



Avaya Solution & Interoperability Test Lab

Application Notes for Exony Virtualized Interaction Manager with Avaya Call Management System R17 – Issue 1.0

Abstract

These Application Notes describe the configuration steps required for Exony Virtualized Interaction Manager to interoperate with Avaya Call Management System. Exony Virtualized Interaction Manager is a web tool that enables business users to measure and manage virtualized contact centers. Via an ODBC interface Exony Virtualized Interaction Manager collects historical call measurement data from various database tables on Avaya Call Management System.

Information in these Application Notes has been obtained through 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 Exony Virtualized Interaction Manager (VIM) to interoperate with Avaya Call Management System (CMS). Exony Virtualized Interaction Manager is a web tool that enables business users to measure and manage virtualized contact centers. Via an ODBC interface Exony Virtualized Interaction Manager collects historical call measurement data from various database tables on Avaya Call Management System. The data is imported, processed, and stored in local database on the Exony Virtualized Interaction Manager server and is accessible via dashboards or custom reports.

Exony VIM provides reports on Agents, Splits, Vectors, VDNs, Trunks and Trunk Groups. For a detailed list of data fields available in VIM please see [3] in **Section 10**.

For the compliance test, the data collection period was set to 15 minutes for both Avaya Call Management System and Exony Virtualized Interaction Manager. The delay between the Avaya Call Management System data collection time and the Exony Virtualized Interaction Manager data import time was set to 20 minutes.

2. General Test Approach and Test Results

This section describes the compliance testing approach used to verify VIM integration with CMS and the test results.

The main goal of the test was to verify that VIM correctly imports, parses, and displays contact center data from CMS.

The test cases were executed manually. Incoming calls were made within a measured interval from measured trunks to measured VDNs, skills, and agents. Manual call controls and work mode changes from the agent telephones were exercised to populate specific fields of relevant database tables. In the compliance test, the measured interval was fixed at 15 minutes.

Once the measured interval was over and data was stored in the VIM server, a number of pre-designed custom reports were run using a web browser to check proper display and correctness of each field against the data in the CMS database.

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.

2.1. Interoperability Compliance Testing

The interoperability compliance test included feature and serviceability testing.

The feature testing involved in the execution of contact center scenarios and vector commands in order to generate data for specific fields in the relevant database tables. The contact center scenarios executed included agent login, agent mode change, agent logout, inbound PSTN call to VDN, abandon call, call waiting in queue, call waiting at agent phone, hold/resume, transfer, conference, direct agent call, extension call from agent, incoming call to agent extension, redirect on no answer, and outbound PSTN calls. The vector commands executed included queue-to, busy, disconnect, and route-to.

The serviceability testing focused on verifying the ability of VIM to recover from adverse conditions, such as network outages and server reboots.

2.2. Test Results

All test cases were executed and passed successfully.

2.3. Support

Technical support on VIM can be obtained from Exony by customers with a current support contract using the details provided therein:

- **Phone:** +44 1635 271555
- **Web:** <http://www.exony.com>

3. Reference Configuration

The compliance test was done with all the test equipment in an Avaya Lab. The Avaya side equipment included Communication Manager, Call Management System, and several IP phones. The Exony application was installed on a Microsoft Windows 2008 SP2 Server running on a VMWare virtual machine in a Dell blade server. The report interface of VIM was accessible through a web browser. All calls to and from the public network were routed through an ISDN PRI trunk.

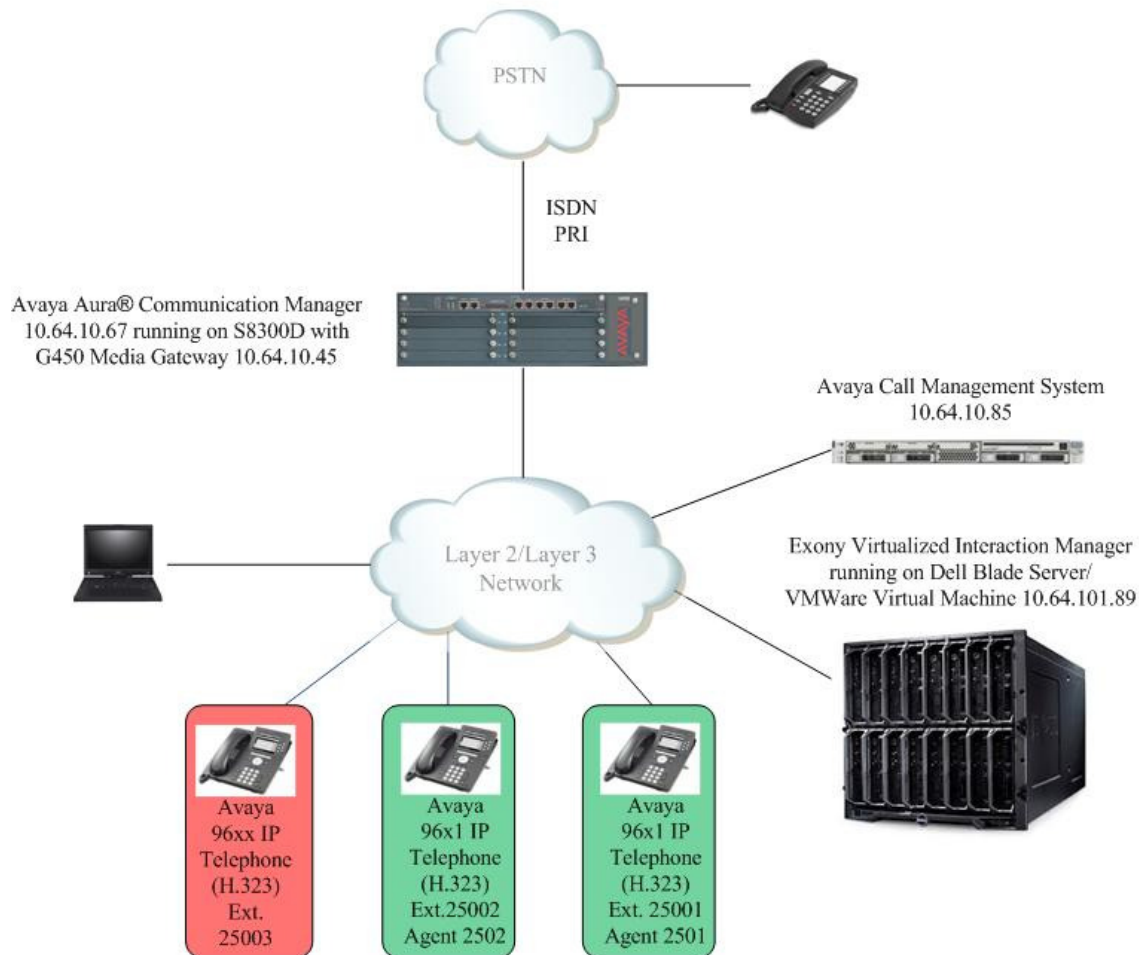


Figure 1: Exony Virtualized Interaction Manager with Avaya Call Management System

4. Equipment and Software Validated

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

Equipment/Software	Version
Avaya Aura® Communication Manager running on Avaya S8300D Server	Release 6.3 with patch 03.0.124.0-20553
Avaya G450 Media Gateway MGP MM710 T1 Module	HW 1 FW 31.20.0 HW 04 FW 015
Avaya Call Management System	R17
Avaya 96x1 H.323 Telephones	Avaya one-X® Deskphone Release 6.2.3
Avaya 96x0 H.323 Telephones	Avaya one-X® Deskphone Release 3.2.0
Exony Virtualized Interaction Manager running under Windows Server 2008 R2 SP1 64-bit with Windows SQL 2008 R2 Enterprise Edition 64-bit on a VMWare virtual machine	9.2(2)

5. Configure Avaya Aura® Communication Manager

The detailed administration of contact center resources and connectivity between Communication Manager and CMS are not the focus of these Application Notes and therefore are not described in this section. For the administration of contact center resources and connectivity to CMS, refer to appropriate documentation in <http://support.avaya.com>.

This section provides the procedures to enable VDN, Skill, Agent, and trunk measurement data to be sent to CMS. The procedures include the following areas:

- Administer measured VDN
- Administer measured Skill and Agent
- Administer measured Trunk Group

For the compliance testing, the following contact center resources were used.

VDN	Skill	Agent	Trunk Group
25900	1	2501	11
25905	2	2502	
25909			

5.1. Administer Measured VDN

Use the “change vdn n” command to turn on VDN measurement, where “n” is the extension of the VDN to be measured. Set the **Measured** field to “external” or “both” to enable measurement data on the VDN to be sent to CMS. Repeat this step for all VDNs that are measured.

```
change vdn 25900                                     Page 1 of 3
      VECTOR DIRECTORY NUMBER
      Extension: 25900
      Name*: cms test - skill 1
      Destination: Vector Number 20
      Attendant Vectoring? n
      Meet-me Conferencing? n
      Allow VDN Override? n
      COR: 1
      TN*: 1
      Measured: external

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

5.2. Administer Measured Skill and Agent

Use the “change hunt-group n” command to turn on skill measurement, where “n” is the number of the skill group to be measured. Navigate to **Page 2**, and set the **Measured** field to “external” or “both” to enable measurement data on the skill group and the associated Agents to be sent to CMS. Repeat this step for all skill groups that are measured.

change hunt-group 1	HUNT GROUP	Page 2 of 4
Skill? y	Expected Call Handling Time (sec): 20	
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): 10	After Xfer or Held Call Drops? n	

For the compliance testing, two skill groups with group numbers 1 and 2 were configured to be measured. In addition, two agents with extensions 25001 and 25002 and agent id 2501 and 2502 were used as available agents for the above skill groups.

list agent-loginID 2501 count 2									
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
2501	IP Agent 1	25001			1			1	lvl
	1/01	2/01	/	/	/	/	/	/	/
2502	IP Agent 2	25002			1			1	lvl
	1/01	2/01	/	/	/	/	/	/	/

5.3. Administer Measured Trunk Group

Use the “change trunk-group n” command to turn on trunk group measurement, where “n” is the number of the trunk group to be measured. Navigate to **Page 3**, and set the **Measured** field to “external” or “both” to enable measurement data on the trunk group to be sent to CMS.

```
change trunk-group 11                                     Page 3 of 22
TRUNK FEATURES
    ACA Assignment? n                                     Measured: both      Wideband Support? n
                                                         Maintenance Tests? y
                                                         Data Restriction? n   NCA-TSC Trunk Member:
                                                         Send Name: y          Send Calling Number: y
                                                         Send EMU Visitor CPN? n
    Used for DCS? n
    Suppress # Outpulsing? n   Format: natl-pub
    Outgoing Channel ID Encoding: preferred   UII IE Treatment: shared
                                                         Maximum Size of UII IE Contents: 128
                                                         Replace Restricted Numbers? n
                                                         Replace Unavailable Numbers? n
                                                         Send Connected Number: n
                                                         Hold/Unhold Notifications? n
    Network Call Redirection: none
    Send UII IE? y             Modify Tandem Calling Number: no
    Send UCID? y               BSR Reply-best DISC Cause Value: 31
    Send Codeset 6/7 LAI IE? y   Dsl Echo Cancellation? n
    Apply Local Ringback? n      US NI Delayed Calling Name Update? n
    Show ANSWERED BY on Display? y
    Network (Japan) Needs Connect Before Disconnect? n
```

6. Configure Avaya Call Management System

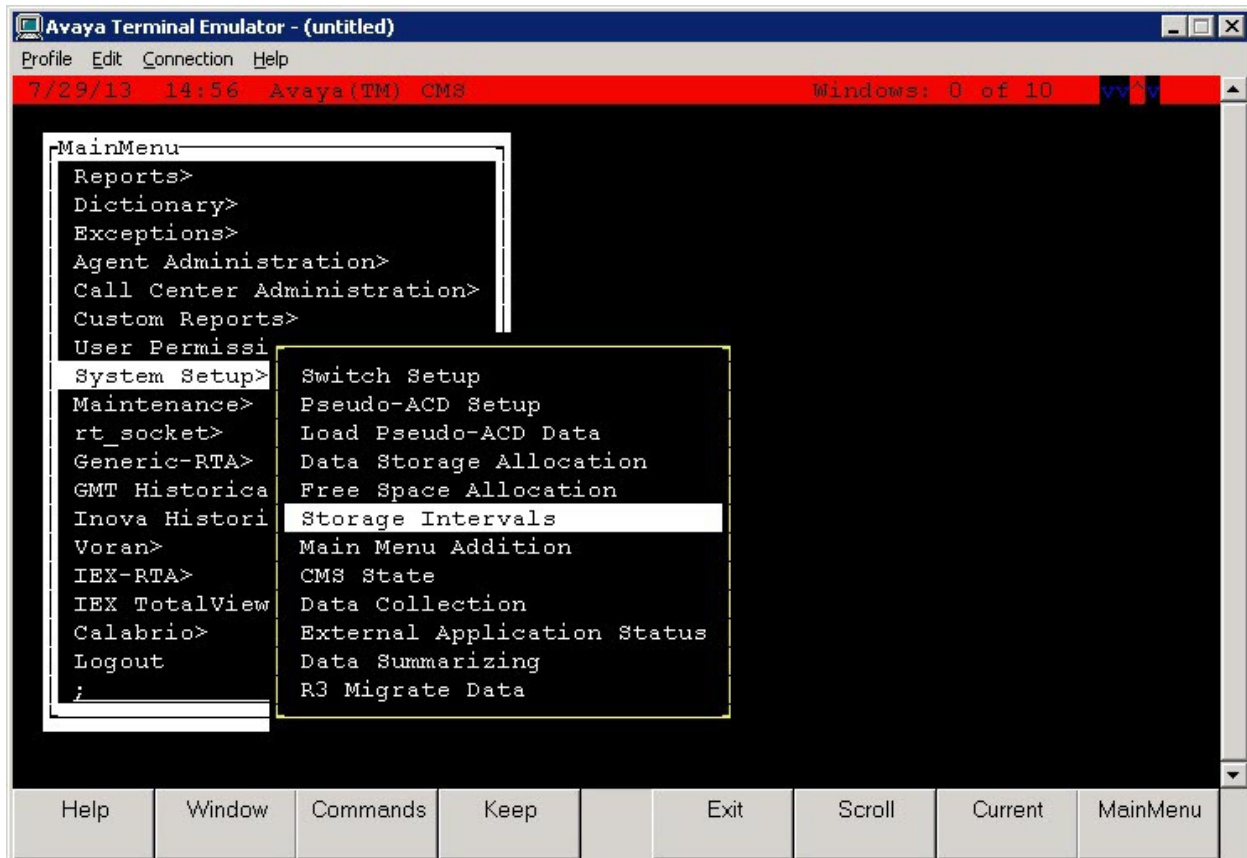
The connectivity between CMS and Communication Manager is assumed to be in place and therefore is not described in this section.

This section provides the procedures for the following:

- Verify Intra-hour Interval
- Administer Dictionary

6.1. Verify Intra-Hour Interval

Use Avaya Terminal Emulator to connect to CMS, and log in with proper credentials. Enter “cms” at the command prompt to display the **MainMenu** screen. Select **System Setup** → **Storage Intervals** and press **Enter**.



The **System Setup: Storage Intervals** screen is displayed. Make certain that the **intra-hour interval** field is set to “15 minutes”, as planned for this test.

Avaya Terminal Emulator - (untitled)

Profile Edit Connection Help

7/29/13 15:09 Avaya(TM) CMS Windows: 1 of 10

System Setup: Storage Intervals S8300_TR1

Intrahour interval (Select one): Modify

<x> 15 minutes

<_> 30 minutes

<_> 60 minutes

Data summarizing time: 12:35 AM

Switch time zone offset (-23 to +23): 0

Week start day (Select one):

<x> Sunday

<_> Monday

<_> Tuesday

<_> Wednesday

<_> Thursday

<_> Friday

<_> Saturday

Week stop day (Select one):

<_> Sunday

<_> Monday

<_> Tuesday

<_> Wednesday

<_> Thursday

<_> Friday

<x> Saturday

Daily start time: 12:00 AM

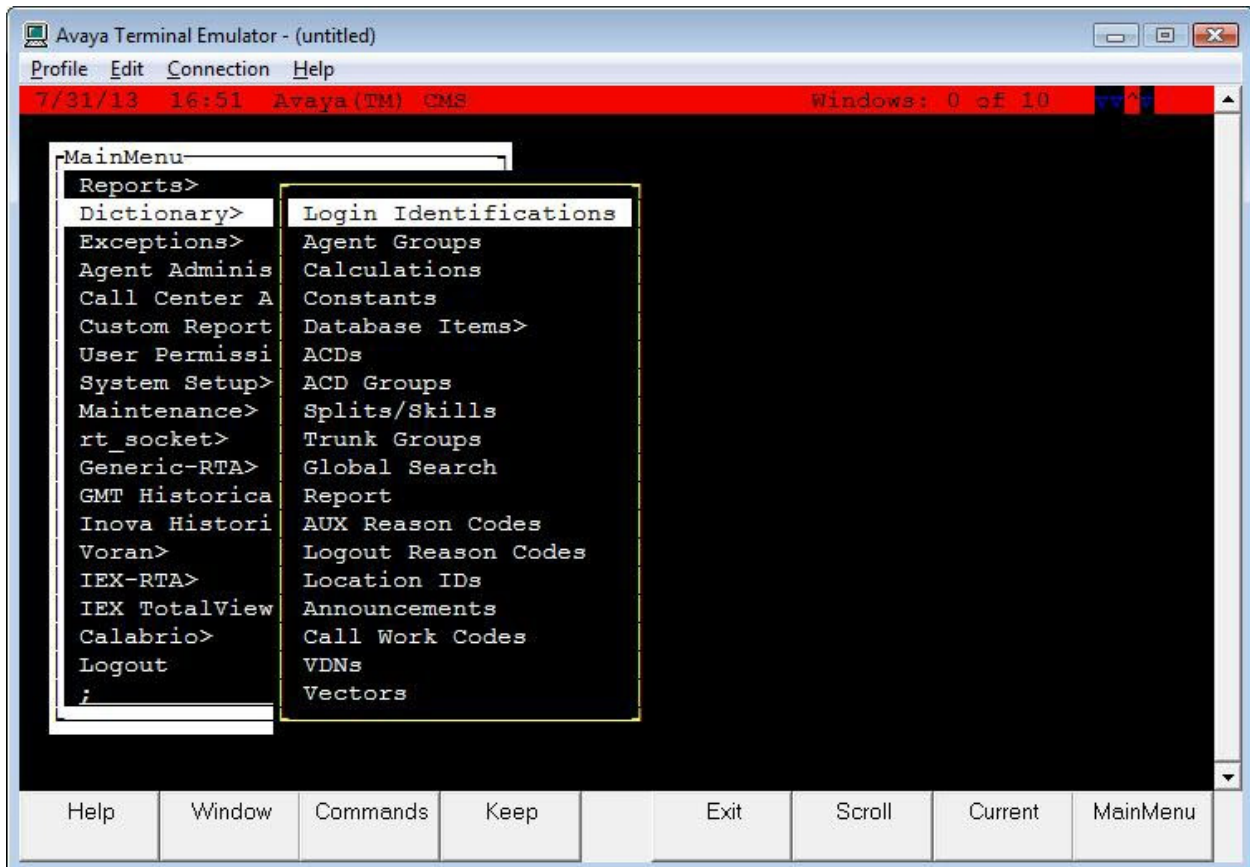
Daily stop time: 11:59 PM

Help Window Commands Keep Exit Scroll Current MainMenu

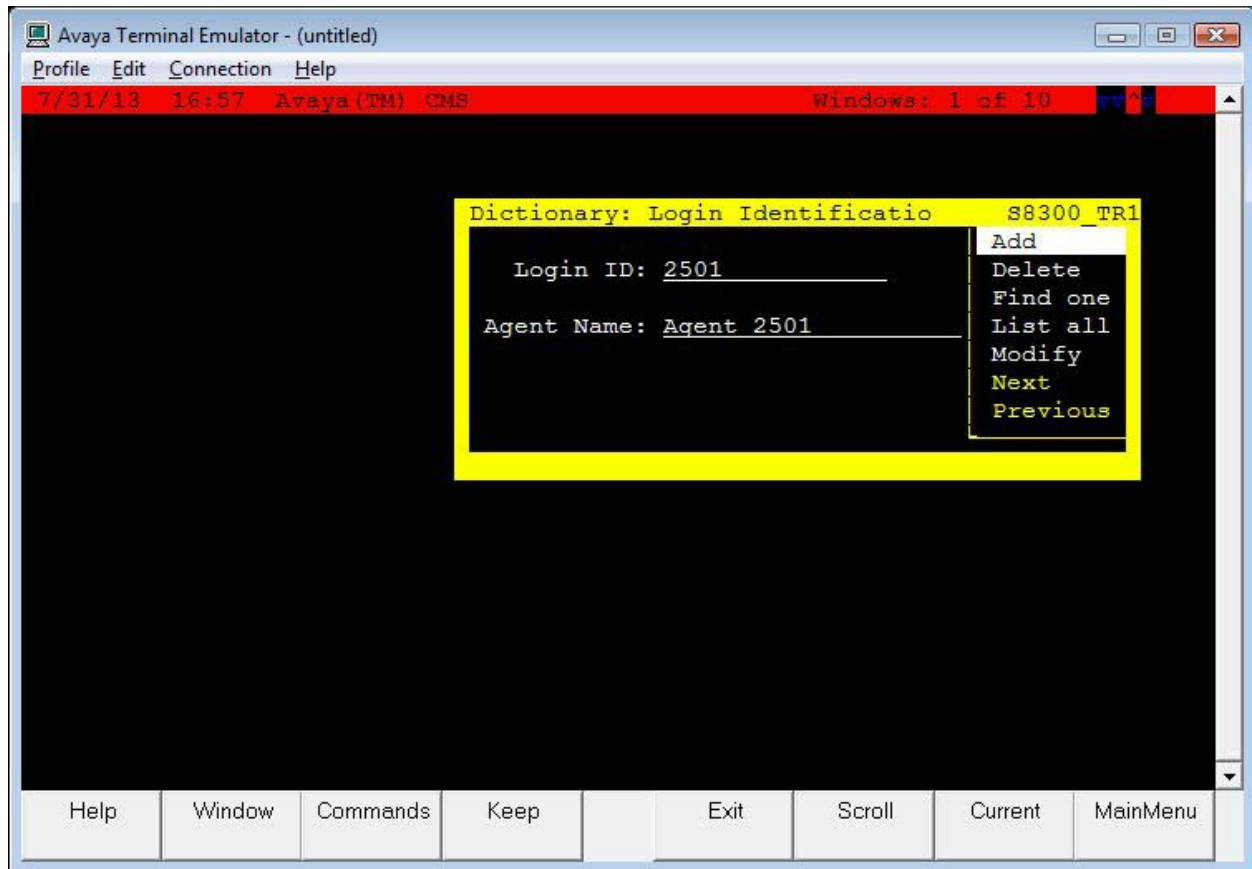
6.2. Administer Dictionary

All the measured agents, skills, VDNs, vectors, trunk groups, and call work codes need to have a name assigned to them in the dictionary. To assign a name to an agent, follow the procedure below.

From the **MainMenu** screen, select **Dictionary** → **Login Identifications** and press **Enter**.



A **Dictionary: Login Identifications** window is displayed. Enter an agent ID in the **Login ID** field and a descriptive name in the **Agent Name** field. Use the Arrow keys to move the cursor to **Add** and press **Enter**. A **Successful** message will be displayed at the bottom of the window (not shown).



Repeat the procedure for all the agents, skills, VDNs, vectors, trunk groups, and call work codes.

7. Configure Exony Virtualized Interaction Manager

This section describes the procedures to configure VIM which include the following areas:

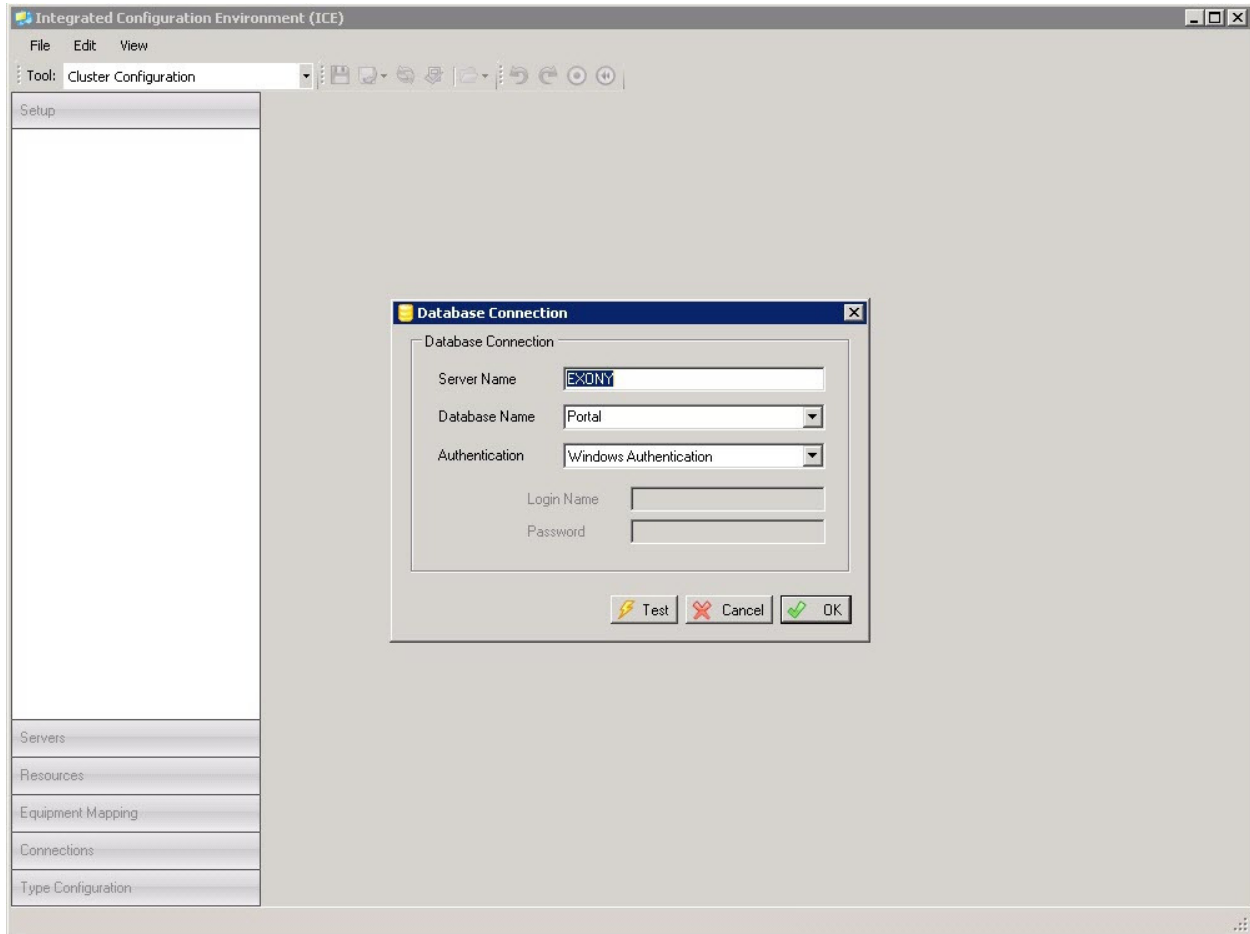
- Configure ODBC Interface to CMS
- View VIM Reports
- Configure Parameter Sets for Reports

Note: Configuration of VIM is typically performed by Exony deployment engineers. The procedural steps presented in these Application Notes are for informational purposes

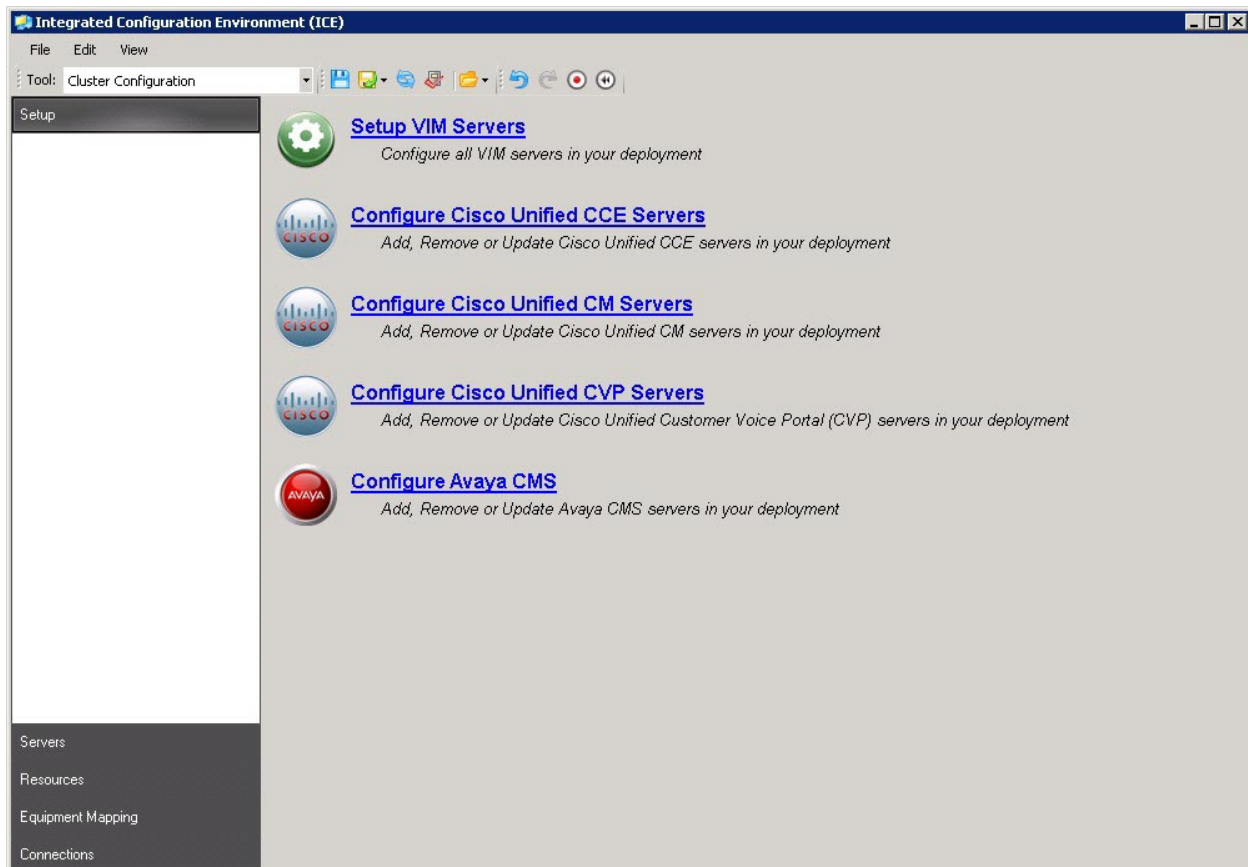
Note: To ensure that all ACD data is written to CMS before the data import cycle executes the VIM import cycle delay must be set to the value of the CMS intrahour interval plus 5 minutes. For example, if a 15 minute interval is used then the VIM import delay should be set to 20 minutes. If there are more than one ACDs (Communication Managers) feeding data to CMS, with different interval settings, then the VIM import delay must be set to a value equal to the largest interval value, plus 5 minutes. This is to ensure that data is written from all ACDs before the import cycle executes.

7.1. Configure ODBC Interface to CMS

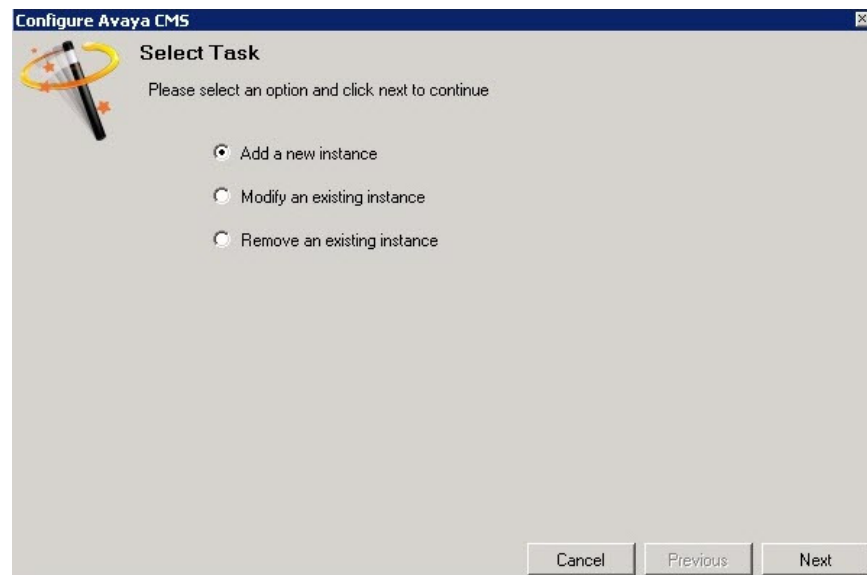
From the VIM server, navigate to **Start → All Programs → VIM Performance → Configuration Tools → Integrated Configuration Environment**. The **Integrated Configuration Environment** screen is displayed along with a **Database Connection** pop-up window. The database connection has been pre-configured. Click **OK** without changing any values.



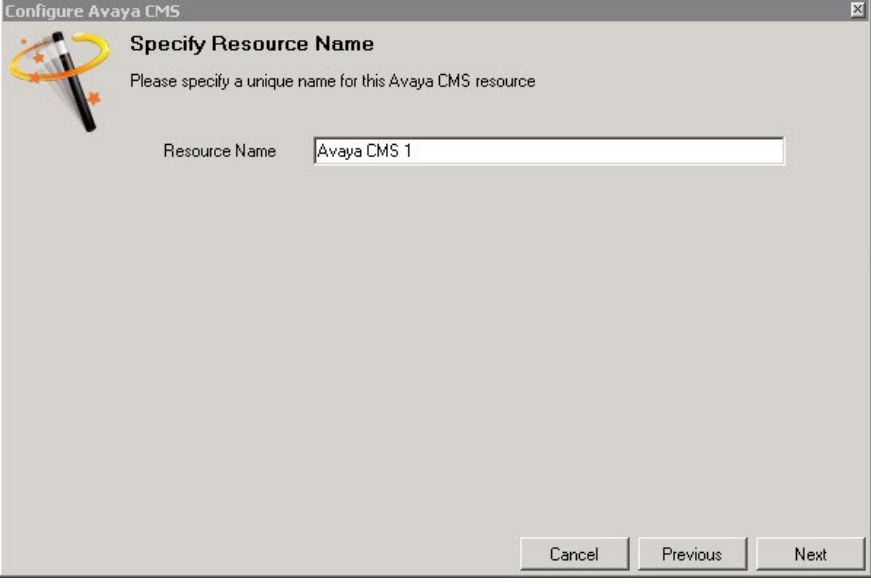
The following screen is displayed. Click the **Configure Avaya CMS** option on the main screen.



The **Configure Avaya CMS** window is shown. Select **Add a new instance** and click **Next**.



The following page is displayed. Enter a descriptive name in the **Resource Name** field. Click **Next**.



The dialog box is titled "Configure Avaya CMS" and "Specify Resource Name". It contains a text input field labeled "Resource Name" with the value "Avaya CMS 1". There are three buttons at the bottom: "Cancel", "Previous", and "Next".

Configure Avaya CMS

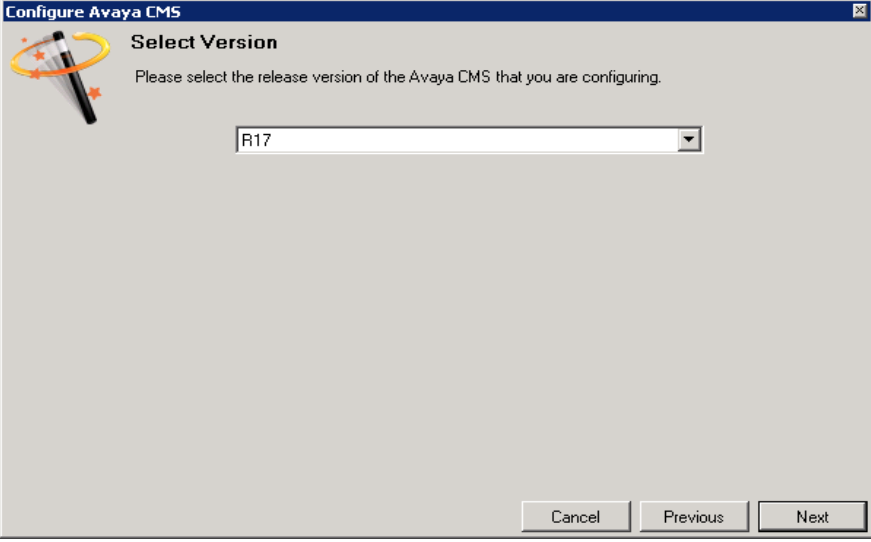
Specify Resource Name

Please specify a unique name for this Avaya CMS resource

Resource Name: Avaya CMS 1

Cancel Previous Next

The following page is displayed. Select **R17** from the dropdown list. Click **Next**.



The dialog box is titled "Configure Avaya CMS" and "Select Version". It contains a dropdown menu with the value "R17". There are three buttons at the bottom: "Cancel", "Previous", and "Next".

Configure Avaya CMS

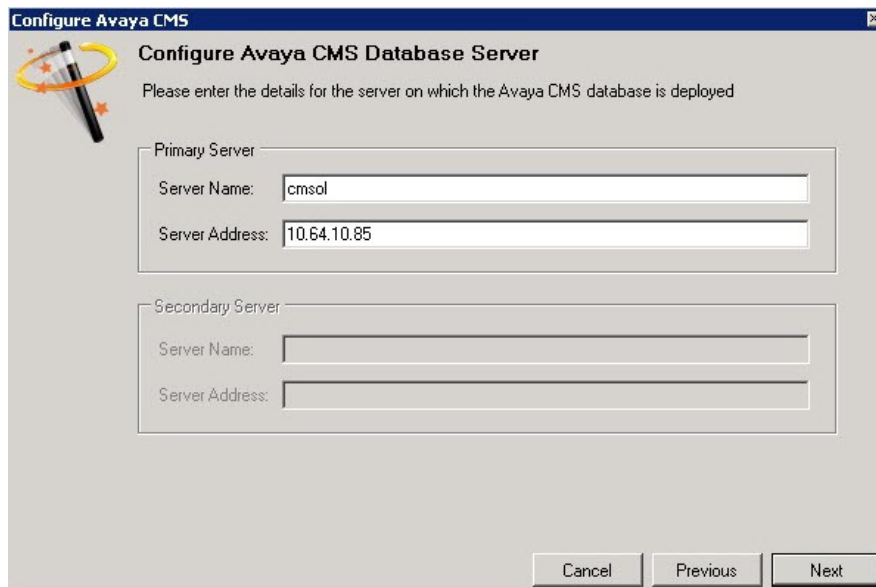
Select Version

Please select the release version of the Avaya CMS that you are configuring.

R17

Cancel Previous Next

The following page is displayed. Enter a descriptive name in the **Server Name** field and the CMS IP address in the **Server Address** field. Click **Next**.



The image shows a Windows-style dialog box titled "Configure Avaya CMS". Inside the dialog, there is a sub-header "Configure Avaya CMS Database Server" and a prompt: "Please enter the details for the server on which the Avaya CMS database is deployed". The dialog is divided into two sections: "Primary Server" and "Secondary Server". The "Primary Server" section contains two text input fields: "Server Name" with the value "cmsol" and "Server Address" with the value "10.64.10.85". The "Secondary Server" section contains two empty text input fields for "Server Name" and "Server Address". At the bottom right of the dialog are three buttons: "Cancel", "Previous", and "Next".

Configure Avaya CMS

Configure Avaya CMS Database Server

Please enter the details for the server on which the Avaya CMS database is deployed

Primary Server

Server Name: cmsol

Server Address: 10.64.10.85

Secondary Server

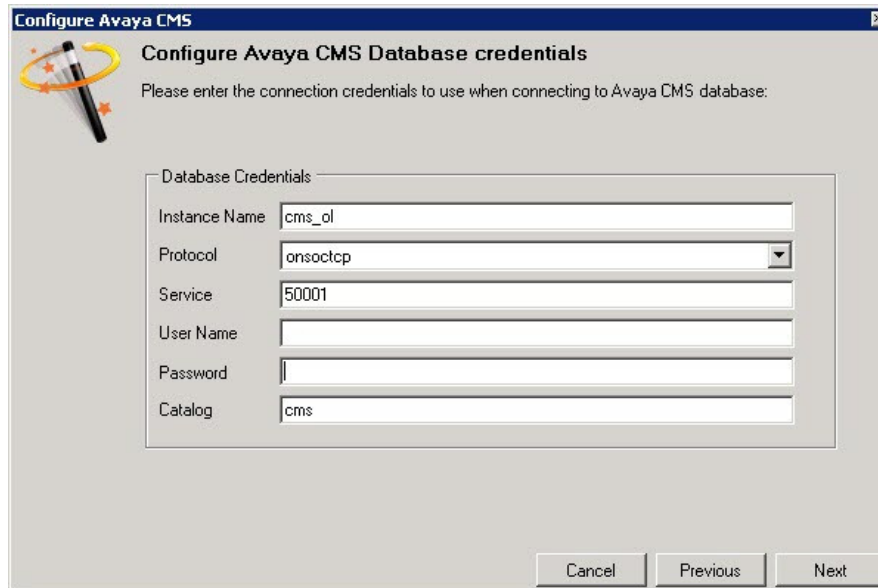
Server Name:

Server Address:

Cancel Previous Next

The following page is displayed. Enter the following values:

- **Instance Name:** “cms_ol”
- **Protocol:** “onsoctcp” from the dropdown menu
- **Service:** “50001”
- **User Name:** a CMS user with normal user privilege
- **Password:** password of the above user
- **Catalog:** “cms”

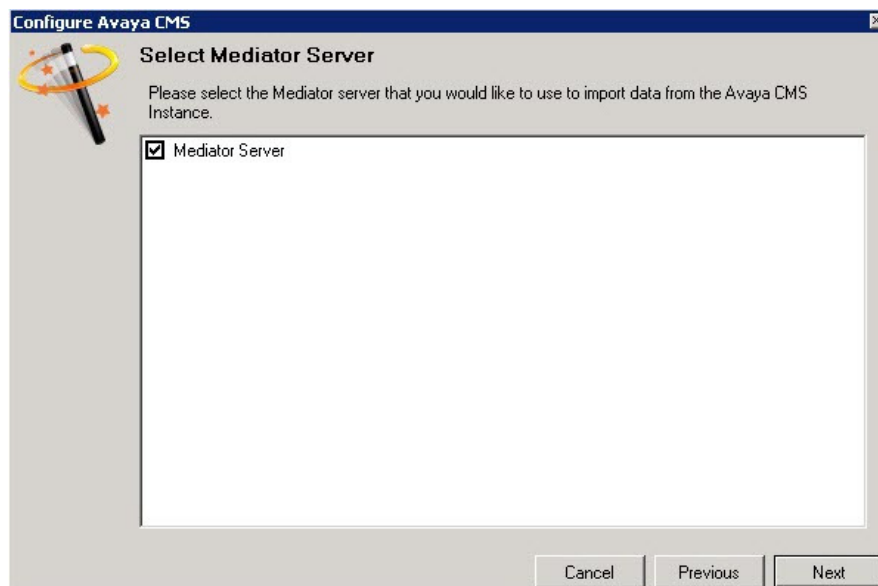


The screenshot shows a window titled "Configure Avaya CMS" with a sub-header "Configure Avaya CMS Database credentials". Below the sub-header is the instruction: "Please enter the connection credentials to use when connecting to Avaya CMS database:". A group box labeled "Database Credentials" contains the following fields:

Instance Name	cms_ol
Protocol	onsoctcp
Service	50001
User Name	
Password	
Catalog	cms

At the bottom right of the window are three buttons: "Cancel", "Previous", and "Next".

The following page is displayed. Check the **Mediator Server** checkbox. Click **Next**.

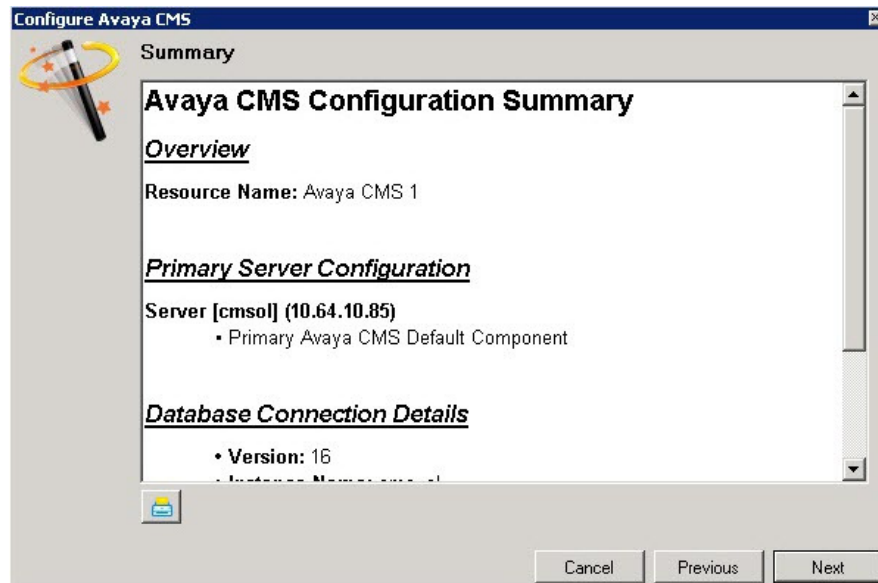


The screenshot shows a window titled "Configure Avaya CMS" with a sub-header "Select Mediator Server". Below the sub-header is the instruction: "Please select the Mediator server that you would like to use to import data from the Avaya CMS Instance.". A list box contains the following item:

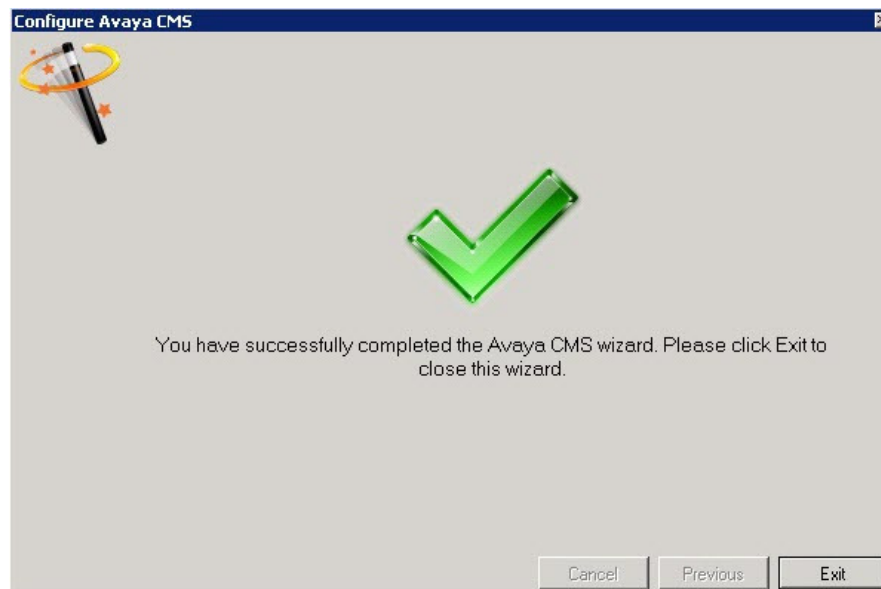
<input checked="" type="checkbox"/> Mediator Server

At the bottom right of the window are three buttons: "Cancel", "Previous", and "Next".

The **Summary** page is displayed. Click **Next**.



The following page is displayed. Click **Exit**.



8. Verification Steps

This section provides the tests that can be performed to verify proper configuration of CMS and VIM.

8.1. Verify Exony Virtualized Interaction Manager

Prior to verifying VIM, make calls to the measured resources on Communication Manager, to enable measurement data to be sent to CMS.

8.1.1. Verify CMS ODBC Connection Status

From the **Integrated Configuration Environment** main page click **Connections** in the left pane.



The following screen is displayed. Verify that both CMS lines have a green status (CMS lines are the lines that show **Avaya CMS: Default** in the **Destination Component Type** column).

The screenshot shows the 'Integrated Configuration Environment (ICE)' window. On the left is a navigation pane with 'Connections' selected. The main area displays the 'All Connections' table. The table has six columns: Status, Source Server, Source Component Type, Destination Server, and Destination Component Type. Two rows are highlighted with red boxes, indicating a green status and 'Avaya CMS: Default' destination component type.

Status	Source Server	Source Component Type	Destination Server	Destination Component Type
Green	EXONY	Application Server Service:Default	EXONY	Analysis Services Database:CoreDatabase
Green	EXONY	OLAP Processor Service:Default	EXONY	Analysis Services Database:CoreDatabase
Green	EXONY	Mediator Service:Default	cmsol	Avaya CMS:Default
Green	EXONY	Application Server Service:Default	cmsol	Avaya CMS:Default
Green	EXONY	Application Server Service:Default	EXONY	Microsoft Reporting Web Server:Default
Green	EXONY	OLAP Processor Service:Default	EXONY	Relational Database:Default
Green	EXONY	Partitioning Service:Default	EXONY	Relational Database:Default
Green	EXONY	Provisioning Service:Default	EXONY	Relational Database:Default
Green	EXONY	Data Import Server Service:Default	EXONY	Relational Database:Default
Green	EXONY	Mediator Service:Default	EXONY	Relational Database:Default
Green	EXONY	Application Server Service:Default	EXONY	Relational Database:Default

8.1.2. Verify Report Generation

Once the data for a particular intra-hour interval is imported and processed, the user can run all the available reports via a web browser. To run a report, the user has to enter a number of parameters including the range or list of resources (e.g. agents), the start time, the end time, etc.

9. Conclusion

These Application Notes describe the configuration steps required for Exony Virtualized Interaction Manager to interoperate with Avaya Call Management System, via an ODBC interface. All feature and serviceability test cases were passed during the compliance test.

10. Additional References

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

- [1] Avaya Call Management System Database Items and Calculations, Release 17.x, May 2013
- [2] Exony VIM Installation and Configuration Guide, 9.2, September 2012
- [3] Exony VIM Avaya CMS Semantic Models, 9.2, September 2012
- [4] Exony VIM Release Notes Version 9.2, September 2012

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