Avaya Solution & Interoperability Test Lab

Application Notes for Virtual Hold Concierge with Avaya Communication Manager using Avaya Application Enablement Services – Issue 1.0

Abstract

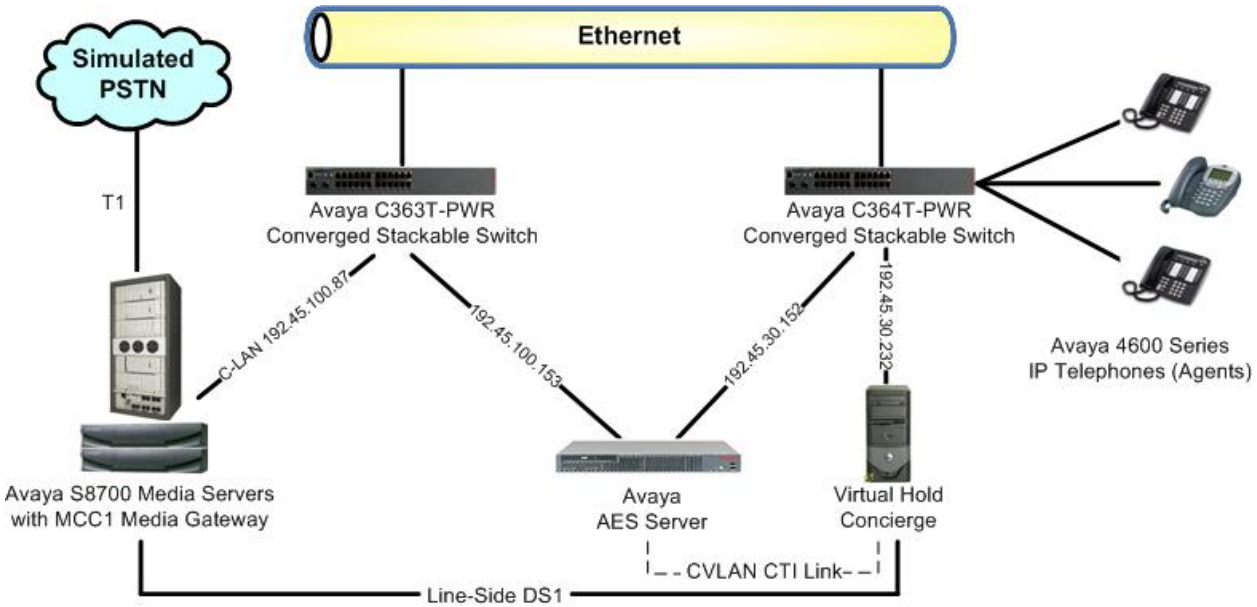
These Application Notes describe the configuration steps required for Virtual Hold Concierge to successfully interoperate with Avaya Communication Manager using Avaya Application Enablement Services. Information in these Application Notes has been obtained through compliance testing and additional technical discussions. Testing was conducted via the Developer*Connection* Program at the Avaya Solution and Interoperability Test Lab.

1. Introduction

Virtual Hold Concierge is a contact center solution that provides intelligent queue management when incoming call traffic exceeds agent availability. Concierge calculates and informs the caller of expected wait time, maintains the caller position in a virtual queue, and calls the caller back when the caller's turn comes up. The CTI integration with Avaya Communication Manager is achieved through the Avaya Application Enablement Services (AES) CVLAN service.

Concierge uses the Avaya AES CVLAN service to query and monitor the skill/ACD queues. The information obtained from the CTI event reports is used to calculate the expected wait time. All incoming calls are routed by Concierge using the CTI adjunct routing capabilities. When the expected wait time for the skill/ACD queue reaches a defined threshold, Concierge can specify the call to be routed to an available line-side DS1 station that terminates to Concierge. The internal Interactive Voice Response (IVR) component of Concierge will play the expected wait time announcement and provide the caller with options to continue to wait in queue or to be called back.

Callers that decide to continue to wait in queue will be transferred by Concierge to the skill/ACD queue. Callers that decide to be called back will be prompted for a callback number and time, and Concierge will track the caller position in a virtual queue. When it is almost time for the caller to be serviced from the virtual queue, Concierge will place a callback call to the caller, and transfer the call to the skill/ACD queue with priority, such that the call will be placed in front of the queue. The callback calls are originated from available line-side DS1 stations. The DS1 circuit pack on Avaya Communication Manager is physically connected to the Dialogic T1/E1 card on Concierge. Callback calls are originated by Concierge from an available port on the Dialogic T1/E1 card, with call progress tones and tone detection handled by Concierge. When the callback call is connected and accepted by the caller, Concierge then utilizes the CTI domain control capabilities to transfer the callback call to the skill/ACD queue.



2. Equipment and Software Validated

The following equipment and software were used for the sample configuration provided:

Equipment	Software
Avaya S8700 Media Servers	Communication Manager 3.0.1, load 346.0
Avaya MCC1 Media Gateway • TN799DP C-LAN Circuit Pack • TN464GP DS1 Interface	 HW01 FW015 HW02 FW018
Avaya Application Enablement Services	3.0, build 46
Avaya C363T-PWR Converged Stackable Switch	4.5.14
Avaya C364T-PWR Converged Stackable Switch	4.5.14
Avaya 4600 Series IP Telephones	1.8.3 (4624), 2.1.3 (4610SW)
Virtual Hold Concierge on Dell Optiplex 170L with Windows 2003 Server • Dialogic D240JCT-T1 Card	6.2.0.1

3. Configure Avaya Communication Manager

This section provides the procedures for configuring Avaya Communication Manager. The procedures include the following areas:

- Verify Avaya Communication Manager License
- Administer IP node name for C-LAN
- Administer IP interface for C-LAN
- Administer data module for C-LAN
- Administer IP services for AES transport link
- Administer CTI link for CVLAN service
- Administer vectors and VDNs
- Administer line-side DS1 stations

The detailed administration of contact center devices, such as ACD/skill groups, logical agents and station extensions are assumed to be in place and are not covered in these Application Notes.

For the compliance testing, a skill group number of "101" with extension number "54101" was created. This information will be used to configure the vectors in **Section 3.7** and the Virtual Hold Concierge agent groups in **Section 5.3**.

3.1. Verify Avaya Communication Manager License

Log into the System Access Terminal (SAT) to verify that the Avaya Communication Manager license has proper permissions for features illustrated in these Application Notes. Use the "display system-parameters customer-options" command to verify that both the **ASAI Link Core Capabilities** and **ASAI Link Plus Capabilities** customer options are set to "y" on **Page 3**.

```
display system-parameters customer-options                    Page   3 of  11
                              OPTIONAL FEATURES

    Abbreviated Dialing Enhanced List? y          Audible Message Waiting? y
        Access Security Gateway (ASG)? n              Authorization Codes? y
        Analog Trunk Incoming Call ID? y Backup Cluster Automatic Takeover? n
 A/D Grp/Sys List Dialing Start at 01? y                       CAS Branch? n
Answer Supervision by Call Classifier? y                         CAS Main? n
                                   ARS? y                Change COR by FAC? n
                 ARS/AAR Partitioning? y  Computer Telephony Adjunct Links? y
          ARS/AAR Dialing without FAC? y   Cvg Of Calls Redirected Off-net? y
          ASAI Link Core Capabilities? y                       DCS (Basic)? y
          ASAI Link Plus Capabilities? y                DCS Call Coverage? Y
```

Navigate to **Page 6**, and verify that the **Vectoring (Basic)** customer option is set to "y".

```
display system-parameters customer-options                    Page   6 of  11
                        CALL CENTER OPTIONAL FEATURES

                          Call Center Release: 3.0

                                 ACD? y                         Reason Codes? y
                       BCMS (Basic)? y             Service Level Maximizer? n
         BCMS/VuStats Service Level? y            Service Observing (Basic)? y
  BSR Local Treatment for IP & ISDN? n    Service Observing (Remote/By FAC)? y
                  Business Advocate? n             Service Observing (VDNs)? y
                    Call Work Codes? y                              Timed ACW? y
      DTMF Feedback Signals For VRU? n                  Vectoring (Basic)? y
                  Dynamic Advocate? n               Vectoring (Prompting)? y
       Expert Agent Selection (EAS)? y            Vectoring (G3V4 Enhanced)? Y
```

3.2. Administer IP Node Name for C-LAN

Use the "change node-names ip" command, and add an entry for the C-LAN that will be used for connectivity to the AES server. In this case, "clan-1b09" and "192.45.100.87" are entered as **Name** and **IP Address**. The actual node name and IP address may vary. Submit these changes.

```
change node-names ip
                                  IP NODE NAMES
    Name                 IP Address
clanP2-1a04            192.168.61 .21
clanP27-2a03           172.16 .252.200
clanP7-3a04            192.168.1  .10
default                0  .0  .0  .0
clan-1b09              192.45 .100.87
```

3.3. Administer IP Interface for C-LAN

Add the C-LAN to the system configuration using the "add ip-interface 1b09" command. Note that the actual slot number may vary. In this case, "1b09" is used as the slot number. Enter the C-LAN node name assigned from **Section 3.2** into the **Node Name** field. The **IP Address** field will be populated automatically.

Enter proper values for the **Subnet Mask** and **Gateway Address** fields. In this case, "255.255.255.0" and "192.45.100.1" are used to correspond to the network configuration in these Application Notes. Set the **Enable Ethernet Port** field to "y", and use a separate **Network Region** for the C-LAN dedicated for AES connectivity. Default values may be used in the remaining fields. Submit these changes.

```
add ip-interface 1b09
                                  IP INTERFACES


                  Type: C-LAN
                  Slot: 01B09
           Code/Suffix: TN799  D
             Node Name: clan-1b09
            IP Address: 192.45 .100.87
           Subnet Mask: 255.255.255.0
       Gateway Address: 192.45 .100.1
  Enable Ethernet Port? y
        Network Region: 2
                  VLAN: n

Number of CLAN Sockets Before Warning: 400

                               ETHERNET OPTIONS
                  Auto? y
```

3.4. Administer Data Module for C-LAN

Add a new data module using the "add data-module n" command, where "n" is an available extension. Enter the following values:

- **Name:** A descriptive name.
- **Type:** "ethernet"
- **Port:** Same slot number from **Section 3.3** above and port "17".
- **Link:** An available link number.

```
add data-module 2001
                              DATA MODULE

  Data Extension: 2001            Name: CLAN 1B09 Data Module
            Type: ethernet
            Port: 01B0917
            Link: 11

Network uses 1's for Broadcast Addresses? Y
```

3.5. Administer IP Services for AES Transport Link

Administer the transport link to the AES server with the "change ip-services" command. Add an entry with the following values for fields on **Page 1**:

- **Service Type:** "AESVCS"
- **Enabled:** "y"
- **Local Node:** C-LAN node name from **Section 3.2**.
- **Local Port:** Retain the default value of "8765".

```
change ip-services                                          Page   1 of   3

                                  IP SERVICES
 Service     Enabled     Local       Local       Remote      Remote
  Type                   Node        Port        Node        Port
SAT           y      clanP27-2a03    5023    any             0
SAT           y      clan-1b04       5023    any             0
AESVCS        y      clan-1b04       8765
AESVCS        y      clan-1b09       8765
```

Proceed to **Page 3**, and enter the following values:

- **AE Services Server:** Name obtained from the AES server, in this case "AES-DevCon2".
- **Password:** Same password to be administered on the AES server.
- **Enabled:** "y"

Note that the name and password entered for the **AE Services Server** and **Password** fields are case sensitive, and must match the name and password on the AES server. The administered name for the AES server is created as part of the AES installation, and can be obtained from the AES server by typing "uname –n" at the Linux command prompt. The same password entered in the screen below will need to be set on the AES server, as described in **Section 4.3.**

```
change ip-services                                          Page   3 of   3
                           AE Services Administration

   Server ID    AE Services       Password          Enabled    Status
                   Server
      1:      devconaes01       *                   y        in use
      2:      AES-DevCon2       *                   y
      3:
```

3.6. Administer CTI Link for CVLAN Service

Add a CTI link using the "add cti-link n" command, where "n" is an available CTI link number. Enter an available extension number in the **Extension** field. Note that the CTI link number and extension number may vary. Enter "ASAI-IP" in the **Type** field, and a descriptive name in the **Name** field. Default values may be used in the remaining fields. Submit these changes.

```
add cti-link 3                                              Page   1 of   2
                                  CTI LINK
 CTI Link: 3
Extension: 2203
     Type: ASAI-IP
                                                                  COR: 1
     Name: Virtual Hold CVLAN CTI Link
```

3.7. Administer Vectors and VDNs

Administer a set of vectors and Vector Directory Numbers (VDNs) for the following purposes:

- **Entry:** To provide adjunct routing and failure coverage.
- **Holding:** To queue incoming calls to the skill/ACD group at medium priority.
- **Callback:** To queue callback calls to the skill/ACD group at high priority.

3.7.1. Entry Vector and VDN

Modify a vector using the "change vector n" command, where "n" is an existing vector number. The vector will be used to provide adjunct routing to the CTI link defined previously in **Section 3.6**. Note that the vector **Number**, **Name**, **wait-time** step, and **route-to number** may vary. The **route-to number** is used as the covering point to provide failure coverage in case of failures from adjunct route.

```
change vector 991                                          Page   1 of   3
                                CALL VECTOR

    Number: 991              Name: VH Entry
Multimedia? 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? n   Holidays? n
 Variables? n   3.0 Enhanced? n
01 adjunct      routing link 3
02 wait-time    20  secs hearing silence
03 route-to     number 27992           with cov n if unconditionally
04
```

Add a VDN using the "add vdn n" command, where "n" is an available extension number. Enter a descriptive name for the **Name** field, and the vector number from above for the **Vector Number** field. Retain the default values for all remaining fields.

```
add vdn 27991                                              Page   1 of   2
                           VECTOR DIRECTORY NUMBER

                            Extension: 27991
                                 Name: VH Entry VDN
                       Vector Number: 991
```

3.7.2. Holding Vector and VDN

Modify a vector to queue incoming calls to the skill/ACD group at medium priority. Note that the vector **Number**, **Name**, **queue-to skill**, and **wait-time** step may vary.

```
change vector 992                                          Page   1 of   3
                                CALL VECTOR

    Number: 992              Name: VH Holding
Multimedia? 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? n   Holidays? n
 Variables? n   3.0 Enhanced? n
01 queue-to     skill 101  pri m
02 wait-time    20  secs hearing ringback
03
```

Add a VDN with an available extension as shown below. Enter a descriptive name for the **Name** field, and the vector number from above for the **Vector Number** field.

```
add vdn 27992                                              Page   1 of   2
                          VECTOR DIRECTORY NUMBER

                            Extension: 27992
                                 Name: VH Holding
                        Vector Number: 992
```

3.7.3. Callback Vector and VDN

Modify a vector to queue callback calls to the skill/ACD group at high priority. Note that the vector **Number**, **Name**, **queue-to skill**, and **wait-time** step may vary.

```
change vector 993                                          Page   1 of   3
                                CALL VECTOR

    Number: 993              Name: VH Callback
Multimedia? 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? n   Holidays? n
 Variables? n   3.0 Enhanced? n
01 queue-to     skill 101  pri h
02 wait-time    20  secs hearing ringback
03
```

Add a VDN with an available extension as shown below. Enter a descriptive name for the **Name** field, and the vector number from above for the **Vector Number** field.

```
add vdn 27993                                              Page   1 of   2
                          VECTOR DIRECTORY NUMBER

                            Extension: 27993
                                 Name: VH Callback
                        Vector Number: 993
```

3.8. Administer Line-Side DS1 Stations

Administer the line-side DS1 stations. Each line-side DS1 station is a port off of the DS1 circuit pack that is physically connected to the Dialogix T1/E1 card in the Virtual Hold Concierge server. Typically half of the port capacities are configured to handle inbound calls, and the other half are configured to handle outbound callback calls. For the compliance testing, two ports were configured for handling of inbound calls, and two ports for handling of outbound callback calls. The customer can vary the number of ports to be used for each purpose.

3.8.1. Inbound Line-Side DS1 Stations

Use the "add station n" command, where "n" is an available extension number. Enter the following values for the specified fields, and retain the default values for all remaining fields. Submit these changes.

- **Type:** "DS1FD" to indicate line-side DS1.
- **Port:** An available port from the DS1 circuit pack.
- **Name:** A descriptive name.

```
add station 22291                                          Page   1 of   3
                                  STATION

Extension: 22291                        Lock Messages? n          BCC: 0
     Type: DS1FD                        Security Code:             TN: 1
     Port: 01B1701                   Coverage Path 1:             COR: 1
     Name: VH Inbound Line #1        Coverage Path 2:             COS: 1
                                     Hunt-to Station:           Tests? y
```

Repeat the "add station n" command to add the desired number of line-side DS1 stations to be used for handling of inbound calls. When possible, use consecutive extension numbers for the line-side DS1 stations, for ease of configuring Virtual Hold Concierge.

3.8.2. Outbound Line-Side DS1 Stations

The procedure for creating the line-side DS1 stations for outbound callback calls is exactly the same as the procedure for creating line-side DS1 stations for inbound calls. Follow the procedure described in **Section 3.8.1** to create the desired number of line-side DS1 stations for handling of outbound callback calls.

```
add station 22295                                          Page   1 of   3
                                   STATION

Extension: 22295                         Lock Messages? n          BCC: 0
     Type: DS1FD                         Security Code:             TN: 1
     Port: 01B1705                     Coverage Path 1:            COR: 1
     Name: VH Outbound Line #1         Coverage Path 2:            COS: 1
                                       Hunt-to Station:          Tests? y
```

Below is a listing of all line-side DS1 stations created for the compliance testing.

```
list station 22291 count 4

                                 STATIONS

Ext/     Port/    Name/                        Room/         Cv1/ COR/    Cable/
 Type    Hunt-to  Surv GK NN          Move     Data Ext      Cv2  COS     Jack

22291    01B1701  VH Inbound Line #1                              1
 DS1FD                                no                         1
22292    01B1702  VH Inbound Line #2                              1
 DS1FD                                no                         1
22295    01B1705  VH Outbound Line #1                             1
 DS1FD                                no                         1
22296    01B1706  VH Outbound Line #2                             1
 DS1FD                                no                         1
```

3.9. Administer Hunt Group

Administer a hunt group to be used for routing of inbound calls to the line-side DS1 stations. Use the "add hunt-group n" command, where "n" is an available hunt group number. Enter the following values for the specified fields, and retain the default values for the remaining fields.

- **Group Name:** A descriptive name.
- **Group Extension:** An available extension number.

```
add hunt-group 234                                          Page   1 of  60
                                HUNT GROUP

           Group Number: 234                              ACD? n
             Group Name: VH Inbound DS1                 Queue? n
        Group Extension: 54234                         Vector? n
             Group Type: ucd-mia                Coverage Path:
                     TN: 1          Night Service Destination:
                    COR: 1                    MM Early Answer? n
          Security Code:               Local Agent Preference? n
 ISDN/SIP Caller Display:
```

Navigate to **Page 3** of the **HUNT GROUP** screen, and enter the extensions of all line-side DS1 stations to be used for handling of inbound calls from **Section 3.8.1**. Submit these changes.

```
add hunt-group 234                                          Page   3 of  60
                                HUNT GROUP
          Group Number: 234     Group Extension: 54234     Group Type: ucd-mia
  Member Range Allowed: 1 - 1500       Administered Members (min/max): 1   /2
                                           Total Administered Members: 2
GROUP MEMBER ASSIGNMENTS
      Ext      Name (24 characters)           Ext      Name (24 characters)
   1: 22291    VH Inbound Line #1         14:
   2: 22292    VH Inbound Line #2         15:
   3:                                     16:
```

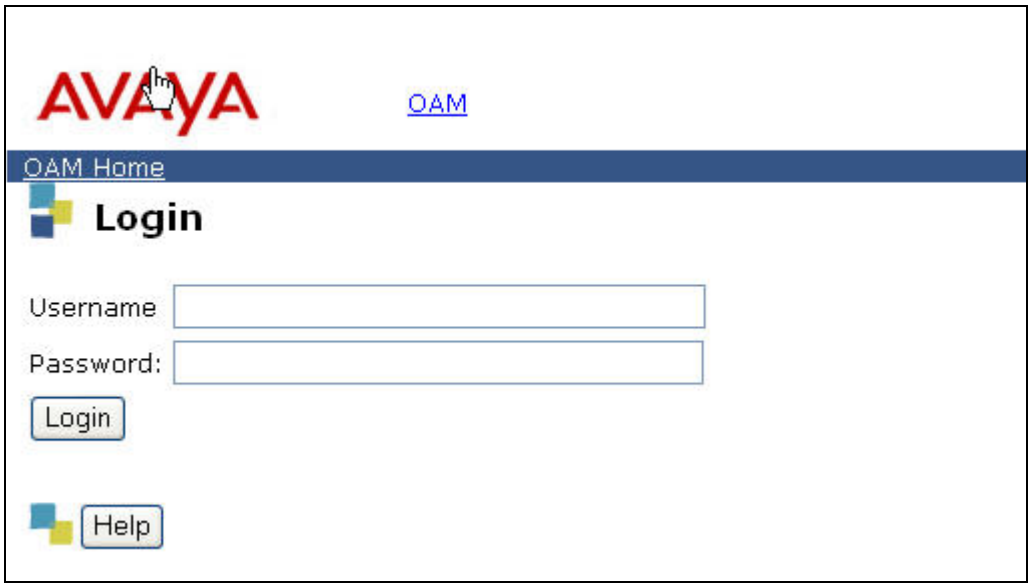
4. Configure Avaya Application Enablement Services

This section provides the procedures for configuring Avaya Application Enablement Services. The procedures include the following areas:

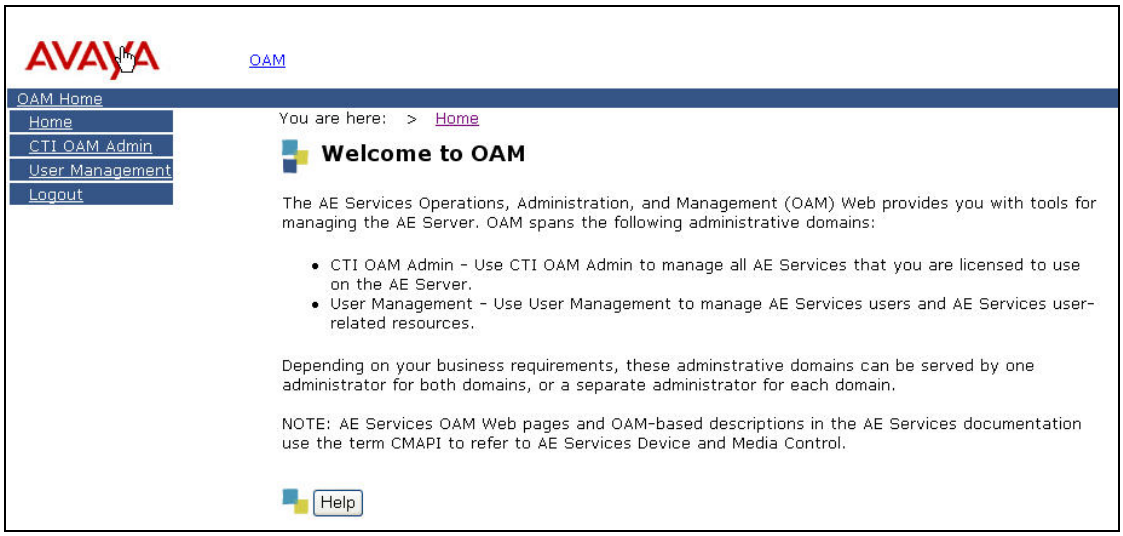
- Verify Avaya Application Enablement Services License
- Administer local IP
- Administer switch connection
- Administer CVLAN link

4.1. Verify Avaya Application Enablement Services License

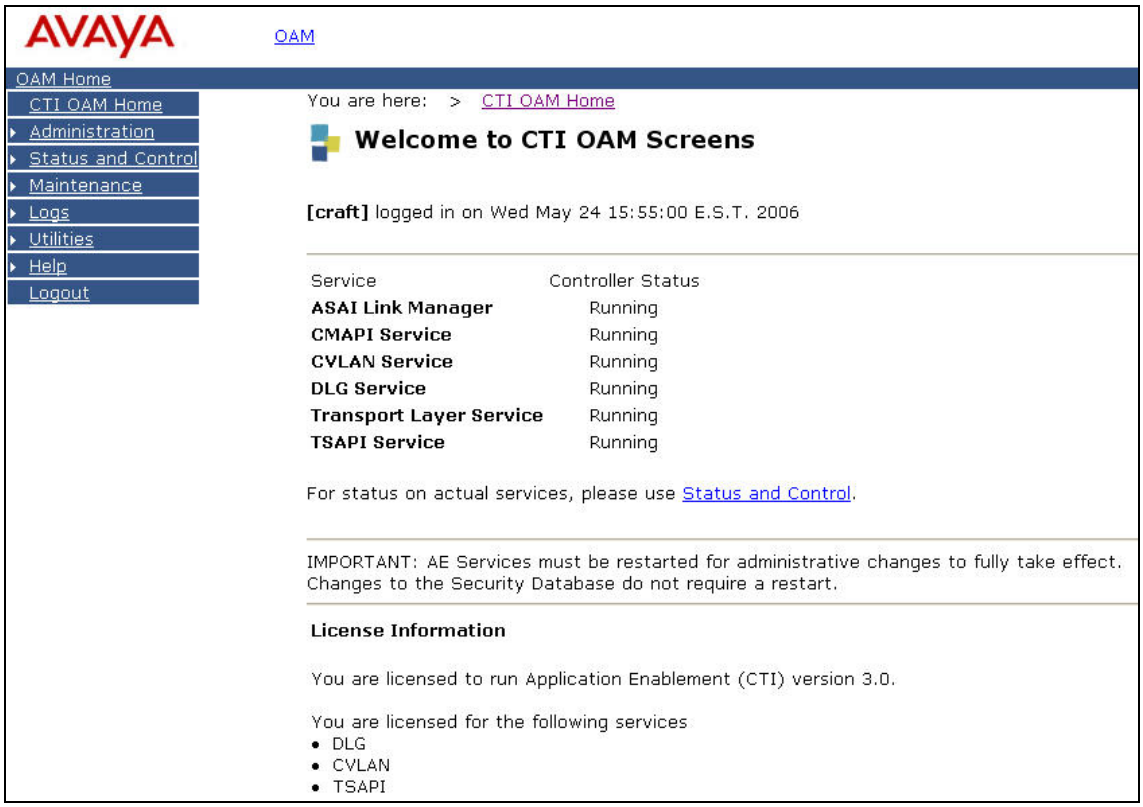
Access the AES OAM web based interface by using the URL "https://ip-address:8443/MVAP" in an Internet browser window, where "ip-address" is the IP address of the AES server. The **Login** screen is displayed as shown below. Note that the AES OAM includes two separate administrative accounts, one to access CTI OAM Admin and a separate one to access User Management. Log in using the CTI OAM Admin user name and password.



The **Welcome To OAM** screen is displayed, as shown below. Select **OAM Home > CTI OAM Admin** from the left pane.



The **Welcome to CTI OAM Screens** is displayed. Verify that the Avaya Application Enablement Services license has proper permissions for the features illustrated in these Application Notes by ensuring the CVLAN service is licensed, as shown in the bottom of the screen below. If the CVLAN service is not licensed, contact the Avaya sales team or business partner for a proper license file.

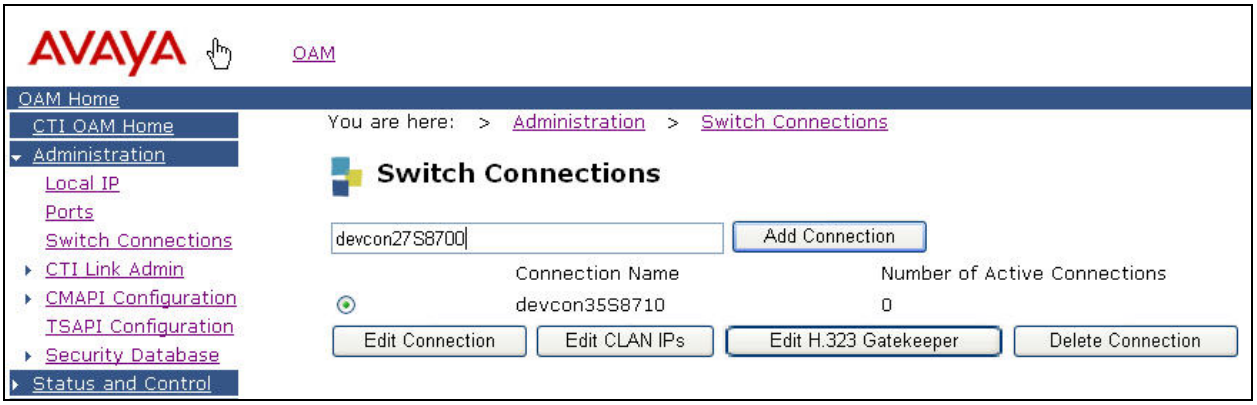


4.2. Administer Local IP

From the **CTI OAM Home** menu in the left pane, select **Administration > Local IP**. The **Local IP** screen is displayed into the right pane, as shown below. In the **Client Connectivity** field, select the AES server IP address that will be used to connect to Virtual Hold Concierge. In the **Switch Connectivity** field, select the AES server IP address that will be used to connect to Avaya Communication Manager. Click on **Apply Changes**.

4.3. Administer Switch Connection

From the **CTI OAM Home** menu in the left pane, select **Administration > Switch Connections**. The **Switch Connections** screen is displayed, as shown below. Enter a descriptive name for the switch connection and click on **Add Connection**. In this case, "devcon27S8700" is used. Note that the actual switch connection name may vary.



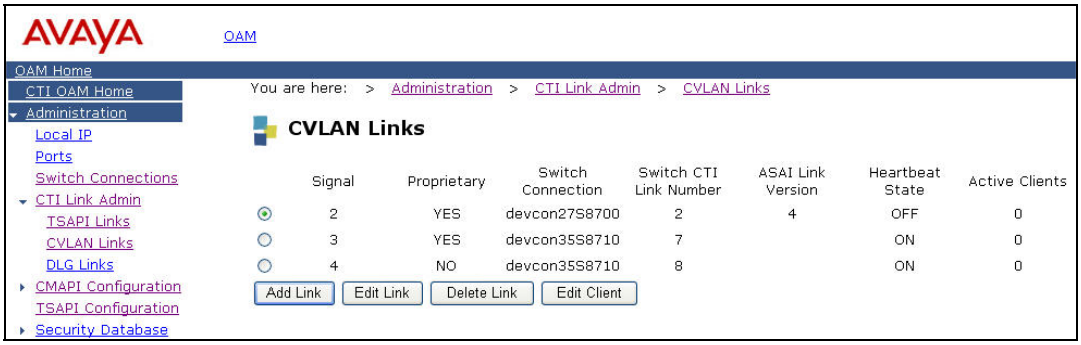
Next, the **Set Password – devcon27S8700** screen is displayed. Enter the same password that was administered in the Avaya Communication Manager **IP SERVICES** screen from **Section 3.5**, and re-enter the same password in the **Confirm Switch Password** field. Retain the check in the **SSL** check box. Had the switch been an Avaya DEFINITY Server G3csi, the **SSL** would need to be unchecked. Click on **Apply**.

The **Switch Connections** screen is displayed next, as shown below. Select the newly added switch connection name from the listing, and click on **Edit CLAN IPs**.

The **Edit CLAN IPs – devcon27S8700** screen is displayed next. Enter the host name or IP address of the C-LAN used for AES connectivity from **Section 3.2**. In this case, "192.45.100.87" is used. Click on **Add Name or IP**.

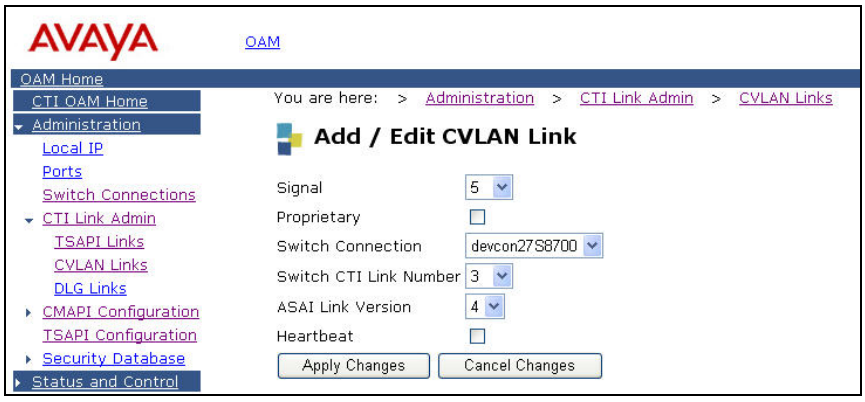
4.4. Administer CVLAN Link

To administer a CVLAN link, select **Administration > CTI Link Admin > CVLAN Links** from the **CTI OAM Home** menu in the left pane. The **CVLAN Links** screen is displayed, as shown below. Click on **Add Link**.

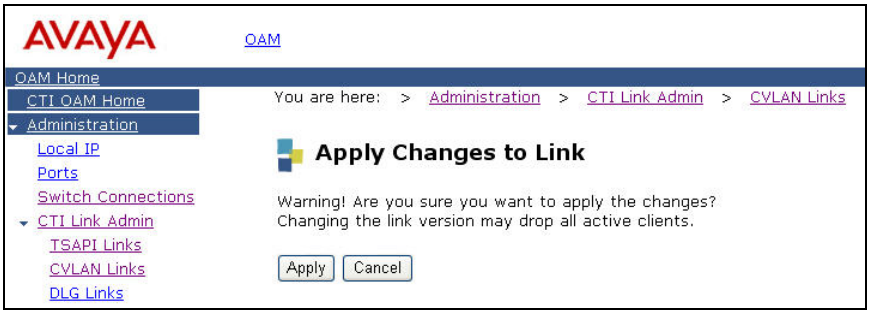


The **Add/Edit CVLAN Link** screen is displayed next. Select the following values for the specified fields, and click on **Apply Changes**.

- **Signal:** An available signal number from the drop down list.
- **Switch Connection:** Name of switch connection from **Section 4.3**.
- **Switch CTI Link Number:** CTI link number from **Section 3.6**.
- **ASAI Link Version:** Version "4" from the drop down list.

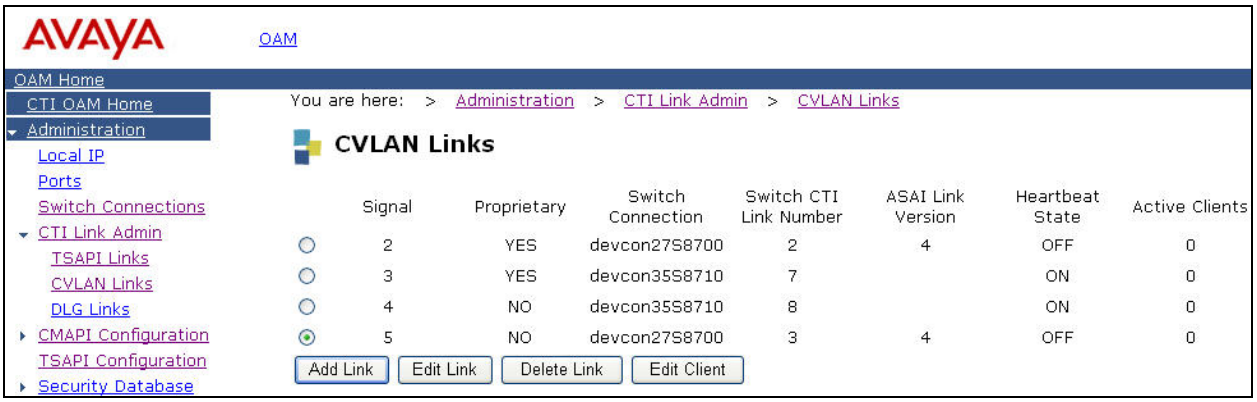


The **Apply Changes to Link** screen is displayed. Click on **Apply**.

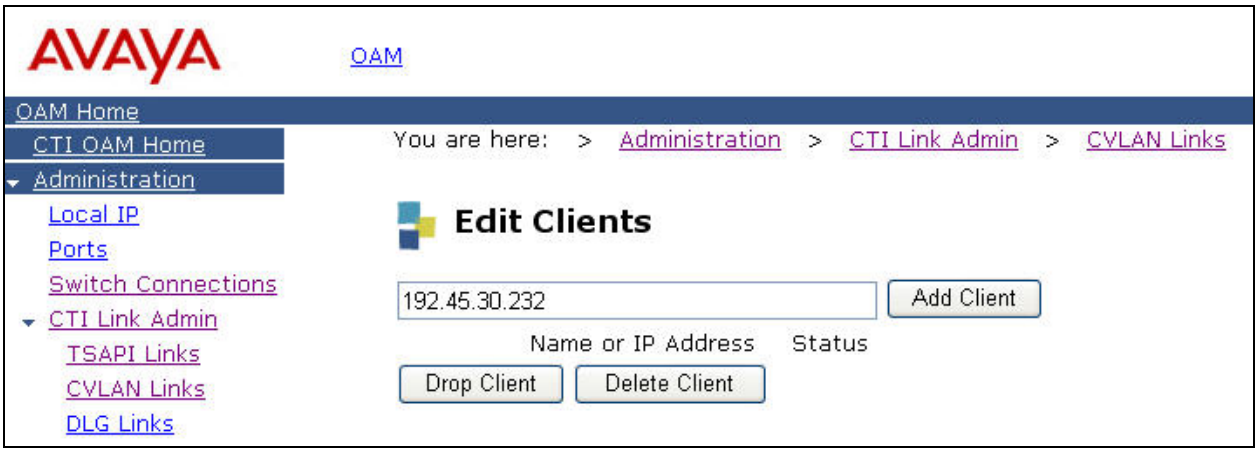


4.5. Administer CVLAN Client

The **CVLAN Links** screen is displayed again and updated with the newly added CVLAN link. Select the radio button next to the newly added CVLAN link, and click on **Edit Client**.



The **Edit Clients** screen is displayed next. Enter the IP address of the Virtual Hold Concierge server, in this case "192.45.30.232", and click on **Add Client**.



5. Configure Virtual Hold Concierge

This section provides the procedures for configuring Virtual Hold Concierge. The procedures include the following areas:

- Launch configuration wizard
- Administer switch connection
- Administer agent groups
- Administer IVR servers and extensions
- Administer queues
- Administer incoming extensions

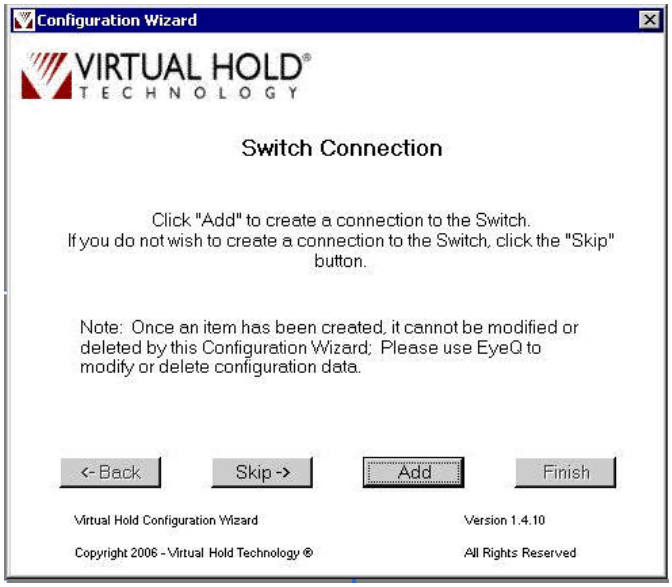
Virtual Hold Concierge can be configured on a single server or with components distributed across multiple servers. For ease of compliance testing, the configuration used a single server hosting all components.

5.1. Launch Configuration Wizard

From the Virtual Hold Concierge server, navigate to **Start > Programs > VHT > VHT Configuration Wizard** to launch the Configuration Wizard. The **Welcome to the Virtual Hold Configuration Wizard** screen is displayed, as shown below. Click **Configure** to proceed.

5.2. Administer Switch Connection

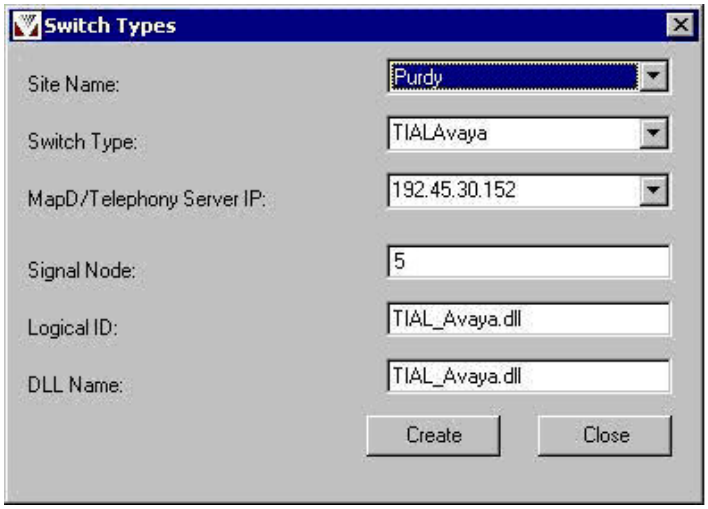
The **Switch Connection** screen is displayed. Click **Add** to create a connection to the switch.



The **Switch Types** screen is displayed next. Enter the following values for the specified fields.

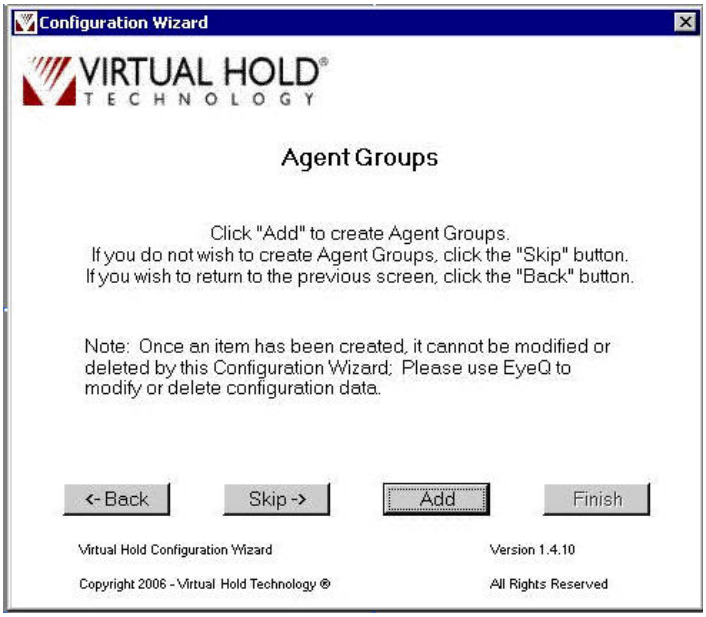
- **Switch Type:** Select "TIALAvaya" from the drop down list.
- **MapD/Telephony Server IP:** Client connectivity IP on AES server from **Section 4.2**.
- **Signal Node:** CVLAN signal number on AES server from **Section 4.4**.

Note that the value of the **Site Name** field is automatically populated and was created as part of the installation. The values in the **Logical ID** and **DLL Name** fields are changed automatically upon selecting the value for the **Switch Type** field. Click **Create**, followed by **Close**.



5.3. Administer Agent Groups

The **Agent Groups** screen is displayed. Click **Add** to create agent groups.

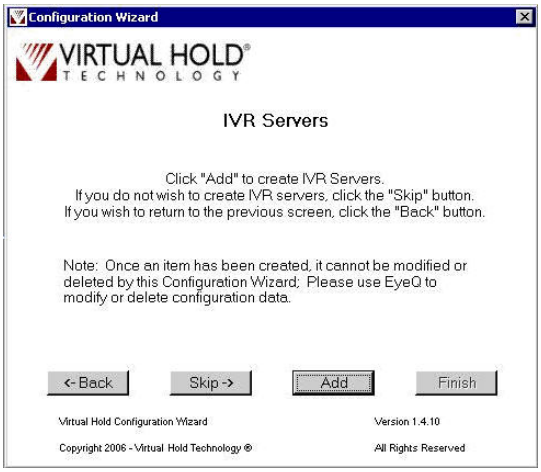


The **Agent Groups** screen below is displayed next. This screen is used to define the skill/ACD group. For the **Starting Agent Group** field, enter a descriptive agent group name and the agent group extension number, separated by a colon. Note that the agent group name, in this case "DevConnect", will be used later to administer queues in **Section 5.5**. The agent group extension number, in this case "54101", is the skill extension number on Avaya Communication Manager. Click **Create**, followed by **Close**.

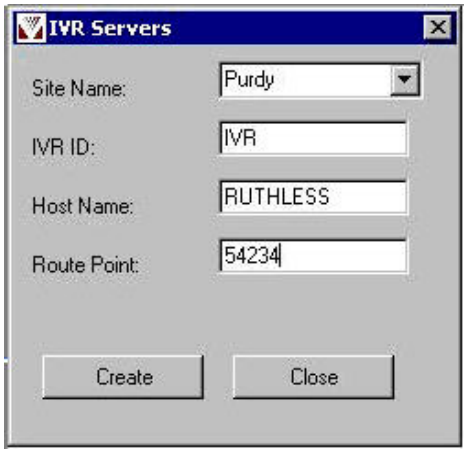
The **Agents** screen is displayed. Click **Skip**.

5.4. Administer IVR Servers and Extensions

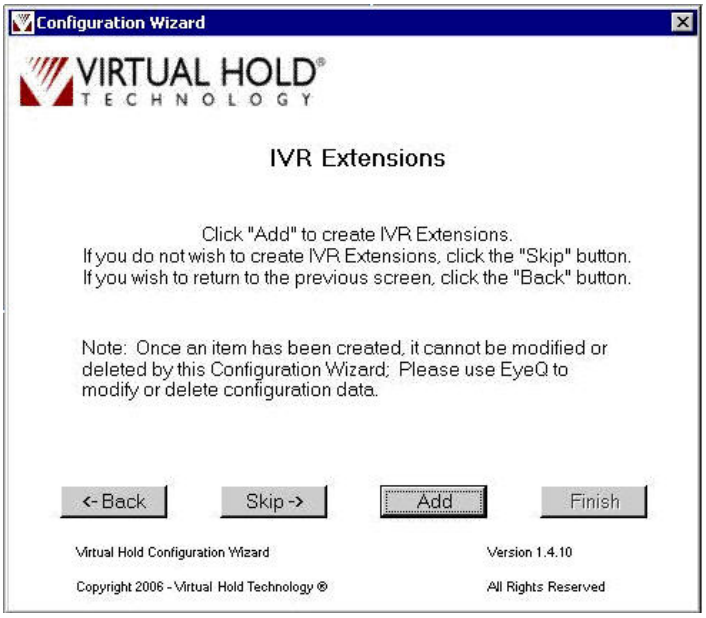
The **IVR Servers** screen is displayed. Click **Add** to create IVR servers.



The **IVR Servers** screen below is displayed next. For the **Route Point** field, enter the extension of the hunt group for the inbound line-side DS1 stations from **Section 3.9**. Default values may be retained for all remaining fields. Click **Create**, followed by **Close**.

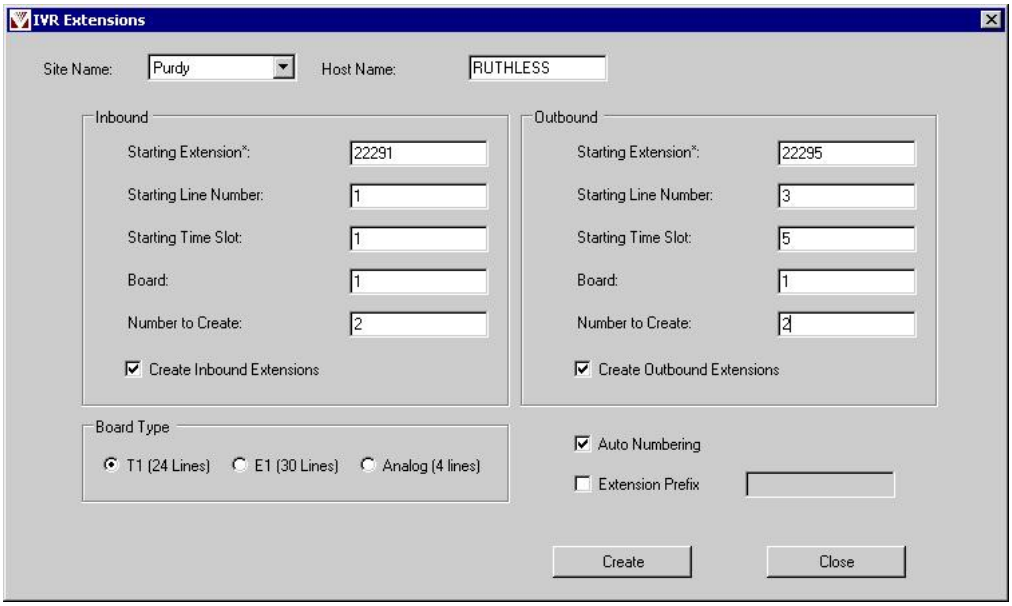


The **IVR Extensions** screen is displayed. Click **Add** to create IVR extensions.



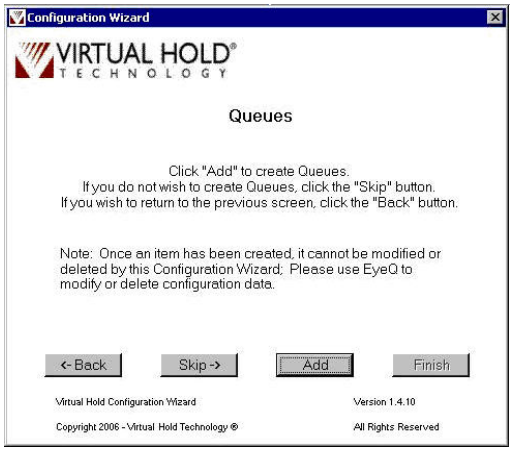
The **IVR Extensions** screen below is displayed next. For the **Starting Extension** fields, enter the starting extension number of the inbound and outbound line-side DS1 stations from **Section 3.8**. For the **Starting Time Slot** fields, enter the starting DS1 port number of the inbound and outbound line-side DS1 stations from **Section 3.8**. For the **Number to Create** fields, enter the number of inbound and outbound line-side DS1 stations that were created from **Section 3.8**. Retain the default values for all remaining fields. Click **Create**, followed by **Close**.

In the case that the line-side DS1 station extension numbers are not sequential, then each extension number will need to be entered individually on this screen.



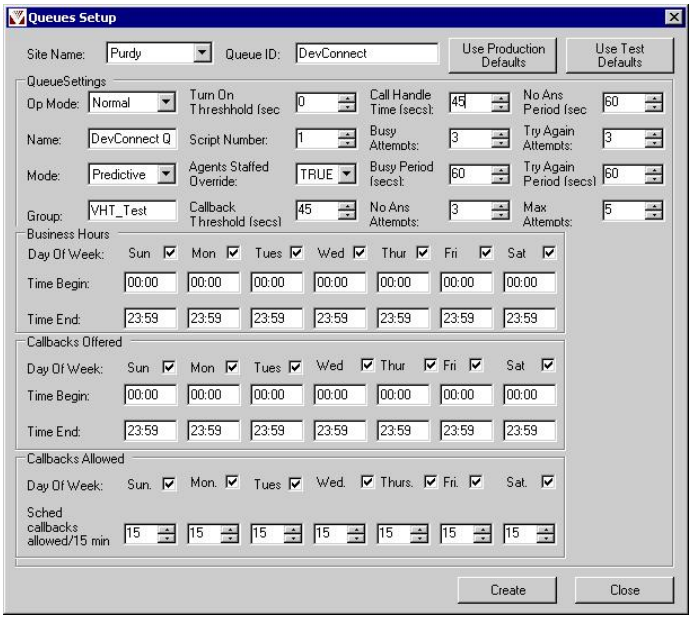
5.5. Administer Queues

The **Queues** screen is displayed. Click **Add** to create queues.

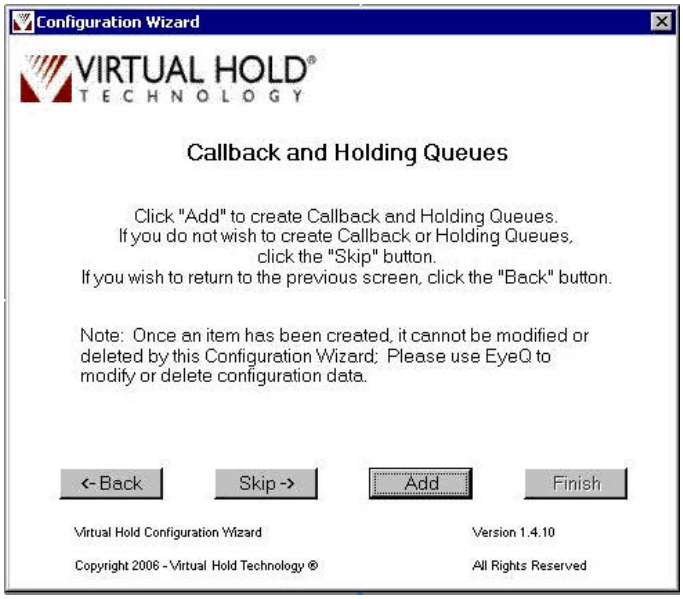


The **Queues Setup** screen is displayed next. The **QueueSettings** area contains parameters relating to the skill/ACD queue. The **Business Hours** area contains the hours of normal business operation. The **Callbacks Offered** area contains the hours of when the callback option will be offered to the callers. The **Callbacks Allowed** area contains the maximum threshold of callback calls that can be launched. Consult the Virtual Hold Concierge documentation for proper values to administer for these areas.

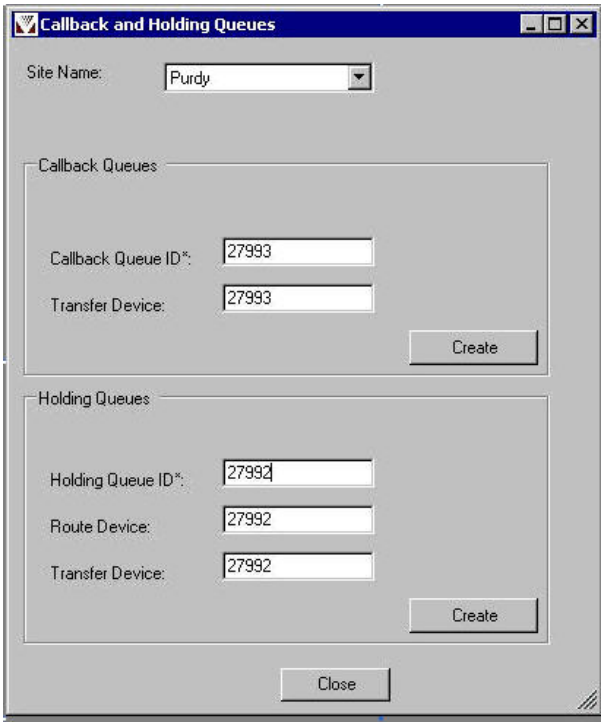
The **Queue ID** field value needs to match the agent group name from **Section 5.3**. For the compliance testing, the **Name** field was modified for a more descriptive name, as shown below. All remaining default values were retained from the **Use Test Defaults** option. Note that the **Turn On Threshhold** field defines the threshold for when the incoming calls are to be routed to the line-side DS1 stations. Click **Create**, followed by **Close**.



The **Callback and Holding Queues** screen is displayed. Click **Add** to create queues.

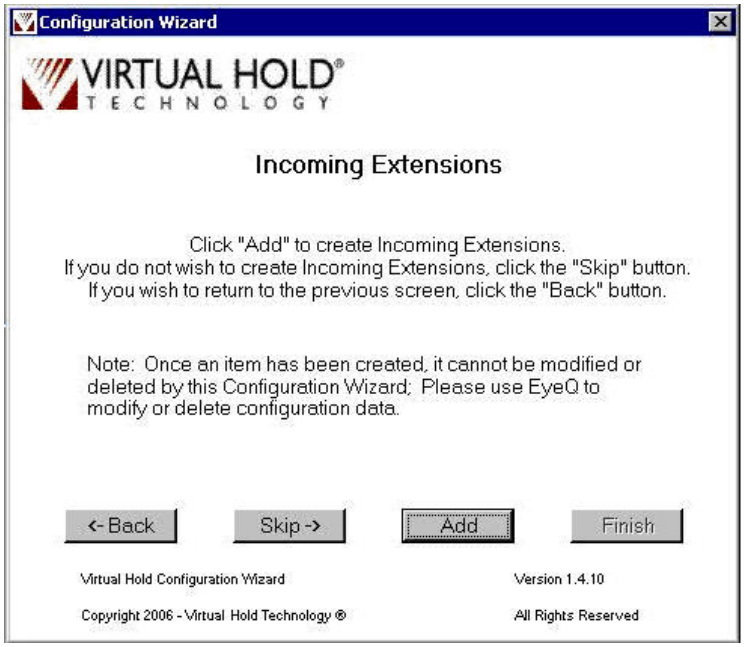


The **Callback and Holding Queues** screen below is displayed next. For the **Callback Queue ID** field, enter the extension of the Callback VDN from **Section 3.7.3**, and the corresponding **Transfer Device** field will be populated automatically. For the **Holding Queue ID** field, enter the extension of the Holding VDN from **Section 3.7.2**, and the corresponding **Route Device** and **Transfer Device** fields will be populated automatically. Retain the default in the **Site Name** field. Click **Create**, followed by **Close**.

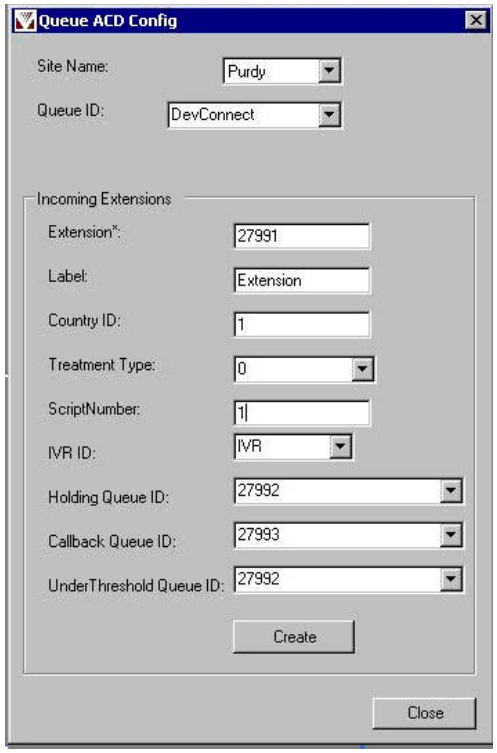


5.6. Administer Incoming Extensions

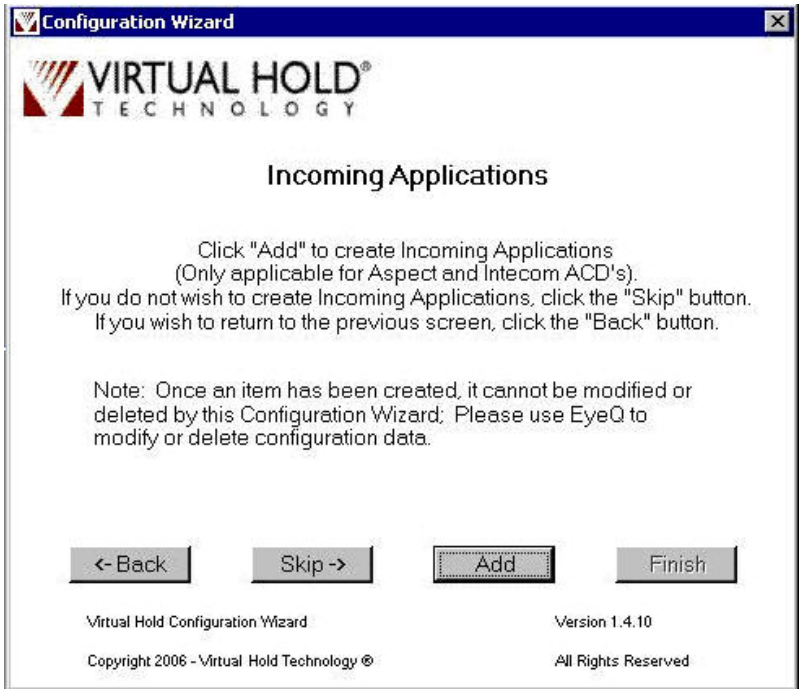
The **Incoming Extensions** screen is displayed. Click **Add**.



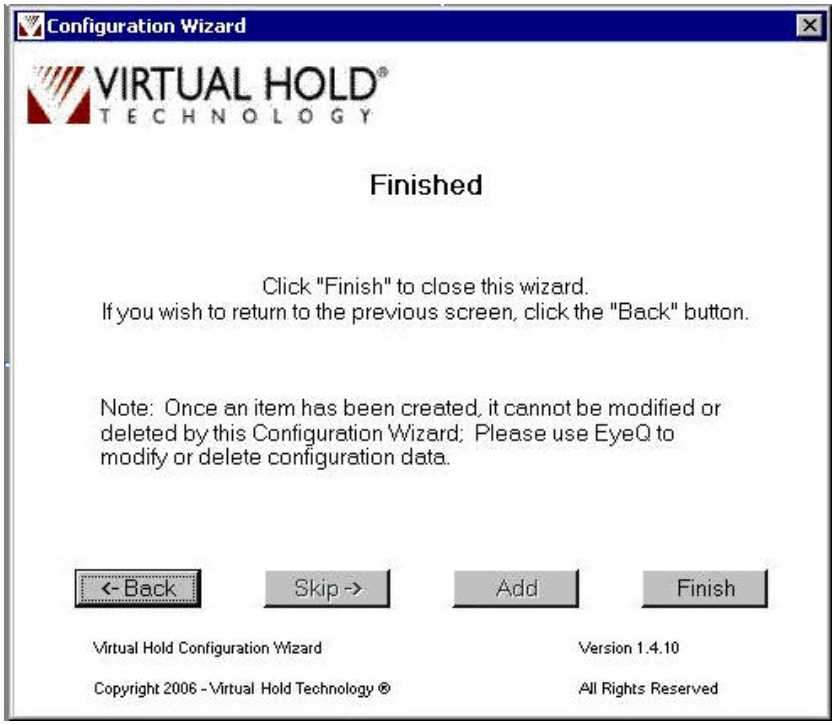
The **Queue ACD Config** screen is displayed next. For the **Extension** field, enter the extension of the Entry VDN from **Section 3.7.1**. Retain the default values in all remaining fields. Click **Create**, followed by **Close**.



The **Incoming Applications** screen is displayed. Click **Skip**.



The **Finished** screen is displayed next. Click **Finish** to close the Configuration Wizard.



6. Interoperability Compliance Testing

The interoperability compliance test included feature and serviceability testing.

The feature testing focused on verifying Virtual Hold Concierge handling of CVLAN messages in the areas of routing, domain control, event notification, and value queries. The call scenarios included building up the skill/ACD queue and expected wait time, routing of inbound calls to the inbound line-side DS1 stations, and originating and transferring of outbound callback calls.

The serviceability testing focused on verifying the ability of Virtual Hold Concierge to recover from adverse conditions, such as busying out the CTI link and disconnecting the Ethernet cable for the CTI link.

6.1. General Test Approach

The feature test cases were performed both automatically and manually. Upon start of the Virtual Hold Concierge application, the application automatically queries Avaya Communication Manager for skill/ACD status and requests monitoring. For the manual part of the testing, incoming calls were made to the monitored VDNs to enable event reports to be sent to Virtual Hold Concierge. Manual call controls from the agent telephones were exercised to verify event reports associated with remaining features such as conferencing and transferring of calls.

The serviceability test cases were performed manually by busying out and releasing the CTI link, and by disconnecting and reconnecting the LAN cables.

The verification of all tests included checking of proper states at the telephone sets, and monitoring the event report logs from the Virtual Hold Concierge server log files.

6.2. Test Results

All test cases were executed and passed.

7. Verification Steps

This section provides the tests that can be performed to verify proper configuration of Avaya Communication Manager, Avaya Application Enablement Services, and Virtual Hold Concierge.

7.1. Verify Avaya Communication Manager

Verify the status of the administered CTI link by using the "status aesvcs cti-link" command. Verify the **Service State** is "established" for the CTI link number administered in **Section 3.6**, as shown below.

```
status aesvcs cti-link

                        AE SERVICES CTI LINK STATUS

CTI   Version  Mnt   AE Services      Service       Msgs     Msgs
Link           Busy  Server           State         Sent     Rcvd

1              no                     down          0        0
2     4        no    AES-DevCon2      restarted     30       15
3     4        no    AES-DevCon2      established   15       15
```

Verify the status of an inbound line-side DS1 station during an active inbound call using the "status station n" command, where "n" is the extension of the connected station. Verify that the **Service State** is "in-service/off-hook" as shown below.

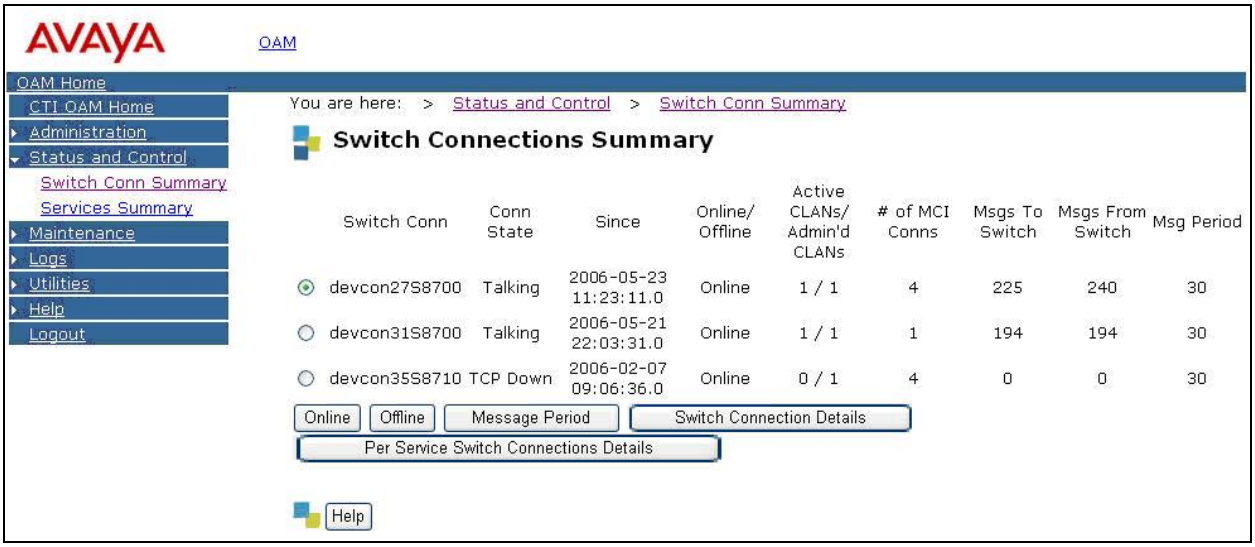
```
status station 22291                                          Page   1 of   3
                            GENERAL STATUS
     Administered Type: DS1FD              Service State: in-service/off-hook
        Connected Type: N/A              Parameter Download: not-applicable
             Extension: 22291                 SAC Activated? no
                  Port: 01B1701             User Cntrl Restr: none
           Call Parked? no                 Group Cntrl Restr: none
      Ring Cut Off Act? no               CF Destination Ext:
Active Coverage Option: 1
```

Verify the status of an outbound line-side DS1 station during an active outbound callback call using the "status station n" command, where "n" is the extension of the connected station. Verify that the **Service State** is "in-service/off-hook" as shown below.

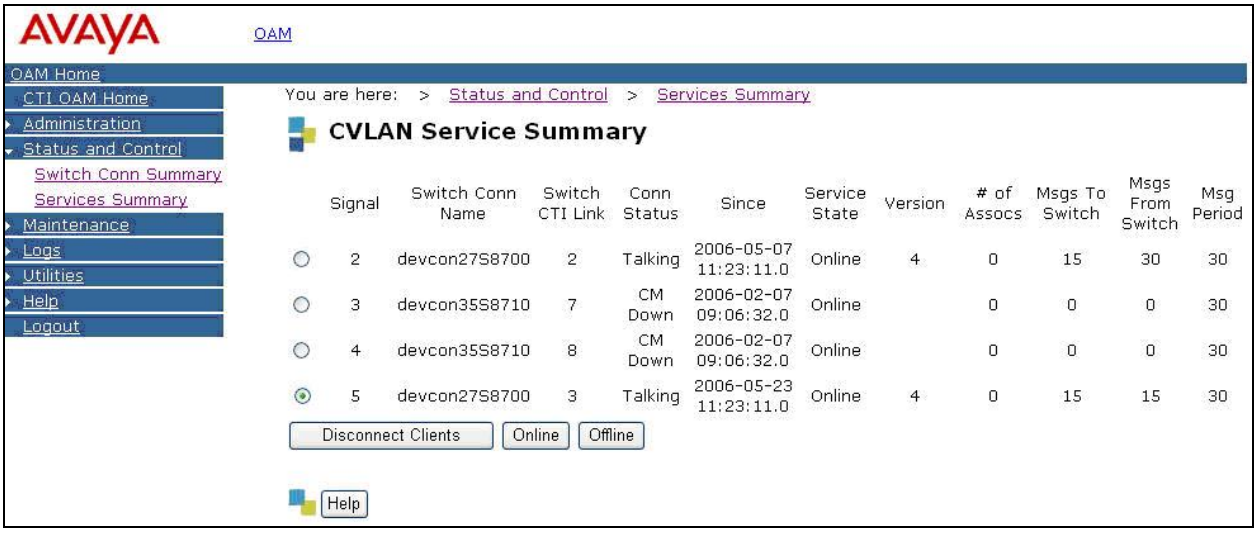
```
status station 22295                                          Page   1 of   3
                            GENERAL STATUS
     Administered Type: DS1FD              Service State: in-service/off-hook
        Connected Type: N/A              Parameter Download: not-applicable
             Extension: 22295                 SAC Activated? no
                  Port: 01B1705             User Cntrl Restr: none
           Call Parked? no                 Group Cntrl Restr: none
      Ring Cut Off Act? no               CF Destination Ext:
Active Coverage Option: 1
```

7.2. Verify Avaya Application Enablement Services

From the **CTI OAM Home** menu, verify the status of the switch connection by selecting **Status and Control > Switch Conn Summary** from the left pane. Verify the **Conn State** is "Talking" for the switch connection administered in **Section 4.3**, as shown below.

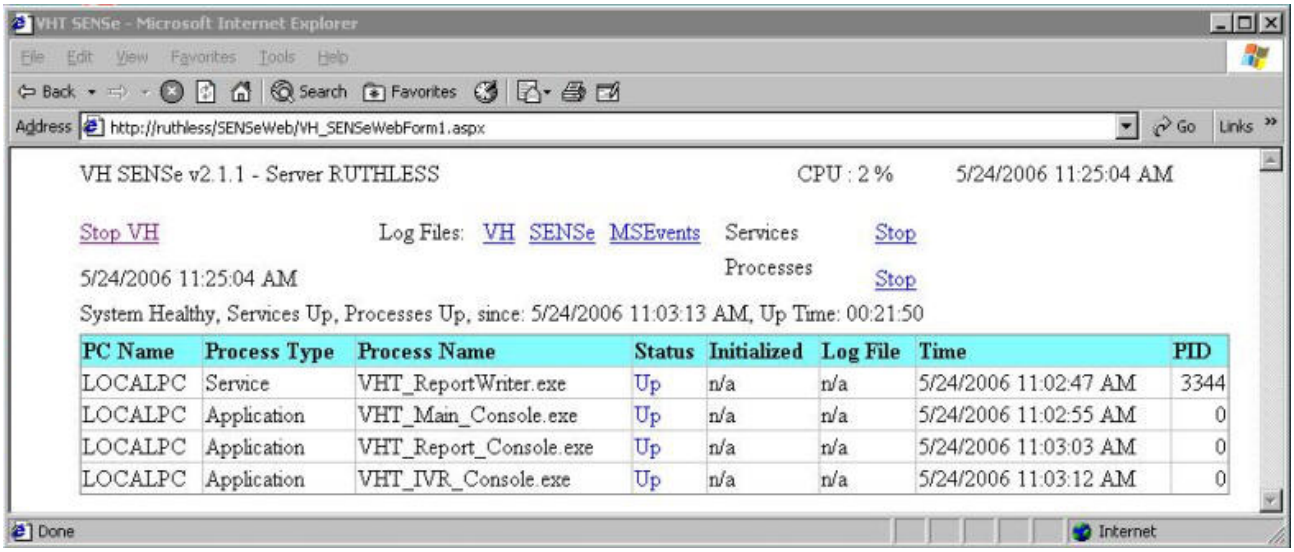


Verify the status of the CVLAN link by selecting **Status and Control > Services Summary** from the left pane. Click on **CVLAN Service**, followed by **Details**. The **CVLAN Service Summary** screen is displayed. Verify the **Conn Status** is "Talking" for the CVLAN link signal administered in **Section 4.4**, as shown below.

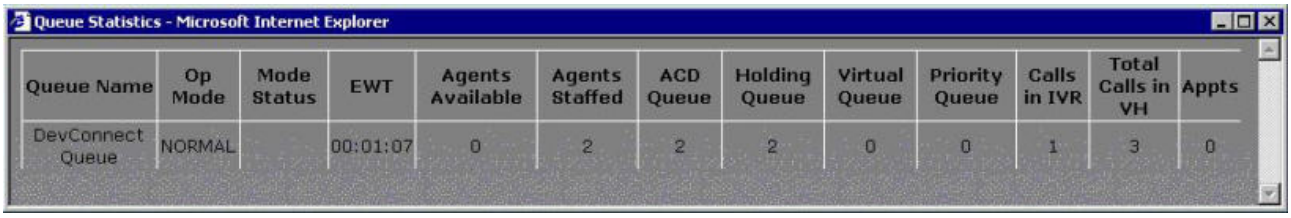


7.3. Verify Virtual Hold Concierge

Bring up the web based process monitoring window by using the URL "http://host name/SENSeWeb/VH_SENSeWebForm1.aspx" in an Internet browser window, where "host name" is the host name of the Concierge server. The screen below is displayed, and shows a listing of the processes. Verify that the **Status** of all processes is "Up".



Bring up the web based queue monitoring window by using the URL "http://host name/eyeQ/Home.aspx" in an Internet browser window, where "host name" is the host name of the Concierge server. Log in with proper credentials. Click on the **QueueWATCH** icon followed by **Queue Statistics** (not shown). In the **Queue Statistics** screen below, verify that the data values properly reflect the current system activity.



8. Support

Technical support on Virtual Hold Concierge can be obtained through the following:

- **Phone:** (866) 670-2223
- **Email:** support@virtualhold.com

9. Conclusion

These Application Notes describe the configuration steps required for Virtual Hold Concierge 6.2 to successfully interoperate with Avaya Communication Manager 3.0.1 using Avaya Application Enablement Services 3.0. All feature and serviceability test cases were completed successfully.

10. Additional References

This section references the product documentation relevant to these Application Notes.

- *Administrator Guide for Avaya Communication Manager*, Document 03-300509, Issue 1, June 2005, available at http://support.avaya.com
- *Avaya Application Enablement Services 3.0 Administration and Maintenance Guide*, Document ID 02-300357, Issue 1, June 2005, available at http://support.avaya.com.
- *Virtual Hold ACD Configuration Guide*, available from the Virtual Hold Concierge 6.2 Installation CD.
- *Virtual Hold Version 6 Deployment Guide*, available from the Virtual Hold Concierge 6.2 Installation CD.

Please e-mail any questions or comments pertaining to these Application Notes along with the full title name and filename, located in the lower right corner, directly to the Avaya Developer*Connection* Program at devconnect@avaya.com.