDN of Origin Annc. Extension*:
                          1st Skill*:
                          2nd Skill*:
                          3rd Skill*:
```

* Follows VDN Override Rules

VECTOR DIRECTORY NUMBER

AUDIX Name:
Return Destination*:
VDN Timed ACW Interval*: After Xfer or Held Call Drops*? n
BSR Application*:
BSR Available Agent Strategy*: 1st-found Used for BSR Polling? n
BSR Tie Strategy*: system

Observe on Agent Answer? n

Send VDN as Called Ringing Name Over QSIG? n

Display VDN for Route-To DAC*? n
VDN Override for ASAI Messages*: no

BSR Local Treatment*? n

Reporting for PC or POM Calls? n
Pass Prefixed CPN to VDN/Vector*? system
* Follows VDN Override Rules

VECTOR DIRECTORY NUMBER

VDN VARIABLES*

Var Description Assignment
V1
V2
V3
V4
V5
V6
V7
V8
V9

VDN Time-Zone Offset*: + 00:00
Daylight Saving Rule*: system
Use VDN Time Zone For Holiday Vectoring*? n
Apply Ringback for Auto Answer calls*? y

* Follows VDN Override Rules

Vector

```
                              CALL VECTOR

    Number: 83               Name: VHT IVG CB
Multimedia? n      Attendant Vectoring? n    Meet-me Conf? n          Lock? n
     Basic? y   EAS? y   G3V4 Enhanced? y   ANI/II-Digits? y   ASAI Routing? y
 Prompting? y   LAI? y  G3V4 Adv Route? y   CINFO? y   BSR? y   Holidays? y
 Variables? y   3.0 Enhanced? y
01 wait-time    0   secs hearing ringback
02 queue-to     skill 5    pri h
03 wait-time    30  secs hearing ringback
04 goto step    3            if unconditionally
05 disconnect   after announcement none
06 stop
07
08
09
10
11
12
```

Connecting VXML Interaction Server (VIS) to Platform Toolkit (PTK)

To connect VIS to the Platform Toolkit (PTK) from the toolkit.properties file:

1. Locate the PTK toolkit.properties file (...etc/Virtual Hold/toolkit.properties) located on the VXML Interaction Server (VIS).
2. Edit the following line of code in the toolkit.properties file:

   com.virtualhold.toolkit.baseurl+http:///*location*/VHTPlatformWS-v5/

   Where:

   location is the IP address of the server containing the PTK application (the management instance server IP address).

3. Verify the following lines of code are automatically set as shown to enhance Answering Machine Detection (AMD) performance:

   com.virtualhold.toolkit.hvp.amd.url=/vht-ivg/amdRecord.jsp

   com.virtualhold.toolkit.hvp.amd.finalsilence=1s

   com.virtualhold.toolkit.hvp.amd.asrengine=dtmf

   com.virtualhold.toolkit.hvp.amd.sensitivity=0.4

   com.virtualhold.toolkit.hvp.amd.maxspeech=20s

   com.virtualhold.toolkit.hvp.amd.maxinitialsilence=3s

   com.virtualhold.toolkit.hvp.amd.lifethreshold=4.0

4. Save the toolkit.properties file. These changes will take effect immediately
5. Repeat Steps 1 through 4 on each VIS/IVG server.

Logging into IVG Holly Management System (HMS)

Overview

The Holly Management System (HMS) provides centralized configuration and administration of all Holly Voice Platforms installed in the IVG system. There are four management features which require specific attention in IVG systems:

- Workers
- Service Provider
- Affiliates
- Applications

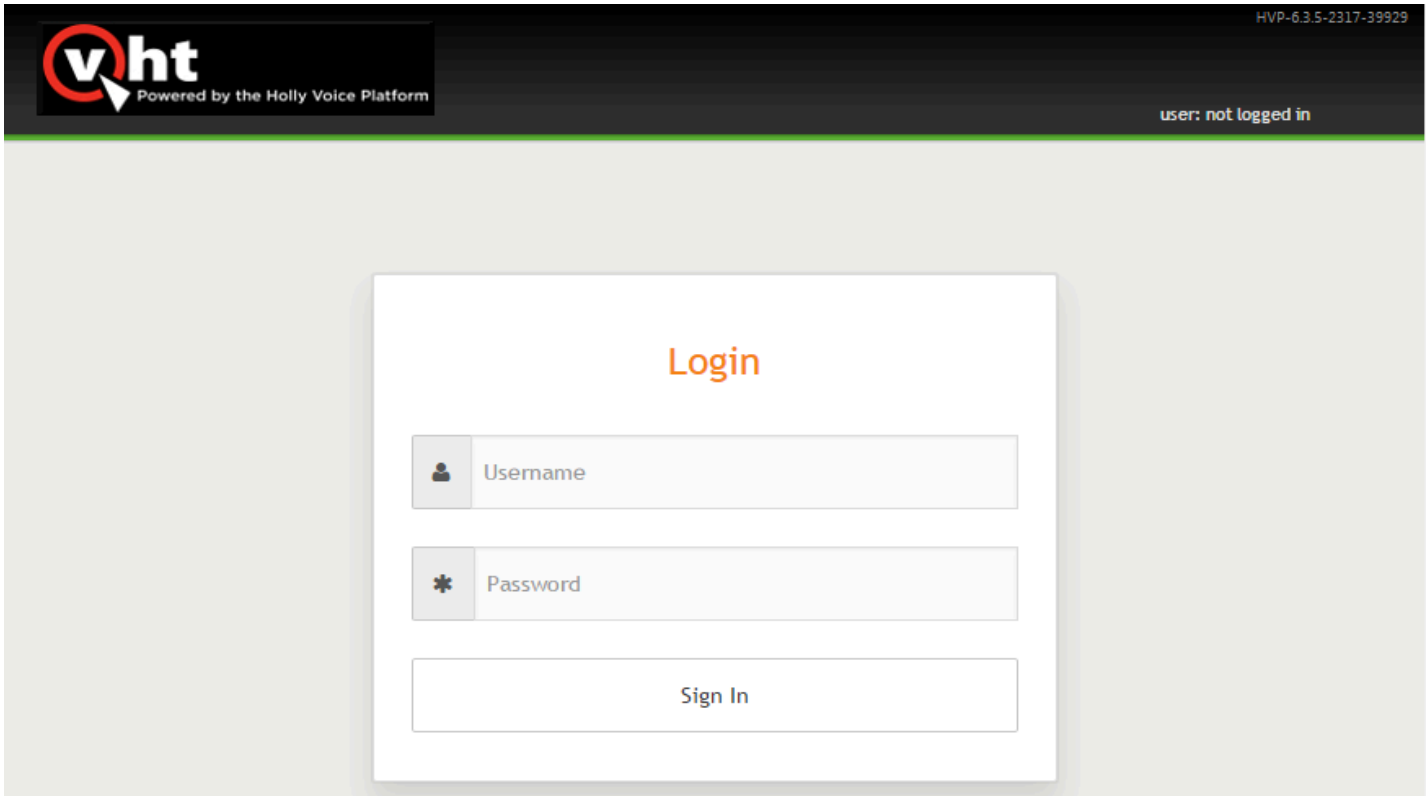
The first step in using the HMS is logging in to the User Interface (UI).

Logging In and Out

To start the IVG HMS from the server containing the IVG:

1. Open a web browser.
2. Enter **http://***server_address*:**2020**.
3. Enter a username and password and click **Login**.

> **Note:**
>
> The username and password for the initial default user is **administrator** and **holly12**. It is highly recommended to change the default password after the first login using the **System Users** option within the **Administration** menu within HMS.

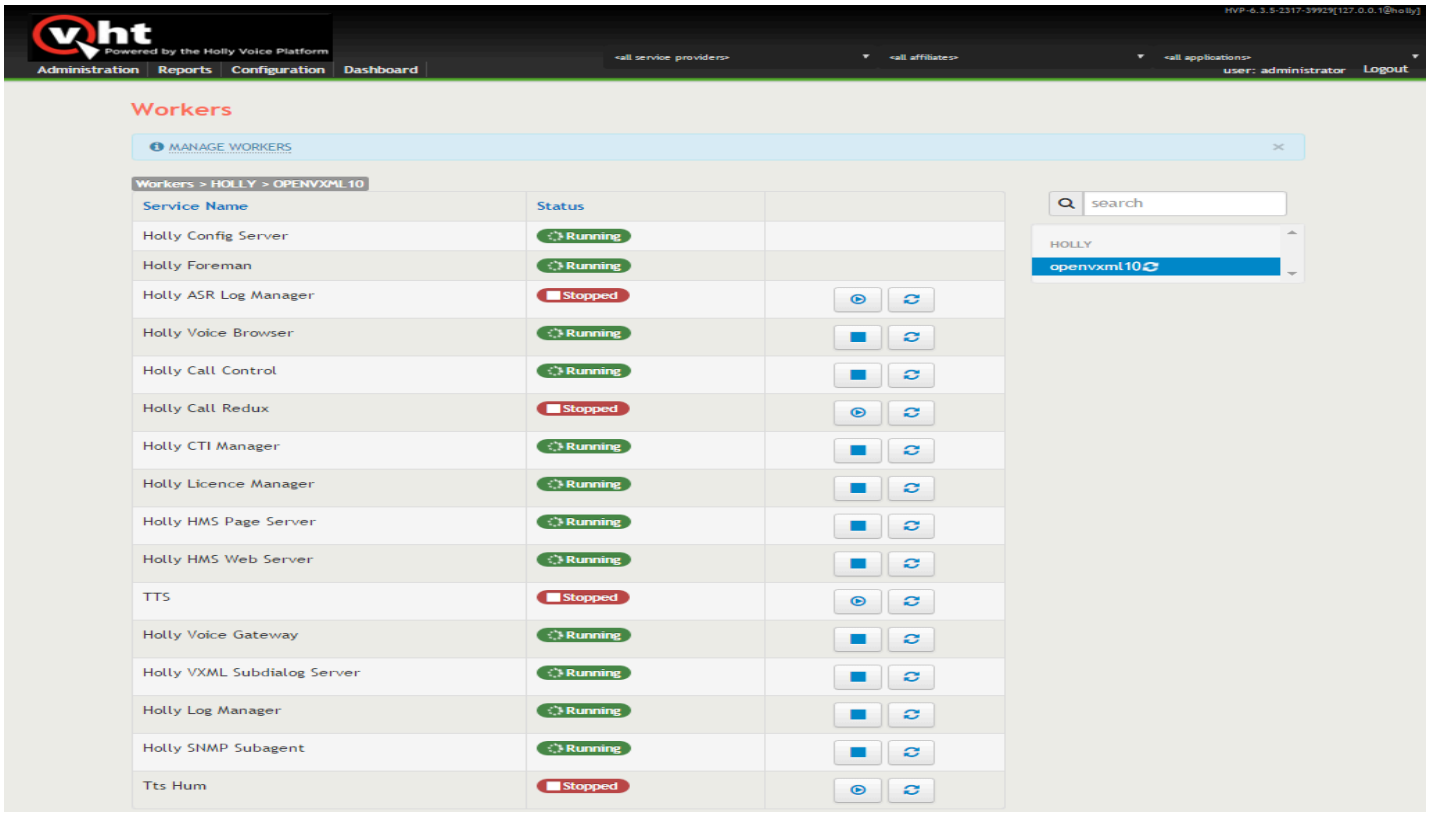


To exit the IVG HMS:

1. Select **Logout** in the IVG HMS Window.

Activating IVG Workers using HMS

Use the **Workers** option of the **Configuration** menu to verify the required IVG Workers (shown in the screen shot, and listed in the table below) are Started and Running as part of the installation process. If necessary, use the following procedure to start IVG workers.



Worker Name	Process Name	Description
Holly Config Server	configserver	Required by all workers to access configuration information and ensure the parameter information is accurate throughout the HMS system.
Holly Foreman	foreman	Required to monitor and restart workers.

Worker Name	Process Name	Description
Holly Voice Browser	browser	Required for calls using an IVR.
Holly Call Control	callcontrol	Required when using CCXML.
Holly License Manager	hlm	Required for incoming calls. Used to limit the number of calls on a server to prevent oversubscribing. Also returns the configuration and URL for the application.
Holly HMS Page Server	hmspageserver	Required for HMS access.
Holly HMS Web Server	hmsweb	
Holly Voice Gateway	hvg	Required for calls using an IVR.
Holly VXML Subdialog Server	hvss	Required by license manager to access Holly license information.
Holly Log Manager	logmgr	Required for writing diagnostic log information.
Holly SNMP Subagent	subagent	Required for SNMP integration and alarm consolidation in ~/log/alarms.log file.

To select and activate the required Holly workers:

1. Select **Configuration > Workers** within HMS.
2. Select the Holly server on the right side of the window.
3. Click the start icon (right arrow) for a Holly worker to be started.
4. Verify the status of the worker changes to Running.
5. Repeat Steps 3 and 4 for the remaining Holly workers that need started.

It is also possible to check the IVG installer log (installer_log.txt file) to verify the workers have been started. Refer to one of the following topics for an example installer log:

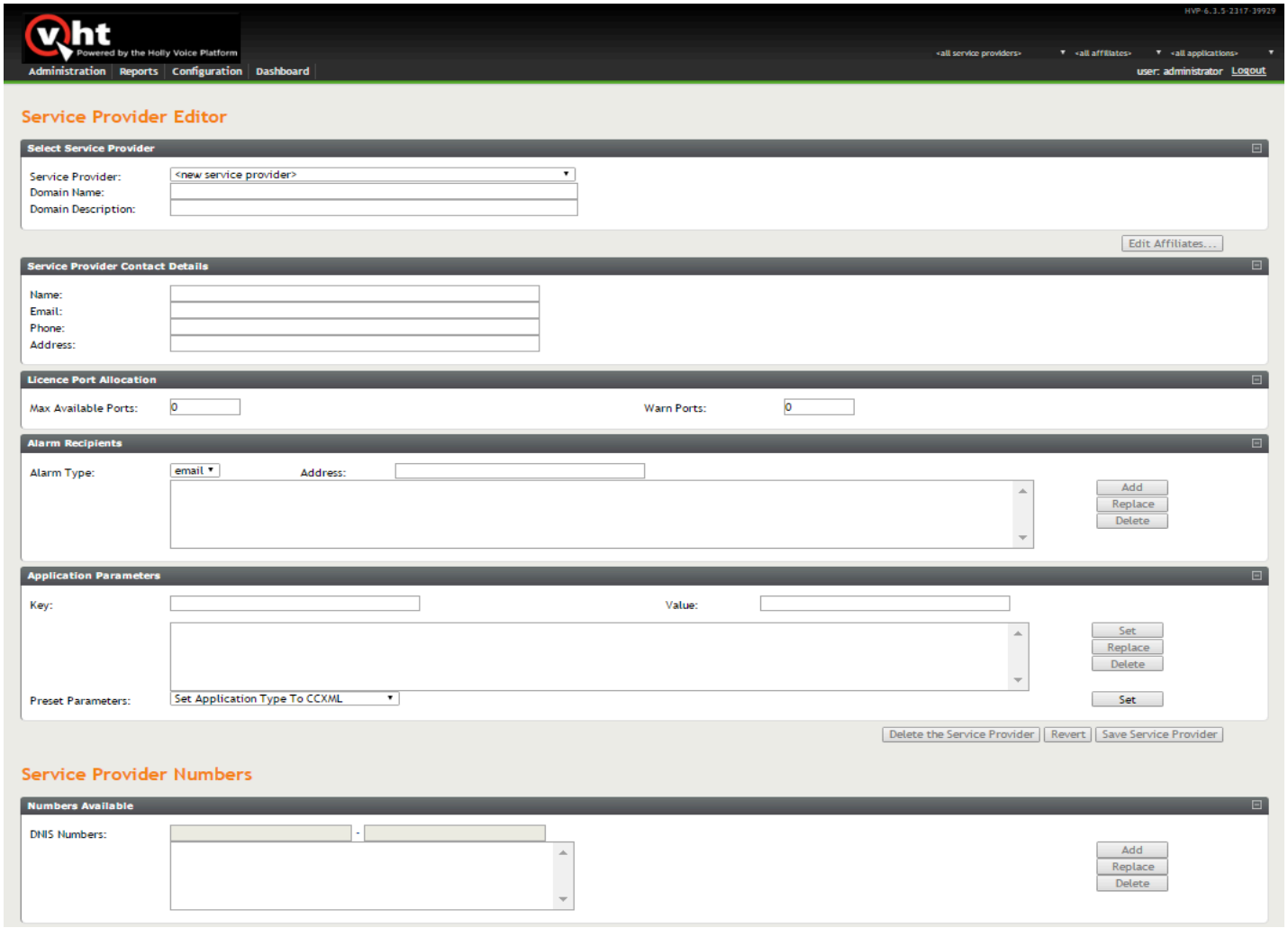
- Single IVG
- Multiple IVG and Local PostgreSQL
- Multiple IVG and Standalone PostgreSQL
- High Availability Virtual Hold with Multiple IVG and Standalone PostgreSQL

Adding the VHT Service Provider Using HMS

Use the **Service Providers** option of the **Administration** menu to define (or edit) the VHT service provider for this IVG.

Note:

Only one Service Provider needs to be added since IVG employs the HVP centralized management feature.



To create or edit the VHT service provider:

1. Select **Administration > Service Providers** within HMS.
2. Complete the **Select Service Provider**, **Service Provider Contact Details**, **Licenses Port Allocation**, **Alarm Recipients**, and **Application Parameters** areas. Fields are defined as follows:

Note:

Fields marked with an asterisk (*) are required.

Field	Description
Select Service Provider	
Service Provider *	Unique name of service provider to be (or already) created (**VHT_ServiceProvider** for example)
Domain Name *	Name of domain containing service provider.
Domain Description	Description of domain containing service provider. Default value is **Domain Name**.
Service Provider Contact Details	
Name *	Name of the service provider contact.
Email	Email address of service provider contact.
Phone	Telephone number of service provider contact.
Address	Address of service provider contact.
License Port Allocation	
Max Available Ports *	Maximum number of ports available to affiliates attached to this service provider. A warning (configured in **Alarm Recipients** area) is sent when this value is exceeded. **Note:** Set this value greater than the total number of Virtual Hold licensed ports (sum of VoiceLicenses, NonVoiceLicenses, VoiceBurstingLicenses, and NonVoiceBurstingLicenses).

Field	Description
Warn Ports *	Number of allocated ports used (by the affiliates attached to this service provider) at which a warning is generated. The warning is configured in **Alarm Recipients** area and gives advance notice of approaching the port allocation limit. **Note:** Set this value greater than the total number of Virtual Hold licensed ports (sum of VoiceLicenses, NonVoiceLicenses, VoiceBurstingLicenses, and NonVoiceBurstingLicenses).
Alarm Recipients	
Alarm Type *	Type of warning generated when default **Max Available Ports** and **Warn Ports** limits are exceeded. Available type is **email**.
Address *	Destination (email address) of warnings generated when default **Max Available Ports** and **Warn Ports** limits are exceeded.
Application Parameters	
Key	Name of key value pair used by this service provider.
Value	Value of key value pairs used by this service provider.
Preset Parameters	Default parameters used by affiliates and applications attached to this service provider.

3. Click **Save Service Provider**.
4. Complete the Service Provider **Numbers Available** area. Ensure the DNIS numbers represent the range of numbers available to this service provider.

Note:

DNIS numbers are case-sensitive and can be aphanumeric.

5. Click **Add**.
6. Click **Save Service Provider**.

Notes:

1. Associated affiliates must be deleted before a service provider can be deleted.
2. Deleting a service provider deletes the associated service provider groups and users.

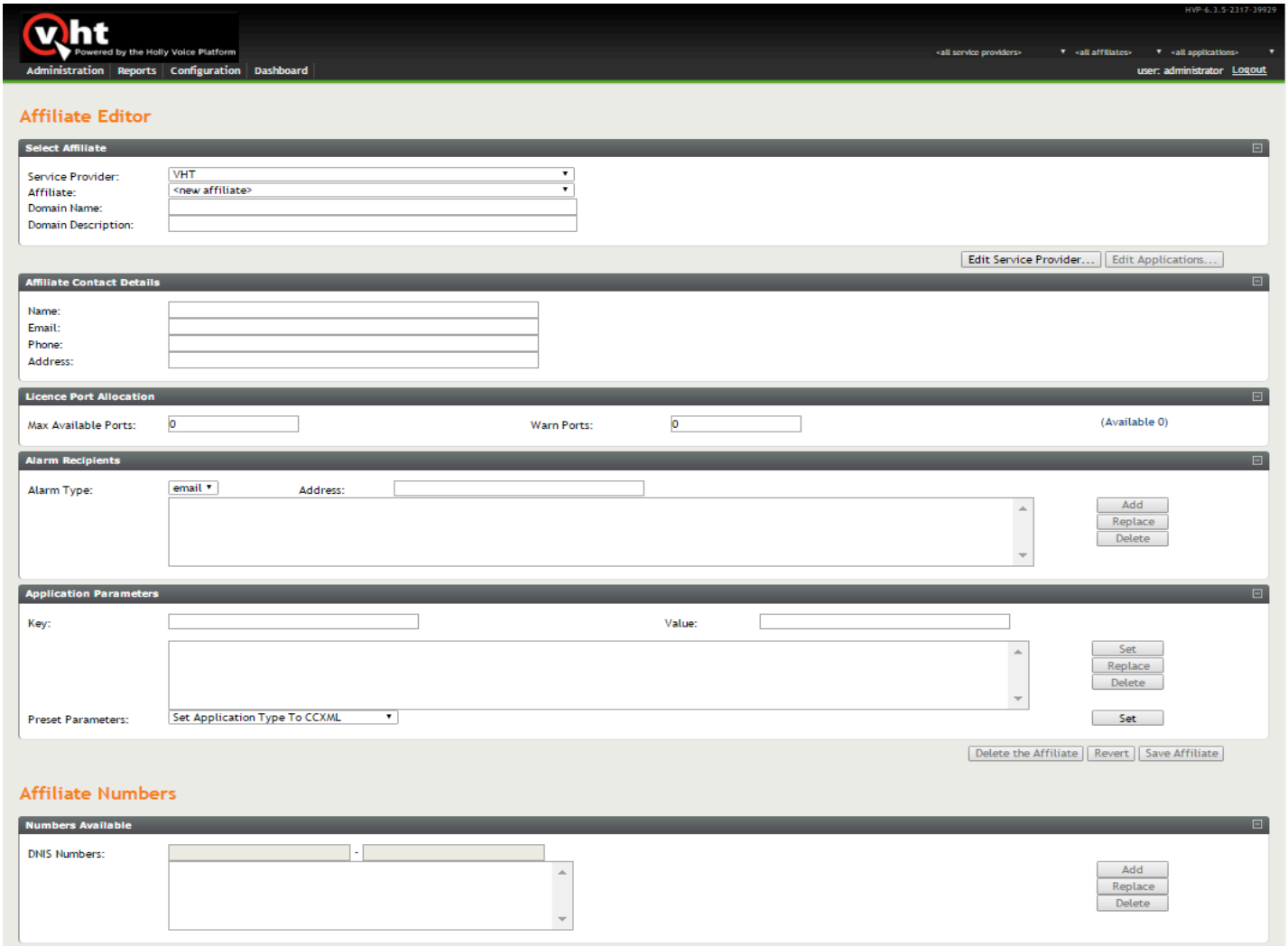
3. Deleting a service provider removes all connections to associated archived log records.

Adding the VHT Affiliate Using HMS

Use the **Affiliates** option of the **Administration** menu to create (or edit) the VHT affiliate and associate it to the VHT service provider.

Note:

Only one Affiliate needs to be add since IVG employs the HVP centralized management feature.



To create or edit the VHT affiliate:

1. Select **Administration > Affiliates** within HMS.
2. Complete the **Select Affiliate**, **Affiliate Contact Details**, **Licenses Port Allocation**, **Alarm Recipients**, and **Application Parameters** areas. Fields are defined as follows:

Note:

Fields marked with an asterisk (*) are required.

Field	Description
Select Affiliate	
Service Provider *	Name of service provider to which affiliate is associated (**VHT_Affiliate** for example)..
Affiliate *	Unique name of the affiliate to be (or already) created (**VHT_Affiliate** for example).
Domain Name *	Name of domain containing service provider.
Domain Description	Description of domain containing service provider.
Affiliate Contact Details	
Name *	Name of affiliate contact.
Email	Email address of affiliate contact.
Phone	Telephone number of affiliate contact.
Address	Address of affiliate contact.
License Port Allocation	
Max Available Ports *	Maximum number of ports available to this affiliate. A warning (configured in **Alarm Recipients** area) is sent when this value is exceeded. **Note:** Set this value to **0** indicating that a license from the parent object is used.

Field	Description
Warn Ports*	Number of allocated ports used (by the applications attached to this affiliate) at which a warning is generated. The warning is configured in **Alarm Recipients** area and gives advance notice of approaching port allocation limit. **Note:** Set this value to **0** indicating that a license from the parent object is used.
Alarm Recipients	
Alarm Type*	Type of warnings generated when default **Max Available Ports** and **Warn Ports** limits are exceeded. Available type is **email**.
Address *	Destination (email address) of warnings generated when default **Max Available Ports** and **Warn Ports** limits are exceeded.
Application Parameters	
Keys *	Name of key value pair used by this affiliate.
Value *	Value of key value pair used by this affiliate.
Preset Parameters*	Default parameters used by affiliates and applications that reference the associated service provider.

3. Click **Save Affiliate**.
4. Complete the Affiliates **Numbers Available** area. Ensure the DNIS numbers represent a unique subset of the range of numbers available to the associated Service Provider.

Note:

DNIS numbers are case-sensitive and can be aphanumeric .

5. Click **Add**.
6. Click **Save Affiliate**.

Notes:

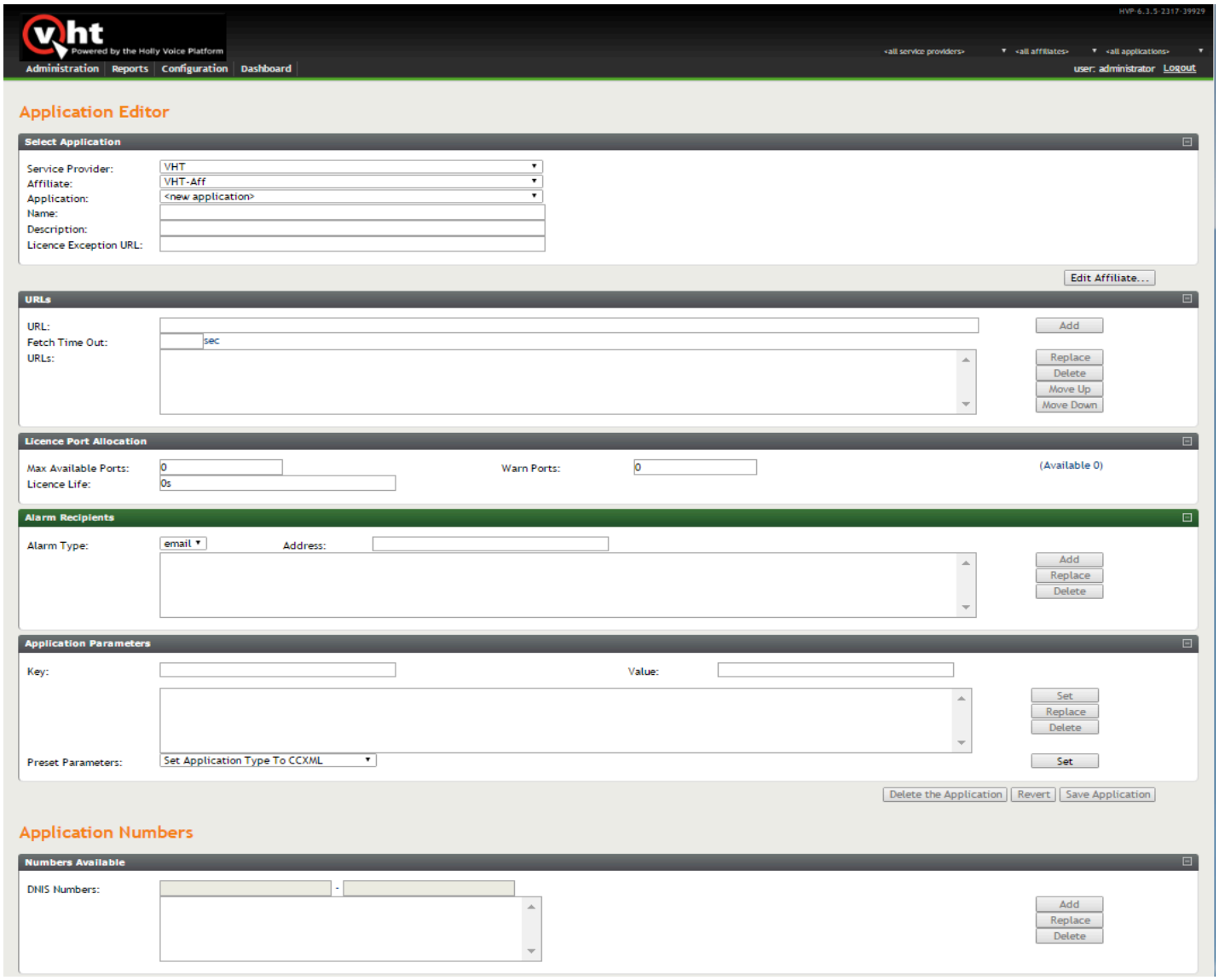
1. Associated applications must be deleted before an affiliate can be deleted.
2. Deleting an affiliate deletes the associated affiliate groups and users.
3. Deleting an affiliate removes all connections to associated archived log records.

Adding VHT Applications Using HMS

Use the **Applications** option of the **Administration** menu to create or edit the inbound (**VHT_Inbound** for example) and outbound (**VHT_Outbound** for example) applications and associate them to the appropriate affiliate on this IVG.

Note:

Only these two applications need to be added since IVG employs the HVP centralized management feature.



To create or edit the inbound and then outbound applications for call treatment:

1. Select **Administration > Applications** within HMS.
2. Complete the **Select Application**, **URLs**, **Licenses Port Allocation**, **Alarm Recipients**, and **Application Parameters** areas. Fields are defined as follows:

Note:

Fields marked with an asterisk (*) are required.

Field	Description
Select Application	
Service Provider *	Name of service provider to which this application is associated (**VHT_ServiceProvider** for example).
Affiliate *	Name of affiliate to which this application is associated. Set this value to (**VHT_Affiliate** for example).
Application *	Unique application name to be used in reports (**VHT_Inbound** or **VHT_Outbound** for example).
Name	Unique name of application to be (or already) created (**VHT_Inbound** for inbound or **VHT_Outbound** for outbound for example).
Description	Description of application.
License Exception URL	URL returned with rejected license message (**VHT_Inbound** for inbound or **VHT_Outbound** for outbound for example).
URLs	
URL	URL where this application can be found. Always specify a fetch time out when inserting a URL.
Fetch Time Out	Time allotted to fetch this URL.
URLs	Listing of URLs where this application is published. URLs are utilized in the order presented. **Notes:** 1. Use **Move Up** and **Move Down** to ensure URLs are listed in desired order. 2. Limit number of URLs inserted because fetch time outs are cumulative. 3. Ensure last URL listed is local to browser so that access is assured.
License Port Allocation	
Max Available Ports	Maximum number of ports available to this application. A warning (configured in **Alarm Recipients** area) is sent when this value is exceeded. **Note:** Set this value to **0** indicating that a license from the parent object is used.

Field	Description
Warn Ports	Number of allocated ports used (by this application) at which a warning is generated. Warning is configured in **Alarm Recipients** area and gives advance notice of approaching the port allocation limit. **Note:** Set this value to **0** indicating that a license from the parent object is used.
License Life	Amount of time the License Manager holds on to a license before it assumes the license is no longer in use.
Alarm Recipients	
Alarm Type	Type of warnings generated when default **Max Available Ports** and **Warn Ports** limits are exceeded. Available type is **email**.
Address	Destination (email address) of warnings generated when default **Max Available Ports** and **Warn Ports** limits are exceeded.
Application Parameters **Note:** At a minimum, the following parameters are required for the inbound IVR: **ap.connhdrstodlg = 1** **failure_destination =** *location* where *location* is the IP address to which calls are transferred when VIS fails to execute and inbound call treatment is not delivered. **type = application/voicexml+xml** **Note:** At a minimum, the following parameter is required for the outbound IVR: **type = application/voicexml+xml**	
Key	Name of any key value pairs used by this application.
Value	Value of any key value pairs used by this application.
Preset Parameters	Default parameters used by this application.

3. Click **Save Application**.
4. Complete the Application **Numbers Available** area. Ensure the DNIS numbers represent a unique subset ot the range of numbers available to the associated affiliate (**VHT_Affiliate** for example).

Note:

DNIS numbers are case-sensitive and can be aphanumeric .

5. Click **Add**.
6. Click **Save Application**.

Note:

Deleting an application removes all connections to associated archived log records.

7. Repeat Steps 2 through 6 for the associated outbound application (**VHT_Outbound** for example).

IVG Performance Configuration

Overview

This topic details example performance data, default performance enhancements, and how these enhancements that can customized to improve IVG system performance.

Sample Performance Data

While actual performance is dependent on the IVG system, internal VHT acceptance testing has achieved the following performance level(s) when all recommended configuration procedures were followed.

Operating System	Integration	# of CPUs	RAM Memory	Total Ports	Total Calls Per Hour	Average Memory Usage	Average CPU Usage
Red Hat	Avaya	4	8 GB	250	8991	3.2 GB	50%

Performance Configuration

The following sections detail requirements and performance configuration items (both automatically and manually set) and how to configure them. This content is divided unto the following topics:

- Server Components
- Virtual Machine (Hypervisor)
- Operating System
- Holly Voice Platform

Server Components

The following sections identify the Virtual Hold recommendations for common server components.

CPUs

Virtual Hold recommends the use of at least two, quad core high clock speed (2.95 MHz or faster) processors.

Network Interfaces

Virtual Hold recommends the use of 1 GB Network Interface Cards (NICs).

Disk Space

Virtual Hold recommends thick provisioned hard disks of 60 GB or larger.

Virtual Machine (Hypervisor)

IVG software has been tested using the following virtualized environment:

- VMWARE ESXi (version 5.5 or higher), 64-bit compatible.

Operating System

The following sections detail Virtual Hold requirements and recommendations (both automatically and manually set) for the operating system and how to set them.

Version

Virtual Hold requires CentOS 6.8 and RHEL 6.8 (both 64-bit only).

/tmp as tmpfs [Manual Configuration]

> **Note:**
>
> It is recommended to perform this procedure before executing any calls.

As the Holly Voice Platform (HVP) writes optional call recordings and caches data temporarily to the /tmp/holly directory, a negative performance impact is seen if /tmp is left at its default Red Hat configuration as a normal disk-based file system location. It is recommended that /tmp be mounted as a tmpfs file system. The following is an example command in /etc/fstab to enable this addition on startup.

tmpfs /tmp tmpfs defaults size=*memory_size* **0 0**

where:

memory_size = As a general rule, set this value to 50% of the RAM memory available to the system.

Repeat this procedure on all servers containing an IVG.

Realtime Option [Automatic Configuration]

This option places the processes responsible for handling RTP audio into a higher priority real time process class. Audio

is a realtime environment and quality suffers if packets are delayed or jittered. Raising the priority of these processes minimizes the chances of these delays occurring. To enable Realtime feature at the operating system level:

1. Have a root user create a 99-realtime.conf file in the ...\etc\security\limits.d directory.
2. Ensure this file contains the following lines:

   @realtime - rtprio 99
   @realtime - memlock unlimited
   Eg.

3. Have the root user create a group named **realtime** and add the holly user to it using the following commands.

   groupadd realtime
   usermod -a -G realtime holly

4. Restart this server.
5. Repeat this procedure on all servers containing an IVG.

Holly Voice Platform

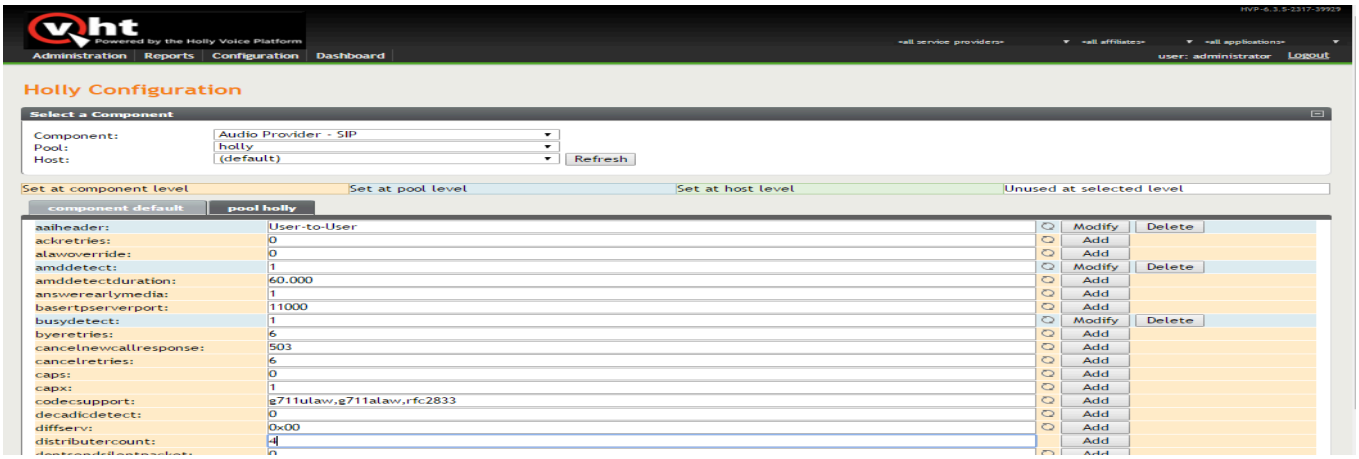
The following sections detail HVP requirements and recommendations (both automatically and manually set) and how to configure them.

Version

IVG installs Version 6.3 of the Holly Voice Platform.

HMS Settings

Use the **Holly Configuration** option of the **Configuration** menu to create (or edit) performance enhancements to this IVG.



Note:

This configuration only needs to be made once because the parameters are being configured at the pool level. Such changes apply to all Holly Voice Platforms (HVPs) installed as members of the pool.

To edit the HVP performance related configuration:

1. Select **Configuration > Holly Configuration** within HMS.
2. Configure the **Component** and **Pool** parameters as follows:

Field	Description
Component	Component to be configured. Set this value to **Audio Provider - SIP**.
Pool	Pool or group of IVG servers (**holly** for example).

3. Configure the **distributercount** parameter to **2** (default value is **4**). [Manual Configuration]

Note:

The amount of processes used by the **realtime** parameter (refer to Step 5) is determined by the **distributercount** parameter. The **distributercount** parameter is the number of SIP threads available to distribute and mix the audio and RTP channels. Set the **distributercount** parameter to the number of physical CPU cores, not including hyperthreads, allocated to a VM. The distributers are responsible for handling RTP audio. As an example, for a four vCPU VM that contains four CPU threads and two CPU cores, set **distributercount** to 2.

4. Click **Add** or **Modify** for this parameter.

5. Ensure the **realtime** parameter is set to **1** (default value). [Automatic Configuration]
6. If necessary, click **Add** or **Modify** for this parameter.
7. Ensure the **tonedetect** parameter is set to **0** (disabled - the default value). [Automatic Configuration]

Note:

This option is used when DTMF is delivered to the Holly voice platform in-band as a tone in the audio stream. Enabling the **tonedetect** option causes usage of extra processing for every call so it recommended to disable this option. Reset the value or click **Delete** to return this option to the default value.

8. If necessary, click **Add** or **Modify** for this parameter.
9. Configure the **Component** and **Pool** parameters as follows:

Field	Description
Component	Component to be configured. Set this value to **Holly Globals**.
Pool	Pool or group of IVG servers (**holly** for example).

10. Ensure the **CC** parameter is set to **1** (default value). [Automatic Configuration]
11. If necessary, click **Add** or **Modify** for this parameter.
12. Configure the **Component** and **Pool** parameters as follows:

Field	Description
Component	Component to be configured. Set this value to **Holly Voice Browser**.
Pool	Pool or group of IVG servers (**holly** for example).

10. Configure the **callevents** parameter to contain the minimum required number of call events generating log entries because (none by default) the platform logs a large amount of events to the database. This excessive logging of call events should be avoided in production systems as it consumes processing resources. At a minimum, the **fetch** event should be removed. At a maximum, all events can be removed. The complete list of available call events is: [Automatic Configuration]
    asr_session
    log_element
    recognition_start
    recognition_end
    record_start
    record_end
    transfer_start

transfer_end
disconnect
fetch
error_critical
error_severe
error_warning
note
exit
placecall_start
placecall_end
sip_session
grammar_activation

11. Configure the **jsruntimesizekb** parameter to **40960**. This setting should improve performance in high call volume systems using JavaScript. [Manual Configuration]
12. Click **Add** or **Modify** for this parameter.
13. Ensure the **dthreads** parameter is set to **1** (default value). [Manual Configuration]

Note:

This option handles outbound CCXML calls at VHT. If jitter (incomplete voice prompts, intermittent call response, etc.) is present during high load call, it may ne necessary to increment this value. However, be aware the a setting of **4** in system using four vCPUs was tested and caused other problems. A setting of **2** would be suggested. In some cases, the **distributercount** and **dthreads** options interacted. For example, a four vCPU system handling a large load of concurrent inbound and outbound calls may require setting both of them to **1** so they do not unnecessarily impact Tomcat processing.

14. Click **Add** or **Modify** for this parameter.
15. Configure the **Component** and **Pool** parameters as follows:

Field	Description
Component	Component to be configured. Set this value to **Holly Log Manager**.
Pool	Pool or group of IVG servers (**holly** for example).

14. Ensure the **disklogging** parameter is set to **1** (default value). [Automatic Configuration]
15. If necessary, click **Add** or **Modify** for this parameter.
16. Configure the **Component** and **Pool** parameters as follows:

Field	Description
Component	Component to be configured. Set this value to **Holly Essentials**.
Pool	Pool or group of IVG servers (**holly** for example).

14. Select the **Trace Level** tab.
15. Ensure all parameters are set to **2: Status Messages**. [Automatic Configuration]
16. If necessary, click **Add** or **Modify** for this parameter.

Adjusting Holly Resource Levels

The following Holly Call Control and Browser resource levels should be configured to a value greater than the total number of Callback licensed ports on each IVG. This ensures there are always more resources available than needed for the available licenses. These levels are currently set to a high value by default through use of the hvp_param.cfg file by the IVG installer.

Holly Configuration > Call Control:

maxcreateccxmlsessions (default value = 999)

maxexternalsessions (default value = 999)

maxnewcallsessions (default value = 999)

maxsessions (default value = 999)

Holly Essentials (Telephony):

Number of Ports per Server (default value = 400)

Maximum Concurrent Inbound Calls per Server (default value = 400)

Maximum Concurrent Outbound Calls per Server (default value = 400)

These values are based on the baseline system used for IVG performance testing. Adjustment of these values is expected to achieve the best performance. Refer to Interactive Voice Gateway (IVG) Technical Overview for baseline system specifications.

To set these resource levels for this IVG, use the **Configuration > Holly Configuration** menu within HMS.

IVG External Media Files

A client's collection of voice files can reside on a media server separate from the VXML Interaction Server (VIS) in systems using Interactive Voice Gateways (IVGs). The external voice project can be edited independently outside of Eclipse and then deployed to the server without building a new VXML project or .war file. This allows for quicker deployment and easier customization of the voice files.

The standard procedures for using external voice files are described in the **Customizing External Media Files** topic within the VXML Interaction Server Installation Guide or VXML Interaction Server Configuration Guide. One difference in systems using IVGs is that voice files are located in the .../usr/local/tomcat7/webapps/voices directory within the IVG directory structure. Other than this difference, VIS and the accompanying external voice files are utilized in the standard manner.

Configuring Data Purging

The data purging values for logtokeep, logtodelete, and datatodelete are automatically configured during IVG Installation in the install_hvp.cfg file, and log to /export/home/<*holly user*>/log/logmgr. These values may be adjusted post-installation by manually modifying the values.

To update the data purging values:

1. Run the following command as a root user using a Linux text editor:

   /var/spool/cron/holly

2. Locate lines 03 and 04 (example below):

```
00 3 * * * /usr/bin/ruby    /export/home/holly/bin/logmgr_expire -d 30 -k 10 >> /$
00 4 * * * /bin/sh    /export/home/holly/bin/datalog_expire.sh 10 >> /dev/null 2>$
```

3. Modify the following values:

Field		Description	Default Value
logmgr_expire	-d	Number of days of logs to be deleted	30
	-k	Number of days of logs to be kept	10
datalog_expire		Number of days of data to be deleted	10

4. Save the file.
5. Restart the Cron service for these changes to take effect.