AVAYA

Avaya Solution & Interoperability Test Lab

Application Notes to Integrate Avaya Aura® Communication Manager R6.0.1, Avaya Call Management System R16.2 and Avaya Workforce Management R10.1 – Issue 1.0

Abstract

These Application Notes describe the configuration steps required to successfully integrate Avaya Aura® Communication Manager 6.0.1, Avaya Call Management System R16.2 and Avaya Workforce Optimization R10.1. Avaya Aura® Communication Manager contains the Call Center Software package to provide agent functionality necessary for contact centers. Avaya Call Management System is a database, administration and reporting application designed for enterprises that receive large call volumes and have complex contact center operations. Avaya Workforce Management is comprised of functionality designed to optimize agent performance, reduce risk and automate manual processes such as scheduling, forecasting, reporting, etc. Avaya Workforce Management uses multiple interfaces connected to Avaya Aura® Call Management System to receive both real time and historical information.

Information in these Application Notes has been obtained through Full Stack Test conducted at the Avaya Solution and Interoperability Test Lab.

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Solution & Interoperability Test Lab Application Notes
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CM-CMS-WFM

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1 Introduction

These Application Notes describe the configuration steps required to successfully integrate Avaya Aura® Communication Manager 6.0.1, Avaya Call Management System R16.2 and Avaya Workforce Management R10.1. Avaya Aura® Communication Manager contains the Call Center Software package to provide agent functionality necessary for contact centers. Avaya Call Management System is a database, administration and reporting application designed for enterprises that receive large call volumes and have complex contact center operations. Avaya Workforce Management is comprised of functionality designed to optimize agent performance, reduce risk and automate manual processes such as scheduling, forecasting, reporting, etc. Avaya Workforce Management uses multiple interfaces connected to Avaya Aura® Call Management System to receive both real time and historical information.

1.1 Solution Overview

The following section describes the components of the solution under test.

1.1.1 Avaya Aura® Communication Manager

Avaya Aura® Communication Manager software is the open, highly-reliable and extensible IP Telephony foundation on which Avaya delivers Unified Communications solutions to enterprises large and small. It delivers rich voice and video capabilities and provides for a resilient, distributed network of gateways and analog, digital and IP-based communication devices. In addition, Avaya Aura® Communication Manager boasts robust PBX features, high reliability and scalability, and multi-protocol support. It includes advanced mobility features, built-in conference calling and contact center applications.

1.1.2 Avaya Call Management System

Avaya Call Management System (CMS) is a database, administration, and reporting application designed for enterprises that receive a large volume of telephone calls and have complex contact center operations. Working in conjunction with Avaya Call Management System, the Avaya Call Management System (CMS) Supervisor client provides comprehensive administration and reporting capabilities using a familiar Microsoft Windows interface. With Avaya Call Management System, customers can view live, real-time information and see the immediate results of their adjustments. They can also use historical reports to analyze trends, establish performance benchmarks, and plan new marketing or customer service campaigns. Supervisors have access to real-time and historical reports to help them effectively manage the performance of their personnel.

1.1.3 Avaya Workforce Management

Avaya Workforce Management applications (i) encourage businesses to use their contact center strategically rather than just as a mechanism to field customer calls, (ii) helps businesses gain a deeper understanding of customer trends and balances efficiency with effectiveness to create an optimized customer experience and (iii) enables the Customer Centric Enterprise.

1.2 Full Stack Testing and Results

The Full Stack Testing included feature, serviceability and reliability testing of an integrated configuration using Avaya Aura® Communication Manager, Avaya Call Management System and Avaya Workforce Management in a complex customer Intelligent Routing configuration.

The testing focused on verifying the following capabilities as applicable to agent activity in a highly customized contact center environment:

- Handling of real-time agent states and call events from a complex Intelligent Routing solution.
- Avaya Call Management System reports accurately reflected agent and contact center activity.
- Avaya Workforce Management functionality to include Forecasting and Scheduling, Agent Adherence, Reporting, etc.
- Various customer call scenarios including queued calls with no media, long and short queue, re-queue, hold/un-hold, transfer, conference, etc.

The Full Stack Testing focused on verifying the ability of the products to recover from adverse conditions, such as component failover, network outages, server reboot, Enterprise Survivable Server failovers, etc.

Full Stack test cases were executed manually. During the test, inbound calls were placed by simulating customer calls into the Intelligent Routing solution and then routed to agents in varying agent/phone states. Agent outbound calls were placed manually to observe direct Agent Dialing, VDN, transfer, conference, etc.

All test cases were executed and passed based on expected results

1.3 Assumptions

These Application Notes do not provide any configuration details for the following list of assumptions:

- The Workforce Optimization Solution includes the functions described in the Workforce Management guide. For that reason, the product referred to as the Workforce Optimization Solution may also be referred as Workforce Management.
- The front end, highly customized and complex customer Intelligent Routing configuration has been installed, configured and is operational
- Avaya Aura® Communication Manager has been installed, operational and the Enterprise Survivable Server installed and working
- Avaya Call Management System has been installed and is operational.
- Avaya Professional Services has installed the required data connections on the Avaya Call Management System
- Avaya Workforce Management has been installed and is operational
- Avaya Workforce Management Forecasting and Scheduling, Quality Monitoring, Scorecards and Reports are outside the scope of these Application Notes.

1.4 Acronyms

ACD	Automatic Call Distributor
ARS	Alternative Routing Service (Routing on Avaya Aura® Communication Manager)
CM	Avaya Aura® Communication Manager
CM-ES	Communication Manager – Evolution Server
CM-FS	Communication Manager – Feature Server
CMS	Avaya Call Management System
DAD	Direct Agent Dialing
DCP	Digital Communications Protocol
DNIS	Dialed Number Identification Service
DNS	Domain Naming Resolution
DTMF	Dual Tone Multi Frequency
ESS	Enterprise Survivable Server
FQDN	Fully Qualified Domain Name (hostname for Domain Naming Resolution)
IP	Internet Protocol
IPSI	IP-services interface (Control Card in Communication Manager)
LAN	Local Area Network
PSTN	Public Switched Telephone Network
RTP	Real Time Protocol
SAT	System Access Terminal (Avaya Aura® Communication Manager Administration Interface)
SIL	Solution Interoperability Lab
SIP	Session Initiation Protocol
SM	Avaya Aura® Session Manager
SMGR	Avaya Aura® System Manager
SNMP	Simple Network Management Protocol
SRE	SIP Routing Element
SSH	Secure Shell
SSL	Secure Socket Layer
TAC	Trunk Access Code (Avaya Aura® Communication Manager Trunk Access)
TCP	Transmission Control Protocol
TCP/IP	Transmission Control Protocol/Internet Protocol
TLS	Transport Layer Security
URL	Uniform Resource Locator
VDN	Vector Directory Number
WAN	Wide Area Network
WFM	Avaya Workforce Management
WFO	Avaya Workforce Optimization
XML	eXtensible Markup Language

1.5 Lab Configuration

The following is the Lab configuration used for testing.
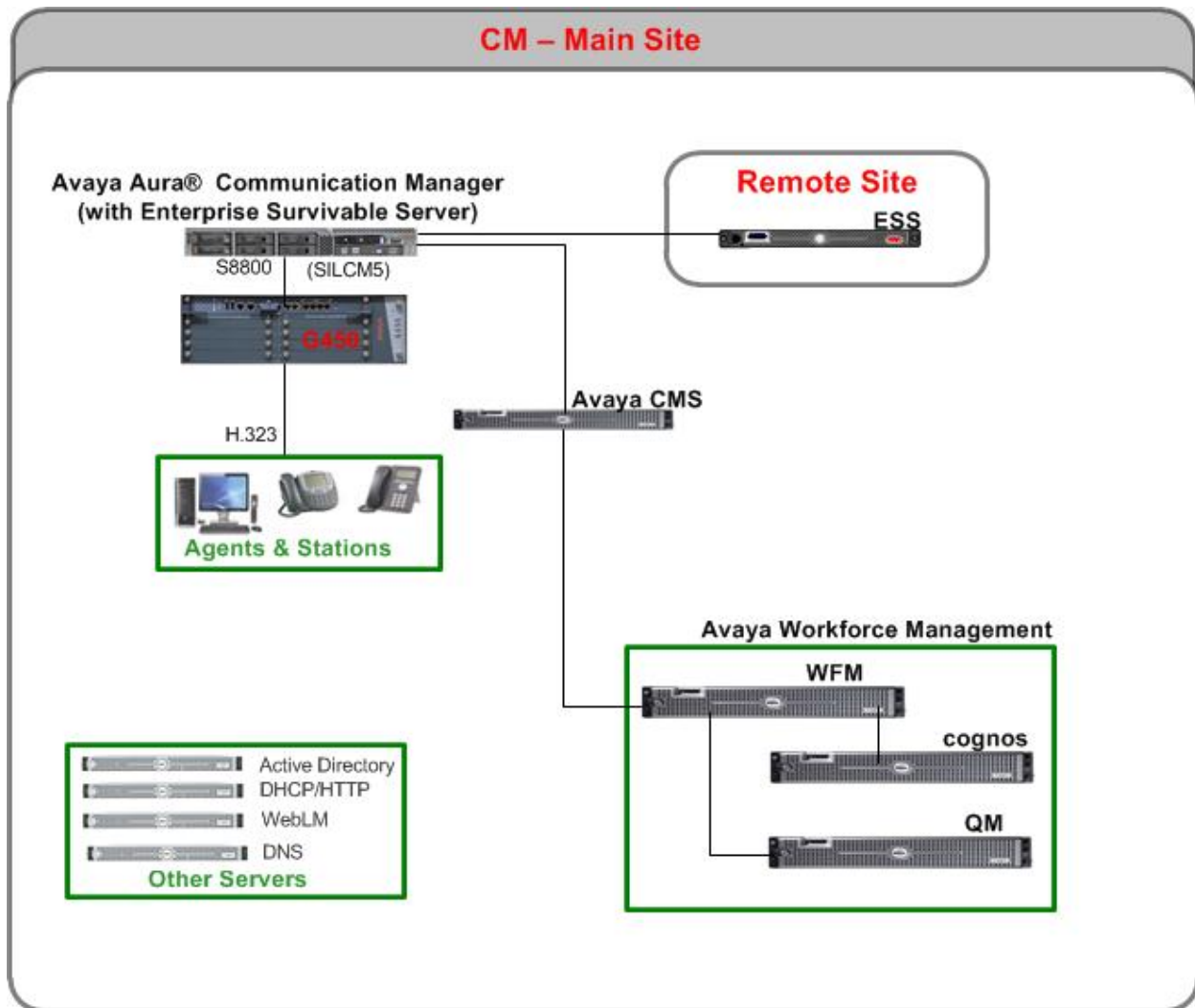
Figure 1: Lab Configuration Overview

1.6 Equipment and Software Validated

The following equipment and software were used for the sample configuration.

Equipment/Software	Software Version
Avaya S8800 Media Server	Avaya Aura® Communication Manager 6.0.1 (R016x.00.1.510.1)
Avaya G450 Media gateway	FW: g450_sw_31_18_1
Avaya IP (H.323) Deskphones: • 9650 • 9630 • 9620 • 9608 • 9641	ha96xxua3_0_02 ha96xxua3_0_02 ha96xxua3_0_02 S9608_11HALBR6_1r31_V4r52 S9608_11HALBR6_1r31_V4r52
Avaya IP-Agent	7.0.28.184
Avaya Call Management System • Sun T5120	Avaya Call Management System R16.2da.d
Avaya Workforce Optimization • Avaya Workforce Management • Avaya Cognos Report Server • Avaya Quality Monitoring	10.1 10.1 10.1

2 Configure Avaya Aura® Communication Manager

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

- Verify Communication Manager License
- Administer System Parameters Features
- Administer Feature Access Code
- Administer Class of Restriction – Agent Stations
- Administer Agent Stations
- Administer Hunt-Group
- Administer Agents
- Administer Vector
- Administer VDN
- Administer CMS information

2.1 Verify Avaya Aura® Communication Manager License

Log in to 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**" to display options. Navigate to **Page 4.** Verify that the **Enhanced Conferencing, ESS Administration** and **Media Encryption Over IP** customer options are set to "**y**" on **Page 4**.

```
display system-parameters customer-options                    Page   4 of  11
                            OPTIONAL FEATURES

   Emergency Access to Attendant? y                          IP Stations? y
            Enable 'dadmin' Login? y
            Enhanced Conferencing? y                       ISDN Feature Plus? y
                 Enhanced EC500? y      ISDN/SIP Network Call Redirection? n
      Enterprise Survivable Server? n                   ISDN-BRI Trunks? n
         Enterprise Wide Licensing? n                           ISDN-PRI? y
             ESS Administration? y          Local Survivable Processor? n
           Extended Cvg/Fwd Admin? y              Malicious Call Trace? y
       External Device Alarm Admin? n          Media Encryption Over IP? y
  Five Port Networks Max Per MCC? n    Mode Code for Centralized Voice Mail? n
              Flexible Billing? n
    Forced Entry of Account Codes? y              Multifrequency Signaling? y
        Global Call Classification? y      Multimedia Call Handling (Basic)? y
              Hospitality (Basic)? y    Multimedia Call Handling (Enhanced)? y
  Hospitality (G3V3 Enhancements)? y            Multimedia IP SIP Trunking? n
                    IP Trunks? y

          IP Attendant Consoles? n
```

Navigate to **Page 6**. Verify the **Call Center Release** is "**6.0**" Verify the other **Call Center Optional Features** (i.e Service Observing, CWC, Multiple Call Handling, Vectoring, etc.) are set appropriately (these may vary according to customer preferences.)

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


                        Call Center Release: 6.0


                                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 (On Request)? 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.)
```

If any option specified in this section does not have a proper value, contact the Avaya sales team or business partner for a proper license file.

2.2 Administer System Parameters Features

Use the "**change system-parameters features**" command to enable **Create Universal Call ID (UCID)**, which is located on **Page 5**. For **UCID Network Node ID**, enter an available node ID.

```
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: silcm5
           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


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: 555
```

Navigate to **Page 12**, and set **CMS (appl mis)** to **"R16.1/R16.x"**.

```
change system-parameters features                             Page  12 of  19
                      FEATURE-RELATED SYSTEM PARAMETERS

  AGENT AND CALL SELECTION
                        MIA Across Splits or Skills? n
                         ACW Agents Considered Idle? y
                         Call Selection Measurement: current-wait-time
    Service Level Supervisor Call Selection Override? n
                                 Auto Reserve Agents: none


  CALL MANAGEMENT SYSTEM
                           REPORTING ADJUNCT RELEASE
                                 CMS (appl mis): R16.1/R16.x
                                 IQ  (appl ccr): 5.1


                           BCMS/VuStats LoginIDs? y
```

Navigate to **Page 13**, and set **Send UCID to ASAI** to **"y"**.

```
change 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? y
       Call Classification After Answer Supervision? n
                              Send UCID to ASAI? y
         For ASAI Send DTMF Tone to Call Originator? y
```

2.3 Administer Feature Access Code

Use the "**change feature-access-codes**" command to enter feature access codes for Agent Work Modes and Service Observing. These feature access codes may have been previously administered. The screenshot below illustrates the lab configuration.

```
change feature-access-codes                                  Page   5 of  11
                          FEATURE ACCESS CODE (FAC)

                           Call Center Features
 AGENT WORK MODES
                  After Call Work Access Code: *75
                          Assist Access Code: *76
                         Auto-In Access Code: *71
                        Aux Work Access Code: *72
                           Login Access Code: *88
                          Logout Access Code: *89
                       Manual-in Access Code: *73
 SERVICE OBSERVING
     Service Observing Listen Only Access Code: *77
     Service Observing Listen/Talk Access Code: *78
         Service Observing No Talk Access Code: *79
```

2.4 Administer Class of Restriction – Agent Stations

Use the "**change cor n**" command, where "**n**" is the class of restriction (COR) number to be assigned to the agent stations. Set the **Can Be Service Observed** fields to "**y**" and the **Calling Party Restriction** field to "**none**", as shown below.

```
change cor 1                                                 Page   1 of  23
                          CLASS OF RESTRICTION

               COR Number: 1
           COR Description:

                     FRL: 0                            APLT? y
  Can Be Service Observed? y          Calling Party Restriction: none
Can Be A Service Observer? n          Called Party Restriction: none
        Time of Day Chart: 1     Forced Entry of Account Codes? n
          Priority Queuing? n              Direct Agent Calling? n
     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? n
                               Can Use Directed Call Pickup? n
                               Group Controlled Restriction: inactive
```

2.5 Administer Agent Stations

Modify each physical station used by agents to allow the station to be service-observed and involved in inbound calls. Use the "**change station n**" command, where "**n**" is the station extension, to change the **COR** field to "**1**" which is defined in **Section 2.4**.

```
change station 4150000                                        Page   1 of   5
                                STATION

Extension: 415-0000                  Lock Messages? n                BCC: 0
     Type: 9650                      Security Code: 123456            TN: 1
     Port: S00000                    Coverage Path 1:               COR: 1
     Name: stat 4150000              Coverage Path 2:               COS: 1
                                     Hunt-to Station:
STATION OPTIONS
                                     Time of Day Lock Table:
            Loss Group: 19        Personalized Ringing Pattern: 1
                                       Message Lamp Ext: 415-0000
         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
```

Repeat this section for all agent stations. In this Full Stack Test effort, four physical agent stations "4150000 - 4150003" were modified.

Use the "**list station**" command to observe administered agents.

```
list station 4150000

                         STATIONS

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

415-0000      S00000  stat 4150000                         1
              9650                       no                 1   1
415-0001      S00001  station 4150001                       1
              9650                       no                 1   1
415-0002      S00002  station 4150002                       1
              9620                       no                 1   1
415-0003      S00003  station 4150003                       1
              9630                       no                 1   1
```

2.6 Administer Hunt-Group

Use the "**add hunt-group n**" command where "**n**" is an available Hunt-Group Number. On **Page 1**, provide a descriptive name for the **Group Name** field. Set **Group Extension** to a valid and available extension. Set the **Group Type** field to the appropriate agent selection method. Set **COR** to "**1**" as defined in **Section 2.4**. Set **ACD**, **Queue** and **Vector** fields to "**y**".

```
add hunt-group 40                                               Page   1 of  60
                              HUNT GROUP

          Group Number: 40                                 ACD? y
            Group Name: Split 40                          Queue? y
         Group Extension: 410-0000                       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:
```

Navigate to **Page 2**. Set **Skill** to **"y"** and **Measured** to **"both".**

```
add hunt-group 40                                               Page   2 of  60
                              HUNT GROUP

                 Skill? y    Expected Call Handling Time (sec): 180
                  AAS? n       Service Level Target (% in sec): 80 in 20
              Measured: both
     Supervisor Extension:


        Controlling Adjunct: none


         VuStats Objective:

     Multiple Call Handling: none


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

2.7 Administer Agents

Enter the "**add agent n**" command where "**n**" is an available agent ID. On **Page 1**, enter a descriptive name for the **Name** field. Set **COR** to "**1**" as defined in **Section 2.4**. Enter the password in the two **Password** fields, if required. For the Application Notes, **Auto Answer** is set to "**station**".

```
add agent-loginID 4000000                                    Page   1 of   3
                              AGENT LOGINID

             Login ID: 400-0000                              AAS? n
                 Name: Ag 4000000                          AUDIX? n
                   TN: 1                          LWC Reception: spe
                  COR: 1                  LWC Log External Calls? n
        Coverage Path:                   AUDIX Name for Messaging:
        Security Code:
                                   LoginID for ISDN/SIP Display? n
                                                      Password: 1234
                                       Password (enter again): 1234
                                                  Auto Answer: station
                                            MIA Across Skills: system
                                ACW Agent Considered Idle: 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
```

Navigate to **Page 2**. Assign the agent to the Hunt-Group defined in **Section 2.6** by setting the first agent/skill pair. Enter the Hunt-Group Number under **SN** column and provide a Skill Level under the **SL** column.

```
add agent-loginID 4000000                                    Page   2 of   3
                              AGENT LOGINID
     Direct Agent Skill:                       Service Objective? n
Call Handling Preference: skill-level          Local Call Preference? n

    SN   RL SL        SN   RL SL        SN   RL SL        SN   RL SL
 1: 40      1     16:             31:             46:
 2:              17:             32:             47:
 3:              18:             33:             48:
 4:              19:             34:             49:
 5:              20:             35:             50:
 6:              21:             36:             51:
```

Repeat this section for all agents. In this Full Stack Test effort, four agents "4000000 - 4000003" were modified.

Use the "**list agent-loginID**" command to observe administered agents.

```
list agent-loginID


                          AGENT LOGINID
Login ID     Name           Extension    Dir Agt  AAS/AUD      COR Ag Pr SO
             Skil/Lv Skil/Lv Skil/Lv Skil/Lv Skil/Lv Skil/Lv Skil/Lv Skil/Lv

400-0000    Ag 4000000    unstaffed                          1   lvl
            40/01     /         /         /         /         /         /
400-0001    Ag 4000001    unstaffed                          1   lvl
            40/01     /         /         /         /         /         /
400-0002    Agent 4000002  unstaffed                         1   lvl
            40/01     /         /         /         /         /         /
400-0003    Agent 4000003  unstaffed                         1   lvl
            40/01     /         /         /         /         /         /
```

2.8 Administer Vector

Use the "**change vector n**" command where "**n**" is the target vector number. In the **Name** field, enter a descriptive name. Build the vector using valid vector steps to route the call accordingly.

*Note: For these Application Notes the Intelligent Routing solution required specific polling and queuing vector pairs. Shown below is an example of the polling vector. The queuing vector is not shown.

```
change vector 40                                          Page   1 of   6
                           CALL VECTOR

    Number: 40                   Name: Vec 40
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 consider     skill    1st  pri m adjust-by 0
02 reply-best
03
04
05
06
```

2.9 Administer VDN

Use the "**add vdn n**" command where "**n**" is the target VDN number. In the **Name** field, enter a descriptive name. Set the **Destination** fields to "**Vector Number**" and specify the vector number as defined in **Section 0**. Set **Measured** to "**none**". Enter the Hunt Group number defined in **Section 2.6**, and assigned to the target agents, in the **1st Skill** field.

*Note: For these Application Notes the Intelligent Routing solution required specific polling and queuing VDN pairs. Shown below is an example of the polling VDN. The queuing VDN is not shown.

```
add vdn 4770000                                              Page   1 of   3
                          VECTOR DIRECTORY NUMBER

                           Extension: 477-0000
                               Name*: pvdn 4770000
                         Destination: Vector Number        40
                   Attendant Vectoring? n
                   Meet-me Conferencing? n
                    Allow VDN Override? n
                                 COR: 1
                                 TN*: 1
                            Measured: none


        VDN of Origin Annc. Extension*:
                           1st Skill*: 40
                           2nd Skill*:
                           3rd Skill*:



* Follows VDN Override Rules
```

2.10 Administer Avaya Call Management System information

Add the CMS Server **Name** and **IP Address** to the **IP Node-Names** table using the "**change node-names ip name**" where "**name**" is a unique entry in the IP Node Names table.

```
change node-names ip silfscms                                     Page   1 of   2
                              IP NODE NAMES
   Name              IP Address
silfscms           135.9.228.45
```

Use the "**change communication-interface processor-channels**" command to add the CMS server node to Processor Channel Assignment table. Select an available "**Proc Chan**" and set the following fields

- **Enable**:   set to "**y**"
- **Appl**.   set to "mis"
- **Mode**   set to "s"
- **Link/Chan**   set to "**pv4**" and **"5001"** respectively
- **Destination Node** set to node-name defined above
- **Local/Remote**   set both to **"1"**

```
change communication-interface processor-channels          Page   1 of  24
                      PROCESSOR CHANNEL ASSIGNMENT
Proc                  Gtwy      Interface          Destination      Session   Mach
Chan Enable   Appl.   To  Mode Link/Chan          Node      Port  Local/Remote ID
  1:   y      mis          s   pv4 5001  silfscms            0       1     1
```
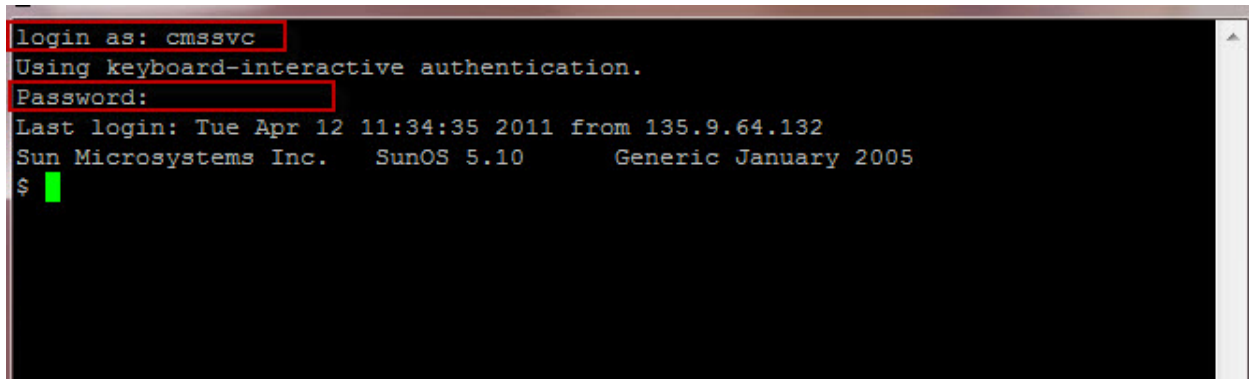
3 Verify Avaya Call Management System

Use the **Avaya Call Management System Software Installation, Maintenance, and Troubleshooting** document provided in **Section 6** to configure CMS. For these Application Notes, CMS was previously administered with 3 ACDs. This section provides the procedures for verifying Avaya Call Management System. The procedures include the following areas:

- Login to CMS
- Verify authorizations
- Verify Switch setup
- Verify WFM links
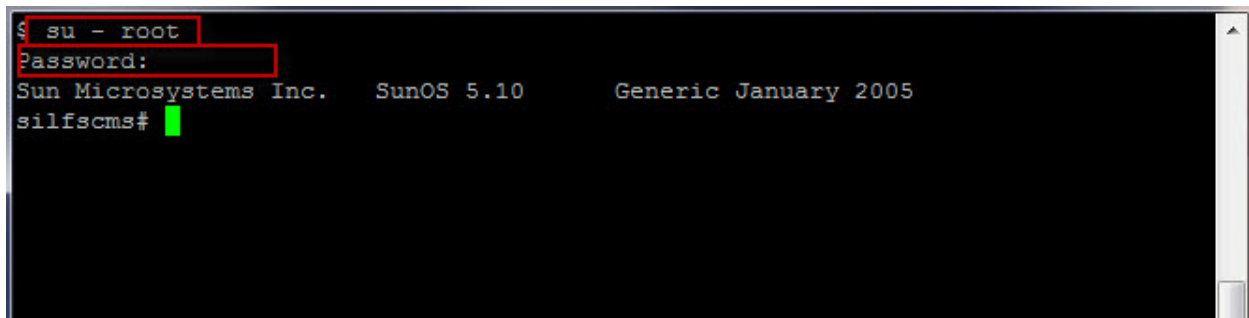
3.1 Login to Avaya Call Management System

Access the Avaya Call Management System (CMS) command line interface by using a Secure Socket Layer (SSL) application, such as the open source PuTTY. At the login prompt, enter the CMS Services credentials.

```
login as: cmssvc
Using keyboard-interactive authentication.
Password:
Last login: Tue Apr 12 11:34:35 2011 from 135.9.64.132
Sun Microsystems Inc.    SunOS 5.10      Generic January 2005
$
```

Use the Solaris "**su**" command to switch to a user account with system priviledges. For these Application Notes the user account is "**root**".

```
$ su - root
Password:
Sun Microsystems Inc.    SunOS 5.10      Generic January 2005
silfscms#
```

3.2 Verify Authorizations

Use the CMS Services menu application to display the CMS feature authorizations. At the command prompt enter "**cmssvc**". The **Avaya Call Management System Services Menu** is presented. Select the menu option for "**Display feature authorizations**" and press **Enter**. The feature list is displayed. Verify desired features are "**authorized**" and capacities are accurate.

```
silfscms# cmssvc


 Avaya(TM) Call Management System Services Menu

Select a command from the list below.
  1) auth display Display feature authorizations
  2) auth_set      Authorize capabilities/capacities
  3) run_ids       Turn Informix Database on or off
  4) run_cms       Turn Avaya CMS on or off
  5) setup         Set up the initial configuration
  6) swinfo        Display switch information
  7) swsetup       Change switch information
  8) patch_inst    Install a single CMS patch from CD
  9) patch_rmv     Backout an installed CMS patch
 10) load_all      Install all CMS patches found on CD
 11) back_all      Backout all installed CMS patches from machine
Enter choice (1-11) or q to quit: 1
                           Version purchased:   R16.1

                           Capability/Capacity   Authorization
                           -------------------   -------------
                                      vectoring   authorized
                                    forecasting   authorized
                                       graphics   authorized
                          external call history   authorized
                         expert agent selection   authorized
                           external application   authorized
                   global dictionary/ACD groups   authorized
                           Avaya CMS Supervisor   authorized
                           Avaya Report Designer   authorized
          Maximum number of split/skill members   150000
                         Maximum number of ACDs   8
       Simultaneous Avaya CMS Supervisor logins   800
             Number of authorized agents (RTU)   5000
          Number of authorized ODBC connections   10
silfscms#
```

If any desired feature is not authorized or capacity does not have a proper value, contact Avaya support or business partner obtain the proper authorization or capacity.

3.3 Verify Switch Setup

Use the CMS Services menu application to display the switch information. Enter the menu option for "**swinfo**". A list of previously administered ACDs is displayed. Select the sub-menu option for the target ACD to display the switch administration.

*Note: If the desired switch is not listed, use the **Avaya Call Management System Software Installation, Maintenance, and Troubleshooting** document provided in **Section 6** to add an ACD using the CMS Administration Menu.

```
silfscms# cmssvc


 Avaya(TM) Call Management System Services Menu

Select a command from the list below.
   1) auth_display Display feature authorizations
   2) auth_set      Authorize capabilities/capacities
   3) run_ids       Turn Informix Database on or off
   4) run_cms       Turn Avaya CMS on or off
   5) setup         Set up the initial configuration
   6) swinfo        Display switch information
   7) swsetup       Change switch information
   8) patch_inst    Install a single CMS patch from CD
   9) patch_rmv     Backout an installed CMS patch
  10) load_all      Install all CMS patches found on CD
  11) back_all      Backout all installed CMS patches from machine
Enter choice (1-11) or q to quit: 6


Select an ACD
   1) silcm5
   2) silcm2
   3) cm4
Enter choice (1-3) or q to quit: 1
Switch administration for acd 1:
       Switch name: silcm5
       Switch model: Communication Mgr 6.0
       Vectoring: y
       Expert Agent Selection: y
       Central office disconnect supervision: y
       Local port: 1
       Remote port: 1
       Link: TCP/IP 135.9.228.62 5001

silfscms#
```

3.4 Verify Avaya Workforce Management setup

Use the Avaya Call Management System Main Menu to display working system and Avaya Workforce Management setup. From the command line, using a user account with CMS privileges, enter "**cms**". The Avaya CMS Main Menu is displayed.

*Note: If the Avaya Workforce Management items (Blue Pumpkin and RTA_BP) are not displayed in the Main Menu, contact Avaya Professional Services to have them installed.
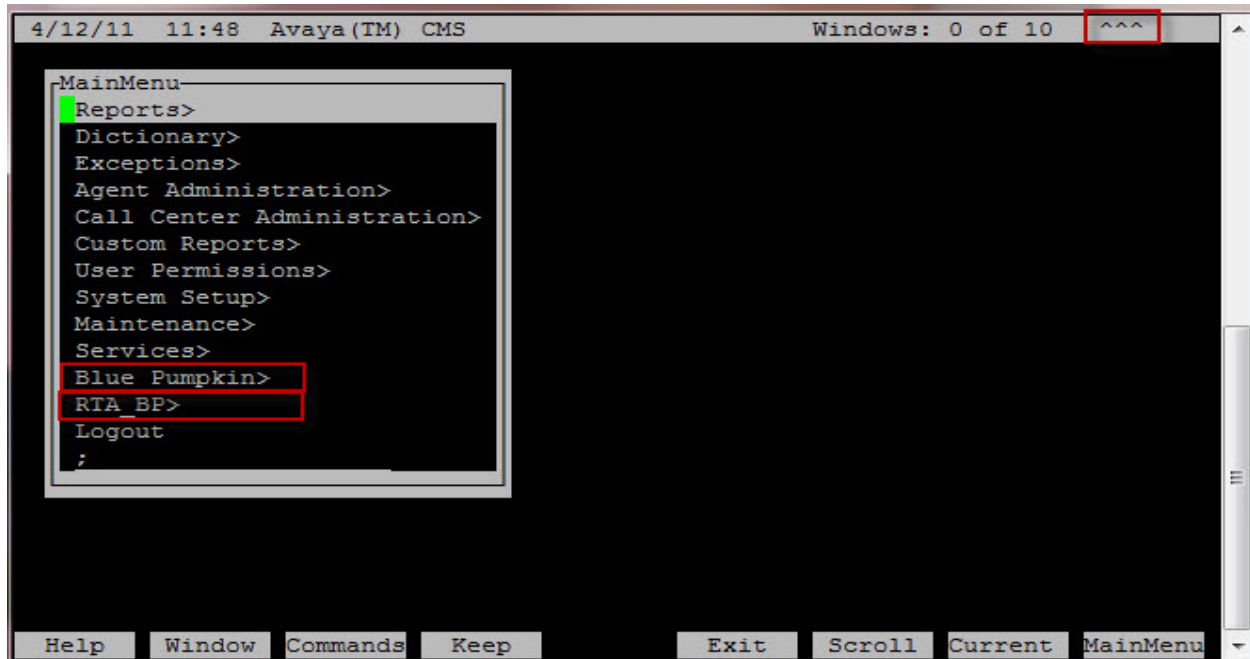
Use the arrow keys and select the "**Blue Pumpkin**"menu option. The **bp Reports Interface** is displayed. Enter the sub-menu option to **Display configuration information**.
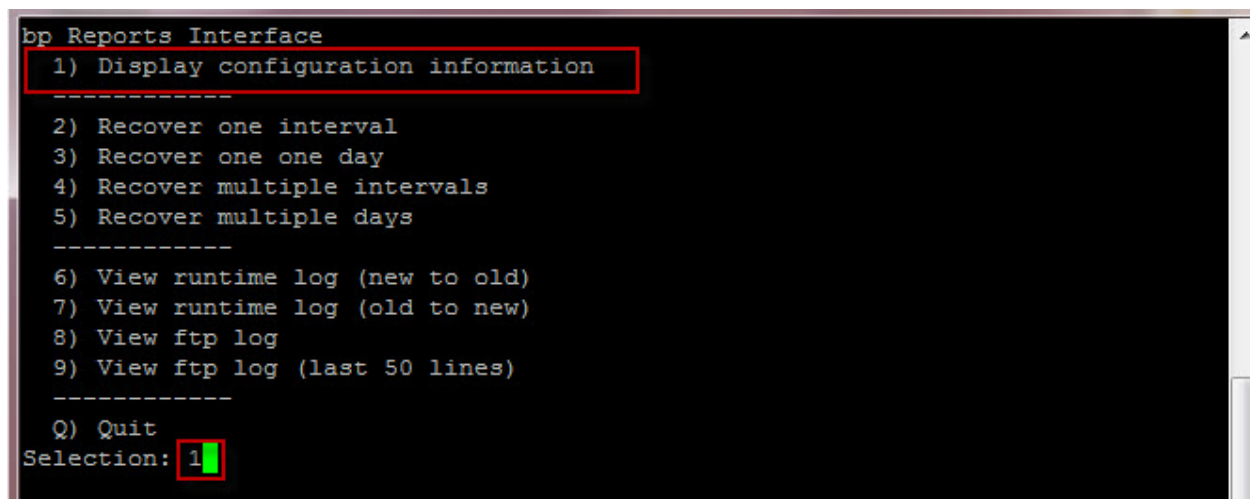
The "**Current Configuration**" is displayed showing the configured ACD, interval, number of agents, etc.

```
Current Configuration - V6.0.8

SESSION   ACD        INTRVL     AGENT      DEST       HOST         DIR
1         1          30         0200       ftp        bp_server    cms/skills



Press ENTER to continue:
```

From the Avaya CMS Main Menu, select the **RTA_BP** menu option. The "**BP-RTA (Blue Pumpkin) Menu**" is displayed.

```
------ BP-RTA (Blue Pumpkin) Menu ------
1) Start BP-RTA (Blue Pumpkin)
2) Stop BP-RTA (Blue Pumpkin)
3) Check Status
4) View Maintenance Log
5) Show Version
6) Show Licensed Authorizations
7) Show Staffed Agents Count
8) Change Split(s)/Skill(s) and/or ACD
9) Show Configuration
0) Exit
=============
Choice ==> 3
```

Select the "**Check Status**" sub-menu option to view the real time process status.

```
Checking status of all configured sessions...

BP-RTA (Blue Pumpkin) session 1 is running and is connected


Press Enter to return to menu:
```

4   Configure Avaya Workforce Management

This section provides the procedures for configuring Avaya Workforce Management. The procedures include the following areas:

- Access Avaya Workforce Optimization
- Verify Workforce Management License
- Configure System Administration
- Create Enterprise Installation
- Configure Data Sources
- Configure Integration Server
- Configure Application Administration
- Configure People

4.1   Login to Avaya Workforce Management

Access the Avaya Workforce Optimization (WFO) via the web user interface. Launch a web browser and use the url http://<IP Address>:7001/wfo. The **Avaya Workforce Optimization Log In** web page is displayed. Continue logging in by using the appropriate credentials and then click the **Login** button.

*Note: For these Application Notes, the default **Username** is "**wsuperuser**" and the **Password** is "**pumpkin1**".
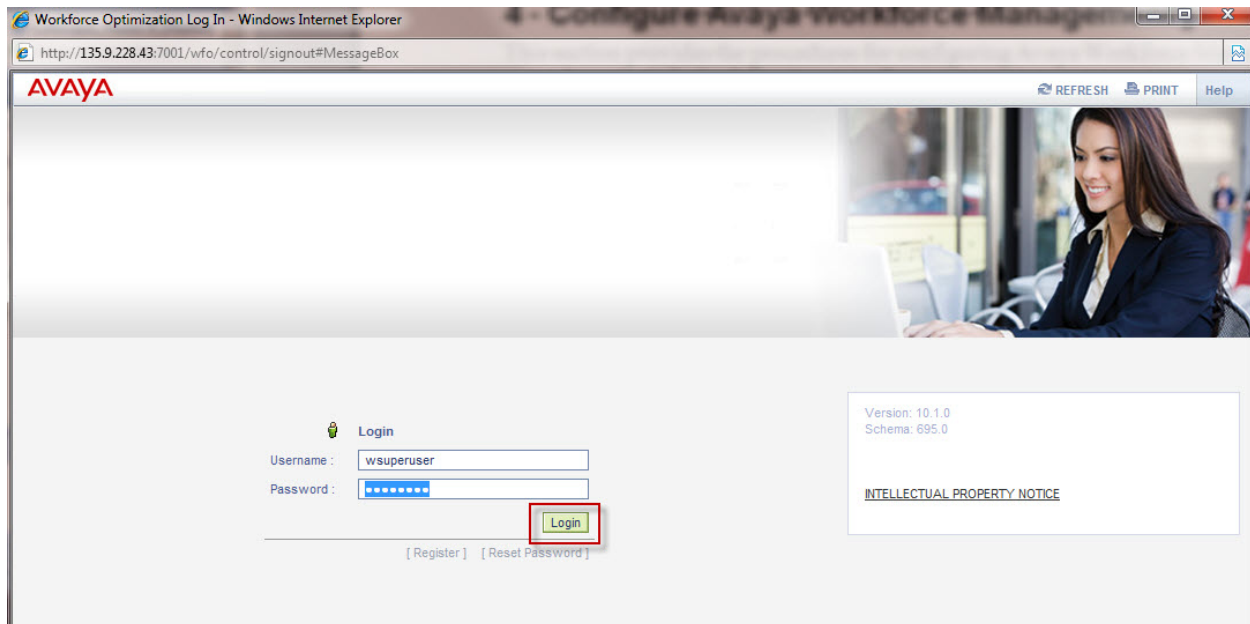
The following screen is displayed after a successful login.
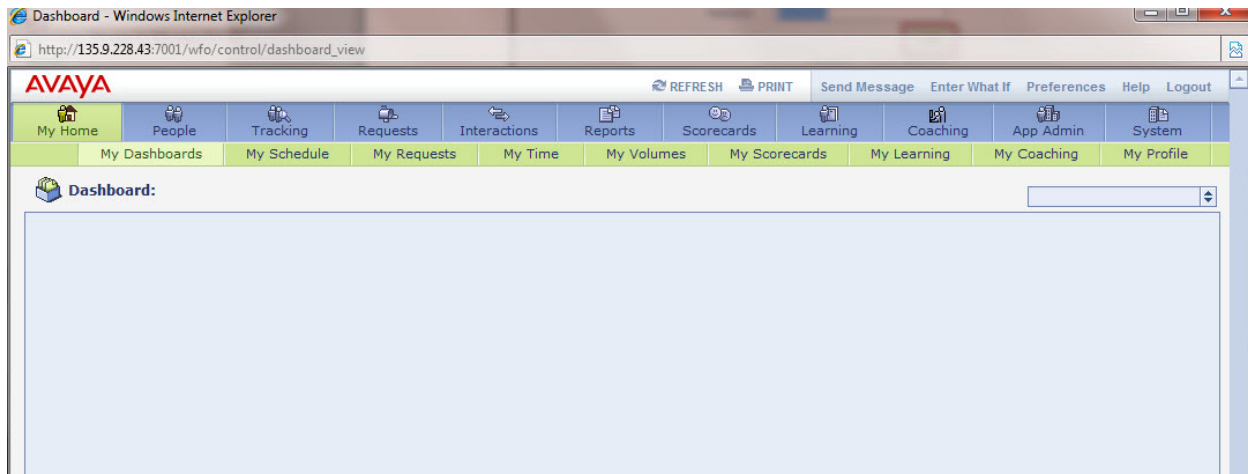
4.2 Verify Avaya Workforce Management License

Select the **System** module and then select the **Administration** section. Click on **License** in the sidebar to view the current license. Verify the desired features are authorized.

*Note: Avaya Workforce Management requires a permanent license file. A temporary license file is installed during the installation process and must be updated.
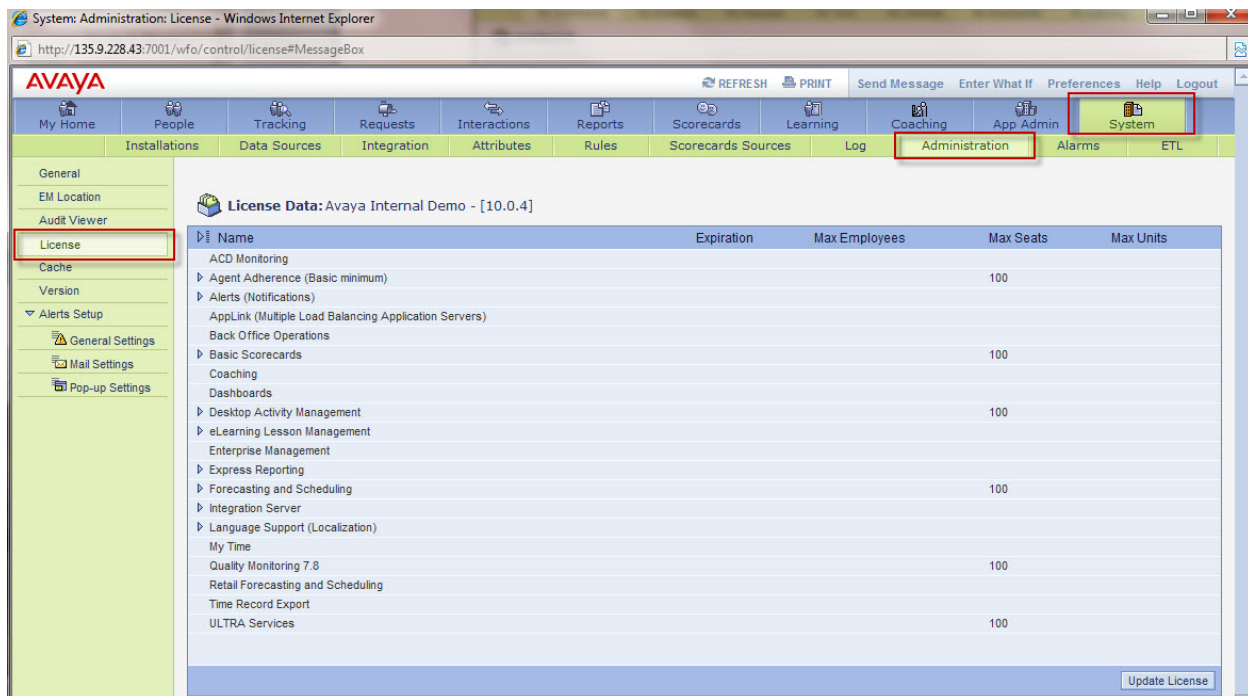
If any desired feature is not licensed, contact Avaya support or business partner obtain the proper license.

4.3 Configure System Administration Settings

Navigate to the **System** module and the **Administration** section. In the sidebar area, select **General**. The following **General Setup – System Wide Configuration** screen is displayed with all sections collapsed.

*Note: Each section can be expanded to display their specific system wide parameters. For these Application Notes the following **Sections 4.3.1 - 4.3.5** were verified and/or modified for testing purposes.

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4.3.1 Configure Language

Expand the **Licensed Languages** option. Select the applicable language by clicking the corresponding checkbox and click **Save** button (not shown) at the bottom of the screen.

4.3.2 Configure Local Defaults

Expand the **Local Defaults** option. Set the **Default Language**, **Default Regional Format** and the **Default Time Zone** using the dropdown menu. Click the **Save** button (not shown) at the bottom of the screen.

4.3.3 Configure System Configuration

Expand the **System Configuration** option. Set the **Application Server Name** by entering the Application Server hostname or IP Address. Enter the port number in the **Application Server Port** field. Set the Application Context Path using "**/wfo**". Use default values for the other fields or edit them as desired. Click the **Save** button (not shown) at the bottom of the screen.

4.3.4 Configure Forecasting and Scheduling Database

Expand the **Forecasting and Scheduling Database Configuration** option. Specify the hostname of the server where the database resides in the **Database Server Hostname** field. In the **Database Name** field, enter the database name. Set the **Primary Database – user password** and the **Whatif Database – user password** appropriately. Click the **Save** button (not shown) at the bottom of the screen.

4.3.5 Configure Reports

Expand the **Reports** option. Enter the URL information for the **Web Server Name** field. Use default values for the other fields or edit them as desired.

*Note: For these Application Notes the Report server was configured on a stand-alone server. Therefore, the URL for this field is http://135.9.228.44:8383/ServletGateway/servlet/Gateway.

4.4 Define Enterprise Installations

Navigate to the **System** module and the **Installations** section. The Enterprise screen is displayed with the **Settings** tab opened. The following screen shows the **Enterprise** screen with "**Enterprise**" previous created. To create an enterprise site click the **Create Site** button at the bottom of the page.

Enter the **Site Name** and provide a **Description**. Click **Save** when finished.

4.5 Configure Data Sources

4.5.1 Create Phone Data Source

Navigate to the **System** module and the **Data Sources** section. The Data Source Settings screen is displayed with the **Settings** tab opened.

*Note: For these Application Notes there are three Data Sources previously added. **CMS-ACD1** is the Data Source for the Primary ACD. The other Data Sources (**Quality Monitoring Data Source** and **silcm5-cms**) are outside the scope of these Application Notes.

To create a data source for the primary ACD, click the **Create Data Source** button at the bottom right. The **Data Source Type** window pops up. Select **Phone** as the type.

The **New Phone Data Source** page is displayed. The following screen shot is shown for illustration purposes only.

Enter a descriptive name for the **Name** field. Optionally, enter a **Description**. Use the drop down menu to select the correct **Time Zone**. In the **WFM Settings** area, use the drop down menu to select the **Adherence Time Line** selection. In the **Recorders Settings** area, use the drop down menu to select the **Switch Type**. Use default values for the other fields or edit them appropriately. Click the **Save** button at the bottom right when finished entering the data source information.

*Note: For these Application Notes, the primary ACD data source was previously added and the following screen shows the selected settings.

4.5.2 Create Data Source Groups

Navigate to the **System** module and the **Data Sources** section. Click the **Data Source Groups** tab. The **Data Source Groups** screen is displayed. Select the **Data Source** in the left pane. Click **Create Groups** button (not shown) on the bottom right. Enter the **Data Source Group Name** and **Description**. Use the drop down menu to select **Type**. Enter a value for the **Average Work Time**. Click **Save** when finished.

4.5.3 Add Agent Mapping

Navigate to the **System** module and the **Data Sources** section. Click the **Agents** tab. The **Data Source Employees** screen is displayed. Select the **Data Source** in the left pane. Select the **Employee Name** in the right pane (added in **Section 4.8.1**) and click **Edit Agent Mapping** (not shown.) Verify and/or set the correct **Employee ID** for the associated **Data Source**. Click **Save** when finished.

4.5.4 Configure Reason Codes

Navigate to the **System** module and the **Data Sources** section. Click the **Reason Codes** tab. The **Data Source Reason Codes** screen is displayed. This information is populated once the real-time data source begins receiving data. The reason codes are mapped to **Time Collector Mappings**. Click **View Time Collector Mappings** button at the bottom of the screen.

The **Time Collector Mappings** screen is displayed. Refer to **Section 4.7.7** to map **Reason Codes** to an **Activity**. The following screen shows **Reason Codes** mapped to **Activities**.

4.6 Configure Integration Server Settings

Navigate to the **System** module and the **Integration** section. In the Integration Servers table, highlight the appropriate server and click **Edit Configuration** button at the bottom of the page.

*Note: For these Application Notes, the **Integration Server** was defined during the installation process. The **Integration Packages** were also previously determined for testing purposes. The following screen shots will illustrate the workflow and configuration for each **Integration Package**.

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The following **Integration Server Configuration** screen is displayed with the **Integration Packages** listed in the tree in the left pane.

*Note: For these Application Notes there are eleven Integration Packages previously added. The first four Integration Packages (**Time Record Auto Close, Report Dump, Avaya – CSI for CMS Report** and **Avaya-STCI for CMS**) will be described in this section and **Appendix A**. The other Integration Packages are used for Quality Monitoring and outside the scope of these Application Notes.
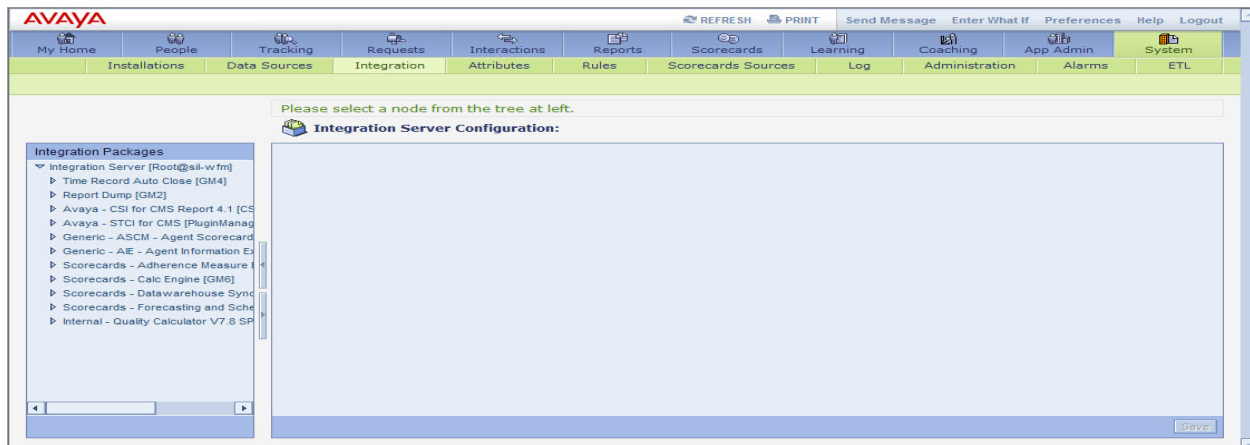
Select the **Integration Server** in the left pane. Open the **Workflow** tab. The **Integration Server Configuration** screen is displayed. Use this screen to add any of the **Available Packages** to the Integration Server. Once the package is moved from the **Available Packages** menu to the **Selected Packages** menu, the package will be displayed on the tree in left pane. After all packages are added, click the **Save** button at the bottom right.
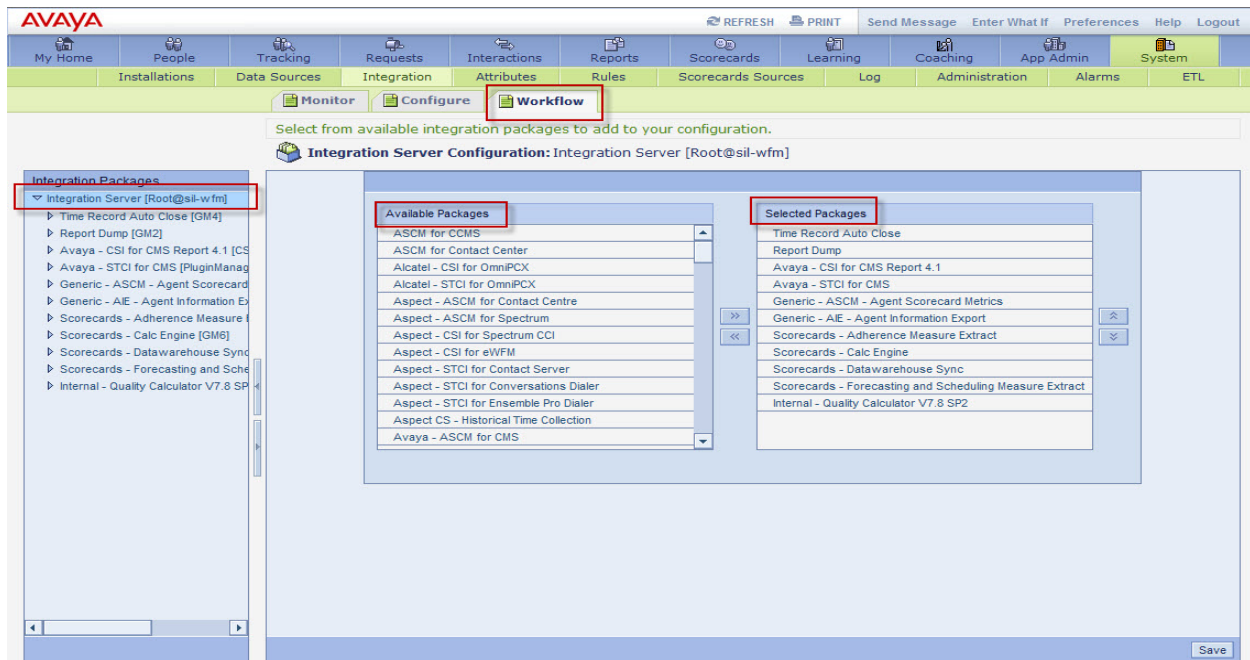
Each Integration Package has a corresponding Workflow that can be customized using its Available Components. Select the **Integration Package** in the left pane. Click the **Workflow** tab to view the **Available Components**. Once the Available Component is moved from the **Available Components** menu to the **Selected Components** menu, the component will be displayed on the tree in left pane under the Integration Package. After all components are added, click the **Save** button at the bottom right.
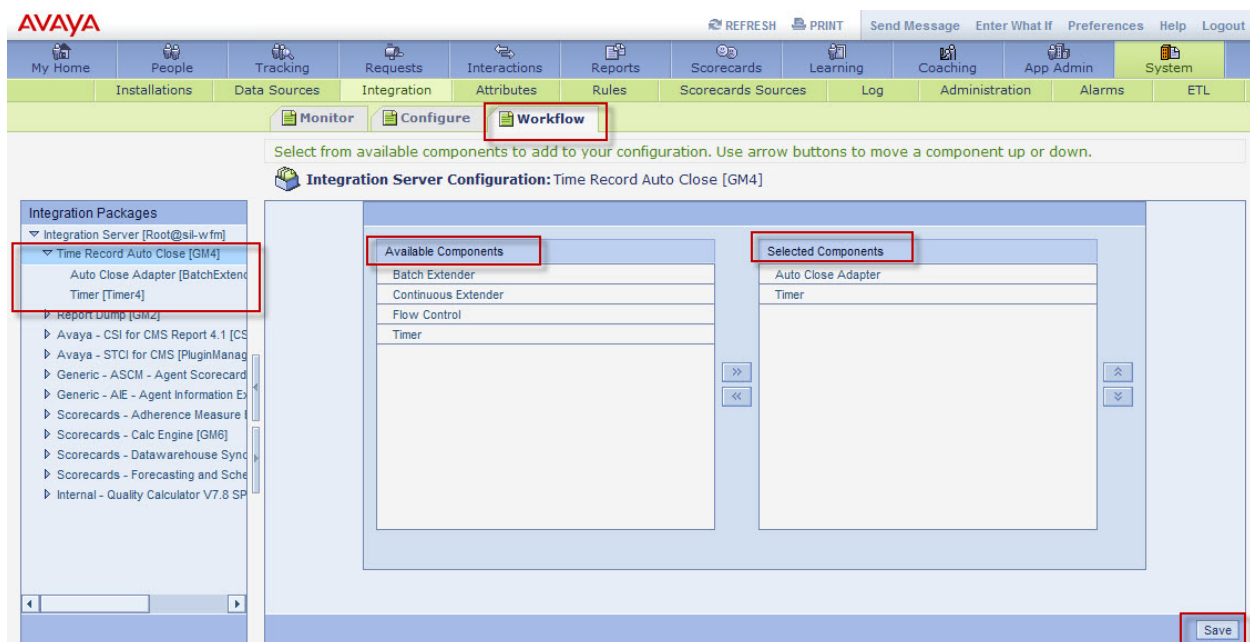
After adding the **Selected Components** to the **Integration Package**, select the **Integration Package**. Click the **Configure** tab. Expand the areas in the right pane and edit the settings appropriately.

*Note: For these Application Notes, the **Time Record Auto Close** package used default values.
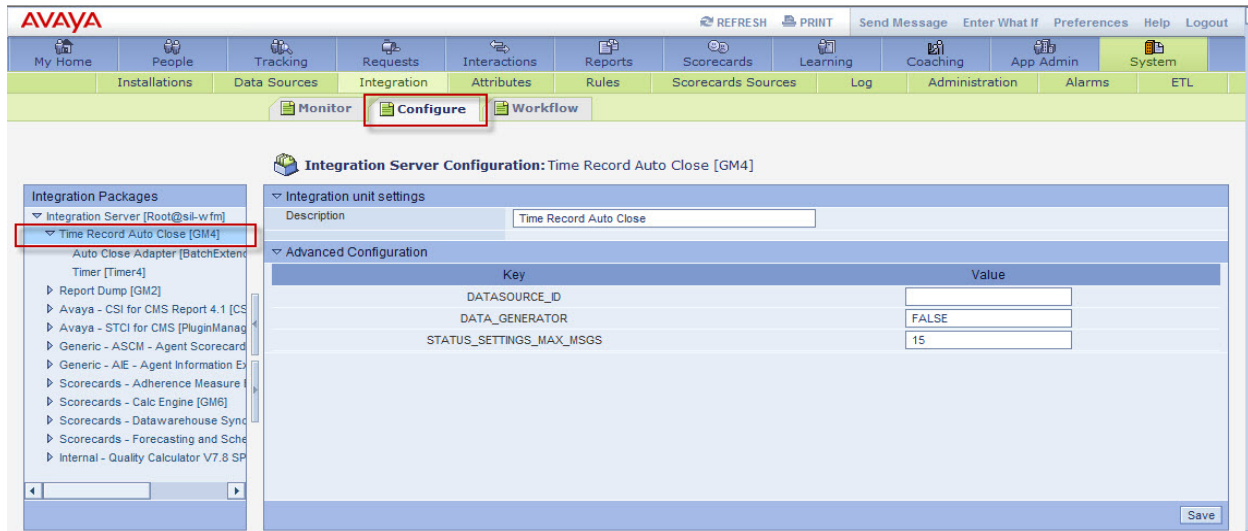
Next, select the dependent **Component** and click the **Configuration** tab. Expand the areas in the right pane and edit the settings appropriately.

*Note: For these Application Notes, the **Auto Close Adapter** component used default values.

Repeat the previous steps for the next dependent Component.

*Note: For these Application Notes, the **Timer** component used default values.
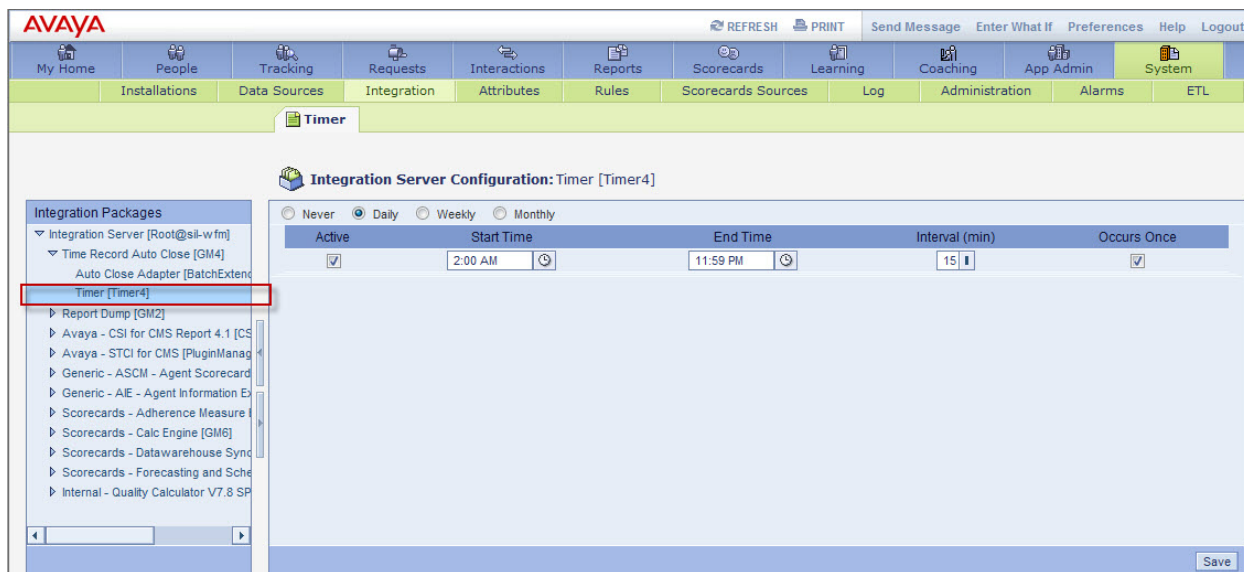
See **Appendix A** for screen shots for the other Integration Packages and their component settings used for this testing.

4.7 Configure Application Administration

Navigate to the **App Admin** module. The following screen is displayed.
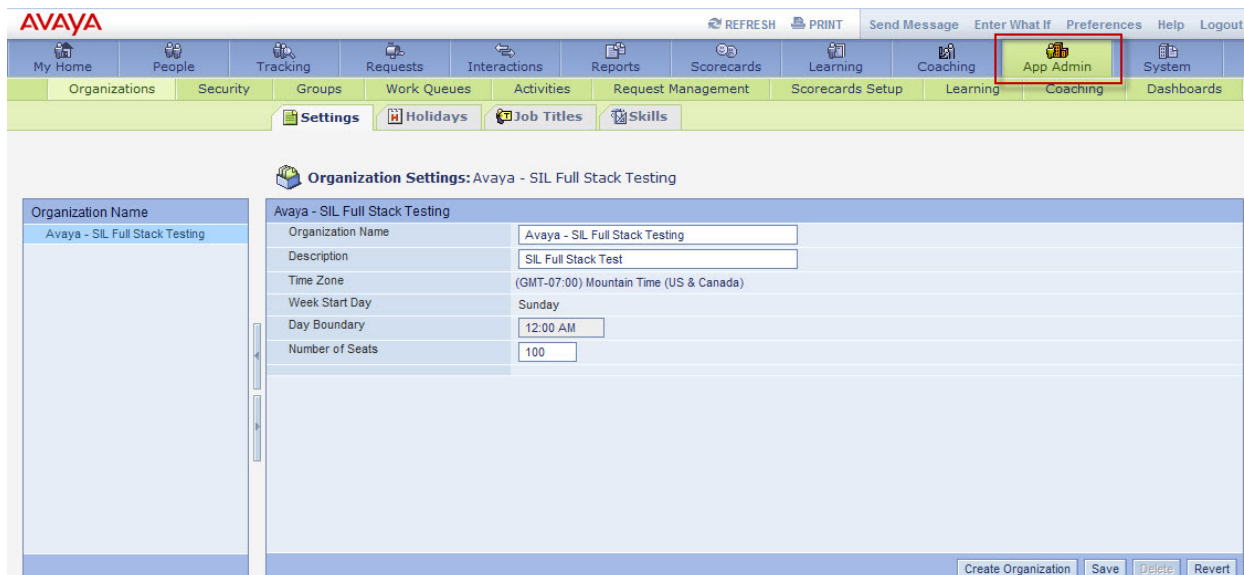
4.7.1 Create an Organization

In the **App Admin** module, click the **Organization** section and select **Settings** tab. The **Organization Settings** will be displayed. Click **Create Organization** button at the bottom right. Provide a descriptive name for **Organization Name** and **Description**. Use the drop down menus to provide the correct **Time Zone** and **Week Start Day**. Select the time to specify the **Day Boundary**. Enter the **Number of Seats** value. Click **Save** when finished.

4.7.2 Add Scheduled Holidays to Organization

In the **App Admin** module, click the **Organization** section and select **Holidays** tab. The **Holidays** for the Organization will be displayed. Click **Create New Holiday** button (shown in second screen below) at the bottom right. Provide a descriptive name for **Holiday Name**. Check the box for **Paid (Non-Working)** if the holiday is to be paid. Use the calendar menus to provide the **Date Range**. Click **Save** when finished.

The **Holidays** tab will display the list of holidays assigned to the Organization.

4.7.3 Define Job Titles used by the Organization

In the **App Admin** module, click the **Organization** section and select **Job Titles** tab. The **Job Title** area for the Organization will be displayed. Click **Create New Title** (shown in second screen below) button at the bottom right. Provide a descriptive name for **Job Title** and **Description**. Click **Save** when finished.

The **Job Titles** tab will display the list of **Job Titles** assigned to the Organization.

4.7.4 Define Skills used by the Organization

In the **App Admin** module, click the **Organization** section and select **Skills** tab. The **Skill** area for the Organization will be displayed. Click **Create New Skill** (shown in second screen below) button at the bottom right. Provide a descriptive name for **Skill** and **Description**. Use the drop down menu to select the **Media Type**. Click **Save** when finished.

The **Skills** tab will display the list of Skills assigned to the Organization.

4.7.5 Create Employee Group used by the Organization

In the **App Admin** module, click the **Groups**. The **Employee Group Form** is displayed. Click **Create** button at the bottom right. Provide a descriptive name for **Name** and **Description**. Use the drop down menu to select an employee filter if desired. Use the **Members** menus to select employees appropriately. Click **Save** when finished.

*Note: Employees are added in **Section 4.5.3.**

4.7.6 Define Work Queues used by the Organization

In the **App Admin** module, click the **Work Queues** section and the **Settings** tab. The **Queues** area is displayed. Click **Create work queues** button on the bottom right.
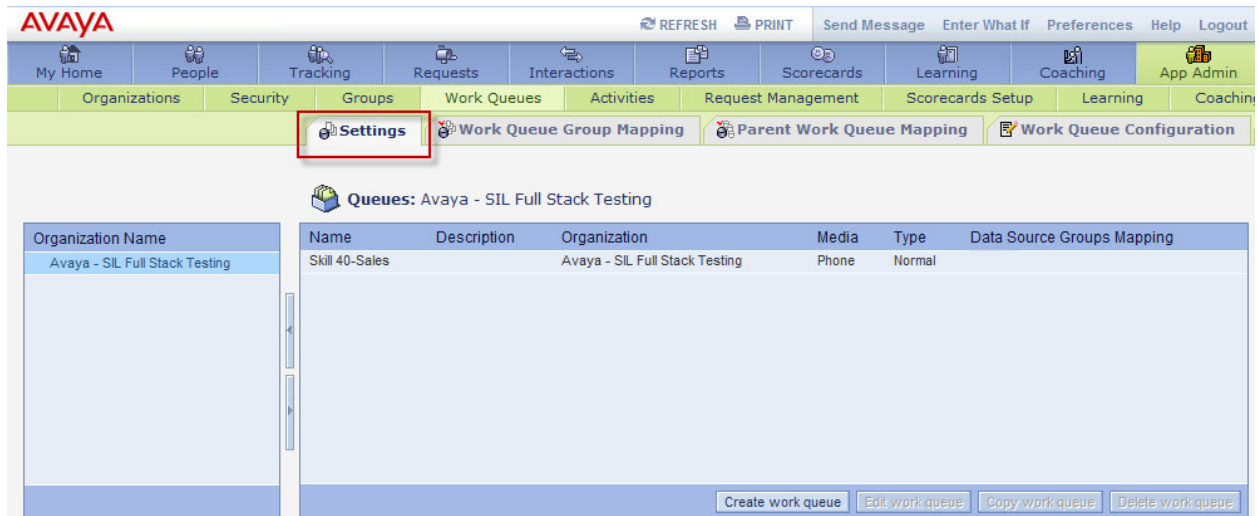
Enter a descriptive name for the **Name** and **Description** fields. Use the drop down menus to select **Media**, **Type** and **Organization**. Click **Save** when finished.

The **Settings** tab will display the list of **Queues** assigned to the Organization.

*Note: the **Data Source Groups Mapping** is automatically populated from the **Data Source Groups** from **Section 4.5.2.**

Click the **Work Queue Group Mapping** tab to add the **Data Source Groups Mapping**. Highlight the Queue created using the procedure above and click **Edit work queue** on bottom right.

Use the drop down menu to select the **Available Data Source Groups**. Move the **Data Source Group** to the **Mapped Data Source Groups** using the **Work Queue Group Mapping** menus. Click **Save Mapping** when finished.

The following screen is displayed showing the **Data Source Groups Mapping** added to the **Queue**.

Click the **Work Queue Configuration** tab to edit the queue configuration. Highlight the work queue and click the **Edit work queue** button at the bottom right.

Use the provided controls to select the desired work queue configuration. Refer to the Avaya Workforce Management documentation for more information on work queues (see **Section 6.3**). For these Application Notes the **Work Queue Configuration** used default values shown below.

4.7.7 Define Activities used by the Organization

Refer to the Avaya Workforce Management documentation for more information on activities (see **Section 6.3**). These Application Notes used default values for **Activity Types**, **Activities** and **Adherence Mapping**. Once the Data Source (created in **Section 4.5.1**) begins sending agent activity, the **Time Collector Mapping** table is populated with **Reason Code** information. Initially, the **Reason Codes** are not mapped to an **Activity** causing agent adherence to not be accurate. The following screen shows **Data Source** and **Reason Code** already mapped to an **Activity**.

To map a **Reason Code to Activity** simply select the row to map. Click the **Edit Time Collector Mapping** button.

Use the drop down menu to select the **Activity** the associated **Reason Code** will be tracked against. Click **Save** when finished.

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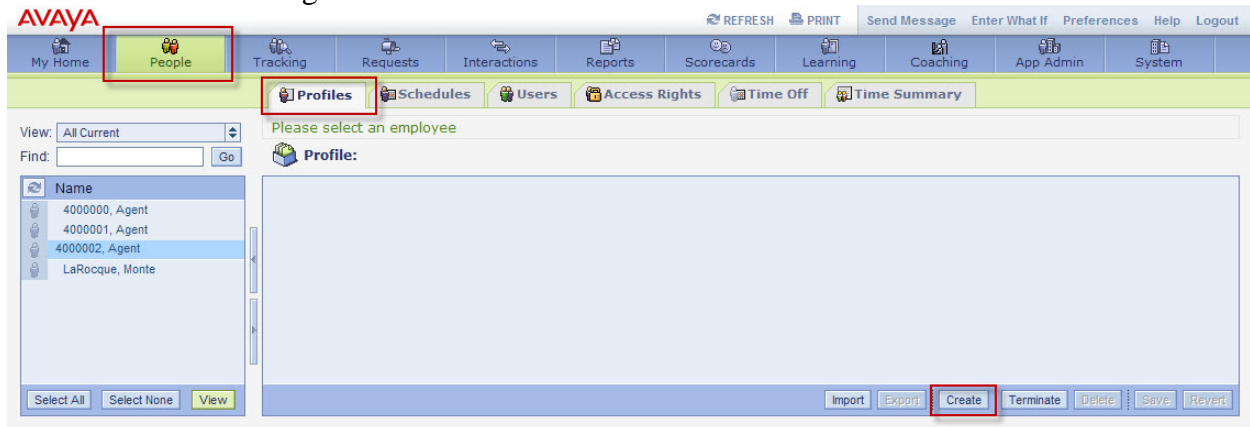
4.8 Configure People Module

4.8.1 Create User Profile

Navigate to **People** module and click **Profiles** tab. Creating a new user by clicking the **Create** button on the bottom right.
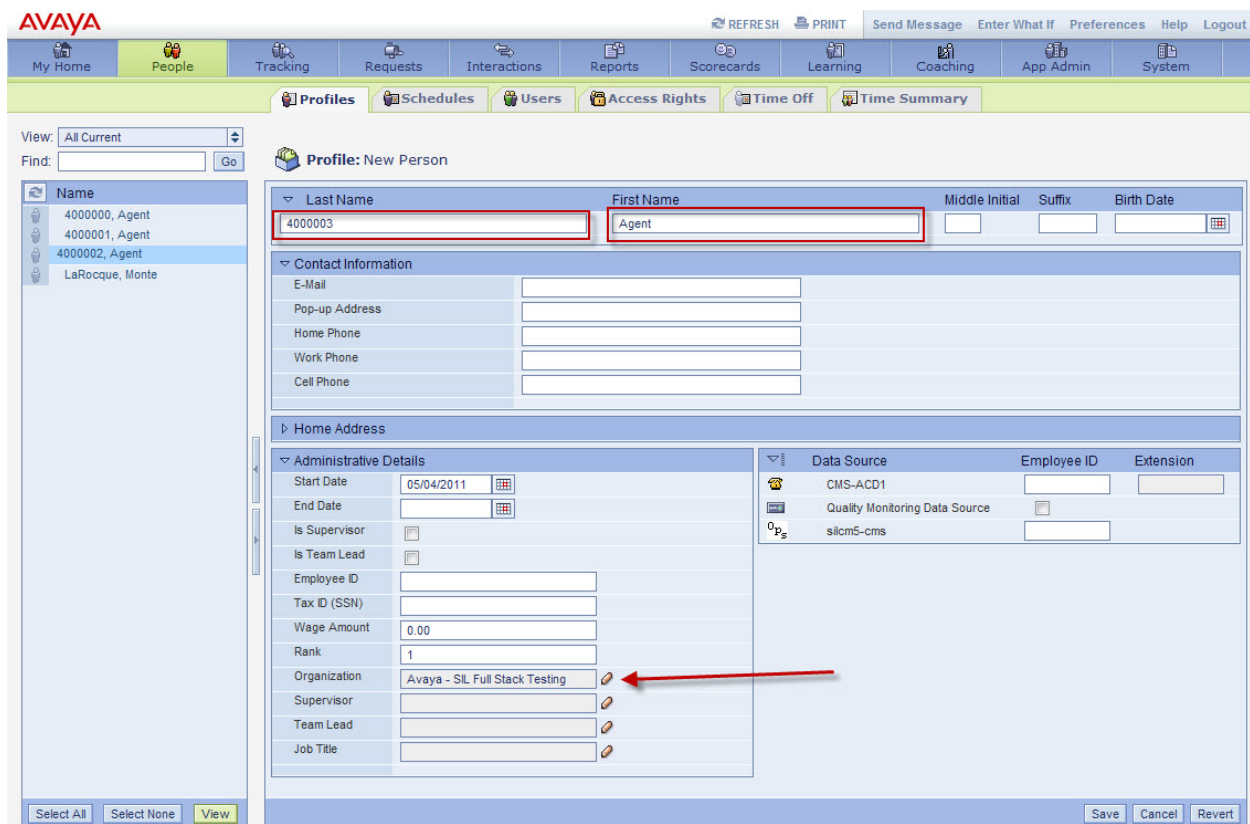

The **Profile** screen is displayed. Enter the new person's **Last Name**, **First Name** and other information if required. Link the new person's Supervisor by clicking on the pencil icon (see arrow.)

The **Effective Dates** screen is displayed. Use the drop down menus to select the new person's **Organization**, **Supervisor**, **Team Lead** and **Job Title**. Click **Set** button when finished.

User is returned to the **Profile** screen. Enter the new person's **Employee ID** corresponding to the Data Sources in the bottom right. Click **Save** when finished.

5 Verification Steps

This section provides the steps that can be performed to verify proper configuration of Communication Manager, Application Enablement Services and Avaya Contact Recorder.

5.1 Verify Avaya Aura® Communication Manager

On Communication Manager, verify the status of the active agents by using the "**list agent-loginID staffed**" command. The results of this command will show all agents that are logged into the Communication Manager. Verify the list contains agents configured in Workforce Management.

```
list agent-loginID staffed

                           AGENT LOGINID
Login ID      Name            Extension     Dir Agt  AAS/AUD        COR Ag Pr SO
              Skil/Lv Skil/Lv Skil/Lv Skil/Lv Skil/Lv Skil/Lv Skil/Lv Skil/Lv

400-0000      Ag 4000000     415-0000                              1   lvl
               40/01    /        /        /        /        /        /        /
400-0001      Ag 4000001     415-0001                              1   lvl
               40/01    /        /        /        /        /        /        /
400-0002      Agent 4000002  415-0003                              1   lvl
               40/01    /        /        /        /        /        /        /
```

5.2 Verify Avaya Call Management System

See **Section 3** to verify the status of CMS and the Workforce Management setup.

## 5.3 Verify Avaya Workforce Management

From the **Avaya Workforce Management** screen, navigate to **System → Integration**. Double click the target **Integration Server** to view the Integration Server Configuration details.

The following screen is displayed. Select the **Integration Server** in the left pane to view the **Integration Server Status** and the **Manager Status**. Each Integration Package status is indicated.

Drill down status for each **Integration Package** can be viewed by selecting the target **Integration Package** in the left pane. The resultant status is displayed in the right pane. The following screen shows status for **Avaya – CSI for CMS Report 4.1 [CS]** package.

6 Additional References

Avaya references are available at http://support.avaya.com.

1. Installing and Configuring Avaya Aura® Communication Manager document
   http://support.avaya.com/css/P8/documents/100089133
2. Avaya Call Management System Software Installation, Maintenance, and
   Troubleshooting, Release 16.2, November 2010
   http://support.avaya.com/css/P8/documents/100114790
3. Avaya Workforce Management Administration Guide
   (Available on product media)
4. Avaya Workforce Management Schedulers' Guide
   (Available on product media)
5. Application Notes to Integrate Avaya Aura® Communication Manager R6.0.1, Avaya
   Aura® Application Enablement Services R6.1 and Avaya Contact Recorder 10.1 using
   Service Observing (add link when available)
6. Application Notes to Integrate Avaya Aura® Communication Manager R6.0.1, Avaya
   Aura® Application Enablement Services R6.1 and Avaya Contact Recorder 10.1 using
   Single Step Conferencing (add link when available)

7 Appendix A

The following screen shots are shown to illustrate the **Integration Package** and **Component** settings used for testing that were not described in **Section 4.6**

Report Dump [GM2]
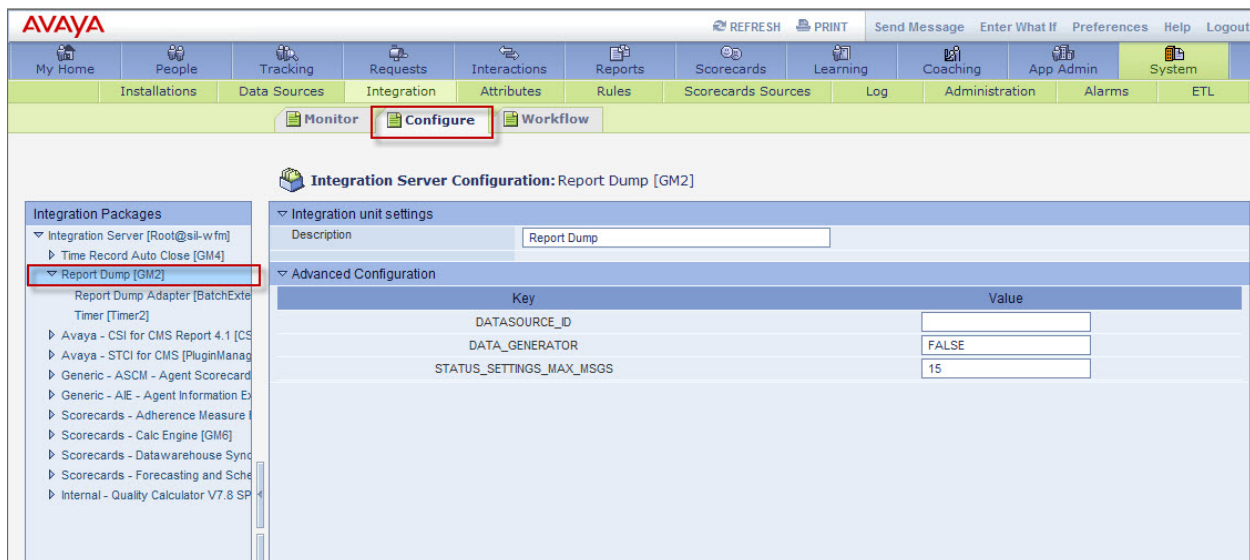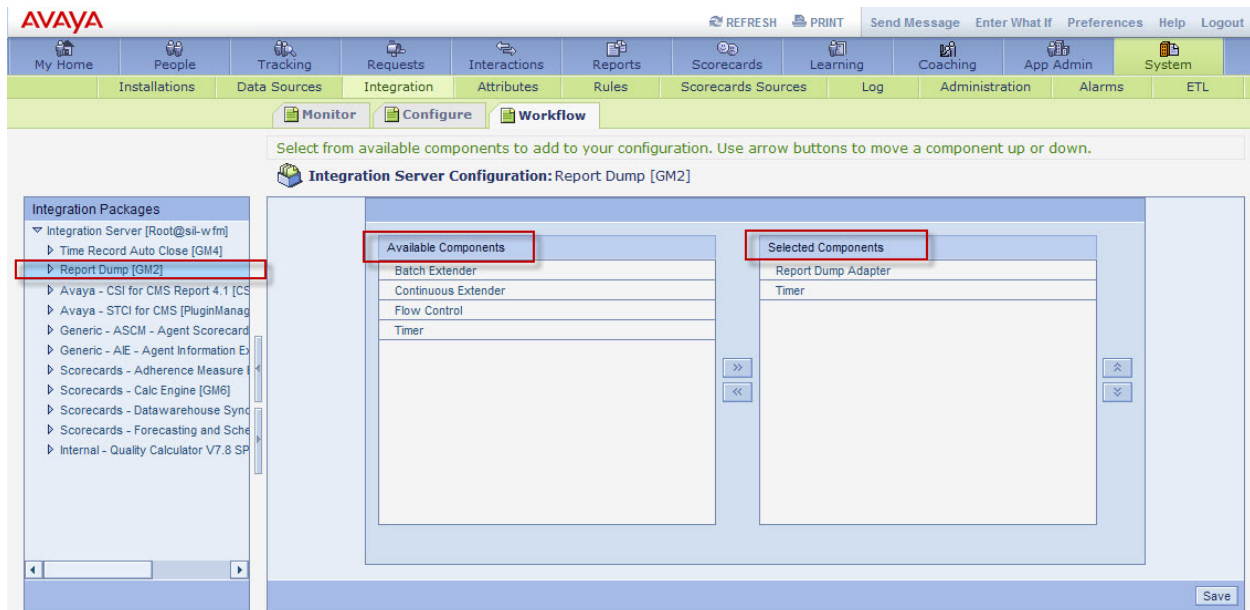
Avaya – CSI for CMS Report 4.1[CS]

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*Note: The following screen is shown in collapsed form. Default values were used.

Avaya – STCI for CMS [PluginManager]

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*Note: The other **Integration Packages** (not shown) support Scorecards and Quality Monitoring which are outside the scope of these Application Notes.