# Interactive Voice Gateway (IVG) Avaya Configuration Guide Version 3.3-3.5

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This article applies from version 3.2.0 to 3.5.0

# Required Inbound IVG Avaya Configuration

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

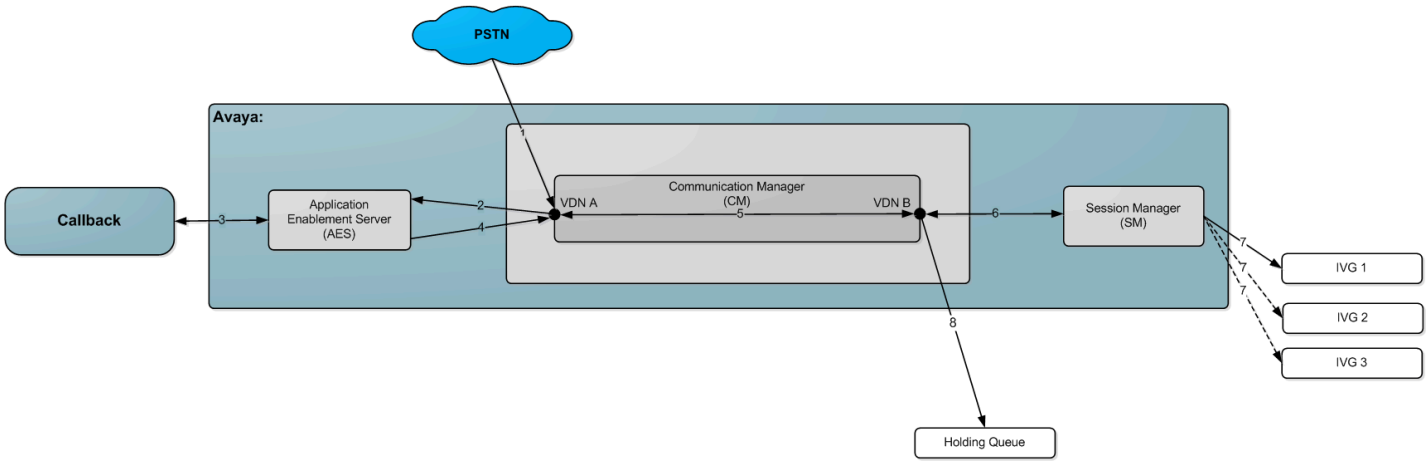
# Multiple IVG Load Balancing and Failover

In Avaya integrations using multiple IVGs, it is possible to leverage Avaya and IVG mechanisms to support the following functions:

- Load balancing
- High availability
- Failover

## Callflow

The following diagram details how inbound calls are handled in multiple IVG integrations.




Calls progress through this integration as follows:

1. Inbound calls arrive at the PSTN (telephone system) and are routed to VDN A, the inbound vector directory number. TDM protocol is used.
2. An adjunct route directs the calls to AES (Avaya enablement server). Proprietary Avaya protocol is used.

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3. AES directs the calls to Callback where the appropriate treatment is determined. In this case, calls are routed back to VDN A, VDN B, Session Manager and on to the IVGs. Proprietary Virtual Hold protocol is used.
4. Callback attaches routing information to the calls and directs them back to VDN A (Communications Manager). Proprietary Avaya protocol is used.
5. Communication Manager reads the routing information and directs the calls to VDN B. Proprietary Avaya protocol is used.
6. Communication Manager directs the calls to Session Manager. SIP protocol is used.
7. Session Manager load balances the calls (using a proprietary Avaya algorithm) across the available IVGs. SIP protocol is used.
8. If the IVGs do not receive the load balanced calls for any reason (failure of all IVGs, incorrect DNIS configuration, etc.), Communication Manager routes the calls to a holding queue. Proprietary Avaya protocol is used.

# Avaya Configuration

Use the following tools to configure Avaya components to function correctly with and support IVG implementations:

- Avaya Site Administrator - Creates dialing plans (including component parts) and configures trunk groups.
- Avaya System Manager - Creates SIP entities, entity links, and configures routing policies and dial patterns.

## 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
```

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```
  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
```

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```
                    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
```

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```
                         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
```

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```
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
```

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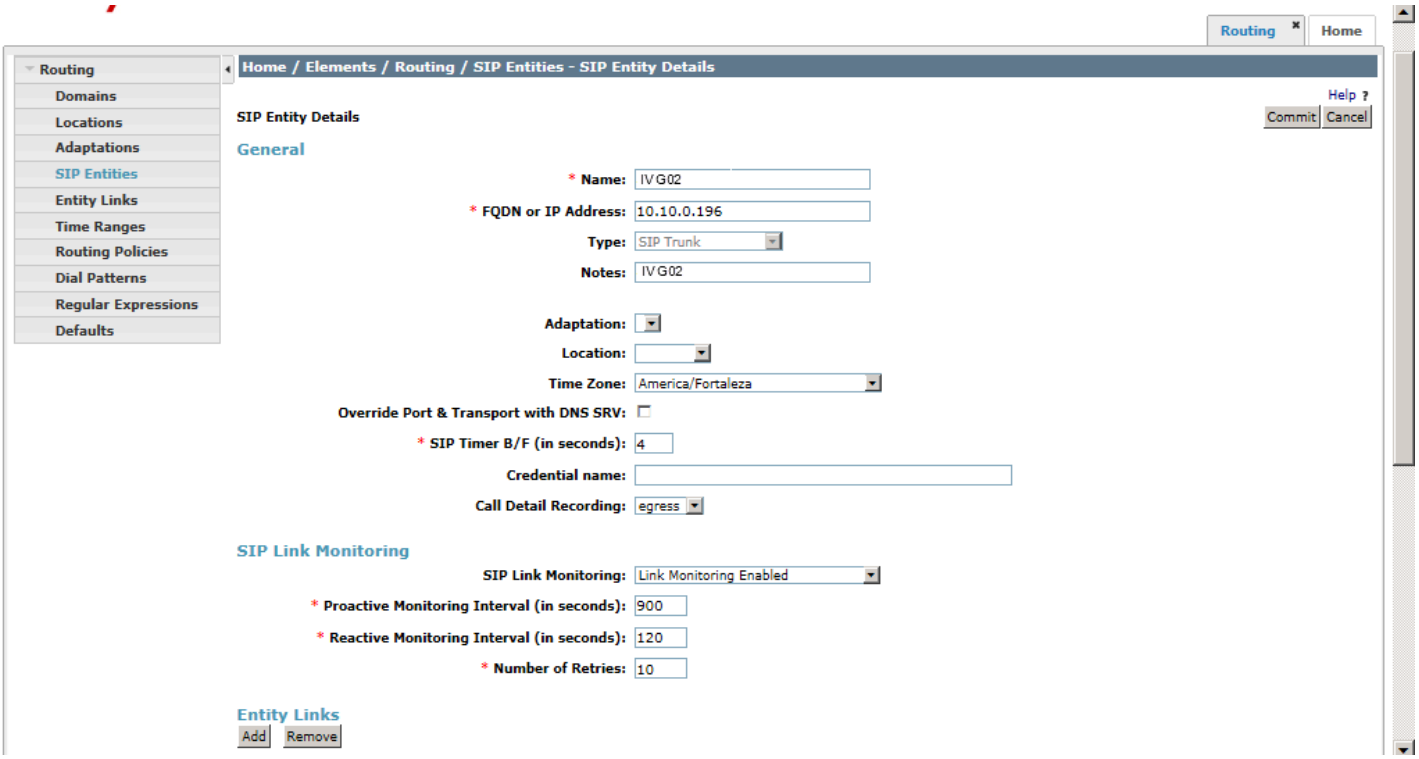
## Avaya System Manager

From the Avaya System Manager, perform the following:

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

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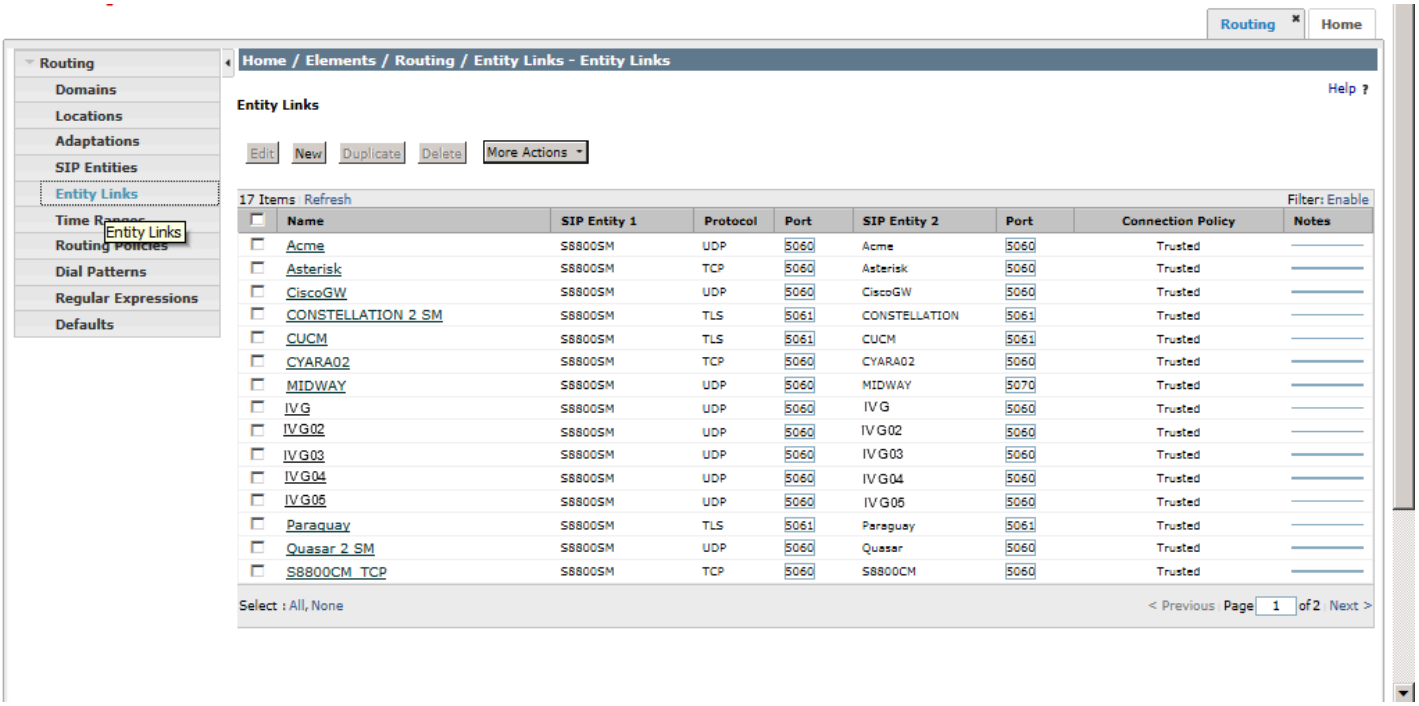
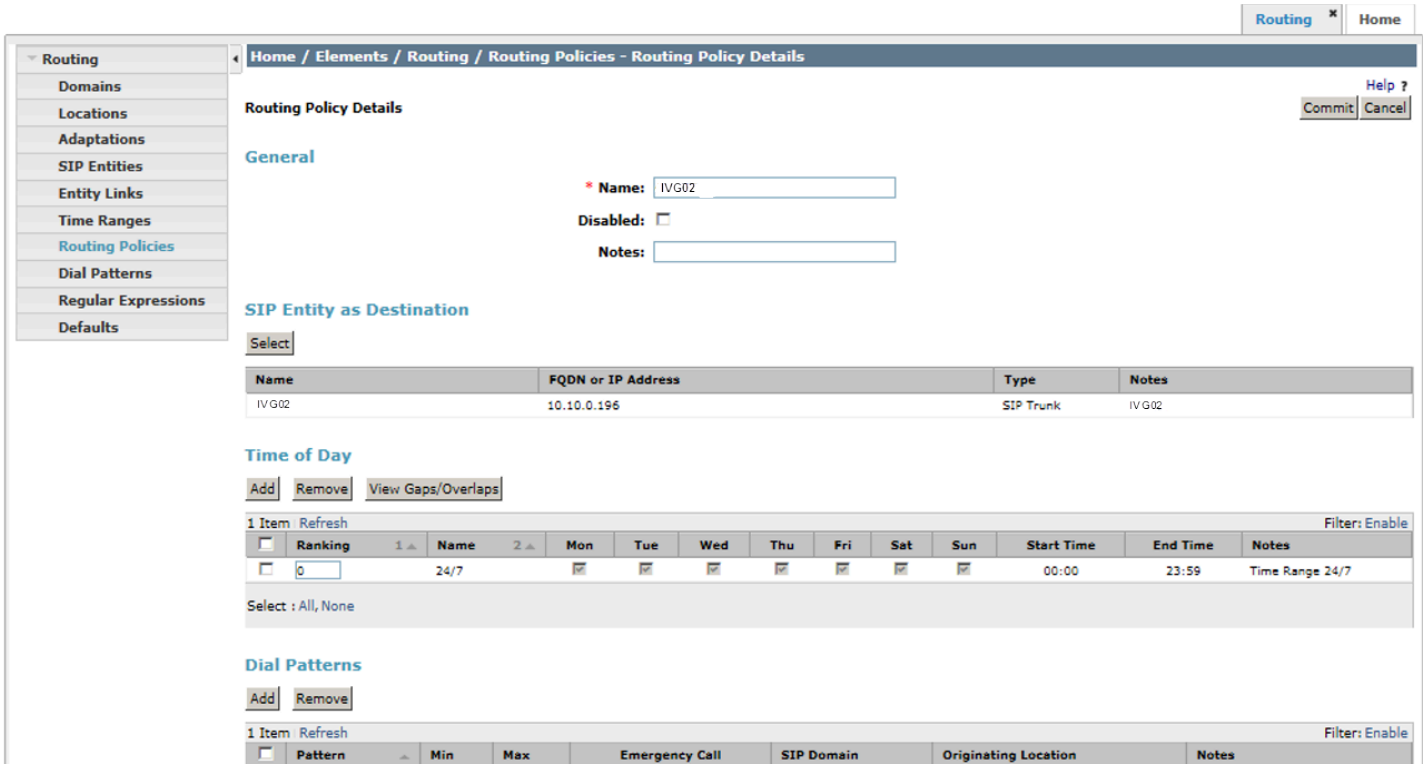



3. Configure the IVG destination in the routing policy to the IVG SIP entity.

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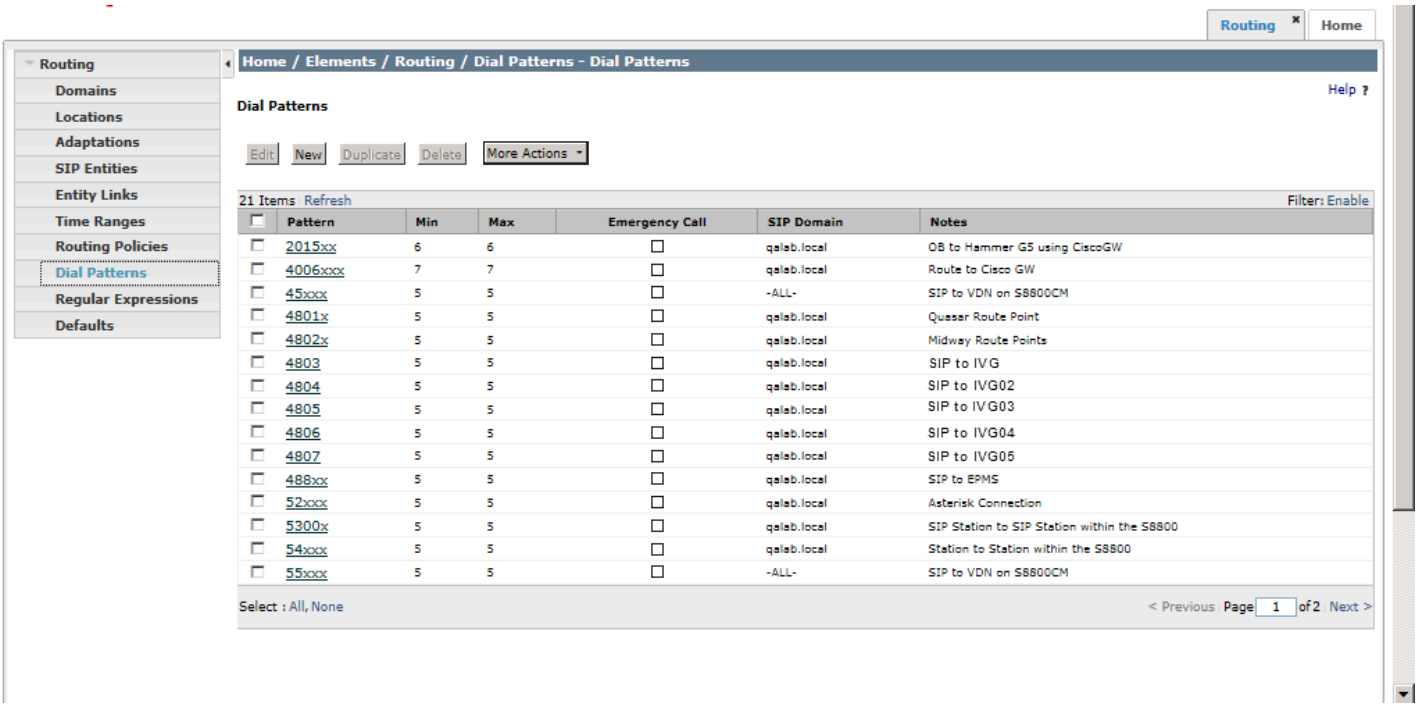
4. Configure the required dial patterns, with the Originating Location and Routing Policy Names, for those created for IVG usage.

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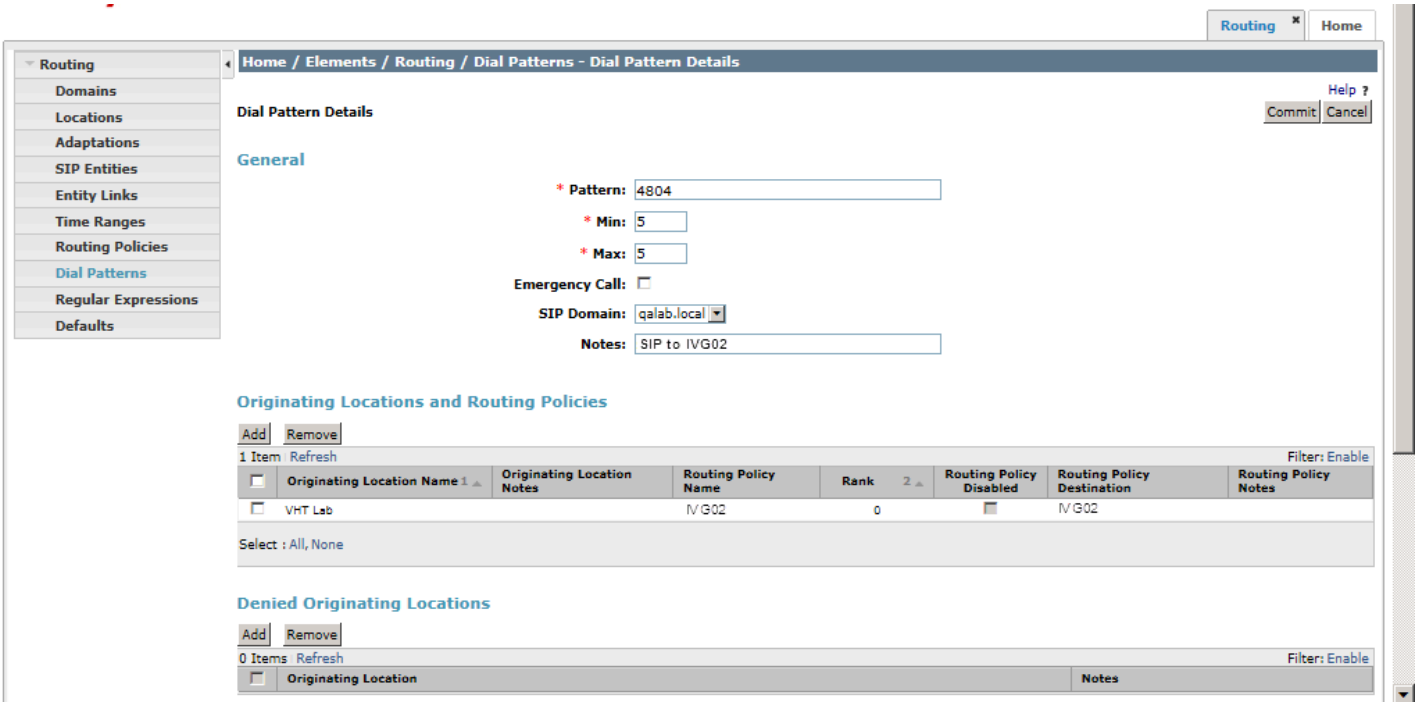


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# Building Avaya Vectors for IVGs (Samples)

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:
```

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```
                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
```

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```
    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 IVG management system 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*:
```

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```
                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
```

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> * 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*:
```

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```
                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
```

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### 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*:
```

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* 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

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## 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
```

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# Log in to IVG Management System

## Overview

The IVG management system 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 IVG management system is logging in to the User Interface (UI).

## Log In and Out

To start the IVG management system 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 the management system.

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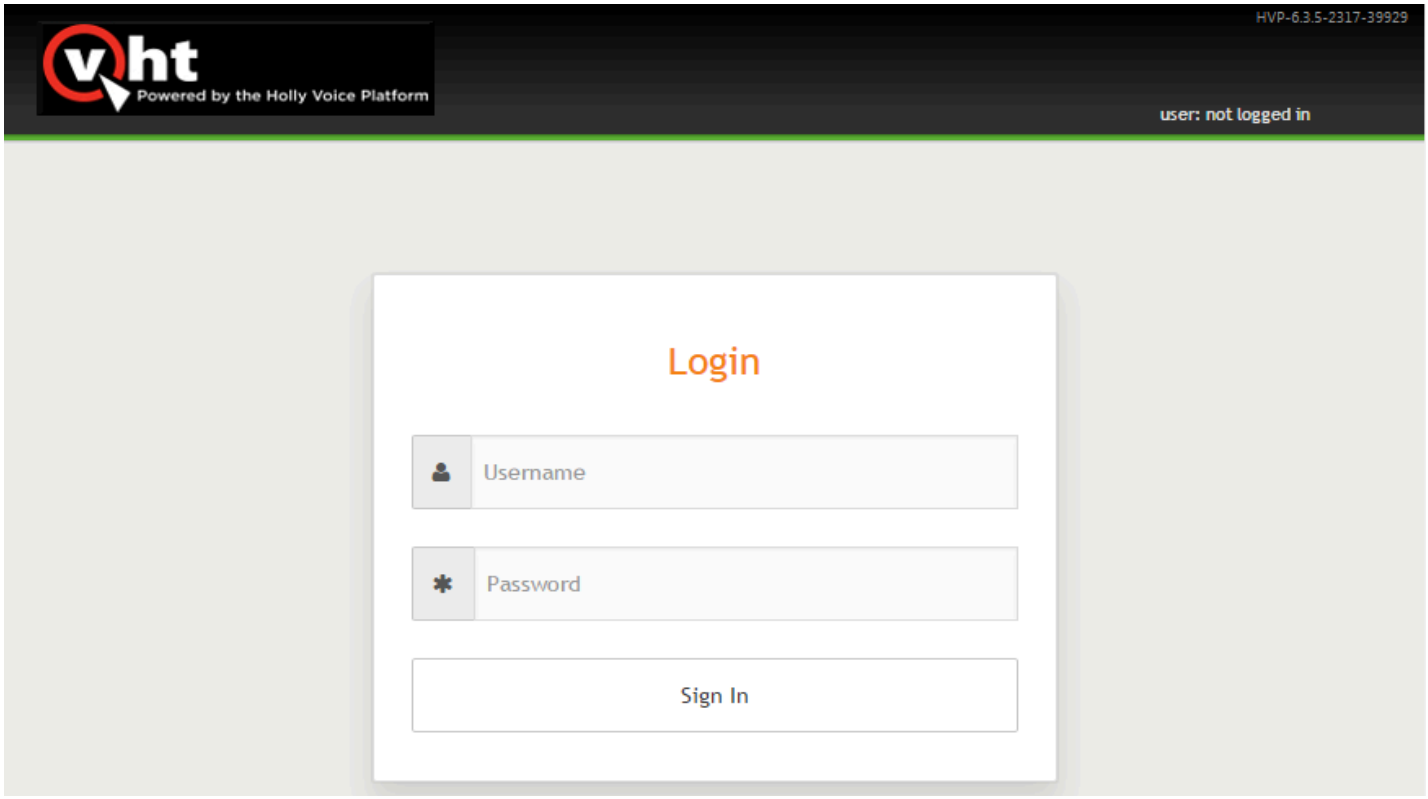


To exit the managementsystem:

1. Select **Logout** in the IVG management system window.

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# Activating IVG Workers

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

**Note:**

You must log into the IVG management system before these procedures can be utilized.

| 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 IVGmanagementsystem. |
| Holly Foreman | foreman | Required to monitor and restart workers. |
| 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 IVG management system 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 IVG license information. |
| Holly Log Manager | logmgr | Required for writing diagnostic log information. |

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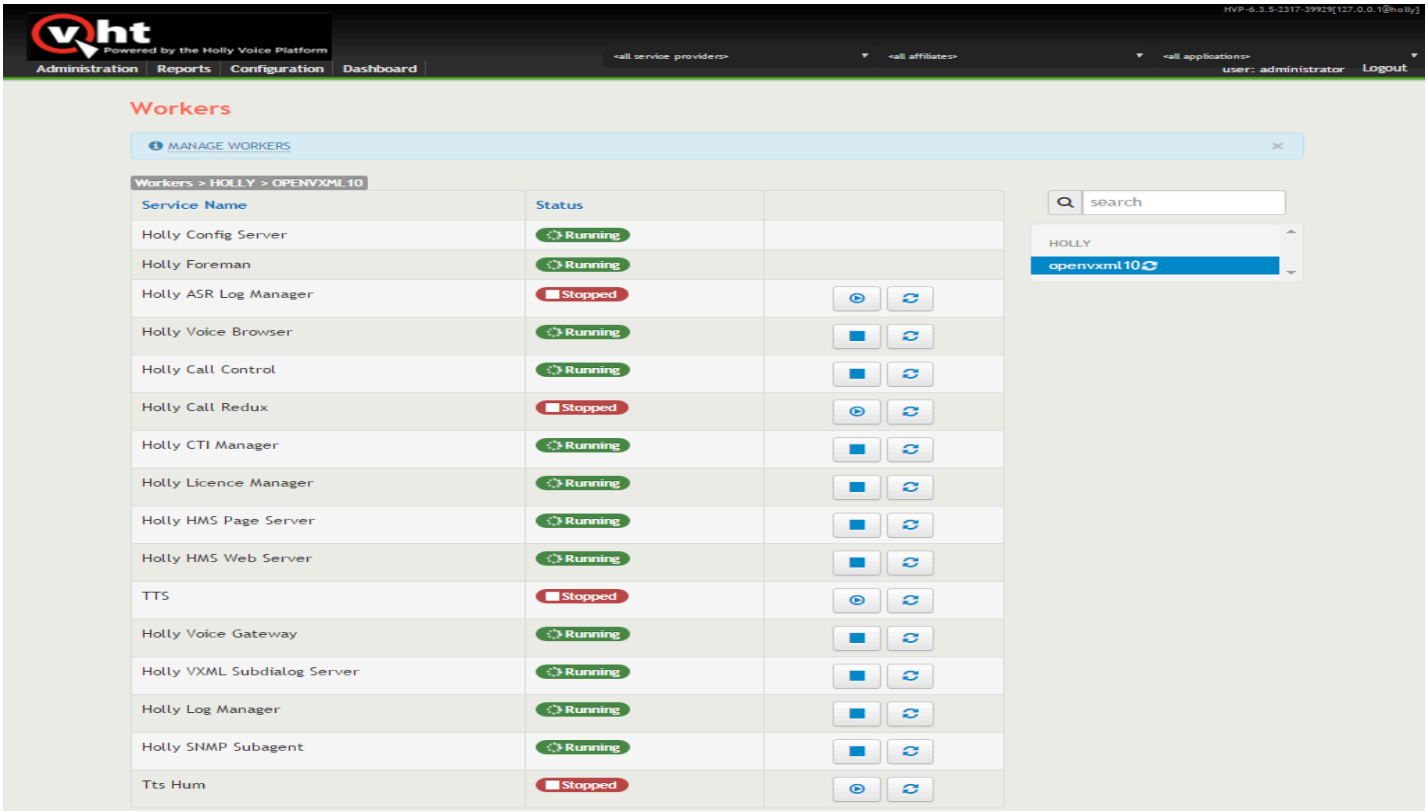
| Worker Name | Process Name | Description |
|---|---|---|
| Holly SNMP Subagent | subagent | Required for SNMP integration and alarm consolidation in ~/log/ alarms.log file. |

To select and activate the required IVG workers:

1. Select **Configuration > Workers** within the IVG management system.
2. Select the IVG server on the right side of the window.




1. Click the start icon (right arrow) for the IVG worker to be started.
2. Verify the status of the worker changes to Running.
3. Repeat Steps 3 and 4 for the remaining IVG workers that need started.

It is also possible to check the IVG installer log (installer_*mmddyy*.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

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

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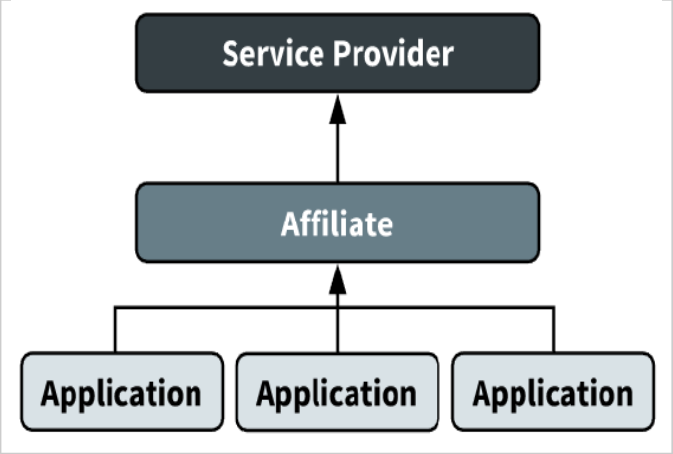
## Voice platform provisioning

Provisioning the voice platform is a configuration step that enables the voice platform to to place calls. The Interactive Voice Gateway (IVG) voice platform uses a hierarchy of system partitioning, and requires adding the following components:

- Service Provider - Service Provider for the platform that manages the Affiliate and Applications
- Affiliate - owner of the Applications running on the system, and managed by the System Provider
- Applications - individual Applications running on the system, managed by the Affiliate




IVG employs a centralized management feature that requires adding only one Service Provider and Affiliate, regardless of the number of IVG instances. The provisioned applications are available to each IVG instance.

## Before you begin

- Install IVG on each VM in the deployment.
- If provisioning for Outreach, verify your system is licensed for this feature. Contact your VHT representative to verify licensing terms.

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## Adding the Service Provider

The Service Provider for the voice platform manages the affiliate and any provisioned applications.

Use the following instructions to create a new Service Provider OR update an existing Service Provider:

### Service Provider editor

To create or edit the VHT service provider:

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1. Log in to the management system and navigate to **Administration > Service Providers**.
2. Populate each field of the **Select Service Provider** section using the following table for descriptions and default values:

**Editing an existing Service Provider?**

Select the Service Provider name from the **Service Provider** dropdown to edit the Domain Name and Domain Description.

| Field | Description | Default value |
|---|---|---|
| Service Provider | To create a new Service Provider:<br>• Leave this field blank.<br>To update an existing Service Provider:<br>• Select the name of the Service Provider from the dropdown menu. | VHT |
| Domain Name | Domain name used when accessing the management system.<br>This value becomes the **Service Provier** name. | VHT-ServiceProvider |
| Domain Description | If a Domain Description is not provided, the value defaults to the text entered for Domain Name. | VHT |

3. Populate each field of the **License Port Allocation** section using the following table for descriptions and default values:

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| Field | Description | Default Value |
|---|---|---|
| Max Available Ports | • Maximum number of ports available to the Service Provider's Affiliate.<br>• The value defined here also cascades to the Affiliate and Application. | 999 |
| Warn Ports | • Maximum number of in-use ports before a warning is generated.<br>• The value defined here also cascades to the Affiliate and Application. | 999 |

To receive a warning if the number of Warn Ports is reached OR if the number of Max Available Ports is reached, configure the **Alarm Recipients** section with a list of users to notify.

4. Click **Save Service Provider**.
5. Proceed to Service Provider numbers to enter the DNIS ranges available to the Service Provider.

## Service Provider numbers

Service Provider numbers indicate the range of DNIS numbers available to the Service Provider. The DNIS ranges are required for:

- Inbound
- Outbound

If using any of the following applications, provision a DNIS range for them as well:

- Outreach
- Agent Priority

To add service provider numbers:

1. Enter the DNIS range using the following table as a guide. DNIS numbers and values are case-sensitive, and can be alphanumeric.

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| Application | Description | Default DNIS range |
|---|---|---|
| Inbound | Range of DNIS numbers available to the inbound application. | NA |
| Outbound | Range of DNIS numbers available to the outbound application.<br>**Note:**<br>This DNIS value must also be configured in the OCC site.config. | outbound-outbound |
| Outreach | DNIS used to identify Outreach. Provision this DNIS if the Outreach application is being used.<br>**Note:**<br>This DNIS value must also be configured in the OCC site.config. | outreach-outreach |
| Agent Priority | DNIS used to identify Agent Priority. Provision this DNIS if the Agent Priority application is being used.<br>**Note:**<br>This DNIS value must also be configured in the OCC site.config. | agntpriority-agntpriority |

2. Click **Add**.
3. Click **Save Service Provider**.

## Deleting a Service Provider

Because the voice platform is hierarchical, a Service Provider cannot be deleted without deleting the associated affiliate. Deleting a Service Provider deletes all associated Service Provider groups and users, and removes all connections to associated archived log records.

To delete a service Provider, click the **Delete the Service Provider** button.

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# Adding the Affiliate

The Affiliate owns the Applications running on the system, and are managed by the Service Provider.

Use the following instructions to create a new Affiliate OR update an existing Affiliate.

## Affiliate Editor

To create or edit the Affiliate:

1. Log in to the management system and navigate to **Administration > Affiliates**.
2. Complete the **Select Affiliate** area. Fields are defined as follows:

**Editing an existing Affiliate?**

Select the Service Provider name from the **Service Provider** dropdown, and then select the **Affiliate** to edit the Domain Name and Domain Description.

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| Field | Description | Default value |
|---|---|---|
| Service Provider | Dropdown list of Service Providers. Select the Service Provider created during **Adding the Service Provider**. | VHT |
| Affiliate | To create a new Service Provider:<br>• Leave this field blank.<br>To update an existing Service Provider:<br>• Select the name of the Service Provider from the dropdown menu. | VHT-Affiliate |
| Domain Name | Affiliate name used to create the new Affiliate.<br>This value becomes the **Affiliate** name. | VHT-Affiliate |
| Domain Description | If a Domain Description is not provided, the value defaults to the text entered for Domain Name. | VHT |

3. Populate each field of the **License Port Allocation** section using the following table for descriptions and default values:

| Field | Description | Default Value |
|---|---|---|
| Max Available Ports | • Maximum number of ports available to the Affiliate.<br>• Ports are used by the Applications attached to the Affiliate. | 0 |

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| Field | Description | Default Value |
|---|---|---|
| Warn Ports | • Maximum number of in-use ports before a warning is generated.<br>• Ports are used by the Applications attached to the Affiliate. | 0 |

To receive a warning if the number of Warn Ports is reached OR if the number of Max Available Ports is reached, configure the **Alarm Recipients** section with a list of users to notify.

4. Click **Save Affiliate**.
5. Proceed to Affiliate numbers to enter the DNIS ranges available to the Affiliate.

## Affiliate numbers

Affiliate numbers indicate the range of DNIS numbers available to the Affiliate. The DNIS ranges are required for:

- Inbound
- Outbound

If using any of the following applications, provision a DNIS range for them as well:

- Outreach
- Agent Priority

To add Affiliate numbers:

1. Enter the DNIS range using the following table as a guide. DNIS numbers and values are case-sensitive, and can be alphanumeric.

| Application | Description | Default DNIS range |
|---|---|---|
| Inbound | Range of DNIS numbers available to the inbound application. | NA |

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| Application | Description | Default DNIS range |
|---|---|---|
| Outbound | Range of DNIS numbers available to the outbound application.<br>**Note:**<br>This DNIS value must also be configured in the OCC site.config. | outbound-outbound |
| Outreach | DNIS used to identify Outreach. Provision this DNIS if the Outreach application is being used.<br>**Note:**<br>This DNIS value must also be configured in the OCC site.config. | outreach-outreach |
| Agent Priority | DNIS used to identify Agent Priority. Provision this DNIS if the Agent Priority application is being used.<br>**Note:**<br>This DNIS value must also be configured in the OCC site.config. | agntpriority-agntpriority |

2. Click **Add**.
3. Click **Save Affiliate**.

## Deleting an Affiliate

Because the voice platform is hierarchical, an Affiliate cannot be deleted without deleting the associated Applications. Deleting an Affiliate deletes all associated Affiliate groups and users, and removes all connections to associated archived log records.

To delete an Affiliate, click the **Delete the Affiliate** button.

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# Adding VHT Applications

The individual Applications are owned by the Affiliate. These Applications are associated to VHT voice applications that include:

- Inbound
- Outbound

Additional applications may include:

- Agent Priority
- Prompt Recorder
- Outreach

Outreach requires a valid VHT license in order to function. Contact your VHT representative for current licensing terms.

Use the following instructions to provision each VHT application.

## Adding VHT Inbound Application

To create or edit the inbound application for call treatment:

1. Log in to the management system and navigate to **Administration > Applications**.
2. Complete the **Select Application** area. Fields are defined as follows:

**Editing an existing Application?**

Select the Application name from the **Application** dropdown.

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| Field | Description | Default value |
|---|---|---|
| Service Provider | Dropdown list of Service Providers. Select the Service Provider created during **Adding the Service Provider**. | VHT-ServiceProvider |
| Affiliate | Dropdown list of Affiliates. Select the Affiliate created during Adding the Affiliate. | VHT-Affiliate |
| Application | Dropdown list of each provisioned Application.<br>To create a new Application:<br>• Leave this field blank. The value for **Name** becomes the Application name.<br>To edit an existing Application:<br>• Select an Application from the dropdown list. | VHT_Inbound |
| Name | Name associated with the Application.<br>This value becomes the **Application** name. | VHT_Inbound |
| Description | Optional description for the application. If no description is added, the value defaults to the value from **Name**. | VHT_Inbound |

3. Add the inbound URL in the format: **http://localhost:8080/VIS/PlatformSupport_HVP/Begin?Tenant=VHT&MODE=HVPAvaya.**
4. Add a **Fetch Time Out**. VHT recommends setting the Fetch Time Out to 5 seconds.
5. Click **Add** to add the URL to the **URLs** list.

**Notes:**

1. Use **Move Up** and **Move Down** to ensure URLs are listed in desired order.

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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.

6. Populate each field of the **License Port Allocation** section using the following table for descriptions and default values:

| Field | Description | Default Value |
|---|---|---|
| Max Available Ports | • Maximum number of ports available to the Application.<br>• Set this value to **0** to indicate a license from the parent object is being used. | 0 |
| Warn Ports | • Maximum number of in-use ports before a warning is generated.<br>• Set this value to **0** to indicate a license from the parent object is being used. | 0 |
| License Life | Amount of time (in seconds) License Manger holds a license before assuming the license is no longer in use. | 0s |

The recipient list configured in the Service Provider's **Alarm Recipients** section cascades to the Affiliate and Application sections.

7. Add the **Application Parameters**. The required application parameters are as follows:

| Key | Value | Description |
|---|---|---|
| ap.connhdrstodlg | 1 | |

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| Key | Value | Description |
|---|---|---|
| failure_destination | **sip:***DNNumber***@***IPAddress* | Location where calls are transferred to when VIS fails to execute, and inbound call treatment is not delivered. |
| type | application/voicexml+xml | Sets the application type to VoiceXML. |
| service_id | 1 | |
| ivg_environment | avaya | IVG environment. |

8. Click **Save Application**.
9. In the **Application Numbers** section, enter the DNIS range available to the Inbound application.
10. Click **Add**.
11. Click **Save Application**.
12. Proceed to **Outbound Application** to provision the outbound application.

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## Adding VHT Outbound Application

To create or edit the Outbound application for call treatment:

1. Log in to the management system and navigate to **Administration > Applications**.
2. Complete the **Select Application** area. Fields are defined as follows:

**Editing an existing Application?**

Select the Application name from the **Application** dropdown.

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| Field | Description | Default value |
|---|---|---|
| Service Provider | Dropdown list of Service Providers. Select the Service Provider created during **Adding the Service Provider**. | VHT-ServiceProvider |
| Affiliate | Dropdown list of Affiliates. Select the Affiliate created during Adding the Affiliate. | VHT-Affiliate |
| Application | Dropdown list of each provisioned Application.<br>To create a new Application:<br>• Leave this field blank. The value for **Name** becomes the Application name.<br>To edit an existing Application:<br>• Select an Application from the dropdown list. | VHT_Outbound |
| Name | Name associated with the Application.<br>This value becomes the **Application** name. | VHT_Outbound |
| Description | Optional description for the application. If no description is added, the value defaults to the value from **Name**. | VHT_Outbound |

3. Add the inbound URL in the format: **http://localhost:8080/VIS/PlatformSupport_HVP/Outbound?MODE=HVPAvaya.**
4. Add a **Fetch Time Out**. VHT recommends setting the Fetch Time Out to 5 seconds.
5. Click **Add** to add the URL to the **URLs** list.

**Notes:**

1. Use **Move Up** and **Move Down** to ensure URLs are listed in desired order.

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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.

6. Populate each field of the **License Port Allocation** section using the following table for descriptions and default values:

| Field | Description | Default Value |
|---|---|---|
| Max Available Ports | • Maximum number of ports available to the Application.<br>• Set this value to **0** to indicate a license from the parent object is being used. | 0 |
| Warn Ports | • Maximum number of in-use ports before a warning is generated.<br>• Set this value to **0** to indicate a license from the parent object is being used. | 0 |
| License Life | Amount of time (in seconds) License Manger holds a license before assuming the license is no longer in use. | 0s |

The recipient list configured in the Service Provider's **Alarm Recipients** section cascades to the Affiliate and Application sections.

7. Add the **Application Parameters**. The required application parameters are as follows:

| Key | Value | Description |
|---|---|---|
| type | application/voicexml+xml | Sets the application type to VoiceXML. |

8. Click **Save Application**.

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9. In the **Application Numbers** section, enter the DNIS range **outbound-outbound** for the outbound application.

> **Note:**
>
> This DNIS value must also be configured in the OCC site.config.

10. Click **Add**.
11. Click **Save Application**.
12. Proceed to Agent Priority, Outreach, or Prompt Recorder if enabling either in your deployment.

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## Adding VHT Agent Priority Application

*Provision Agent Priority only if this feature is enabled for your Callback deployment.*

To create or edit the Agent Priority application for call treatment:

1. Log in to the management system and navigate to **Administration > Applications**.
2. Complete the **Select Application** area. Fields are defined as follows:

**Editing an existing Application?**

Select the Application name from the **Application** dropdown.

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| Field | Description | Default value |
|---|---|---|
| Service Provider | Dropdown list of Service Providers. Select the Service Provider created during **Adding the Service Provider**. | VHT-ServiceProvider |
| Affiliate | Dropdown list of Affiliates. Select the Affiliate created during Adding the Affiliate. | VHT-Affiliate |
| Application | Dropdown list of each provisioned Application.<br>To create a new Application:<br>• Leave this field blank. The value for **Name** becomes the Application name.<br>To edit an existing Application:<br>• Select an Application from the dropdown list. | VHT_AgentPriority |
| Name | Name associated with the Application.<br>This value becomes the **Application** name. | VHT_AgentPriority |
| Description | Optional description for the application. If no description is added, the value defaults to the value from **Name**. | VHT_AgentPriority |

3. Add the outbound URL in the format: **http://localhost:8080/VIS/AgentPriority.**
4. Add a **Fetch Time Out**. VHT recommends setting the Fetch Time Out to 5 seconds.
5. Click **Add** to add the URL to the **URLs** list.

**Notes:**

1. Use **Move Up** and **Move Down** to ensure URLs are listed in desired order.

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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.

6. Populate each field of the **License Port Allocation** section using the following table for descriptions and default values:

| Field | Description | Default Value |
|---|---|---|
| Max Available Ports | • Maximum number of ports available to the Application.<br>• Set this value to **0** to indicate a license from the parent object is being used. | 0 |
| Warn Ports | • Maximum number of in-use ports before a warning is generated.<br>• Set this value to **0** to indicate a license from the parent object is being used. | 0 |
| License Life | Amount of time (in seconds) License Manger holds a license before assuming the license is no longer in use. | 0s |

The recipient list configured in the Service Provider's **Alarm Recipients** section cascades to the Affiliate and Application sections.

7. Add the **Application Parameters**. The required application parameters are as follows:

| Key | Value | Description |
|---|---|---|
| type | application/voicexml+xml | Sets the application type to VoiceXML. |

8. Click **Save Application**.

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9. In the **Application Numbers** section, enter the DNIS range **agntpriority-agntpriority** for the Agent Priority application.

> **Note:**
>
> This DNIS value must also be configured in the OCC site.config.

10. Click **Add**.
11. Click **Save Application**.
12. Proceed to **Outreach** or **Prompt Recorder** if enabling either in your deployment.

To fully enable Agent Priority functionality, refer to Configuring Agent Priority in the Agent Priority integration guide to complete configuration.

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## Adding VHT Outreach Application

*Provision Outreach only if this feature is enabled for your Callback deployment.*

The use of Outreach requires a valid VHT license. Contact your VHT representative for your current licensing terms.

To create or edit the Outreach application for call treatment:

1. Log in to the management system and navigate to **Administration > Applications**.
2. Complete the **Select Application** area. Fields are defined as follows:

**Editing an existing Application?**

Select the Application name from the **Application** dropdown.

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| Field | Description | Default value |
|---|---|---|
| Service Provider | Dropdown list of Service Providers. Select the Service Provider created during **Adding the Service Provider**. | VHT-ServiceProvider |
| Affiliate | Dropdown list of Affiliates. Select the Affiliate created during Adding the Affiliate. | VHT-Affiliate |
| Application | Dropdown list of each provisioned Application.<br>To create a new Application:<br>• Leave this field blank. The value for **Name** becomes the Application name.<br>To edit an existing Application:<br>• Select an Application from the dropdown list. | VHT_Outreach |
| Name | Name associated with the Application.<br>This value becomes the **Application** name. | VHT_Outreach |
| Description | Optional description for the application. If no description is added, the value defaults to the value from **Name**. | VHT_Outreach |

3. Add the outbound URL in the format: **http://localhost:8080/VIS/PlatformSupport_HVP/Outreach?MODE=HVPAvaya**
4. Add a **Fetch Time Out**. VHT recommends setting the Fetch Time Out to 5 seconds.
5. Click **Add** to add the URL to the **URLs** list.

**Notes:**

1. Use **Move Up** and **Move Down** to ensure URLs are listed in desired order.

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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.

6. Populate each field of the **License Port Allocation** section using the following table for descriptions and default values:

| Field | Description | Default Value |
|---|---|---|
| Max Available Ports | • Maximum number of ports available to the Application.<br>• Set this value to **0** to indicate a license from the parent object is being used. | 0 |
| Warn Ports | • Maximum number of in-use ports before a warning is generated.<br>• Set this value to **0** to indicate a license from the parent object is being used. | 0 |
| License Life | Amount of time (in seconds) License Manger holds a license before assuming the license is no longer in use. | 0s |

The recipient list configured in the Service Provider's **Alarm Recipients** section cascades to the Affiliate and Application sections.

7. Add the **Application Parameters**. The required application parameters are as follows:

| Key | Value | Description |
|---|---|---|
| type | application/voicexml+xml | Sets the application type to VoiceXML. |

8. Click **Save Application**.

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9. In the **Application Numbers** section, enter the DNIS range **outreach-outreach** for the Outreach application.

> **Note:**
>
> This DNIS value must also be configured in the OCC site.config.

10. Click **Add**.
11. Click **Save Application**.
12. Proceed to **Agent Priority** or **Prompt Recorder** if enabling either in your deployment.

To fully enable Outreach functionality, refer to Outreach Settings in the EyeQueue guide, and Feature Enablement in the Licensing guide to complete configuration.

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## Adding VHT Prompt Recorder Application

*Provision Prompt Recorder only if this feature is enabled for your Callback deployment.*

To create or edit the Prompt Recorder application for call treatment:

1. Log in to the management system and navigate to **Administration > Applications**.
2. Complete the **Select Application** area. Fields are defined as follows:

**Editing an existing Application?**

Select the Application name from the **Application** dropdown.

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| Field | Description | Default value |
|---|---|---|
| Service Provider | Dropdown list of Service Providers.<br>Select the Service Provider created during **Adding the Service Provider**. | VHT-ServiceProvider |
| Affiliate | Dropdown list of Affiliates.<br>Select the Affiliate created during Adding the Affiliate. | VHT-Affiliate |
| Application | Dropdown list of each provisioned Application.<br>To create a new Application:<br>• Leave this field blank. The value for **Name** becomes the Application name.<br>To edit an existing Application:<br>• Select an Application from the dropdown list. | VHT_PromptRecorder |
| Name | Name associated with the Application.<br>This value becomes the **Application** name. | VHT_PromptRecorder |
| Description | Optional description for the application. If no description is added, the value defaults to the value from **Name**. | VHT_PromptRecorder |

3. Add the outbound URL in the format: **http://localhost:8080/PRec/PRec/Begin?Tenant=VHT&MODE=HVP for HVPAvaya**
4. Add a **Fetch Time Out**. VHT recommends setting the Fetch Time Out to 5 seconds.
5. Click **Add** to add the URL to the **URLs** list.

**Notes:**

1. Use **Move Up** and **Move Down** to ensure URLs are listed in desired order.

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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.

6. Populate each field of the **License Port Allocation** section using the following table for descriptions and default values:

| Field | Description | Default Value |
|---|---|---|
| Max Available Ports | • Maximum number of ports available to the Application.<br>• Set this value to **0** to indicate a license from the parent object is being used. | 0 |
| Warn Ports | • Maximum number of in-use ports before a warning is generated.<br>• Set this value to **0** to indicate a license from the parent object is being used. | 0 |
| License Life | Amount of time (in seconds) License Manger holds a license before assuming the license is no longer in use. | 0s |

The recipient list configured in the Service Provider's **Alarm Recipients** section cascades to the Affiliate and Application sections.

7. Add the **Application Parameters**. The required application parameters are as follows:

| Key | Value | Description |
|---|---|---|
| type | application/voicexml+xml | Sets the application type to VoiceXML. |

8. Click **Save Application**.

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9. In the **Application Numbers** section, enter the DNIS range available to the Prompt Recorder application.

> **Note:**
>
> This DNIS value must also be configured in the OCC site.config.

10. Click **Add**.
11. Click **Save Application**.
12. Proceed to **Agent Priority** or **Outreach** if enabling either in your deployment.

To fully enable Prompt Recorder functionality, refer to Configuring Prompt Recorder in the Prompt Recorder guide to complete configuration.

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# Enabling SSL/TLS ciphers and options

## Overview

Enable SSL/TLS in IVG through the voice platform UI.

**For multiple IVG deployments:**

Enable SSL/TLS parameters at the Pool level. This enables these parameters for all voice platforms in the designated pool.

## Enabling SSL/TLS in the voice platform

1. Navigate to **Configuration > Holly Configuration**.
2. Select **OpenSSL** from the **Component** dropdown.
3. Select the **Pool**.
    - **TIP:** The default pool name is **holly**.
4. In **sslciphers**, enter the list of SSL ciphers for openssl.
    - For example: **"HIGH:DES:MD5:AES256-SHA256"**
5. In **ssloptions**, enter the SSL options to use from the following:
    - no_sslv2
    - no_sslv3
    - no_tlsv1
    - no_tlsv1_1
    - no_tlsv1_2

**Important:**

Escape the separator (,) when listing multiple **ssloptions** using a forward slash (\). For example:

no_sslv2\, no_sslv3\, no_tlsv1\, no_tlsv1_1\, no_tlsv1_2

6. Restart IVG for the changes to take effect.

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## Generating the self-signed certificates

The IVG installer process generates the self-signed certificates for each IVG instance, and stores them in the **/export/home/holly/etc** directory.

The certificate and key file names are referenced in the values for **httpscertificatefilename** and **httpsprivatekeyfilename**.

## Verifying available ciphers

Ciphers available for a voice platform can be checked by using the following Linux shell command:

```
openssl ciphers -V
```

**For available cipher options:**

Learn more about available cipher options at https://www.openssl.org/docs/apps/ciphers.html.

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# IVG Performance Configuration

## Overview

This topic details default performance enhancements and how these enhancements can be customized to improve IVG system performance.

## 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

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.

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## 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

As the voice platform 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. The installer in Version 3.1.0 or later automatically mounts the /tmp as a tmpfs file system with a memory size of 4GB. To configure this setting post installation, use the following command in **/etc/fstab**:

**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.

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## Voice Platform

The following sections detail voice platform requirements and recommendations (bot automatically and manually set) and how to configure them.

### Version

IVG installs Version 6.3 of the 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 voice platforms installed as a member of the pool.

To edit the voice platform performance related configuration:

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

| Field | Description |
|---|---|
| Component | Component to be configured.<br>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.

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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 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.<br>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.<br>Set this value to **Holly Voice Browser**. |
| Pool | Pool or group of IVG servers (**holly** for example). |

13. 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

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

14. Configure the **jsruntimesizekb** parameter to **40960**. This setting should improve performance in high call volume systems using JavaScript. [Manual Configuration]
15. Click **Add** or **Modify** for this parameter.
16. Configure the **Component** and **Pool** parameters as follows:

| Field | Description |
|---|---|
| Component | Component to be configured.<br>Set this value to **Holly Call Control**. |
| Pool | Pool or group of IVG servers (**holly** for example). |

17. 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** (Audio Provider - SIP) and **dthreads** (Holly Call Control) 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.

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

| Field | Description |
|---|---|
| Component | Component to be configured.<br>Set this value to **Holly Log Manager**. |

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| Field | Description |
|---|---|
| Pool | Pool or group of IVG servers (**holly** for example). |

20. Ensure the **disklogging** parameter is set to **1** (default value). [Automatic Configuration]
21. If necessary, click **Add** or **Modify** for this parameter.
22. Select **Configuration > Holly Essentials** within the IVG management system.
23. Configure the **Component** and **Pool** parameters as follows:

| Field | Description |
|---|---|
| Pool | Pool or group of IVG servers (**holly** for example). |

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

### Adjusting Resource Levels

The following 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. It is 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)

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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 the appropriate 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.

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# Configuring log purging

## Overview

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

**Note:**

Virtual Hold recommends keeping log data only as long as it is needed. If reports for a specific time period are required, Virtual Hold also recommends that these reports be run, exported to CSV files, and the supporting data purged or moved to a data warehouse.

## Update logtokeep and logtodelete

The values for logtokeep and logtodelete establish a range of how many days PostgreSQL database log records are kept.

- logtokeep - This value determines the maximum number of days PostgreSQL database log records are kept.
- logtodelete - PostgreSQL database log records up to this value (in days) are deleted.

For example, if the value for logtokeep is 10 and the value for logtodelete is 30, then the PostgreSQL database logs that fall between 11 - 30 days old will be deleted.

To update the values for logtokeep or logtodelete:

1. Edit the **/var/spool/cron/postgres** file as a root user using a Linux text editor:
2. Locate the following line:

> 00 3 * /bin/sh /export/home/postgres/9/logmgr_expire.sh holly holly holly12 *10 30* postgres >> /dev/null 2>&1

3. The fields for logtokeep and logtodelete are expressed as integers with the default values 10 and 30, respectively. Modify the fields with the required values.

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| Field | | Description | Default Value |
|---|---|---|---|
| logmgr_expire | logtokeep | Maximum number of days postgreSQL database log records are kept. This is the value set during installation in the install_ivg.cfg file. | 10 |
| | logtodelete | PostgreSQL database log records up to this value (in days) are deleted. This value is set during installation in the install_ivg.cfg file. | 30 |

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

## Update datatodelete

The value for datatodelete determines how long (in days) to keep data files inside the call data directory structure. Data files older than the datatodelete value are deleted.

To update the values for datatodelete:

1. Edit the **/var/spool/cron/holly** file as a root user using a Linux text editor:

   **/var/spool/cron/holly**

2. Locate the following line:

```
00 4 * * * /bin/sh    /export/home/holly/bin/datalog_expire.sh 10 >> /dev/null 2>$
```

3. The value following **datalog_expire.sh** is the integer value for the number of days of data to keep and is set to 10 by default. Update this value with the maximum age (in days) of data to keep.
4. Save the file.
5. Restart the Cron service for these changes to take effect.

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# Name File Sharing

## Overview

**Important:**

These instructions apply to IVG 3.1.0 or higher.

A CentOS or RHEL machine can be configured as a network drive to share name files at a common location across other CentOS or RHEL machines in a Network File System (NFS). The machine being shared is referred to as a **Server**, and the machines that share the folder are referred to as a **Client**.

Use the following steps to configure the Server that will share its folder with the Clients.

## Configure the Server

1. Install a NFS to share across all Linux machines that will share the same folder by installing the following package:

   **yum install nfs-utils nfs-utils-lib**

2. Execute the following commands to start the services and make them restart when the machine reboots:

   **chkconfig rpcbind on**
   **chkconfig nfs on**

3. Execute the following commands to make the services restart when the machine reboots:

   **service rpcbind start**
   **service nfs start**

4. Designate the directory or folder to share with the other machines by adding an entry to the **\etc\exports** file such as the following sample:

   **/usr/local/namefiles  10.10.0.42(rw,sync,no_root_squash,no_subtree_check)**

   - **\usr\local\namefiles** – Indicates the name of the folder to be shared
   - **10.10.0.42** – Indicates the IP address to share the folder with
   - **rw** - Indicates read and write access to the folder form the given IP address.

**Note:**

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Replacing the IP address with an asterisk (*) allows access to the designated folder by any host.

5. Run the following command to enable the folder:

   **exportfs -a**

## Configure the Client

Use the following instructions to configure the Client that will share the Server's folder.

1. Run the following command to install the necessary packages:

   **yum install nfs-utils nfs-utils-lib**

2. Mount the NFS folder on the Server to a folder in the Client by running the following command:

   **mount** *ServerIPAddress*:*NameFilesFolderPath*

   a. For example, if the Server IP address is 10.10.0.30 and the namefiles folder path is usr\local\tomcat7\webapps\ROOT\namefiles, the command would be:

      **mount** *IPAdress*:**/var/lib/namefiles /usr/local/tomcat7/webapps/ROOT/namefiles**

      - IPAddress - The IP address

4. Ensure the mount occurs on every server reboot by adding an entry to the **\etc\fstab** file by running the following command:

   :*NameFilesFolderPath* **nfs auto,noatime,nolock,bg,nfsvers=3,intr,tcp,actimeo=1800 0 0**

5. Run the following command on server reboot to mount fstab:

   **mount -a**

6. Repeat Steps 1-4 for each Client that will share the Server's folder.

## Example

A deployment has three IVG instances with tomcat installed:

- IVG01
- IVG02
- IVG03

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Another machine does not have IVG installed:

- SERVER1

Given the preceding information, file sharing can be enabled in two scenarios:

- Configure IVG01 as a Server and IVG02 and IVG03 as Clients
  1. Perform Steps 1-2 from the Configuring the Server steps above to install the NFS and start the services.
  2. Since HVP01 has tomcat, use the following command to designate the folder to share with the Clients:

     **/usr/local/tomcat7/webapps/ROOT/namefiles**
     **10.10.0.42(rw,sync,no_root_squash,no_subtree_check)**

  3. Enable the folder by running the command:

     **exportfs -a**

  4. Configure IVG02 and IVG03 as Clients by executing Steps 1-5 from the Configuring the Client steps.
- Configure SERVER1 as a Server and IVG01, IVG02, and IVG03 as Clients.
  1. Perform Steps 1-2 from the Configuring the Server steps above to install the NFS and start the services.
  2. Since SERVER1 does not have tomcat, any folder can be selected as the NFS shared folder. For example, **var/lib/namefiles**. Use the following command to designate the folder to share with the Clients:

     **/var/lib/namefiles 10.10.0.42(rw,sync,no_root_squash,no_subtree_check)**

  3. Enable the folder by running the command:

     **exportfs -a**

  4. Configure IVG01, IVG02, and IVG03 as Clients by executing Steps 1-5 from Configuring the Client.

**Important:**

In either scenario, if the NFS machine is down, then the clients cannot access the name file share.

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# Configuring SMTP Server and Sentinel Email for IVG

## Overview

The Interactive Voice Gateway (IVG) management system has the ability to generate alarms when workers are stopped, started, or down. These alarms are sent over an SMTP server, which acts as a relay host to send the alerts.
The Sentinel, a process which monitors the Foreman and Configuration Manager, can also generate alerts should one of the monitored applications stop or fail.

The SMTP server and Sentinel email are configured during IVG Installation, but can also be configured post-installation by using the following steps.

## Configuring SMTP Server

**Important:**

If the values for **smtpserver**, **smtpuser**, and **smtppwd** were configured during IVG Installation, executing the manual configuration will override the values written by the installer.

To configure the SMTP server:

1. Configure postfix smtp secure password file by running the following echo command:

   **>echo "***smtpserver smtpuser*:*smtppwd***" > /etc/postfix/sasl_passwd**

   Example:

   ```
   >echo "196.10.10.1 installer@mobi.com:testing" > /etc/postfix/sasl_passwd
   ```

2. Verify the contents of the **/etc/postfix/sasl_passwd** file.
3. Configure the relay host using the following echo command:

   **>postconf -e 'relayhost = '***relayhostIPaddress* **=' '**

   Example:

   ```
   >postconf -e 'relayhost = '196.10.10.1"
   ```

4. Verify action by running the following command:

   **>postconf -n |grep '^relayhost ='**

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5. Verify the output is similar to:

   > Relayhost=196.10.10.1

6. Enable SMTP secure authentication using the following echo command:

   **>postconf -e 'smtp_sasl_auth_enable = yes'**

7. Verify action by running the following echo command:

   **>postconf -n |grep '^smtp_sasl_auth_enable ='**

8. Verify output of the echo command is similar to:

   > smtp_sasl_auth_enable = yes

9. Set a secure SMTP password file for postfix using the following echo command:

   **>postconf -e 'smtp_sasl_password_maps = hash:/etc/postfix/sasl/password**

10. Verify action by running the following echo command:

    **>postconf -n |grep '^smtp_sasl_password_maps='**

11. Verify the output of the echo command is similar to:

    > smtp_sasl_password_maps = hash:/etc/postfix/sasl_passwd

12. Allow the postfix to use plain text authentication using the following echo command:

    **>postconf -e 'smtp_sasl_security_options='**

13. Verify action by running the following echo command:

    **>postconf -n |grep '^smtp_sasl_security_options ='**

14. Verify the output of the echo command is similar to:

    > smtp_sasl_security_options =

**Important:**

The configuration parameter **smtp_sasl_security_options** should not be set.

15. Secure the password file using the following echo commands:

    **>chowm root:root /etc/postfix/sasl_password**

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**>chmod 600 /etc/postfix/sasl_psswd**

16. Hash the password file to generate the password database file using the following echo command:

    **>postmap /etc/postfix/sasl_psswd**

17. Verify action by verifying the **/etc/postfix/sasl_psswd.db** file is generated.
18. Restart postfix and check its status by running the following echo commands:

    **>/etc/init./d/postfix restart**

    **>/etc/init.d/postfix status**

19. Log in using the Holly user and restart the subagent by running the following echo commands:

    **>su - holly**

    **>fm start subagent**

20. Verify the subagent status by running the following echo command:

    **>fm status**

**Note:**

It is recommended to wait a minute prior to running the **>fm status** command.

20. Verify the status reads **OK**.
21. Send a test email by running the following echo command:

    **>echo "this is a test email." | mail -s "send mail config testing."** *smtpuser*

**Important:**

The value for *smtpuser* should be the email address configured in Step 1.

22. Verify the email was sent to the **smtpuser** email address.
23. Check **/ver/log/mailog** and verify the email was sent using the configured smtp. The log should resemble the following:

```
Nov 29 04:21:19 installhvp02 postfix/pickup[21520]: 797DE22070D: uid=5431 from=<holly>
Nov 29 04:21:19 installhvp02 postfix/cleanup[15570]: 797DE22070D: message-id=<20161129092119.
797DE22070D@installhvp02.qalab.local>
Nov 29 04:21:19 installhvp02 postfix/qmgr[8332]: 797DE22070D: from=<holly@installhvp02.qalab.local>,
size=469, nrcpt=1 (queue active)
Nov 29 04:21:19 installhvp02 postfix/smtp[15593]: 797DE22070D: to=<developer@developer.com>, relay=196.
10.10.1[196.10.10.1]:25, delay=0.11, delays=0.04/0.06/0.01/0.01, dsn=2.0.0, status=sent (250 Queued (0.000
```

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```
seconds))
Nov 29 04:21:19 installhvp02 postfix/qmgr[8332]: 797DE22070D: removed
```

**Notes:**

- The value for **to** should be the **smtpuser** email address.
- The value for **relay** should be the value for **smtpserver**.
- The value for **status** should be **sent**.

After configuring the SMTP server, user, and password, alarms can be configured in the management system by navigating to **Configuration > Holly Alarms**.

# Configuring Sentinel Email

After configuring the SMTP server, a recipient must be configured to receive the email alerts. To configure an email recipient:

1. Navigate to **/export/home/holly/bin/sentinel**
2. Locate the **MAILTO** line.
3. Add the recipient email address.
4. Save the file.
5. Run the following command to restart Sentinel:

   **sentinelctl start**

## Configuring Sentinel Polling Period

The Sentinel polls the status of the Foreman and Configuration Manager every five minutes in a 60 minute period. Update the polling frequency by:

1. Navigate to **/var/spool/cron/holly**
2. Locate the **bin/sentinel** line. The default values indicate a polling frequency of every five minutes within a 60 minute period:

```
0,5,10,15,20,25,30,35,40,45,50,55 * * * * bin/sentinel
```

3. Update the integer string with the desired polling frequency for a 60 minute period. The following example represents a polling interval of every 15 minutes:

```
0,15,30,45 * * * * bin/sentinel
```

4. Save the file.
5. Restart the Cron service by executing the following commands:

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- **/sbin/service crond stop**
- **/sbin/service crond start**

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# VIS Configuration for IVG

## Overview

This topic details purpose and locations of a variety of IVG-related items such as:

- VIS Toolkit.properties file
- VIS .war file
- VIS voice files
- VIS log files
- Holly log files
- IVG External Media Files
- VIS to Platform Toolkit (PTK) Configuration

## VIS Toolkit.properties File

The toolkit.properties file for VIS contains various information such as the properties used to configure the VIS published to the local Tomcat server. This file is located in the ...\etc\VirtualHold directory and can be replaced using normal file copy procedures. No restart is required.

## VIS.war File

The VIS.war file contains the default VIS application. This file and the VIS voice files are required to successfully install VIS. The VIS.war file is located in the ...\usr\local\Tomcat7\webapps directory. To replace this file:

1. Back up the current Apache Software Foundation directory.
2. Stop the Apache Tomcat service.
3. Navigate to the \Tomcat\webapps directory and delete the unpacked .war file as well as the zipped .war file.
4. Navigate to the \Tomcat\work\Catalina\localhost directory (this is the cache directory) and delete the unpacked .war file
5. Paste the new .war file (ensuring it has the same name as the previous .war file) into the Tomcat7\ webapps directory.
6. Start the Tomcat service. This automatically expands out the .war file into the appropriate directories.
7. Verify that the new .war file was pulled to the cache in Tomcat\work\Catalina\localhost.

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## VIS Voice Files

The VIS voice files contain the default set of voice prompts (.wav files) for supported languages. These files and the VIS.war file are required to successfully install VIS. These voice files are located in the ...\usr\local\Tomcat7\webapps\Voices directory.

To replace the Voices directory:

1. Back up the current Voices directory.
2. Stop the Apache Tomcat service.
3. Navigate to the \Tomcat\webapps directory and delete the Voices directory as well as any existing zipped voice files.
4. Paste the new Voices directory into the Tomcat7\webapps directory.
5. Start the Tomcat service.

To replace individual voice files:

1. Back up the current Voices directory.
2. Stop the Apache Tomcat service.
3. Navigate to the \Tomcat\webapps\Voices directory and delete the individual voice file to be replaced.
4. Paste the new voice file into the Tomcat7\webapps\Voices directory.
5. Start the Tomcat service.

# VIS Log Files

The VIS log files record the messages generated by the VIS application and are located in the ...\usr\local\Tomcat7\logs directory.

## Holly Log Files

The Holly log files record the messages generated by the Holly system and are located in the ...\export\home\holly\logs directory.

## 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.

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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.

## VIS to Platform Toolkit (PTK) Configuration

To configure VIS with 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* - 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 - 4 on each VIS/IVG server.

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