Avaya Solution & Interoperability Test Lab

Application Notes for NICE Predictive Behavioral Routing 5.0 with Avaya Aura® Application Enablement Services 8.1 – Issue 1.0

Abstract

These Application Notes describe the configuration steps required for NICE Predictive Behavioral Routing to interoperate with Avaya Aura® Communication Manager and Avaya Aura® Application Enablement Services. NICE Predictive Behavioral Routing (PBR) is an intelligent call mapping system that interfaces with Avaya Aura® Application Enablement services using Computer Telephony Integration (CTI).

Readers should pay attention to **Section 2**, in particular the scope of testing as outlined in **Section 2.1** as well as any observations noted in **Section 2.2**, to ensure that their own use cases are adequately covered by this scope and results.

Information in these Application Notes has been obtained through DevConnect compliance testing and additional technical discussions. Testing was conducted via the DevConnect Program at the Avaya Solution and Interoperability Test Lab.

1. Introduction

These Application Notes describe the configuration steps required for NICE Predictive Behavioral Routing 5.0 to interoperate with Avaya Aura® Communication Manager 8.1 and Avaya Aura® Application Enablement Services 8.1. NICE Predictive Behavioral Routing (PBR) is an Artificial Intelligence (AI) powered smart routing service that interfaces with Avaya Aura® Application Enablement Services (AES) using the Telephony Services Application Programming Interface (TSAPI) from Avaya Aura® Application Enablement Services.

The TSAPI interface was used by PBR to perform adjunct call routing and gather data to calculate agent utilization, monitor agent state and determine agent to skill mapping.

PBR is integrated into a customer's ACD through the use of VDN Variables, Vector Variables and Vector Updates on Communication Manager. The PBR registers itself as a routing server with AES and receives and responds to adjunct route requests from Vectors. If agents are available for the selected skill PBR routes the call to the best available agent's station in that skill; otherwise, call control is returned back to the calling Vector. PBR sends the agent's station and the skill in the route response. By sending the station extension and skill in the route response the call is counted in the correct skill allowing PBR to route calls for multi-skilled agents.

Note: VDN Variables, Vector Variables and Caller Entered Digits (CED) are the preferred method to transmit the necessary data to PBR, however, User-to-User Information (UUI) could be used as an alternative to CED.

2. General Test Approach and Test Results

The feature test cases were performed both automatically and manually. Upon start of the PBR, the application used TSAPI to request monitoring on skills, and agent stations and establishes itself as a routing server for appropriate VDN's. For the manual part of the testing, calls were made to the VDNs. Manual call controls from the agent telephones were exercised.

The serviceability test cases were performed manually by disconnecting and reconnecting the Ethernet connection to the PBR server.

DevConnect Compliance Testing is conducted jointly by Avaya and DevConnect members. The jointly defined test plan focuses on exercising APIs and/or standards-based interfaces pertinent to the interoperability of the tested products and their functionalities. DevConnect Compliance Testing is not intended to substitute full product performance or feature testing performed by DevConnect members, nor is it to be construed as an endorsement by Avaya of the suitability or completeness of a DevConnect member's solution.

Avaya recommends our customers implement Avaya solutions using appropriate security and encryption capabilities enabled by our products. The testing referenced in these DevConnect Application Notes included the enablement of supported encryption capabilities in the Avaya products. Readers should consult the appropriate Avaya product documentation for further information regarding security and encryption capabilities supported by those Avaya products.

Support for these security and encryption capabilities in any non-Avaya solution component is the responsibility of each individual vendor. Readers should consult the appropriate vendor-supplied product documentation for more information regarding those products. For the testing associated with these Application Notes, the interface between Avaya systems and NICE Predictive Behavioral Routing did not include use of any specific encryption features as requested by NICE.

2.1. Interoperability Compliance Testing

The interoperability compliance test included feature and serviceability testing. The feature testing focused on verifying the following on PBR:

- Handling of TSAPI messages in areas of event notification and call control.
- Handling of various call scenarios including internal, external, inbound, outbound, answer, hold/resume, drop, blind/attended transfer, conference, voicemail coverage, ACD queue, multiple agents, and multiple calls.
- Reporting of basic call scenarios including inbound, outbound, hold/resume, and drop.

The serviceability testing focused on verifying the ability of PBR to recover from adverse conditions, such as disconnecting and reconnecting the Ethernet connection to the PBR server or to the PBR Client.

2.2. Test Results

All test cases were executed and verified.

2.3. Support

Technical support on NICE Predictive Behavioral Routing can be obtained through the following:

- **Phone:** + 1 800.642.3611
- **Web:** http://wiser.nice.com

3. Reference Configuration

The configuration used for the compliance testing is shown in **Figure 1**. The PBR solution consisted of the PBR server. The test solution also consists of a Communication Manager, Application Enablement Services, System Manager, and Session Manager with agents logged into Avaya H323 and SIP phones and calls being made to the VDN (shown below).

In the compliance testing, PBR monitored skills and station extensions and established itself as a routing server for appropriate VDN's shown in the table below. The agent stations were pre-existing.

Device Type	Extension
VDN	62002, 62003
Skills	67101, 67102
Agent Station	63100, 63101, 63102. 63103
Agent ID	60100, 60101, 60102, 60103

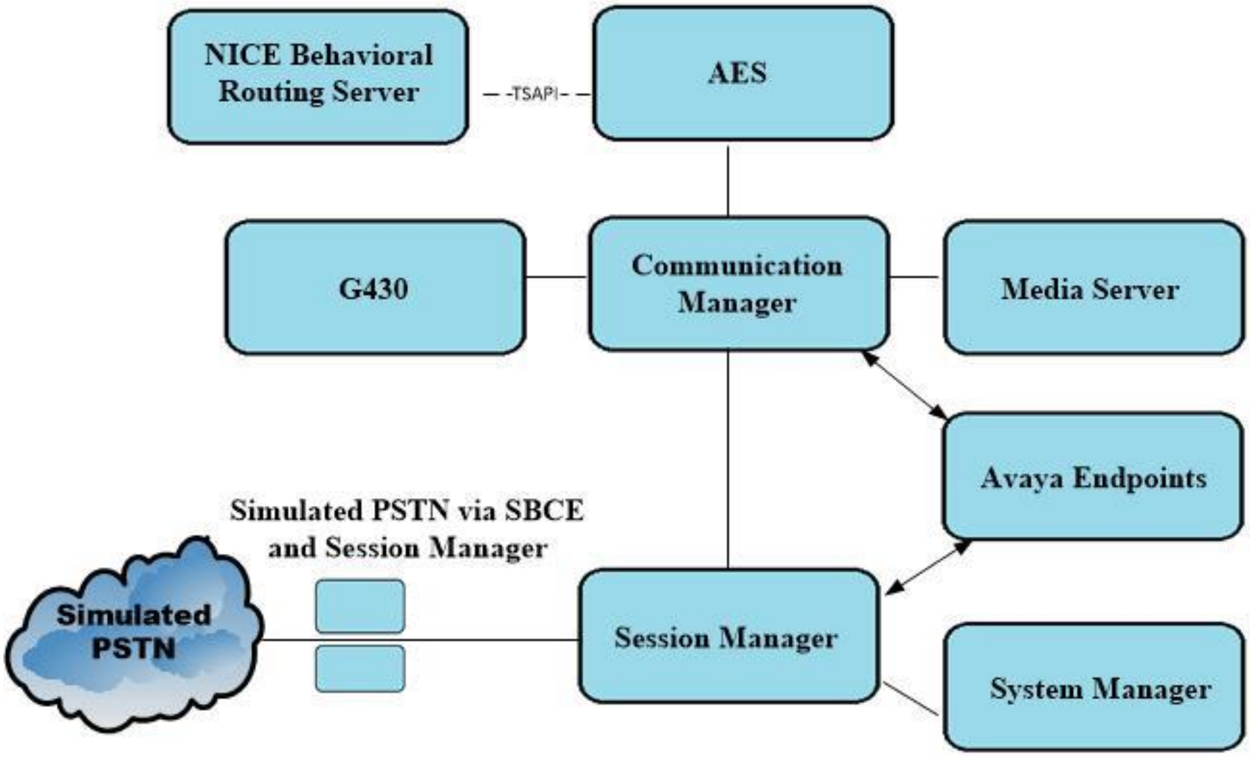


Figure 1: Compliance Testing Configuration

4. Equipment and Software Validated

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

Avaya Equipment/Software	**Release/Version**
Avaya Aura® System Manager	System Manager 8.1.1.0 Build No. – 8.1.0.0.733078 Software Update Revision No: 8.1.1.0.0310912 Feature Pack 1
Avaya Aura® Session Manager	Session Manager R8.1 Build No. – 8.1.1.0.811021
Avaya Aura® Communication Manager	R8.1.1.0.0 – FP1 R018x.01.0.890.0 Update ID 01.0.890.0-25763
Avaya Aura® Application Enablement Services	R8.1.0.0.0.9-1
Avaya Aura® Media Server	8.0.0.169
Avaya G430 Media Gateway	41.16.0/1
Avaya 96x1 H323 Deskphone	6.8304
Avaya 96x1 SIP Deskphone	7.1.2.0.14
Avaya J179 H323 Deskphone	6.8.304
Avaya J129 SIP Deskphone	3.0.0.0.20
NICE Equipment/Software	**Release/Version**
NICE PBR on Windows Server 2012 R2 Standard Avaya TSAPI Windows Client (csta32.dll)	5.0 8.1

5. Configure Avaya Aura® Communication Manager

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

- Verify License
- Administer System Parameters Features
- Administer CTI Link
- Administer Vector Variables
- Administer VDNs
- Administer Vectors
- Administer COR
- Administer Coverage Path
- Administer Agent’s Station
- Administer Skill Group
- Administer Agent

5.1. Verify License

Log into the System Access Terminal (SAT) to verify that the Communication Manager license has proper permissions for features illustrated in these Application Notes. Use the **display system-parameters customer-options** command, navigate to **Page 4**, and verify that the **Computer Telephony Adjunct Links** customer option is set to **y**. If this option is not set to y, then contact the Avaya sales team or business partner for a proper license file.

```
display system-parameters customer-options                    Page   4 of  12
                                OPTIONAL FEATURES

    Abbreviated Dialing Enhanced List? y           Audible Message Waiting? y
        Access Security Gateway (ASG)? y               Authorization Codes? y
        Analog Trunk Incoming Call ID? y                        CAS Branch? n
 A/D Grp/Sys List Dialing Start at 01? y                          CAS Main? n
Answer Supervision by Call Classifier? y                 Change COR by FAC? n
                                 ARS? y  Computer Telephony Adjunct Links? y
                ARS/AAR Partitioning? y   Cvg Of Calls Redirected Off-net? y
          ARS/AAR Dialing without FAC? y                       DCS (Basic)? y
          ASAI Link Core Capabilities? y                 DCS Call Coverage? y
          ASAI Link Plus Capabilities? y                DCS with Rerouting? y
       Async. Transfer Mode (ATM) PNC? n
  Async. Transfer Mode (ATM) Trunking? n    Digital Loss Plan Modification? y
              ATM WAN Spare Processor? n                           DS1 MSP? y
                                 ATMS? y             DS1 Echo Cancellation? y
                  Attendant Vectoring? y



        (NOTE: You must logoff & login to effect the permission changes.)
```

Navigate to **Page 7** and verify that the **Vectoring (Basic)** customer option is set to **y**.

```
display system-parameters customer-options                      Page   7 of  12
                      CALL CENTER OPTIONAL FEATURES

                       Call Center Release: 8.0

                              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? y     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? y                       Vectoring (Basic)? y
                 Dynamic Advocate? n                   Vectoring (Prompting)? y
     Expert Agent Selection (EAS)? y               Vectoring (G3V4 Enhanced)? y
                          EAS-PHD? y                Vectoring (3.0 Enhanced)? y
                 Forced ACD Calls? n     Vectoring (ANI/II-Digits Routing)? y
             Least Occupied Agent? y     Vectoring (G3V4 Advanced Routing)? y
        Lookahead Interflow (LAI)? y                       Vectoring (CINFO)? y
Multiple Call Handling (OnRequest) y      Vectoring (Best Service Routing)? y
  Multiple Call Handling (Forced)? y                    Vectoring (Holidays)? y
PASTE (Display PBX Data on Phone)? y                   Vectoring (Variables)? y
      (NOTE: You must logoff & login to effect the permission changes.)
```

5.2. Administer System Parameters Features

Use the **change system-parameters features** command to enable **Create Universal Call ID (UCID)** and enter an available node ID in the **UCID Network ID** field on **Page 5**. This node ID will be prepended to all the UCIDs generated by Communication Manager.

```
change system-parameters features                                Page   5 of  19
                        FEATURE-RELATED SYSTEM PARAMETERS

SYSTEM PRINTER PARAMETERS
  Endpoint:              Lines Per Page: 60

SYSTEM-WIDE PARAMETERS
                                     Switch Name: cm81xvmpg
            Emergency Extension Forwarding (min): 10
          Enable Inter-Gateway Alternate Routing? n
Enable Dial Plan Transparency in Survivable Mode? n
                              COR to Use for DPT: station
                EC500 Routing in Survivable Mode: dpt-then-ec500
MALICIOUS CALL TRACE PARAMETERS
               Apply MCT Warning Tone? n   MCT Voice Recorder Trunk Group:
      Delay Sending RELease (seconds): 0
SEND ALL CALLS OPTIONS
     Send All Calls Applies to: station    Auto Inspect on Send All Calls? n
              Preserve previous AUX Work button states after deactivation? n
UNIVERSAL CALL ID
     Create Universal Call ID (UCID)? y    UCID Network Node ID: 37
```

Navigate to **Page 13** and enable **Send UCID to ASAI**. This parameter allows for the universal call ID to be sent to PBR.

```
display system-parameters features                                  Page  13 of  19
                        FEATURE-RELATED SYSTEM PARAMETERS
 CALL CENTER MISCELLANEOUS
            Callr-info Display Timer (sec): 10
                          Clear Callr-info: next-call
         Allow Ringer-off with Auto-Answer? n

     Reporting for PC Non-Predictive Calls? n

             Agent/Caller Disconnect Tones? n
Interruptible Aux Notification Timer (sec): 3
   Zip Tone Burst for Callmaster Endpoints: double



  ASAI
                   Copy ASAI UUI During Conference/Transfer? n
               Call Classification After Answer Supervision? y
                                           Send UCID to ASAI? y
                 For ASAI Send DTMF Tone to Call Originator? y
         Send Connect Event to ASAI For Announcement Answer? n
  Prefer H.323 Over SIP For Dual-Reg Station 3PCC Make Call? n
```

5.3. Administer CTI Link

The following section displays the steps required to make a connection from Communication Manager to the AES to share TSAPI messages. This link is required to facilitate the use of Adjunct Routing.

5.3.1. Note procr IP Address for Avaya Aura® Application Enablement Services Connectivity

Display the procr IP address by using the command **display node-names ip** and noting the IP address for the **procr** and AES (**aes81xvmpg**).

```
display node-names ip
                                  IP NODE NAMES
    Name              IP Address
IPOffice            10.10.40.25
aes81xvmpg          10.10.40.38
ams81vmpg           10.10.40.39
default             0.0.0.0
g430                10.10.40.15
procr               10.10.40.37
procr6              ::
sm81xvmpg           10.10.40.32
 ( 8  of 8    administered node-names were displayed )
Use 'list node-names' command to see all the administered node-names
Use 'change node-names ip xxx' to change a node-name 'xxx' or add a node-name
```

5.3.2. Configure Transport Link for Avaya Aura® Application Enablement Services Connectivity

To administer the transport link to AES, use the **change ip-services** command. On **Page 1** add an entry with the following values:

- **Service Type:** Should be set to **AESVCS**.
- **Enabled:** Set to **y**.
- **Local Node:** Set to the node name assigned for the procr in **Section 5.3.1**.
- **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
AESVCS         y         procr        8765
```

Go to **Page 3** of the **ip-services** form and enter the following values:

- **AE Services Server:** Name obtained from the AES server, in this case **aes81xvmpg**.
- **Password:** Enter a password to be administered on the AES server.
- **Enabled:** Set to **y**.

Note: The password entered for **Password** field must match the password on the AES server in **Section 6.2**. The **AE Services Server** must match the administered name for the AES server; this 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.

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

   Server ID    AE Services        Password          Enabled    Status
                   Server
      1:        aes81xvmpg          ********           y         idle
      2:
      3:
```

5.3.3. Configure CTI Link for TSAPI Service

Add a CTI link using the **add cti-link n** command, where **n** is the cti-link number as shown in the example below this is **1**. Enter an available extension number in the **Extension** field. Enter **ADJ-IP** in the **Type** field, and a descriptive name in the **Name** field. Default values may be used in the remaining fields.

```
add cti-link 1                                             Page   1 of   3
                                   CTI LINK
 CTI Link: 1
Extension: 1990
     Type: ADJ-IP
                                                                       COR: 1
     Name: aes81xvmpg
```

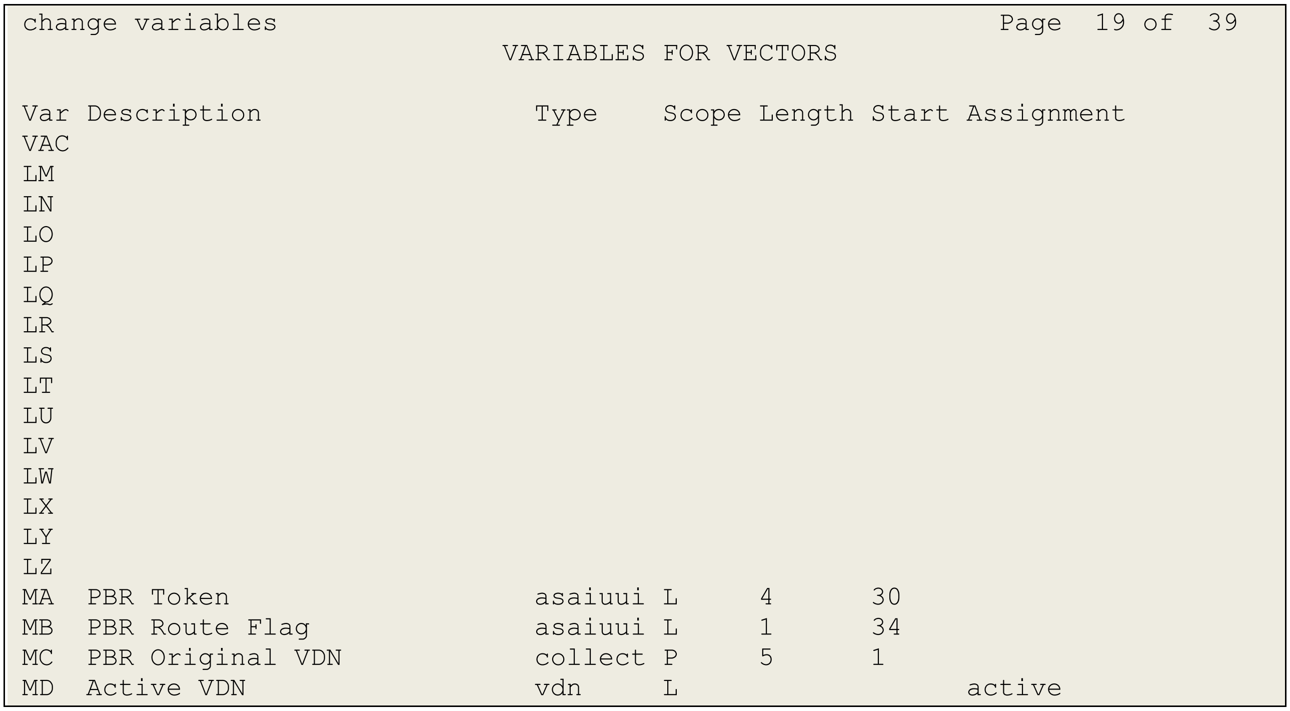
5.4. Administer Vector Variables

Vector Variables are an optional feature that the member may choose to use or opt to use the UUI variable for screen pop-ups.

Create new vector variables using the information provided in the table below.

Var	Description
MA	Holds the 4 digit token representing the agent pool to be considered for agent selection.
MB	This is a flag that NICE will set to signify when a valid route response was provided.
MC	Variable will store the original VDN extension captured with the **MD** variable. The *Length* should be changed to match the number of digits in the VDN extensions. (This variable is used to assist in getting calls back to the correct coverage path if not answered).
MD	Used to capture the active VDN for the current vector. (This variable is used to assist in getting calls back to the correct coverage path if not answered).

The vector **variables** listed, and their starting positions and lengths are dependent on the configuration of a customer's environment. If the CED Caller Entered Digits (CED) is allocated to other applications and is not available to use the UUI variable can be used instead. When the CED is used the **MA** and **MB** variables will not be created and will not be used in the vector logic. Below is example of variables used during compliance test:



```
change variables                                             Page  19 of  39
                              VARIABLES FOR VECTORS

Var Description                 Type    Scope Length Start Assignment
VAC
LM
LN
LO
LP
LQ
LR
LS
LT
LU
LV
LW
LX
LY
LZ
MA  PBR Token                   asaiuui L     4      30
MB  PBR Route Flag              asaiuui L     1      34
MC  PBR Original VDN            collect P     5      1
MD  Active VDN                  vdn     L                  active
```

5.5. Administer VDNs

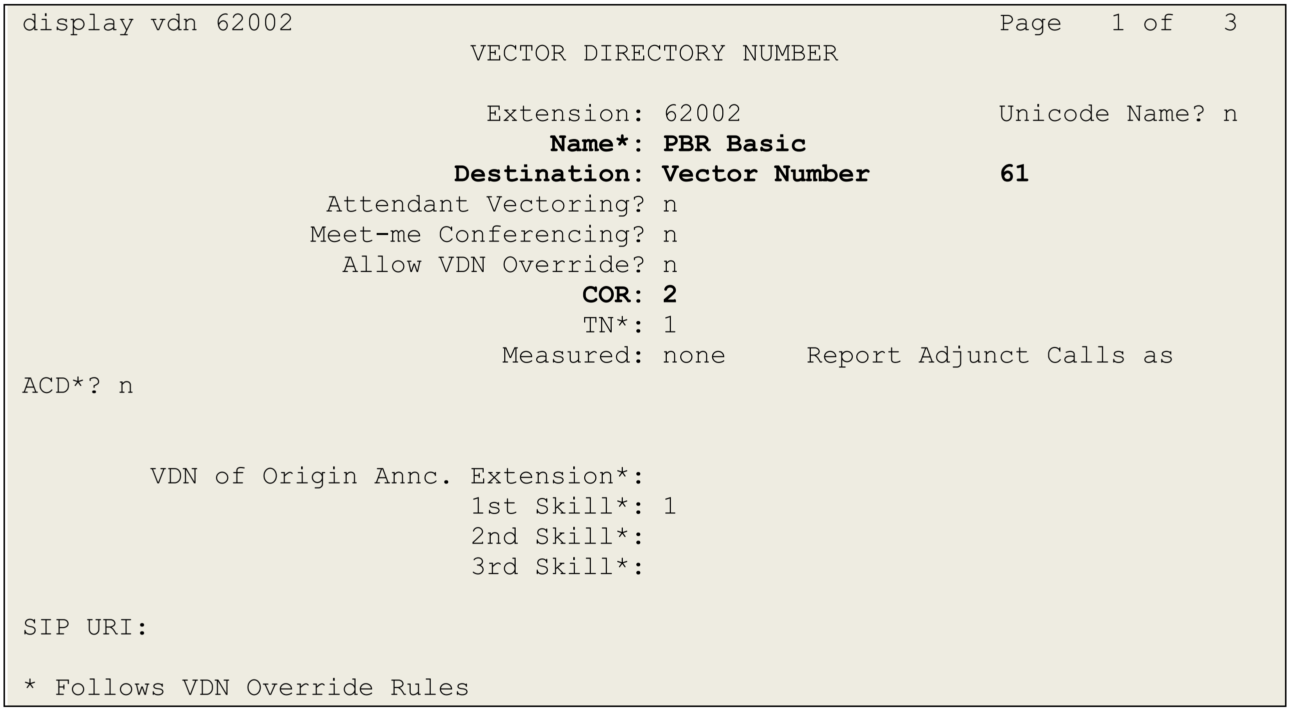
Administer a set of vectors and VDN for routing of calls. The number of VDNs and vectors, and the detailed vector steps may vary based on customer needs. In the compliance testing, two VDNs were created.

VDN	Purpose
62002	Main VDN for incoming skillset calls on Communication Manager
62003	Used by Coverage Path to send call back to queue

5.5.1. Communication Manager Contact Center VDN

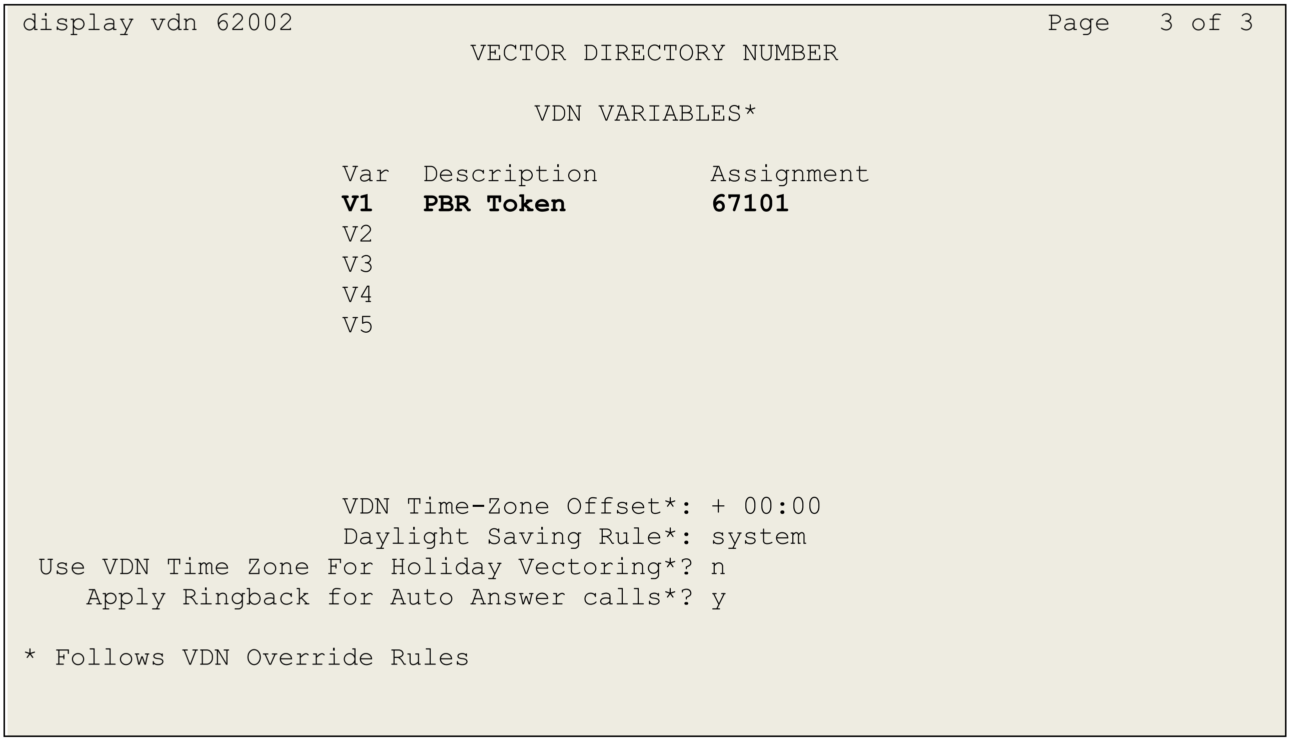
Add a VDN using the **add vdn n** command, where **n** is an available extension, below is example of existing VDN used in Communication Manager, in this case **62002**.

- **Name:** A descriptive name.
- **Destination:** **Vector Number** along with the vector number created in Section **5.6.1**.
- **COR:** Ensure to use the COR 2 created in Section **5.7**.



```
display vdn 62002                                            Page   1 of   3
                            VECTOR DIRECTORY NUMBER

                             Extension: 62002                Unicode Name? n
                                 Name*: PBR Basic
                           Destination: Vector Number        61
                    Attendant Vectoring? n
                   Meet-me Conferencing? n
                     Allow VDN Override? n
                                   COR: 2
                                   TN*: 1
                              Measured: none     Report Adjunct Calls as
ACD*? n


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

SIP URI:

* Follows VDN Override Rules
```

A VDN variable is added to the configuration of all in-scope VDNs, these are VDN's that are being monitored/controlled by PBR. This variable will hold the NICE PBR token which is a five-digit value that will be assigned to the digits (CED) value in the vector steps. NICE can also leverage the UUI variable assuming there is sufficient room available within the UUI value. The **Token** represents a mapping between the VDN, and the skills serviced by that VDN to create a single logical agent pool for agent selection. Each VDN will have one or more unique tokens determined by how the skills are queued within the vector. NICE will dictate the value of each **Token**.

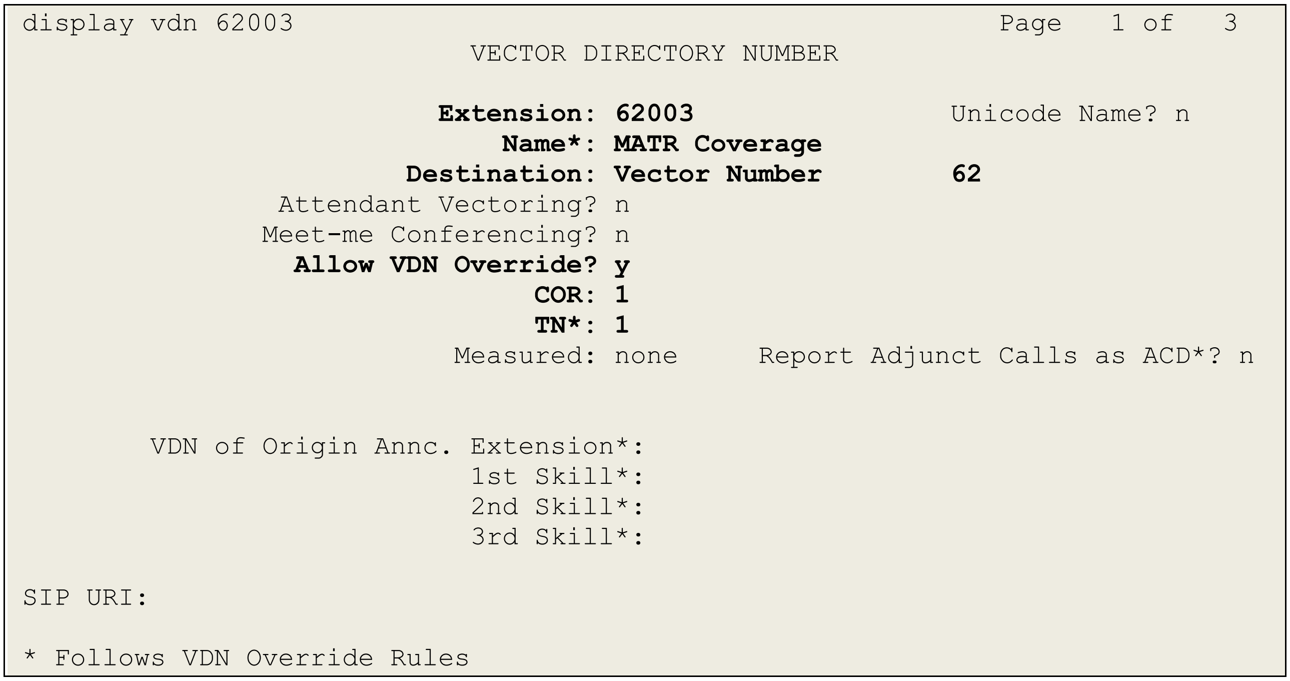


```
display vdn 62002                                              Page   3 of 3
                            VECTOR DIRECTORY NUMBER

                                VDN VARIABLES*

                    Var  Description       Assignment
                    V1   PBR Token         67101
                    V2
                    V3
                    V4
                    V5





                    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
```

5.5.2. Coverage Path VDN to NICE

The new Coverage Path VDN is called by the newly created Coverage Path. The VDN is linked to the new Coverage Path vector (created in next Section **5.6.2**) which routes the call to the appropriate VDN. Create a new VDN matching the one outlined below substituting in the following values:

- **Extension**: Enter any available Extension.
- **Name**: A descriptive name.
- **Destination**: **Vector Number** enter vector number created in **Section 5.6.2**.
- **Allow VDN Override**: **y**
- **COR**: enter preferred value.
- **TN**: preferred value.
- **Measured**: This is an optional entry depending on how the VDN is to be reported on.



```
display vdn 62003                                    Page   1 of   3
                            VECTOR DIRECTORY NUMBER

                          Extension: 62003            Unicode Name? n
                              Name*: MATR Coverage
                        Destination: Vector Number        62
                Attendant Vectoring? n
               Meet-me Conferencing? n
                 Allow VDN Override? y
                                COR: 1
                                TN*: 1
                           Measured: none     Report Adjunct Calls as ACD*? n


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

SIP URI:

* Follows VDN Override Rules
```

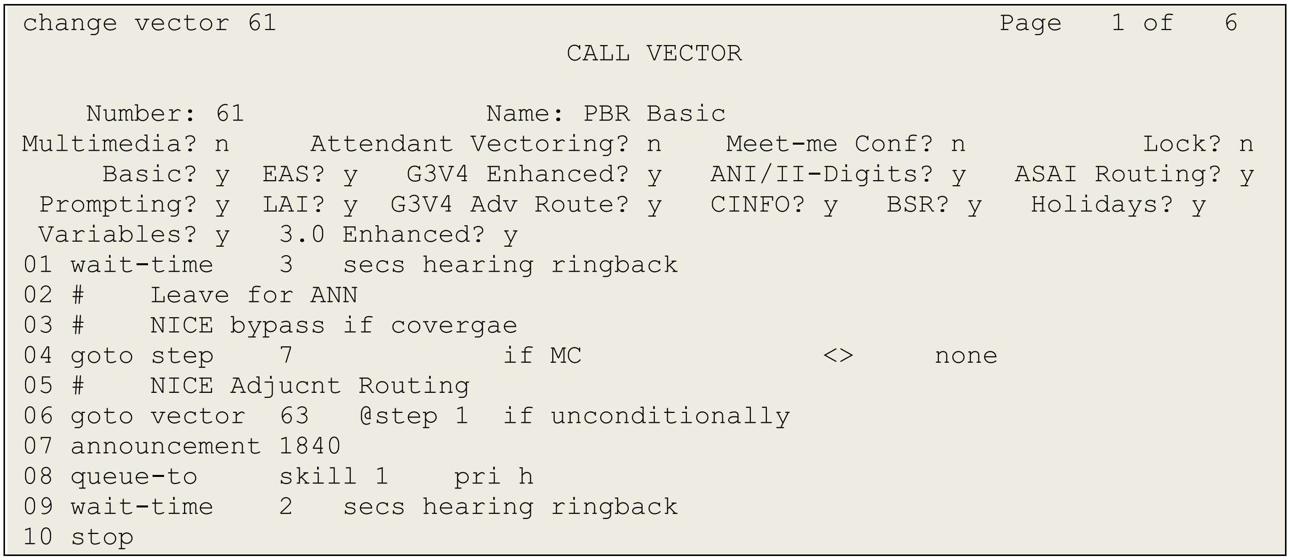
5.6. Administer Vectors

The following Vectors are were used during compliance testing; these were setup specifically to test PBR.

Vector	Vector Name	Purpose
1	Basic	Vector used for Communication Manager basic routing
11	MATR Coverage	Vector for the Coverage Path to PBR
12	MATR Adjunct	To encapsulate the adjunct route command and related logic required to call the PBR adjunct.

5.6.1. Communication Manager Contact Center

Modify a vector using the **change vector n** command, where "n" is an available vector number used to support integration of the NICE PBR service. The go-to vector step represents the call to PBR's Adjunct vector created in **5.6.3**. This step is typically inserted before any queue-to command so the NICE PBR service is called before the customer's vector queues the call to a skill.



```
change vector 61                                             Page   1 of   6
                                  CALL VECTOR

    Number: 61               Name: PBR Basic
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    3   secs hearing ringback
02 #    Leave for ANN
03 #    NICE bypass if covergae
04 goto step    7             if MC                 <>     none
05 #    NICE Adjucnt Routing
06 goto vector  63   @step 1  if unconditionally
07 announcement 1840
08 queue-to     skill 1    pri h
09 wait-time    2   secs hearing ringback
10 stop
```

5.6.2. Coverage Vector

Coverage vector for Coverage VDN created in **Section 5.5.2**.

```
change vector 62                                             Page   1 of   6
                                  CALL VECTOR

    Number: 62              Name: NICE Coverage
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 #    Main Coverage VDN
02 wait-time    0   secs hearing silence
03 #    Route to original VDN
04 route-to     number MC                      cov n if unconditionally
05 #    If no VDN Var go direct to queue vector
06 goto vector  61   @step 1  if unconditionally
07
08
09
10
```

5.6.3. Adjunct Vector

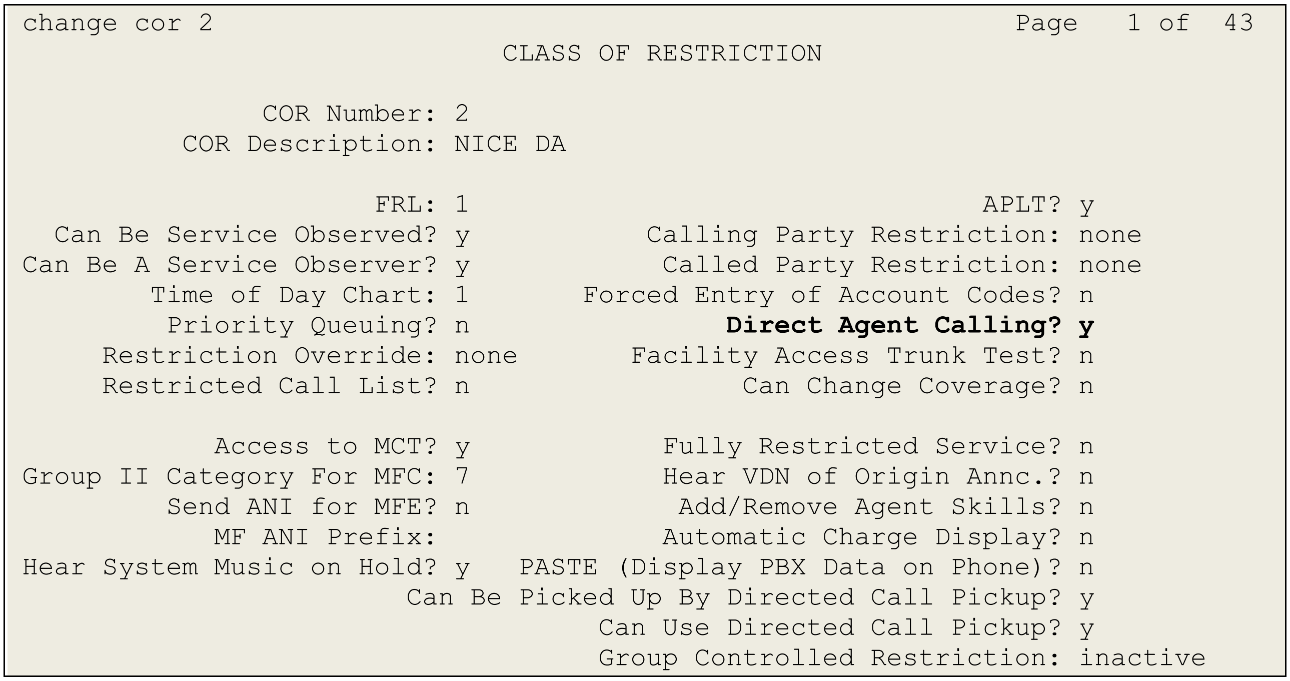
Create one new vector to encapsulate the adjunct route command, in this case it is **63**, and related logic required to call the PBR adjunct. The new vector is setup to call the PBR 2 times in succession if necessary. The vector is structured this way to cover the rare use case where there is an error when the first route attempt is made. When this occurs, the PBR service will be called again so the call can be properly routed to another agent. Creating this vector as displayed below.

```
change vector 63                                              Page   1 of   6
                                  CALL VECTOR

    Number: 63              Name: NICE Adjunct
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 #    NICE Adjunct Call
02 announcement 1841
03 set          MC     = MD     ADD   none
04 #    Set Digits buffer to PBR.Token
05 set          digits = V1     ADD   none
06 #    Adjunct Routing
07 adjunct      routing link 1
08 wait-time    5   secs hearing silence
09 adjunct      routing link 1
10 wait-time    5   secs hearing silence
11 return
```

5.7. Administer COR

Update or create COR, example 2, with **Direct Agent Calling** setting set to **y** as display below. This COR 2 is used in VDN and Stations as displayed in Section **5.5.1** and **5.9**.

Note: Do not enable Direct Agent Calling on the COR used for agents.



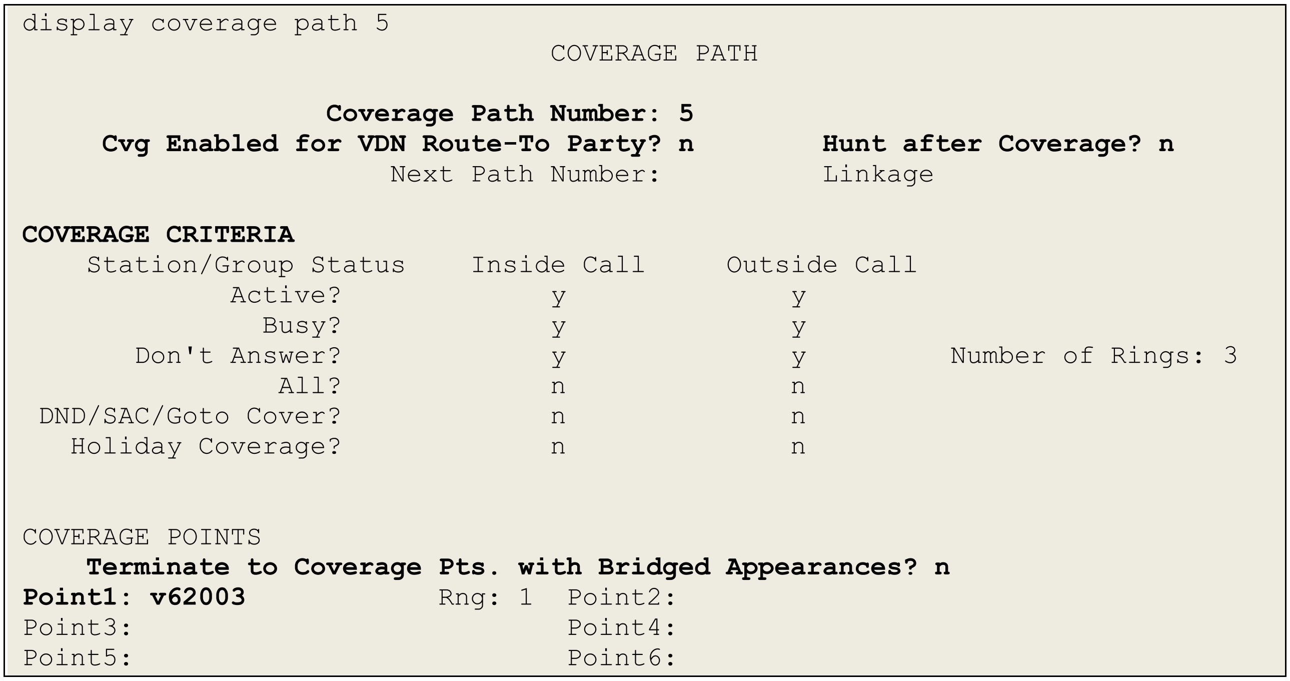
```
change cor 2                                                Page   1 of  43
                              CLASS OF RESTRICTION

               COR Number: 2
          COR Description: NICE DA

                      FRL: 1                                  APLT? y
  Can Be Service Observed? y           Calling Party Restriction: none
Can Be A Service Observer? y            Called Party Restriction: none
        Time of Day Chart: 1       Forced Entry of Account Codes? n
         Priority Queuing? n                Direct Agent Calling? y
     Restriction Override: none       Facility Access Trunk Test? n
     Restricted Call List? n                 Can Change Coverage? n

            Access to MCT? y            Fully Restricted Service? n
Group II Category For MFC: 7            Hear VDN of Origin Annc.? n
         Send ANI for MFE? n             Add/Remove Agent Skills? n
            MF ANI Prefix:              Automatic Charge Display? n
Hear System Music on Hold? y   PASTE (Display PBX Data on Phone)? n
                        Can Be Picked Up By Directed Call Pickup? y
                                    Can Use Directed Call Pickup? y
                                    Group Controlled Restriction: inactive
```

5.8. Administer Coverage Path

The new Coverage Path defines where to send a call when it is sent to an agent’s station and the agent is already handling a call. Create a new Coverage Path matching the one outlined below substituting in the following values:

- **Coverage Path Number**: enter any available number, example **5**.
- **Cvg Enabled for VDN Route-To Party**: n
- **Hunt after Coverage**: n
- **COVERAGE CRITERIA:** set to **n** except those listed below.
    - Set Outside Call Active: “y”
    - Set Outside Call Busy: “y”
    - Set Outside Call Don’t Answer: “y”, Number of Rings 3
- **Terminate to Coverage Pts. with Bridged Appearances** is set to **n**.
- Coverage **Point1**: Use the extension assigned to the Coverage Path VDN created in **Section 5.5.2**, example **62003**.

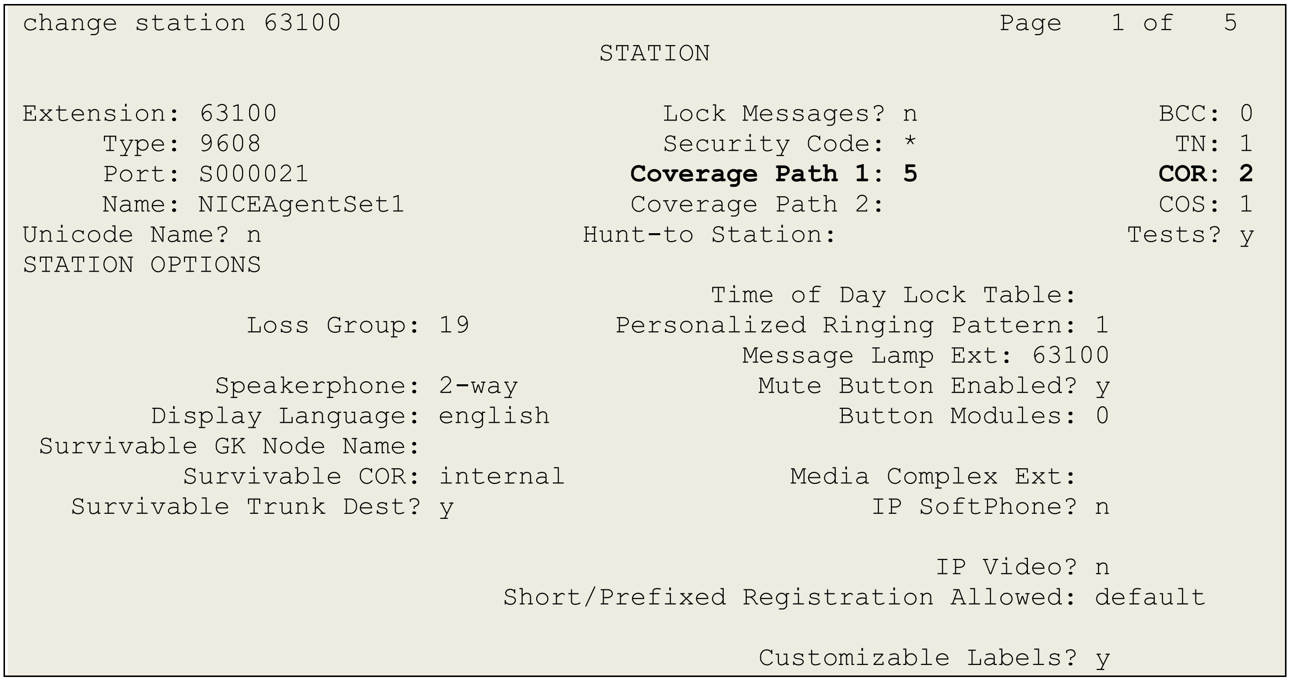
Leave all other Coverage Points blank as default.



```
display coverage path 5
                                 COVERAGE PATH

                   Coverage Path Number: 5
     Cvg Enabled for VDN Route-To Party? n        Hunt after Coverage? n
                       Next Path Number:          Linkage

COVERAGE CRITERIA
    Station/Group Status    Inside Call     Outside Call
             Active?             y               y
               Busy?             y               y
         Don't Answer?           y               y        Number of Rings: 3
                All?             n               n
 DND/SAC/Goto Cover?             n               n
   Holiday Coverage?             n               n


COVERAGE POINTS
    Terminate to Coverage Pts. with Bridged Appearances? n
Point1: v62003            Rng: 1  Point2:
Point3:                           Point4:
Point5:                           Point6:
```

5.9. Administer Agent's Station

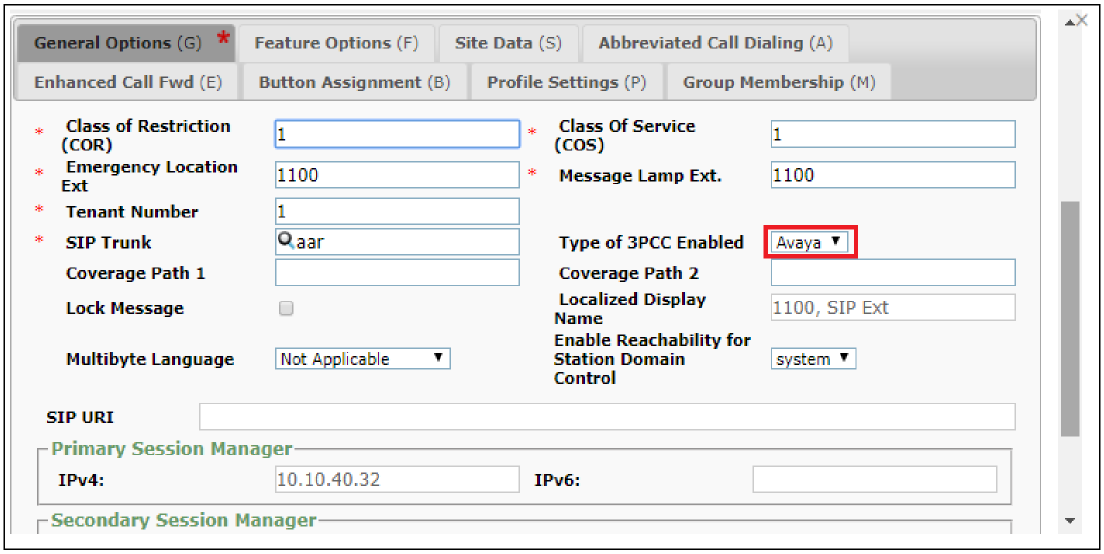
In Station page, modify **Coverage Path 1** to coverage path created in **Section 5.8** as displayed, and **COR** to the COR created in **Section 5.7**.



```
change station 63100                                          Page   1 of   5
                                    STATION

Extension: 63100                        Lock Messages? n              BCC: 0
     Type: 9608                         Security Code: *               TN: 1
     Port: S000021                    Coverage Path 1: 5              COR: 2
     Name: NICEAgentSet1              Coverage Path 2:                COS: 1
Unicode Name? n                    Hunt-to Station:                 Tests? y
STATION OPTIONS
                                             Time of Day Lock Table:
              Loss Group: 19          Personalized Ringing Pattern: 1
                                                 Message Lamp Ext: 63100
            Speakerphone: 2-way                Mute Button Enabled? y
        Display Language: english                  Button Modules: 0
 Survivable GK Node Name:
          Survivable COR: internal               Media Complex Ext:
   Survivable Trunk Dest? y                           IP SoftPhone? n

                                                          IP Video? n
                              Short/Prefixed Registration Allowed: default

                                                Customizable Labels? y
```

Note: For all SIP stations, 3PCC must be set to Avaya. All changes to SIP stations must be made using Avaya Aura® System Manager. The following screen serves as an example only.

In the **General Options** tab ensure that **Type of 3PCC Enabled** is set to **Avaya** as is shown below.



* Class of Restriction (COR)	1	* Class Of Service (COS)	1
* Emergency Location Ext	1100	* Message Lamp Ext.	1100
* Tenant Number	1		
* SIP Trunk	aar	Type of 3PCC Enabled	Avaya ▼
Coverage Path 1		Coverage Path 2	
Lock Message	□	Localized Display Name	1100, SIP Ext
Multibyte Language	Not Applicable ▼	Enable Reachability for Station Domain Control	system ▼

SIP URI

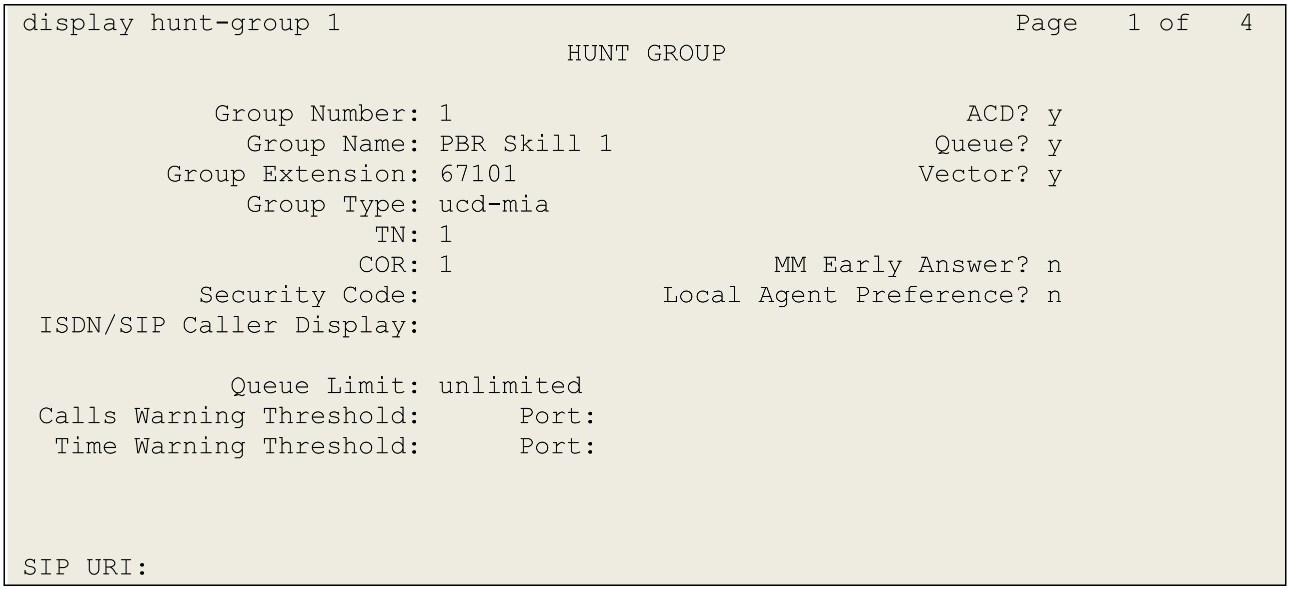
Primary Session Manager

IPv4: 10.10.40.32 IPv6:

Secondary Session Manager

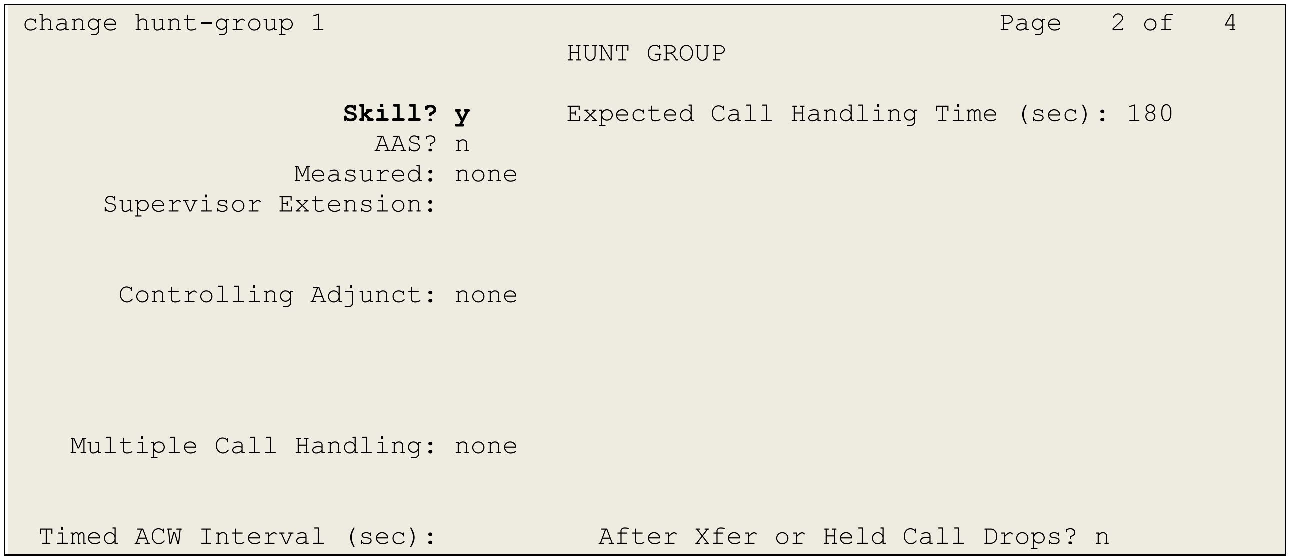
5.10. Administer Skill Group

Below is an example of a hunt group that was added for routing calls to agents, this was setup for this compliance testing.



```
display hunt-group 1                                          Page   1 of   4
                                  HUNT GROUP

            Group Number: 1                                ACD? y
              Group Name: PBR Skill 1                    Queue? y
         Group Extension: 67101                         Vector? y
              Group Type: ucd-mia
                      TN: 1
                     COR: 1                    MM Early Answer? n
           Security Code:               Local Agent Preference? n
 ISDN/SIP Caller Display:

             Queue Limit: unlimited
 Calls Warning Threshold:      Port:
  Time Warning Threshold:      Port:



SIP URI:
```

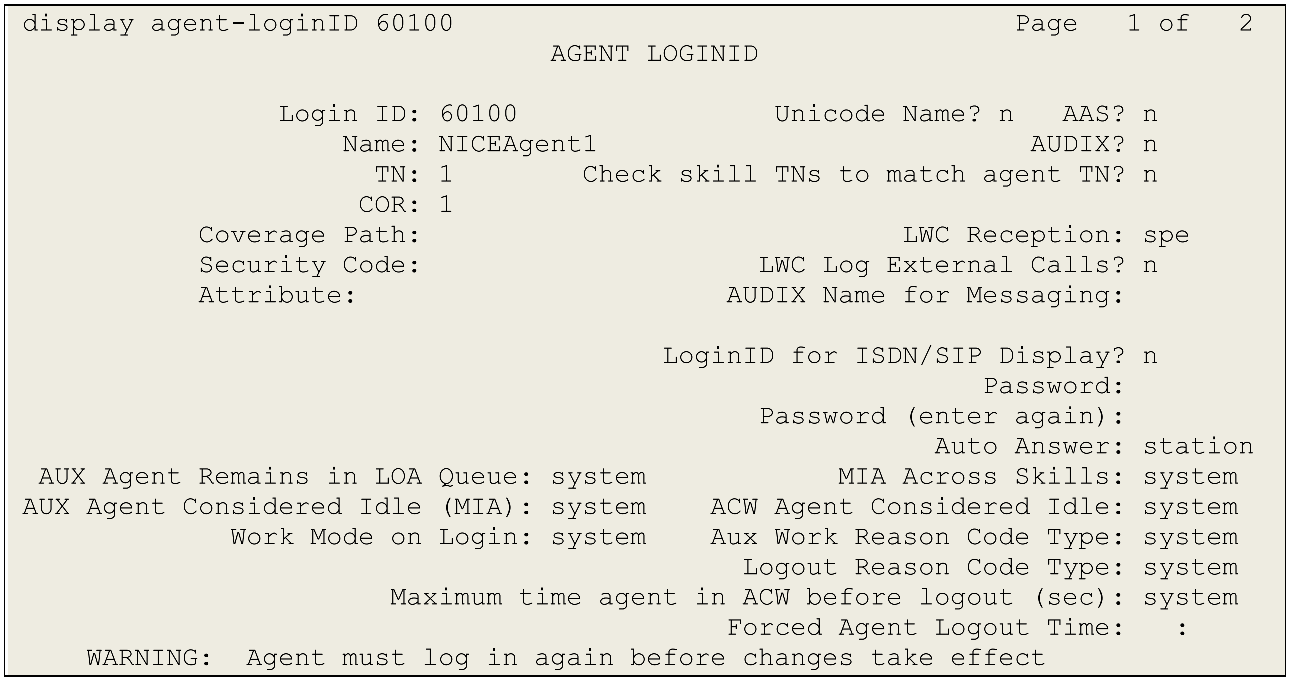
On **Page 2**, set **Skill** to **y**.



```
change hunt-group 1                                          Page   2 of   4
                                  HUNT GROUP

                    Skill? y      Expected Call Handling Time (sec): 180
                      AAS? n
                 Measured: none
     Supervisor Extension:


      Controlling Adjunct: none




   Multiple Call Handling: none


 Timed ACW Interval (sec):          After Xfer or Held Call Drops? n
```

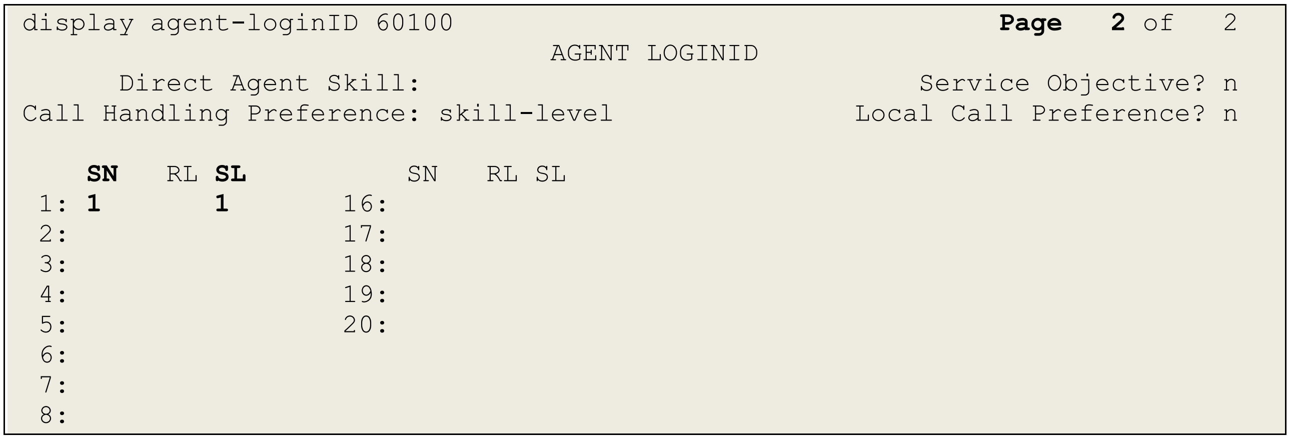
5.11. Administer Agent

Below is an example of an agent that was used for compliance testing.



```
display agent-loginID 60100                                   Page   1 of   2
                                 AGENT LOGINID

                Login ID: 60100                Unicode Name? n   AAS? n
                    Name: NICEAgent1                           AUDIX? n
                      TN: 1       Check skill TNs to match agent TN? n
                     COR: 1
           Coverage Path:                                LWC Reception: spe
           Security Code:                       LWC Log External Calls? n
           Attribute:                         AUDIX Name for Messaging:

                                        LoginID for ISDN/SIP Display? n
                                                            Password:
                                              Password (enter again):
                                                         Auto Answer: station
 AUX Agent Remains in LOA Queue: system              MIA Across Skills: system
AUX Agent Considered Idle (MIA): system     ACW Agent Considered Idle: system
             Work Mode on Login: system     Aux Work Reason Code Type: system
                                              Logout Reason Code Type: system
                       Maximum time agent in ACW before logout (sec): system
                                             Forced Agent Logout Time:   :
    WARNING:  Agent must log in again before changes take effect
```

On **Page 2**, enter the hunt group number configured in **Section 5.10** in the **SN** (Skill Number) column and enter an appropriate **SL** (skill level).



```
display agent-loginID 60100                                  Page   2 of   2
                                 AGENT LOGINID
      Direct Agent Skill:                                 Service Objective? n
Call Handling Preference: skill-level                 Local Call Preference? n

    SN   RL SL           SN   RL SL
 1: 1       1       16:
 2:                 17:
 3:                 18:
 4:                 19:
 5:                 20:
 6:
 7:
 8:
```

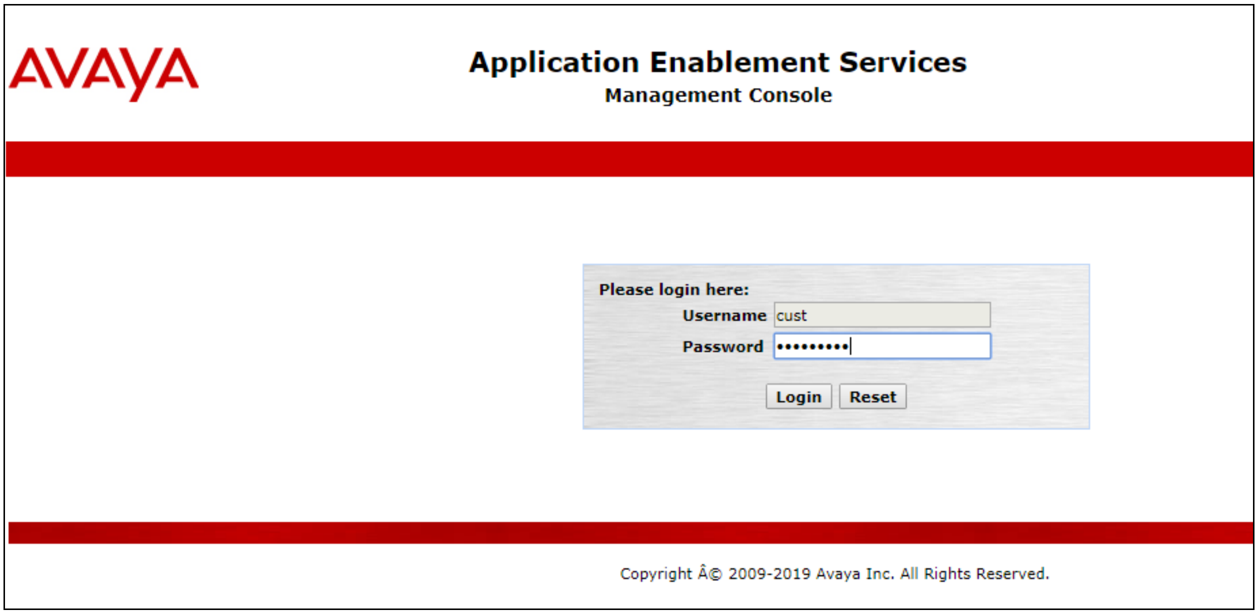
6. Configure Avaya Aura® Application Enablement Services

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

- Verify Licensing
- Create Switch Connection
- Administer TSAPI link
- Identify Tlinks
- Enable TSAPI Ports
- Create CTI User
- Associate Devices with CTI User

6.1. Verify Licensing

To access the AES Management Console, enter **https://<ip-addr>** as the URL in an Internet browser, where <ip-addr> is the IP address of the AES. At the login screen displayed, log in with the appropriate credentials and then select the **Login** button.

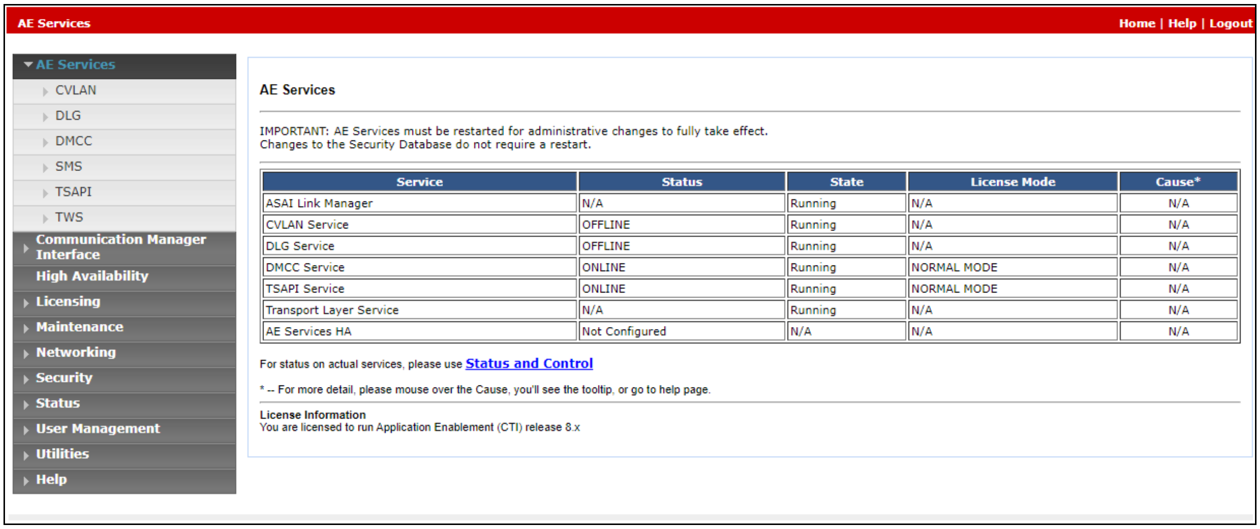


Application Enablement Services
Management Console

Please login here:
Username cust
Password ••••••••••

Note: Please ensure that an AES advanced license exists, as this is required for adjunct routing, (not shown here).

The Application Enablement Services Management Console appears displaying the **Welcome to OAM** screen (not shown). Select **AE Services** and verify that the TSAPI Service is licensed by ensuring that **TSAPI Service** is in the list of **Services** and that the **License Mode** is showing **NORMAL MODE**. If not, contact an Avaya support representative to acquire the proper license.



AE Services

IMPORTANT: AE Services must be restarted for administrative changes to fully take effect.
Changes to the Security Database do not require a restart.

Service	Status	State	License Mode	Cause*
ASAI Link Manager	N/A	Running	N/A	N/A
CVLAN Service	OFFLINE	Running	N/A	N/A
DLG Service	OFFLINE	Running	N/A	N/A
DMCC Service	ONLINE	Running	NORMAL MODE	N/A
TSAPI Service	ONLINE	Running	NORMAL MODE	N/A
Transport Layer Service	N/A	Running	N/A	N/A
AE Services HA	Not Configured	N/A	N/A	N/A

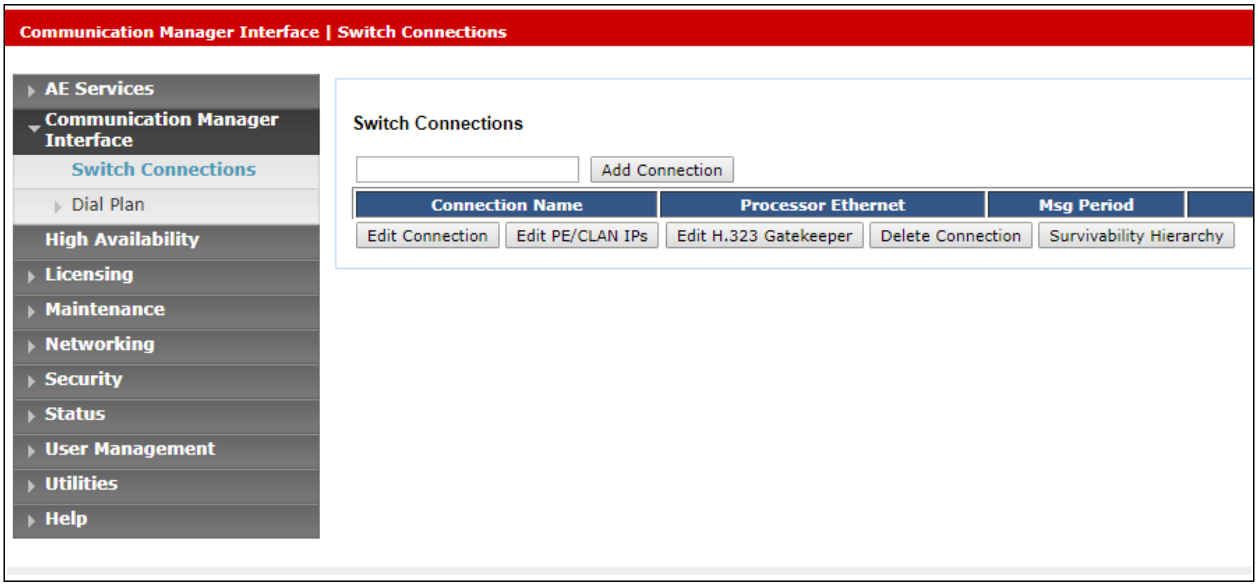
For status on actual services, please use Status and Control

* -- For more detail, please mouse over the Cause, you'll see the tooltip, or go to help page.

License Information
You are licensed to run Application Enablement (CTI) release 8.x

6.2. Create Switch Connection

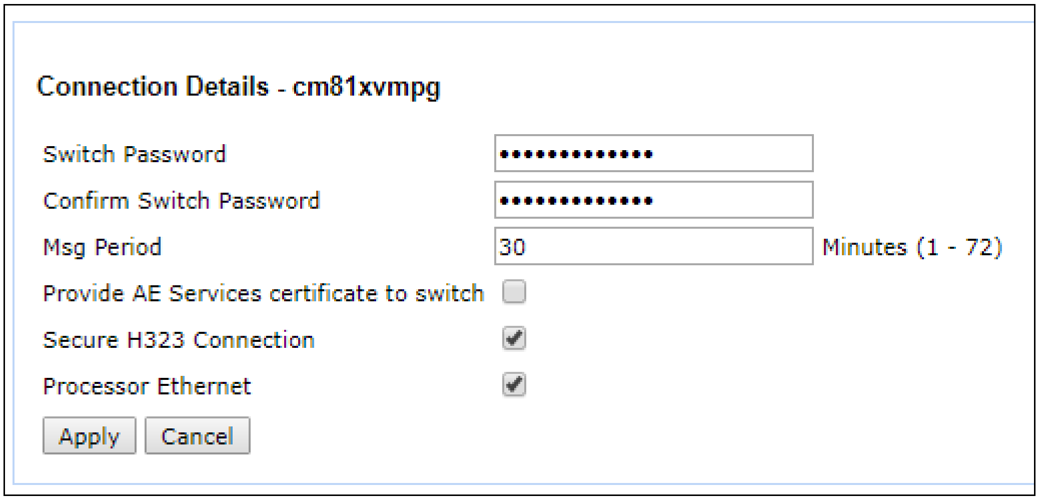
From the AES Management Console navigate to **Communication Manager Interface → Switch Connections** to set up a switch connection. Enter a name for the Switch Connection to be added and click the **Add Connection** button.



Switch Connections

Connection Name	Processor Ethernet	Msg Period

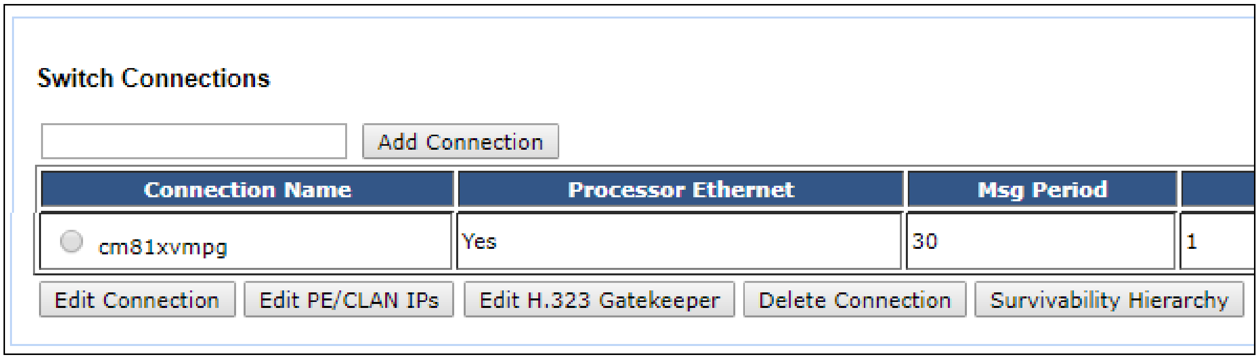
In the resulting screen enter the **Switch Password**; the Switch Password must be the same as that entered into Communication Manager AE Services Administration screen via the **change ip-services** command, described in **Section 5.3.2**. The remaining fields should show as below. Click **Apply** to save changes.



Connection Details - cm81xvmpg

Switch Password	•••••••••••••	
Confirm Switch Password	•••••••••••••	
Msg Period	30	Minutes (1 - 72)
Provide AE Services certificate to switch	☐	
Secure H323 Connection	☑	
Processor Ethernet	☑	

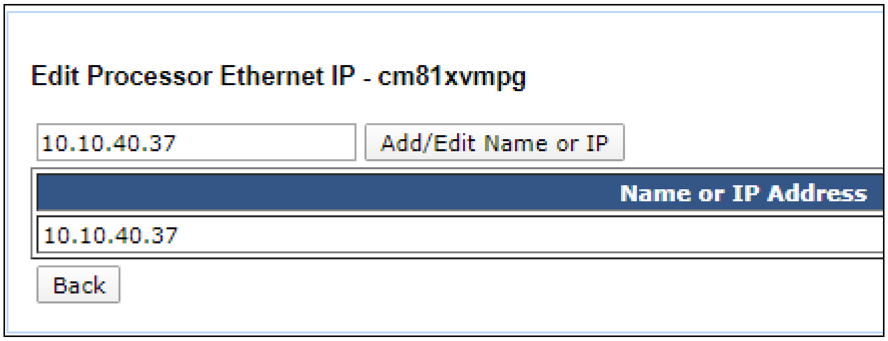
From the **Switch Connections** screen, select the radio button for the recently added switch connection and select the **Edit PE/CLAN IPs** button.



Switch Connections

Connection Name	Processor Ethernet	Msg Period	
○ cm81xvmpg	Yes	30	1

In the resulting screen, enter the IP address of the procr as shown in **Section 5.3.1** that will be used for the AES connection and select the **Add/Edit Name or IP** button.



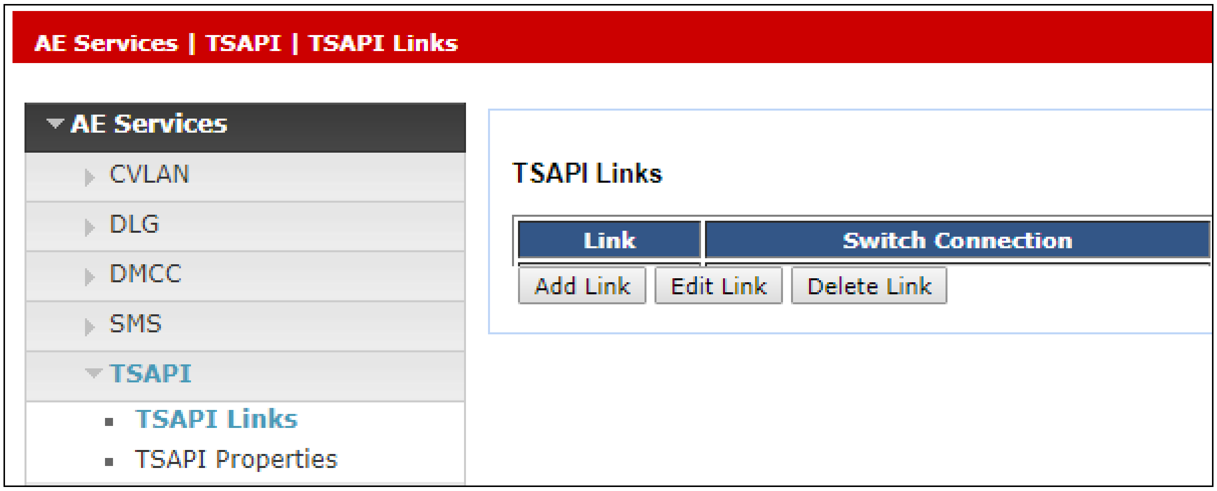
Edit Processor Ethernet IP - cm81xvmpg

10.10.40.37

Name or IP Address
10.10.40.37

6.3. Administer TSAPI link

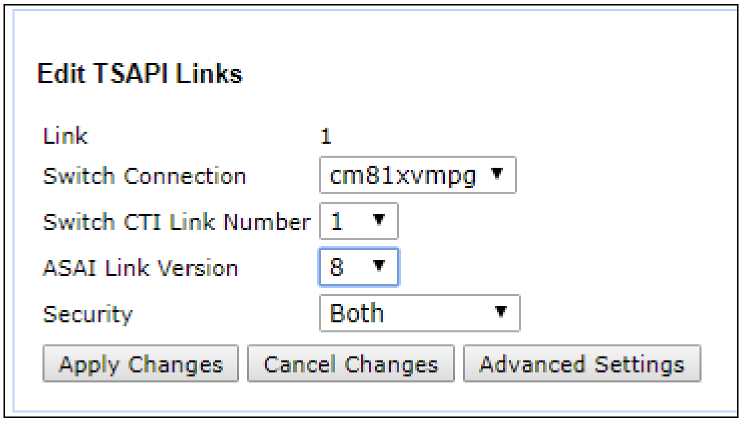
From the Application Enablement Services Management Console, select **AE Services → TSAPI → TSAPI Links**. Select **Add Link** button as shown in the screen below.



On the **Add TSAPI Links** screen (or the **Edit TSAPI Links** screen to edit a previously configured TSAPI Link as shown below), enter the following values:

- **Link:** Use the drop-down list to select an unused link number.
- **Switch Connection:** Choose the switch connection **cm81xvmpg**, which has already been configured in **Section 6.2** from the drop-down list.
- **Switch CTI Link Number:** Corresponding CTI link number configured in **Section 5.3.3** which is **1**.
- **ASAI Link Version:** This can be left at the default value of **8**.
- **Security:** This should be set to **Both** allowing both secure and nonsecure connections.

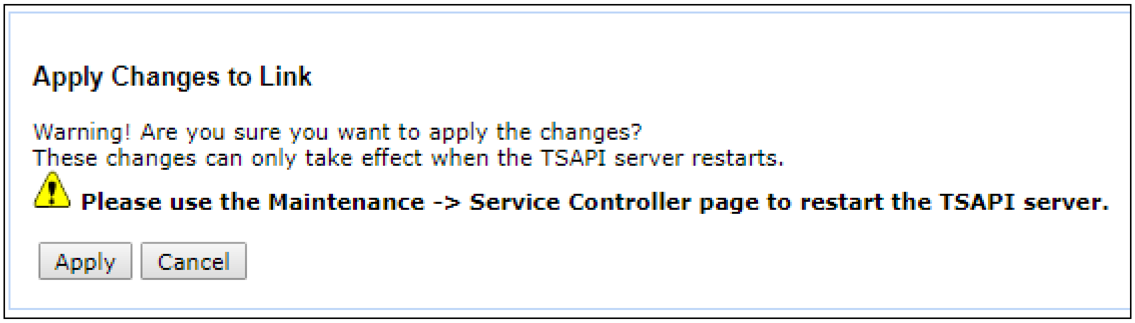
Once completed, select **Apply Changes**.



Edit TSAPI Links

Link	1
Switch Connection	cm81xvmpg
Switch CTI Link Number	1
ASAI Link Version	8
Security	Both

Another screen appears for confirmation of the changes made. Choose **Apply**.

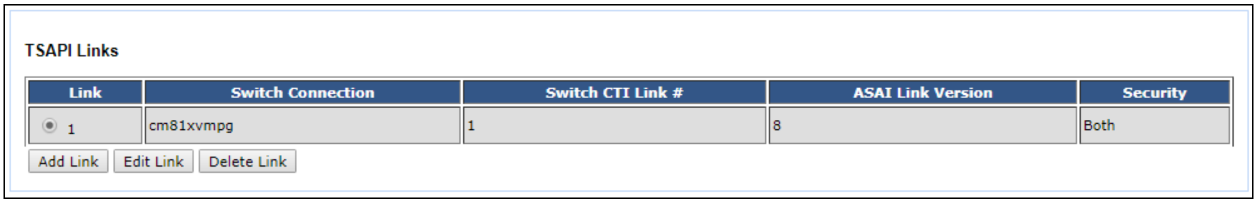


Apply Changes to Link

Warning! Are you sure you want to apply the changes?
These changes can only take effect when the TSAPI server restarts.

⚠ **Please use the Maintenance -> Service Controller page to restart the TSAPI server.**

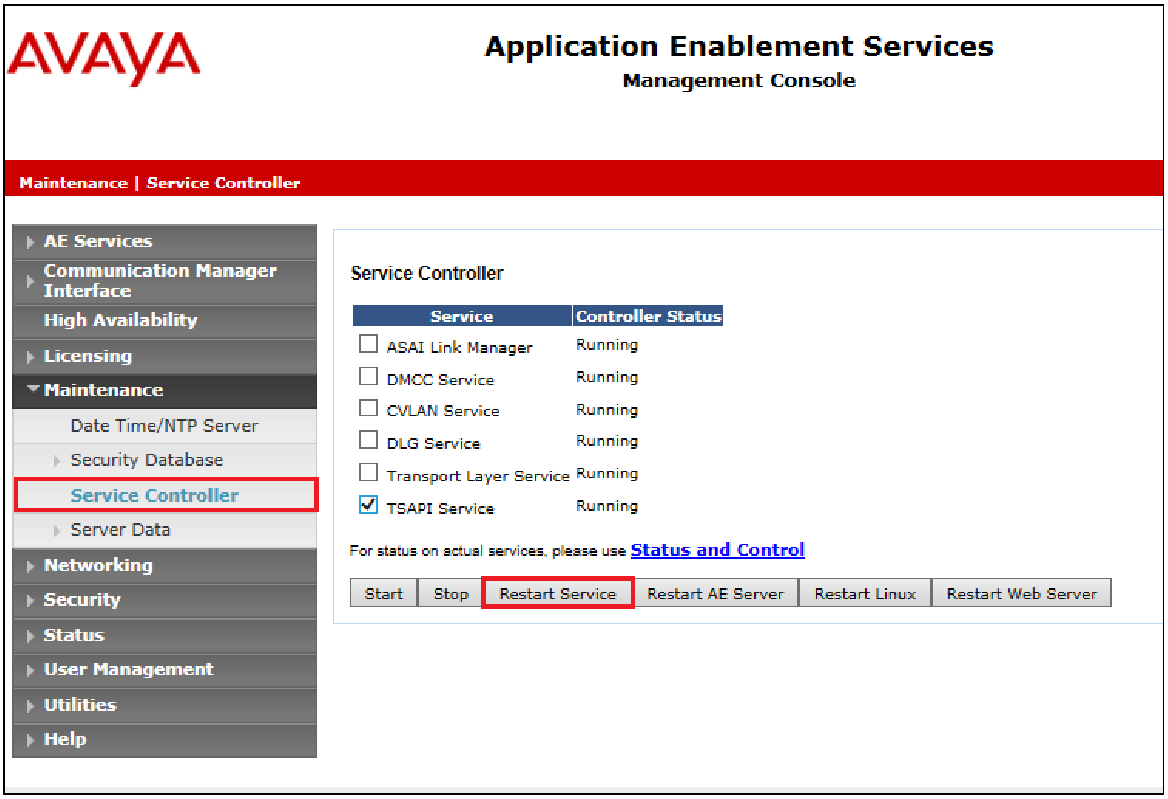
When the TSAPI Link is completed, it should resemble the screen below.



TSAPI Links

Link	Switch Connection	Switch CTI Link #	ASAI Link Version	Security
● 1	cm81xvmpg	1	8	Both

The TSAPI Service must be restarted to effect the changes made in this section. From the Management Console menu, navigate to **Maintenance → Service Controller**. On the Service Controller screen, tick the **TSAPI Service** and select **Restart Service**.



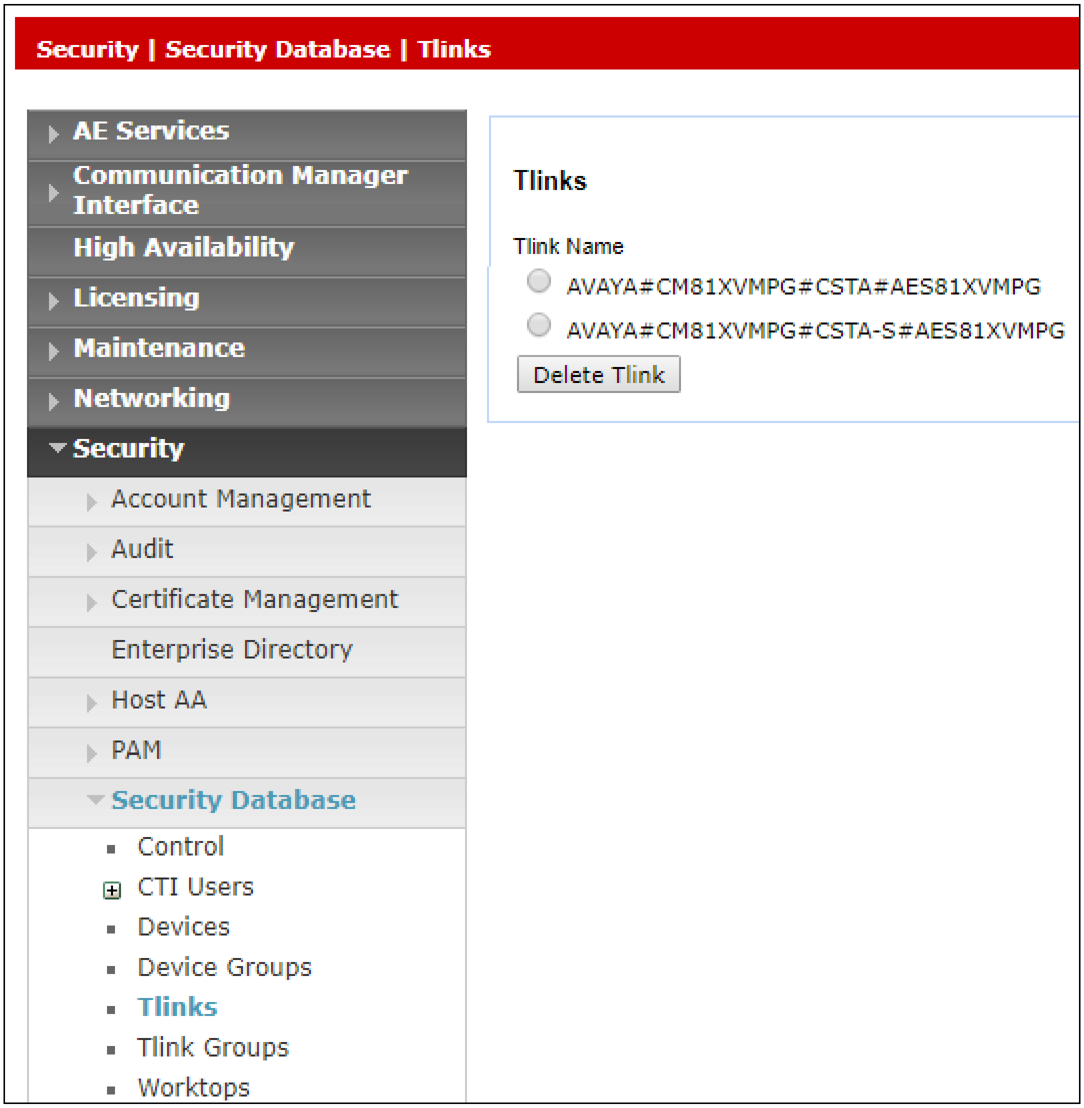
Service Controller

Service	Controller Status
□ ASAI Link Manager	Running
□ DMCC Service	Running
□ CVLAN Service	Running
□ DLG Service	Running
□ Transport Layer Service	Running
☑ TSAPI Service	Running

For status on actual services, please use Status and Control

6.4. Identify Tlinks

Navigate to **Security → Security Database → Tlinks**. Verify the value of the **Tlink Name**. This will be needed to configure PBR in **Section 7.2**.



Tlinks

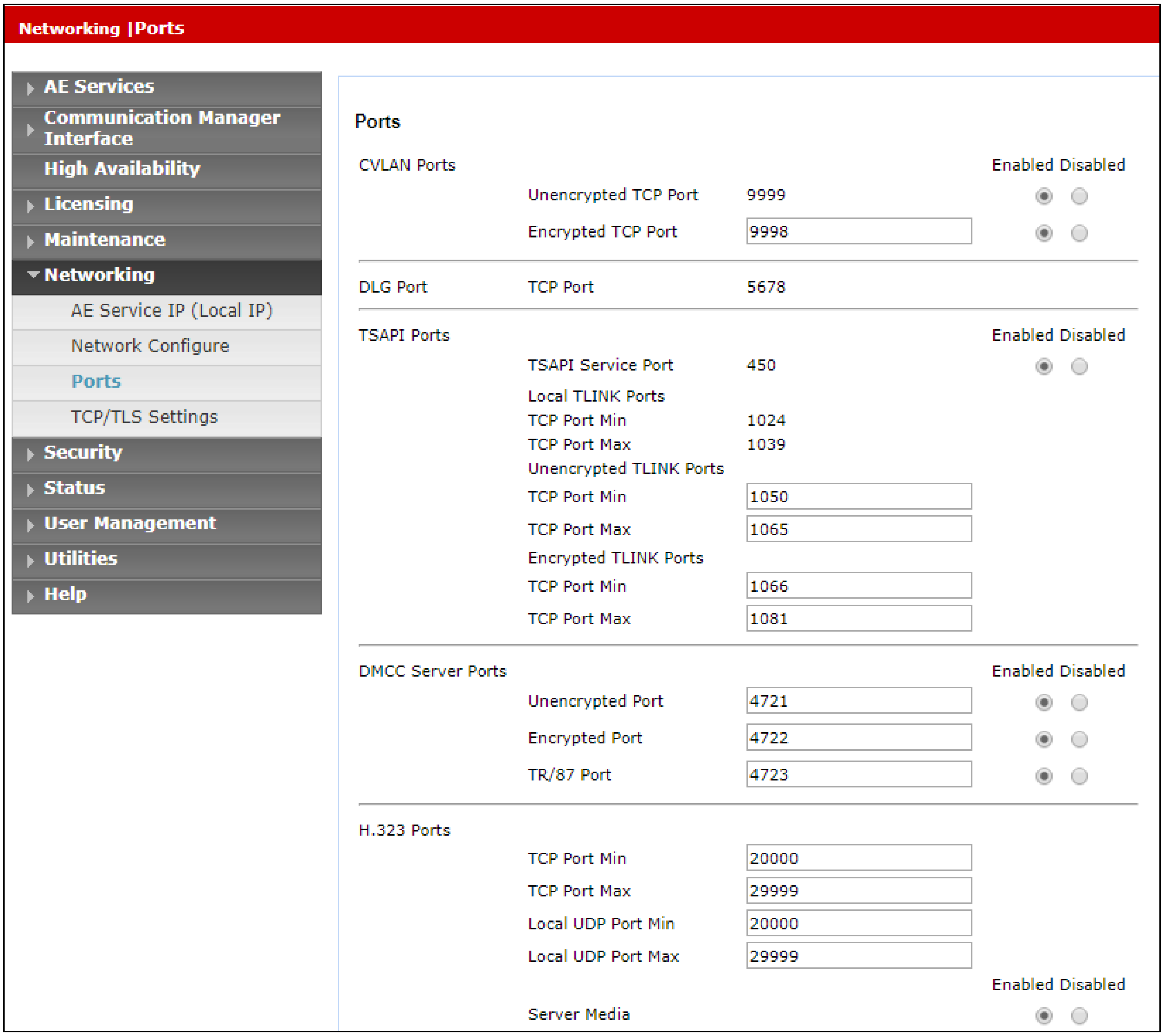
Tlink Name

○ AVAYA#CM81XVMPG#CSTA#AES81XVMPG

○ AVAYA#CM81XVMPG#CSTA-S#AES81XVMPG

6.5. Enable TSAPI Ports

To ensure that TSAPI ports are enabled, navigate to **Networking → Ports**. Ensure that the TSAPI ports are set to **Enabled** as shown below.

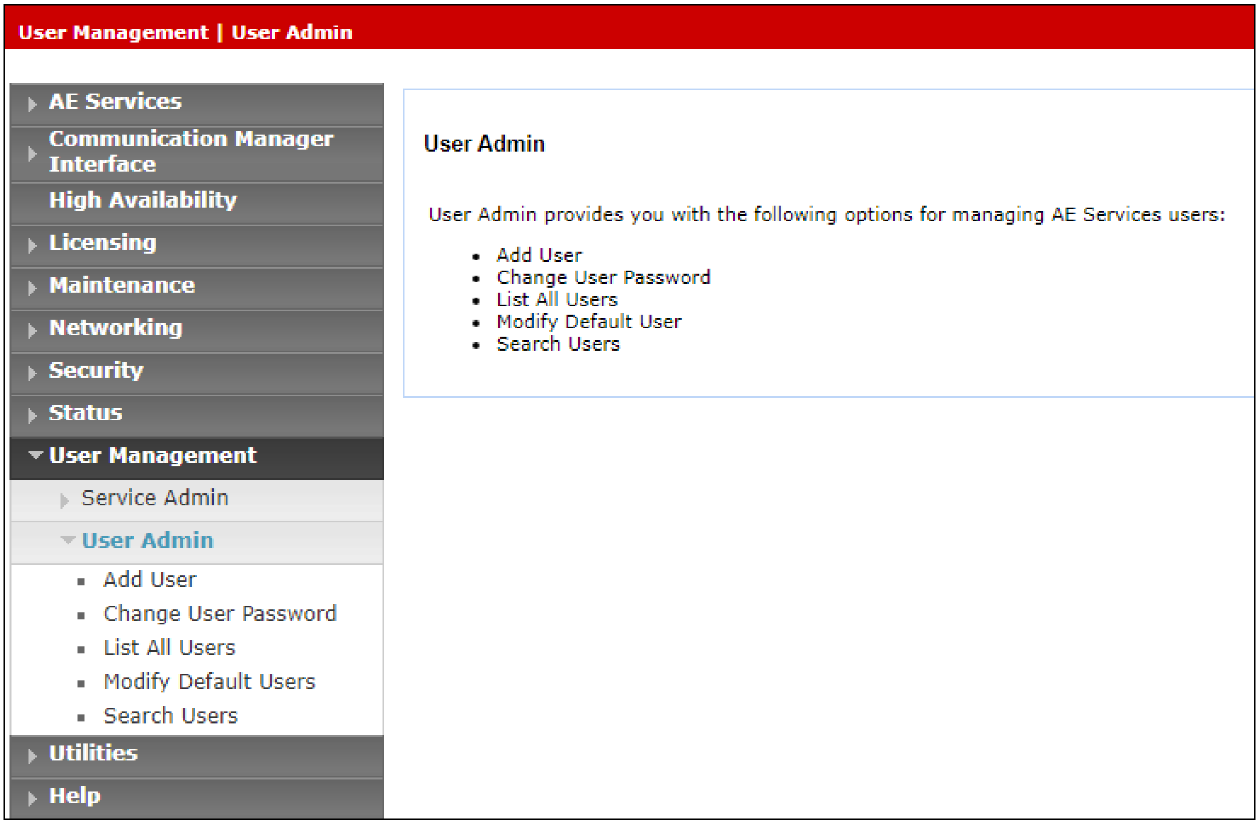


Ports

			Enabled	Disabled
CVLAN Ports				
	Unencrypted TCP Port	9999	●	○
	Encrypted TCP Port	9998	●	○
DLG Port	TCP Port	5678		
TSAPI Ports				
	TSAPI Service Port	450	●	○
	Local TLINK Ports			
	TCP Port Min	1024		
	TCP Port Max	1039		
	Unencrypted TLINK Ports			
	TCP Port Min	1050		
	TCP Port Max	1065		
	Encrypted TLINK Ports			
	TCP Port Min	1066		
	TCP Port Max	1081		
DMCC Server Ports				
	Unencrypted Port	4721	●	○
	Encrypted Port	4722	●	○
	TR/87 Port	4723	●	○
H.323 Ports				
	TCP Port Min	20000		
	TCP Port Max	29999		
	Local UDP Port Min	20000		
	Local UDP Port Max	29999		
	Server Media		●	○

6.6. Create CTI User

A user ID and password needs to be configured for the Predictive Behavioral Routing server to communicate with the Application Enablement Services server. Navigate to the **User Management** → **User Admin** screen then choose the **Add User** option.



User Admin

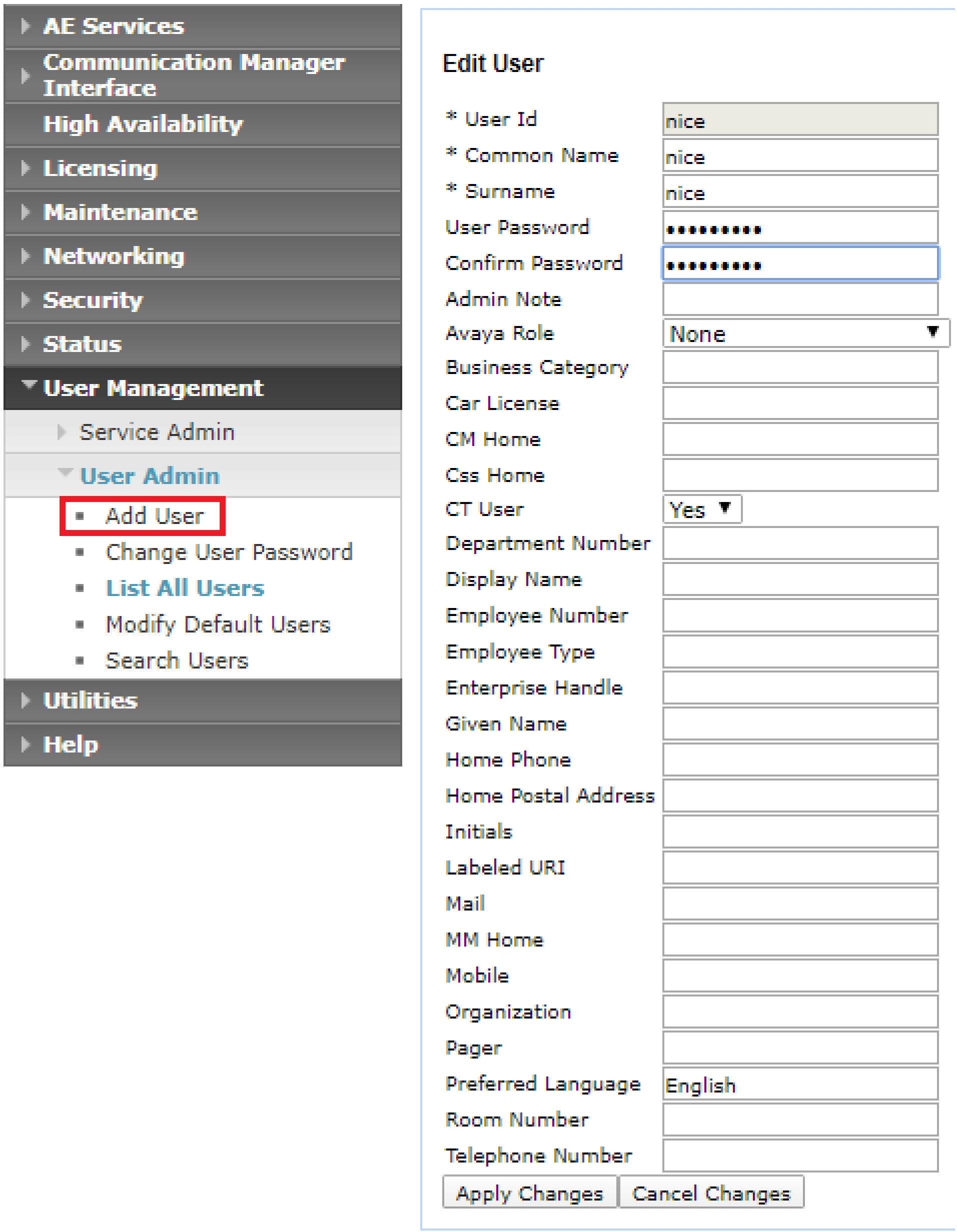
User Admin provides you with the following options for managing AE Services users:

- Add User
- Change User Password
- List All Users
- Modify Default User
- Search Users

In the **Add User** screen shown below, enter the following values:

- **User Id -** This will be used by the Predictive Behavioral Routing setup in **Section 7.2**.
- **Common Name** and **Surname -** Descriptive names need to be entered.
- **User Password** and **Confirm Password -** This will be used with Predictive Behavioral Routing setup in **Section 7.2**.
- **CT User -** Select **Yes** from the drop-down menu.

Click on **Apply Changes** at the bottom of the screen.

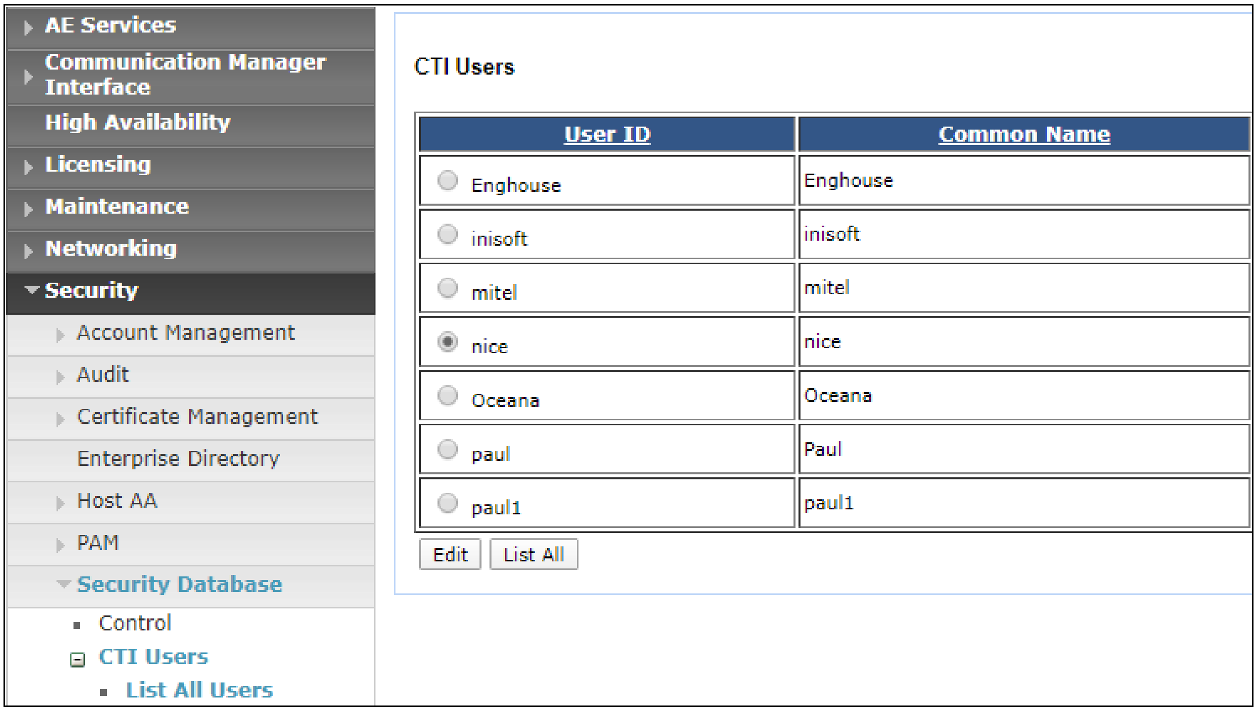


Edit User

* User Id	nice
* Common Name	nice
* Surname	nice
User Password	•••••••••
Confirm Password	•••••••••
Admin Note	
Avaya Role	None
Business Category	
Car License	
CM Home	
Css Home	
CT User	Yes
Department Number	
Display Name	
Employee Number	
Employee Type	
Enterprise Handle	
Given Name	
Home Phone	
Home Postal Address	
Initials	
Labeled URI	
Mail	
MM Home	
Mobile	
Organization	
Pager	
Preferred Language	English
Room Number	
Telephone Number	

6.7. Associate Devices with CTI User

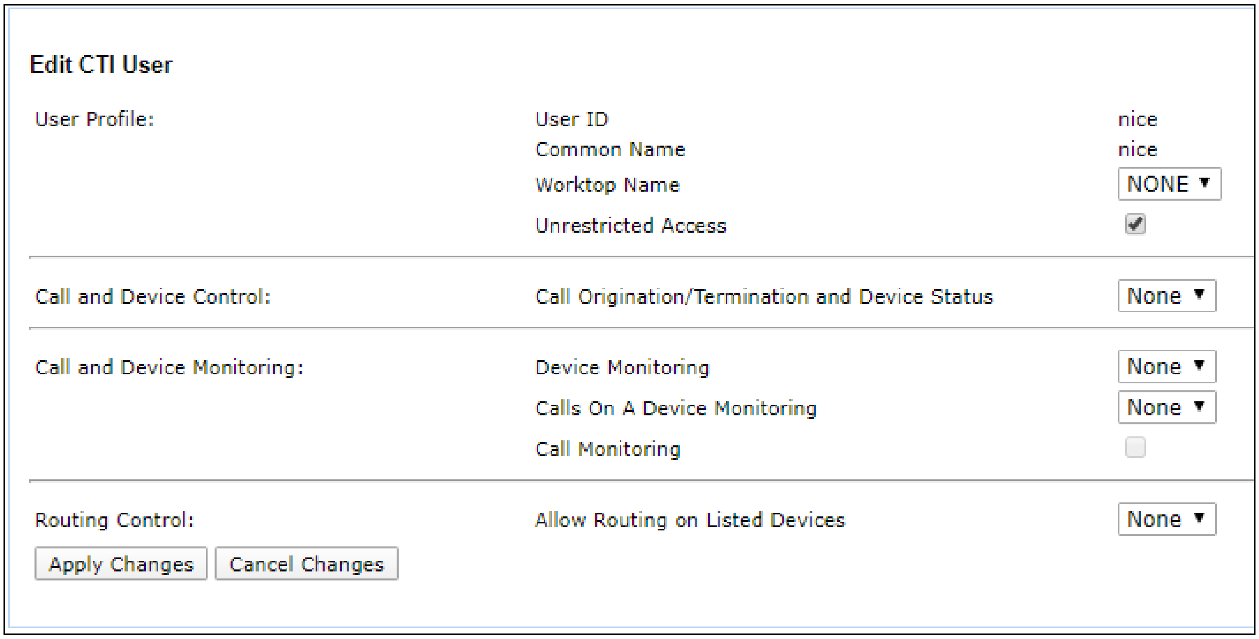
Navigate to **Security → Security Database → CTI Users → List All Users**. Select the CTI user added in **Section 6.6** and click on **Edit**.



CTI Users

	User ID	Common Name
○	Enghouse	Enghouse
○	inisoft	inisoft
○	mitel	mitel
●	nice	nice
○	Oceana	Oceana
○	paul	Paul
○	paul1	paul1

In the main window ensure that **Unrestricted Access** is ticked. Once this is done click on **Apply Changes**.



Edit CTI User

User Profile:	User ID	nice
	Common Name	nice
	Worktop Name	NONE ▼
	Unrestricted Access	☑
Call and Device Control:	Call Origination/Termination and Device Status	None ▼
Call and Device Monitoring:	Device Monitoring	None ▼
	Calls On A Device Monitoring	None ▼
	Call Monitoring	□
Routing Control:	Allow Routing on Listed Devices	None ▼

7. Configure NICE Predictive Behavioral Routing

This section provides the procedures for configuring the Predictive Behavioral Routing (PBR) server. The procedures include the following areas.

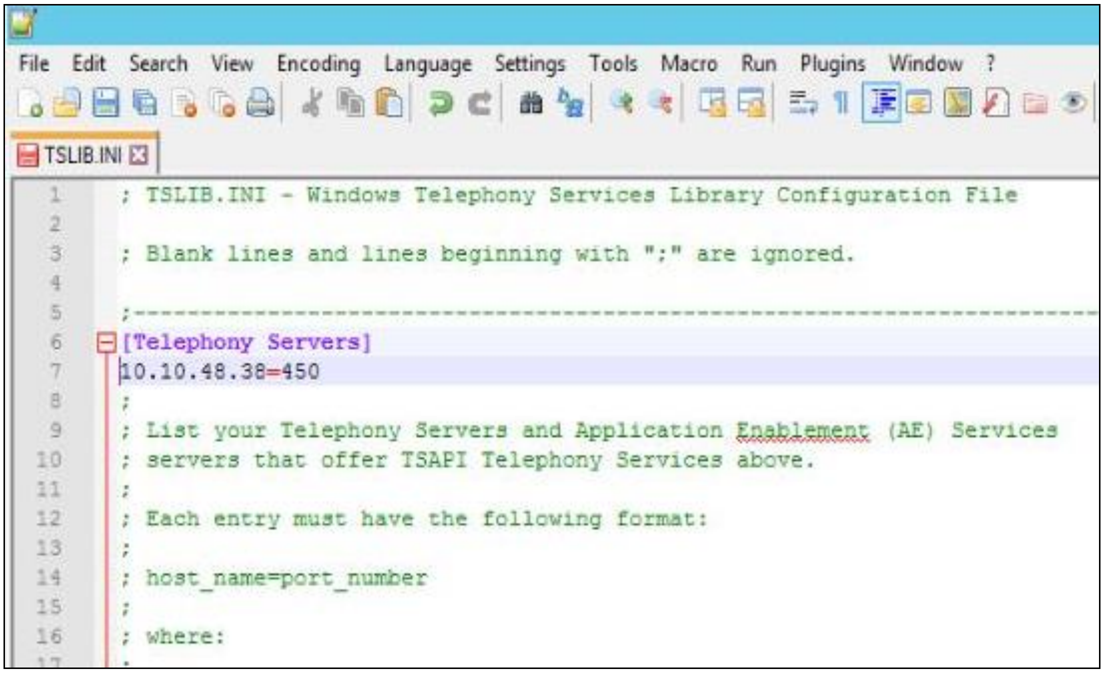
- Administer TSLIB
- Administer workerSetting.config
- Start services

The configuration of PBR server is performed by NICE technicians. The procedural steps are presented in these Application Notes for informational purposes.

Note: The screen shots in this section were taken from previous compliance testing and serve as an example of how the NICE PBR setup should be configured.

7.1. Administer TSLIB

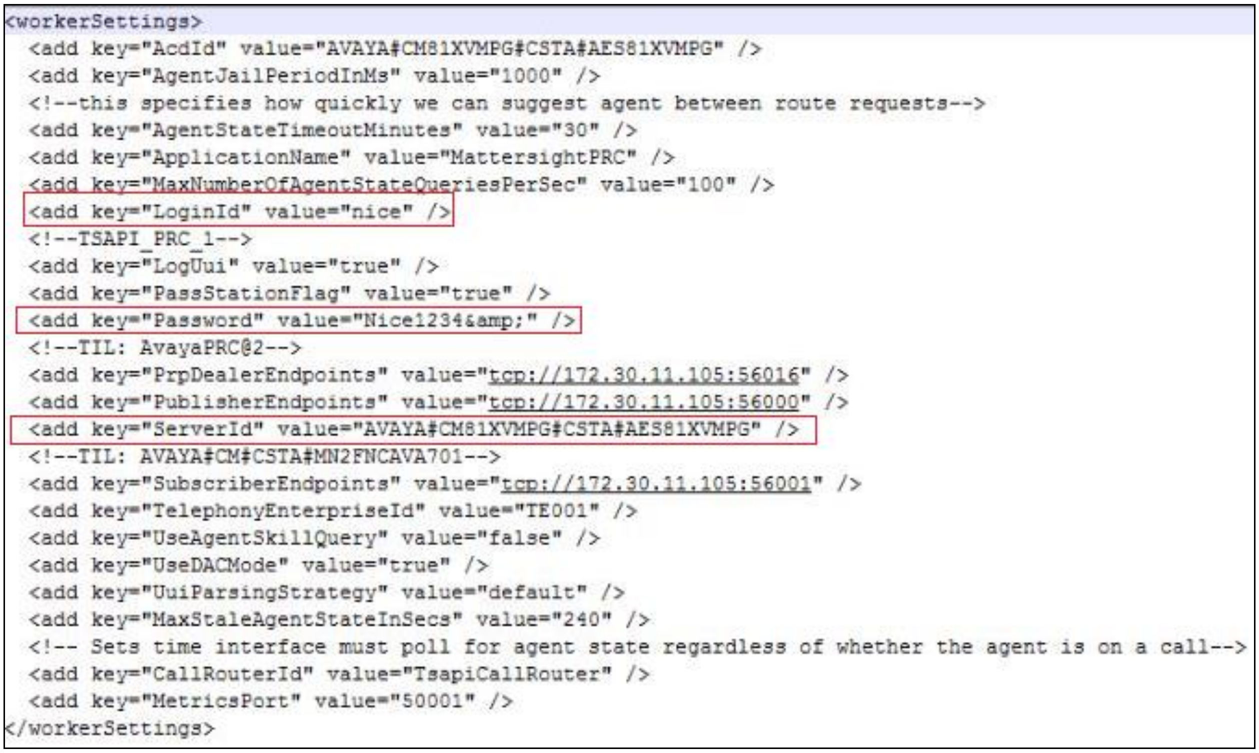
In TSLIB, enter IP address of Avaya Applicable Enablement Server.



```
; TSLIB.INI - Windows Telephony Services Library Configuration File

; Blank lines and lines beginning with ";" are ignored.

;-----------------------------------------------------------------------
[Telephony Servers]
10.10.48.38=450
;
; List your Telephony Servers and Application Enablement (AE) Services
; servers that offer TSAPI Telephony Services above.
;
; Each entry must have the following format:
;
; host_name=port_number
;
; where:
```

7.2. Administer workerSettings.config

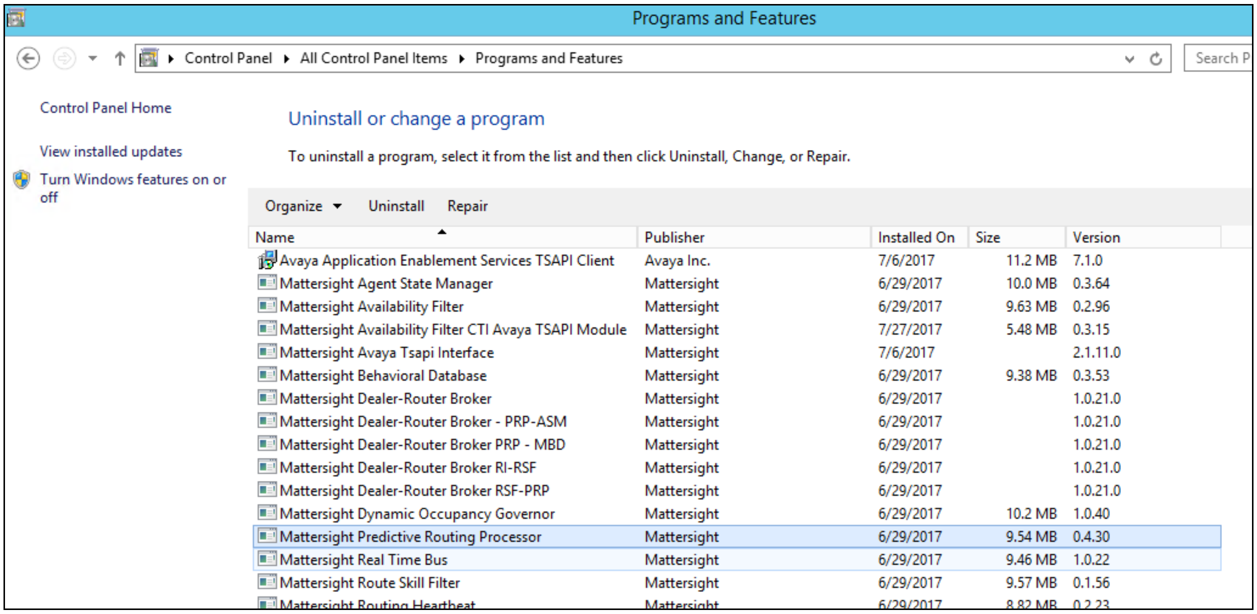
In **workerSettings.config** file enter Avaya Enablement Server information as display below. The **ServerId** should display the Avaya Enablement Services Tlink as displayed in **Section 6.4**. The **LoginId** and **Password** should be that of the Avaya Enablement Services user as created in **Section 6.6**.



```
<workerSettings>
  <add key="AcdId" value="AVAYA#CM81XVMPG#CSTA#AES81XVMPG" />
  <add key="AgentJailPeriodInMs" value="1000" />
  <!--this specifies how quickly we can suggest agent between route requests-->
  <add key="AgentStateTimeoutMinutes" value="30" />
  <add key="ApplicationName" value="MattersightPRC" />
  <add key="MaxNumberOfAgentStateQueriesPerSec" value="100" />
  <add key="LoginId" value="nice" />
  <!--TSAPI_PRC_1-->
  <add key="LogUui" value="true" />
  <add key="PassStationFlag" value="true" />
  <add key="Password" value="Nice1234&amp;" />
  <!--TIL: AvayaPRC@2-->
  <add key="PrpDealerEndpoints" value="tcp://172.30.11.105:56016" />
  <add key="PublisherEndpoints" value="tcp://172.30.11.105:56000" />
  <add key="ServerId" value="AVAYA#CM81XVMPG#CSTA#AES81XVMPG" />
  <!--TIL: AVAYA#CM#CSTA#MN2FNCAVA701-->
  <add key="SubscriberEndpoints" value="tcp://172.30.11.105:56001" />
  <add key="TelephonyEnterpriseId" value="TE001" />
  <add key="UseAgentSkillQuery" value="false" />
  <add key="UseDACMode" value="true" />
  <add key="UuiParsingStrategy" value="default" />
  <add key="MaxStaleAgentStateInSecs" value="240" />
  <!-- Sets time interface must poll for agent state regardless of whether the agent is on a call-->
  <add key="CallRouterId" value="TsapiCallRouter" />
  <add key="MetricsPort" value="50001" />
</workerSettings>
```

7.3. Start Services

Select **Start → Control Panel → Administrative Tools → Services**, to display the **Services** screen. Navigate to the **Mattersight Avaya TSAPI Interface** entry, right-click on the entry and select **Start**.


Programs and Features
Control Panel ▸ All Control Panel Items ▸ Programs and Features
Search P
Control Panel Home
View installed updates
Turn Windows features on or off
Organize ▾
Uninstall
Repair

Uninstall or change a program

To uninstall a program, select it from the list and then click Uninstall, Change, or Repair.

Name	Publisher	Installed On	Size	Version
Avaya Application Enablement Services TSAPI Client	Avaya Inc.	7/6/2017	11.2 MB	7.1.0
Mattersight Agent State Manager	Mattersight	6/29/2017	10.0 MB	0.3.64
Mattersight Availability Filter	Mattersight	6/29/2017	9.63 MB	0.2.96
Mattersight Availability Filter CTI Avaya TSAPI Module	Mattersight	7/27/2017	5.48 MB	0.3.15
Mattersight Avaya Tsapi Interface	Mattersight	7/6/2017		2.1.11.0
Mattersight Behavioral Database	Mattersight	6/29/2017	9.38 MB	0.3.53
Mattersight Dealer-Router Broker	Mattersight	6/29/2017		1.0.21.0
Mattersight Dealer-Router Broker - PRP-ASM	Mattersight	6/29/2017		1.0.21.0
Mattersight Dealer-Router Broker PRP - MBD	Mattersight	6/29/2017		1.0.21.0
Mattersight Dealer-Router Broker RI-RSF	Mattersight	6/29/2017		1.0.21.0
Mattersight Dealer-Router Broker RSF-PRP	Mattersight	6/29/2017		1.0.21.0
Mattersight Dynamic Occupancy Governor	Mattersight	6/29/2017	10.2 MB	1.0.40
Mattersight Predictive Routing Processor	Mattersight	6/29/2017	9.54 MB	0.4.30
Mattersight Real Time Bus	Mattersight	6/29/2017	9.46 MB	1.0.22
Mattersight Route Skill Filter	Mattersight	6/29/2017	9.57 MB	0.1.56
Mattersight Routing Heartbeat	Mattersight	6/29/2017	8.82 MB	0.2.23

8. Verification Steps

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

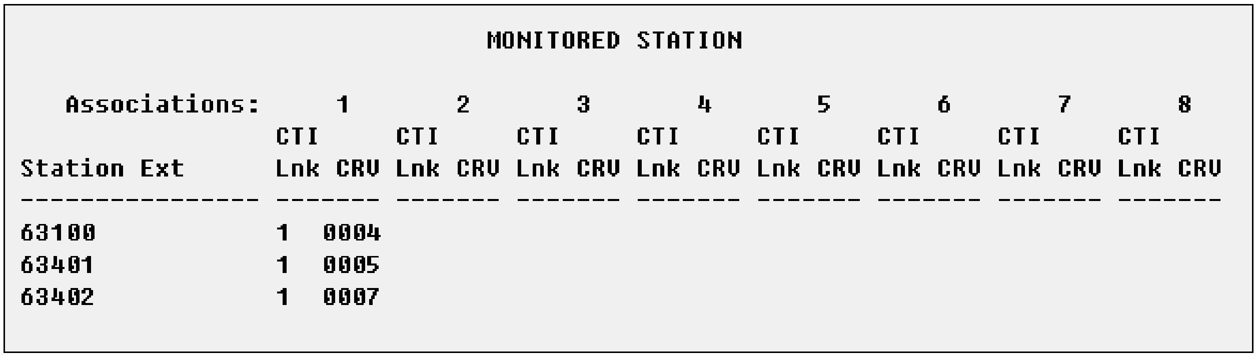
8.1. Verify CTI Link from Avaya Aura® Communication Manager

On Communication Manager, verify the status of the administered CTI link by using the "status aesvcs cti-link" command. Verify that the Service State is "established" for the CTI link number administered in **Section 5.3.3**, 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     8        no    aes81vmpg        established   61       61
```

8.2. Verify Monitoring from Communication Manager

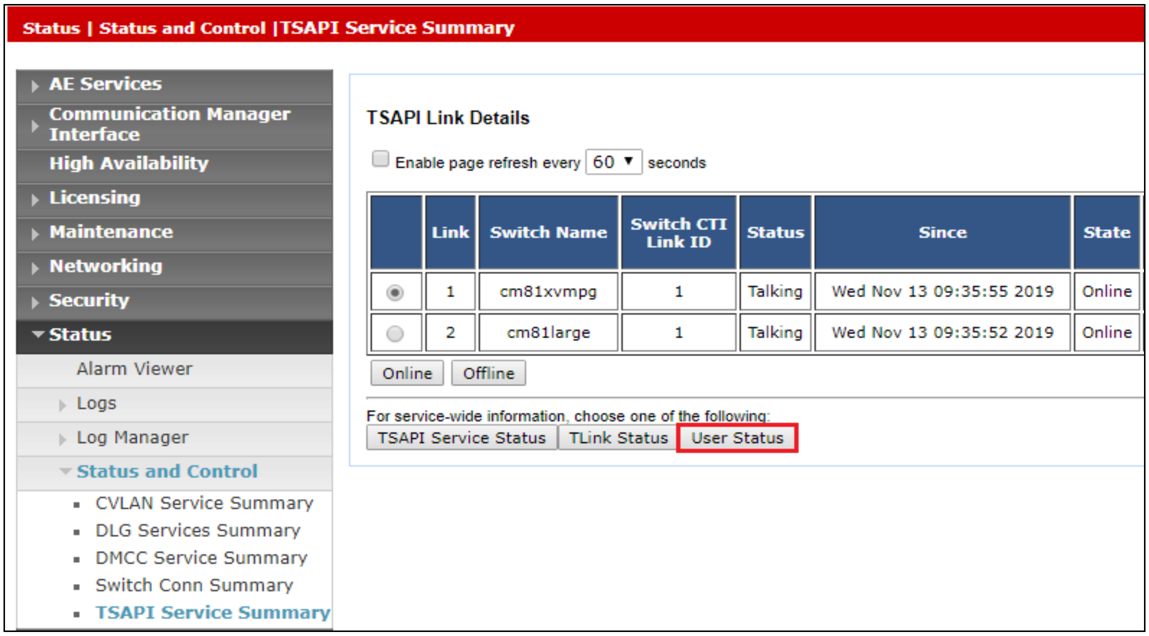
The "List Monitor" command can be used to display any stations are being currently monitored.



```
                              MONITORED STATION

   Associations:     1       2       3       4       5       6       7       8
                 CTI     CTI     CTI     CTI     CTI     CTI     CTI     CTI
Station Ext      Lnk CRV Lnk CRV Lnk CRV Lnk CRV Lnk CRV Lnk CRV Lnk CRV Lnk CRV
---------------- ------- ------- ------- ------- ------- ------- ------- -------
63100            1  0004
63401            1  0005
63402            1  0007
```

8.3. Verify TSAPI Connection Status from Avaya Aura® Application Enablement Services

Using the Application Enablement Services web interface, click **Status** → **Status and Control** → **TSAPI Service Summary**. Select the appropriate **Switch Name** and click on **User Status**.



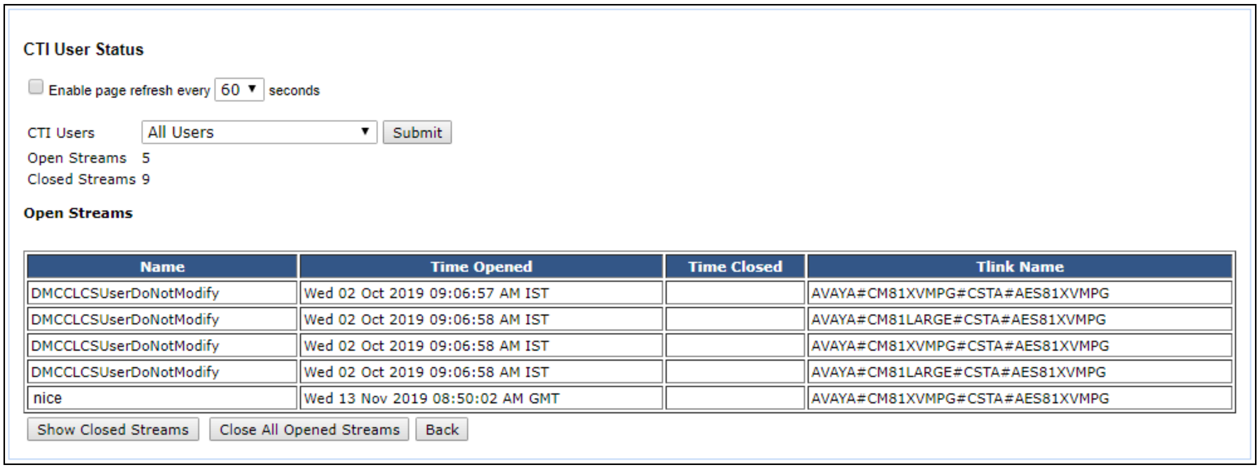
TSAPI Link Details

□ Enable page refresh every 60 ▼ seconds

	Link	Switch Name	Switch CTI Link ID	Status	Since	State
●	1	cm81xvmpg	1	Talking	Wed Nov 13 09:35:55 2019	Online
○	2	cm81large	1	Talking	Wed Nov 13 09:35:52 2019	Online

For service-wide information, choose one of the following:

The **CTI User Status** should show the **nice** user that was created in **Section 6.6**.



CTI User Status

□ Enable page refresh every 60 ▼ seconds

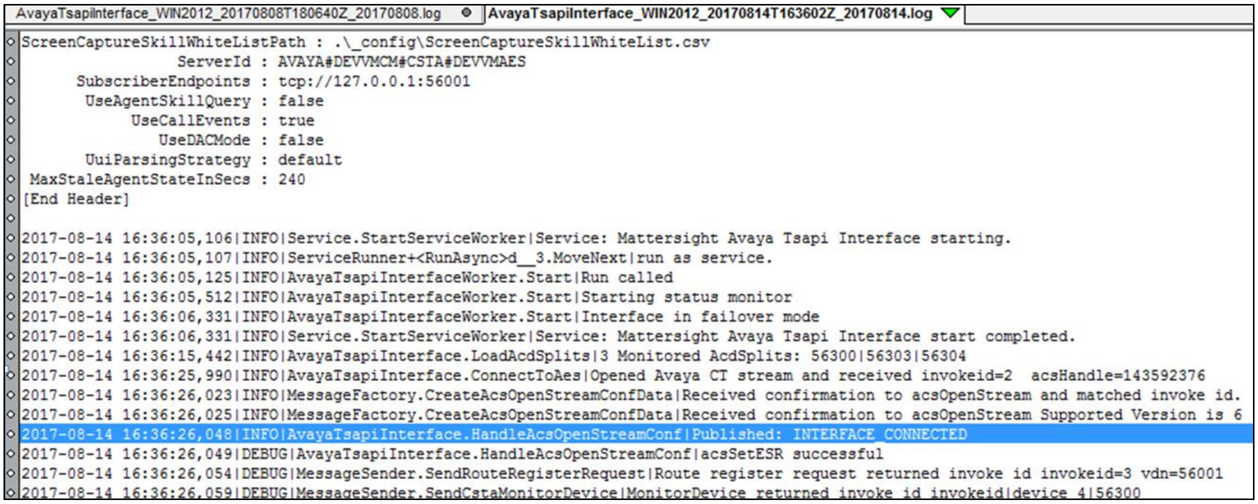
CTI Users All Users ▼ Submit
Open Streams 5
Closed Streams 9

Open Streams

Name	Time Opened	Time Closed	Tlink Name
DMCCLCSUserDoNotModify	Wed 02 Oct 2019 09:06:57 AM IST		AVAYA#CM81XVMPG#CSTA#AES81XVMPG
DMCCLCSUserDoNotModify	Wed 02 Oct 2019 09:06:58 AM IST		AVAYA#CM81LARGE#CSTA#AES81XVMPG
DMCCLCSUserDoNotModify	Wed 02 Oct 2019 09:06:58 AM IST		AVAYA#CM81XVMPG#CSTA#AES81XVMPG
DMCCLCSUserDoNotModify	Wed 02 Oct 2019 09:06:58 AM IST		AVAYA#CM81LARGE#CSTA#AES81XVMPG
nice	Wed 13 Nov 2019 08:50:02 AM GMT		AVAYA#CM81XVMPG#CSTA#AES81XVMPG

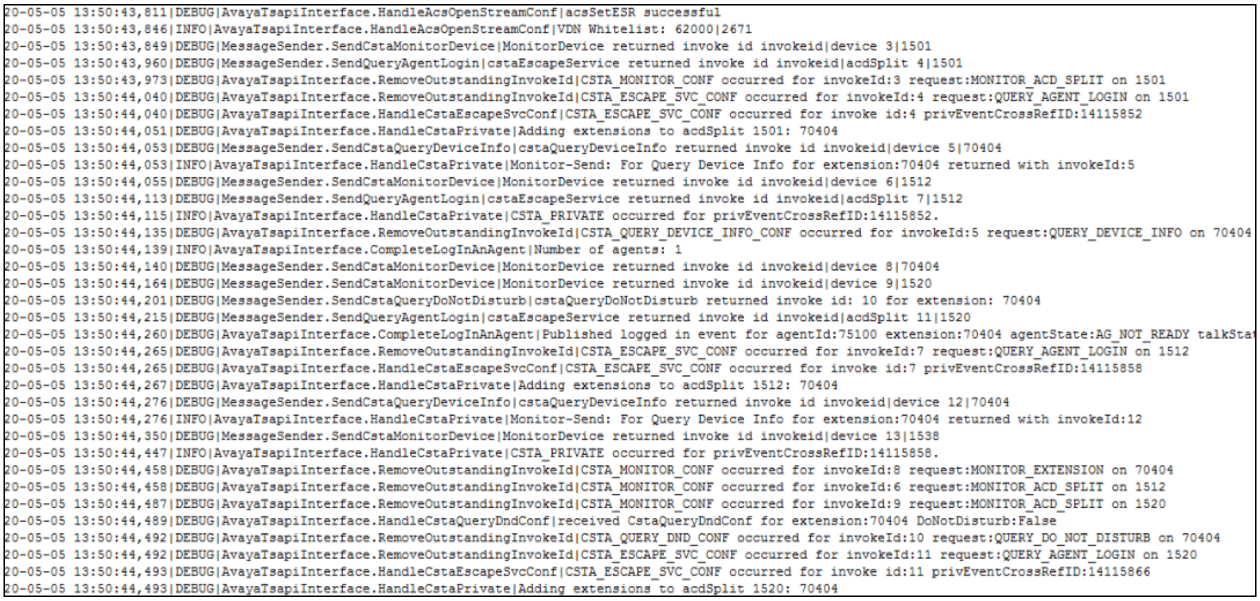
8.4. Verify PBR Connection to AES and VDN Registration

From the PBR server, open log file AvayaTSAPIInterface.log to verify PBR is successfully connected as highlighted in below screenshot.


AvayaTsapiInterface_WIN2012_20170808T180640Z_20170808.log
AvayaTsapiInterface_WIN2012_20170814T163602Z_20170814.log

```
ScreenCaptureSkillWhiteListPath : .\_config\ScreenCaptureSkillWhiteList.csv
                  ServerId : AVAYA#DEVVMCM#CSTA#DEVVMAES
       SubscriberEndpoints : tcp://127.0.0.1:56001
        UseAgentSkillQuery : false
             UseCallEvents : true
                UseDACMode : false
        UuiParsingStrategy : default
 MaxStaleAgentStateInSecs : 240
[End Header]

2017-08-14 16:36:05,106|INFO|Service.StartServiceWorker|Service: Mattersight Avaya Tsapi Interface starting.
2017-08-14 16:36:05,107|INFO|ServiceRunner+<RunAsync>d__3.MoveNext|run as service.
2017-08-14 16:36:05,125|INFO|AvayaTsapiInterfaceWorker.Start|Run called
2017-08-14 16:36:05,512|INFO|AvayaTsapiInterfaceWorker.Start|Starting status monitor
2017-08-14 16:36:06,331|INFO|AvayaTsapiInterfaceWorker.Start|Interface in failover mode
2017-08-14 16:36:06,331|INFO|Service.StartServiceWorker|Service: Mattersight Avaya Tsapi Interface start completed.
2017-08-14 16:36:15,442|INFO|AvayaTsapiInterface.LoadAcdSplits|3 Monitored AcdSplits: 56300|56303|56304
2017-08-14 16:36:25,990|INFO|AvayaTsapiInterface.ConnectToAes|Opened Avaya CT stream and received invokeid=2  acsHandle=143592376
2017-08-14 16:36:26,023|INFO|MessageFactory.CreateAcsOpenStreamConfData|Received confirmation to acsOpenStream and matched invoke id.
2017-08-14 16:36:26,025|INFO|MessageFactory.CreateAcsOpenStreamConfData|Received confirmation to acsOpenStream Supported Version is 6
2017-08-14 16:36:26,048|INFO|AvayaTsapiInterface.HandleAcsOpenStreamConf|Published: INTERFACE_CONNECTED
2017-08-14 16:36:26,049|DEBUG|AvayaTsapiInterface.HandleAcsOpenStreamConf|acsSetESR successful
2017-08-14 16:36:26,054|DEBUG|MessageSender.SendRouteRegisterRequest|Route register request returned invoke id invokeid=3 vdn=56001
2017-08-14 16:36:26,059|DEBUG|MessageSender.SendCstaMonitorDevice|MonitorDevice returned invoke id invokeid|device 4|56300
```

The following is a screenshot of the PBR TSAPI log showing the connection and VDN registration events.



```
20-05-05 13:50:43,811|DEBUG|AvayaTsapiInterface.HandleAcsOpenStreamConf|acsSetESR successful
20-05-05 13:50:43,846|INFO|AvayaTsapiInterface.HandleAcsOpenStreamConf|VDN Whitelist: 62000|2671
20-05-05 13:50:43,849|DEBUG|MessageSender.SendCstaMonitorDevice|MonitorDevice returned invoke id invokeid|device 3|1501
20-05-05 13:50:43,960|DEBUG|MessageSender.SendQueryAgentLogin|cstaEscapeService returned invoke id invokeid|acdSplit 4|1501
20-05-05 13:50:43,973|DEBUG|AvayaTsapiInterface.RemoveOutstandingInvokeId|CSTA_MONITOR_CONF occurred for invokeId:3 request:MONITOR_ACD_SPLIT on 1501
20-05-05 13:50:44,040|DEBUG|AvayaTsapiInterface.RemoveOutstandingInvokeId|CSTA_ESCAPE_SVC_CONF occurred for invokeId:4 request:QUERY_AGENT_LOGIN on 1501
20-05-05 13:50:44,040|DEBUG|AvayaTsapiInterface.HandleCstaEscapeSvcConf|CSTA_ESCAPE_SVC_CONF occurred for invoke id:4 privEventCrossRefID:14115852
20-05-05 13:50:44,051|DEBUG|AvayaTsapiInterface.HandleCstaPrivate|Adding extensions to acdSplit 1501: 70404
20-05-05 13:50:44,053|DEBUG|MessageSender.SendCstaQueryDeviceInfo|cstaQueryDeviceInfo returned invoke id invokeid|device 5|70404
20-05-05 13:50:44,053|INFO|AvayaTsapiInterface.HandleCstaPrivate|Monitor-Send: For Query Device Info for extension:70404 returned with invokeId:5
20-05-05 13:50:44,055|DEBUG|MessageSender.SendCstaMonitorDevice|MonitorDevice returned invoke id invokeid|device 6|1512
20-05-05 13:50:44,113|DEBUG|MessageSender.SendQueryAgentLogin|cstaEscapeService returned invoke id invokeid|acdSplit 7|1512
20-05-05 13:50:44,115|INFO|AvayaTsapiInterface.HandleCstaPrivate|CSTA_PRIVATE occurred for privEventCrossRefID:14115852.
20-05-05 13:50:44,135|DEBUG|AvayaTsapiInterface.RemoveOutstandingInvokeId|CSTA_QUERY_DEVICE_INFO_CONF occurred for invokeId:5 request:QUERY_DEVICE_INFO on 70404
20-05-05 13:50:44,139|INFO|AvayaTsapiInterface.CompleteLogInAnAgent|Number of agents: 1
20-05-05 13:50:44,140|DEBUG|MessageSender.SendCstaMonitorDevice|MonitorDevice returned invoke id invokeid|device 8|70404
20-05-05 13:50:44,164|DEBUG|MessageSender.SendCstaMonitorDevice|MonitorDevice returned invoke id invokeid|device 9|1520
20-05-05 13:50:44,201|DEBUG|MessageSender.SendCstaQueryDoNotDisturb|cstaQueryDoNotDisturb returned invoke id: 10 for extension: 70404
20-05-05 13:50:44,215|DEBUG|MessageSender.SendQueryAgentLogin|cstaEscapeService returned invoke id invokeid|acdSplit 11|1520
20-05-05 13:50:44,260|DEBUG|AvayaTsapiInterface.CompleteLogInAnAgent|Published logged in event for agentId:75100 extension:70404 agentState:AG_NOT_READY talkStat
20-05-05 13:50:44,265|DEBUG|AvayaTsapiInterface.RemoveOutstandingInvokeId|CSTA_ESCAPE_SVC_CONF occurred for invokeId:7 request:QUERY_AGENT_LOGIN on 1512
20-05-05 13:50:44,265|DEBUG|AvayaTsapiInterface.HandleCstaEscapeSvcConf|CSTA_ESCAPE_SVC_CONF occurred for invoke id:7 privEventCrossRefID:14115858
20-05-05 13:50:44,267|DEBUG|AvayaTsapiInterface.HandleCstaPrivate|Adding extensions to acdSplit 1512: 70404
20-05-05 13:50:44,276|DEBUG|MessageSender.SendCstaQueryDeviceInfo|cstaQueryDeviceInfo returned invoke id invokeid|device 12|70404
20-05-05 13:50:44,276|INFO|AvayaTsapiInterface.HandleCstaPrivate|Monitor-Send: For Query Device Info for extension:70404 returned with invokeId:12
20-05-05 13:50:44,350|DEBUG|MessageSender.SendCstaMonitorDevice|MonitorDevice returned invoke id invokeid|device 13|1538
20-05-05 13:50:44,447|INFO|AvayaTsapiInterface.HandleCstaPrivate|CSTA_PRIVATE occurred for privEventCrossRefID:14115858.
20-05-05 13:50:44,458|DEBUG|AvayaTsapiInterface.RemoveOutstandingInvokeId|CSTA_MONITOR_CONF occurred for invokeId:8 request:MONITOR_EXTENSION on 70404
20-05-05 13:50:44,458|DEBUG|AvayaTsapiInterface.RemoveOutstandingInvokeId|CSTA_MONITOR_CONF occurred for invokeId:6 request:MONITOR_ACD_SPLIT on 1512
20-05-05 13:50:44,487|DEBUG|AvayaTsapiInterface.RemoveOutstandingInvokeId|CSTA_MONITOR_CONF occurred for invokeId:9 request:MONITOR_ACD_SPLIT on 1520
20-05-05 13:50:44,489|DEBUG|AvayaTsapiInterface.HandleCstaQueryDndConf|received CstaQueryDndConf for extension:70404 DoNotDisturb:False
20-05-05 13:50:44,492|DEBUG|AvayaTsapiInterface.RemoveOutstandingInvokeId|CSTA_QUERY_DND_CONF occurred for invokeId:10 request:QUERY_DO_NOT_DISTURB on 70404
20-05-05 13:50:44,492|DEBUG|AvayaTsapiInterface.RemoveOutstandingInvokeId|CSTA_ESCAPE_SVC_CONF occurred for invokeId:11 request:QUERY_AGENT_LOGIN on 1520
20-05-05 13:50:44,493|DEBUG|AvayaTsapiInterface.HandleCstaEscapeSvcConf|CSTA_ESCAPE_SVC_CONF occurred for invoke id:11 privEventCrossRefID:14115866
20-05-05 13:50:44,493|DEBUG|AvayaTsapiInterface.HandleCstaPrivate|Adding extensions to acdSplit 1520: 70404
```

9. Conclusion

These Application Notes describe the configuration steps required for NICE Predictive Behavioral Routing 5.0 to successfully interoperate with Avaya Aura® Communication Manager 8.1, Avaya Aura® Application Enablement Services 8.1. All feature and serviceability test cases were completed as noted in **Section 2.2**.

10. Additional References

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

1. *Administering Avaya Aura® Communication Manager*, Release 8.1.x, Issue 6, March 2020, available at http://support.avaya.com.

2. *Administering and Maintaining Aura® Application Enablement Services*, Release 8.1.x, Issue 4, March 2020, available at http://support.avaya.com.

3. NICE Predictive Behavioral Routing document available upon request to NICE Support.

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 DevConnect Program at devconnect@avaya.com.