**Avaya Solution & Interoperability Test Lab**

# Application Notes for FutureSoft Periscope 1.0 with Avaya Call Management System Release 16.2 using Open Database Connectivity (ODBC) Interface – Issue 1.0

## Abstract

These Application Notes describe the configuration steps required to integrate FutureSoft Periscope 1.0 with Avaya Call Management System Release 16.2 using the Open Database Connectivity (ODBC) interface to retrieve Automatic Call Distribution (ACD) call center data from Avaya Aura® Communication Manager. Periscope is a user friendly tool capable of collating and compiling of data from different sources to generate reports in a single desired format.

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 to integrate FutureSoft Periscope 1.0 with Avaya Call Management System (CMS) Release 16.2 using the Open Database Connectivity (ODBC) interface to retrieve ACD call center data from Avaya Aura® Communication Manager. Periscope is a user friendly tool capable of collating and compiling of data from different sources to generate reports in a single desired format. It provides a centralized reporting system accessible from various locations.

# 2. General Test Approach and Test Results

The feature test cases were performed manually. Calls were made to the measured skills and routed to agents to generate call center statistics for FutureSoft Periscope. The accuracy and proper display of the data were verified.

## 2.1. Interoperability Compliance Testing

The interoperability compliance test focused on verifying the ability of FutureSoft Periscope to retrieve call center data from Avaya CMS using the ODBC interface and displaying split/skill data in Periscope reports.

## 2.2. Test Results

All test cases were executed and passed.

## 2.3. Support

For technical support on Periscope, contact FutureSoft as shown below.

- **Web:** http://www.futuresoftindia.com/aboutus/locations.aspx
- **Voice:** +91-11-4222 8888
- **Email:** info@futuresoftindia.com

# 3. Reference Configuration

**Figure 1** illustrates the test configuration used to verify the solution. FutureSoft Periscope was installed on a Microsoft Windows 2003 Server with Service Pack 2, with the client PC using the Microsoft Internet Explorer 7.0 to access the FutureSoft Periscope Server. Calls were placed to the Vector Directory Numbers (VDNs) and were answered by the agent telephones connected to Avaya Aura® Communication Manager. The Avaya Call Management System was used to capture the splits/skills and agent information to generate the historical data used in this testing.

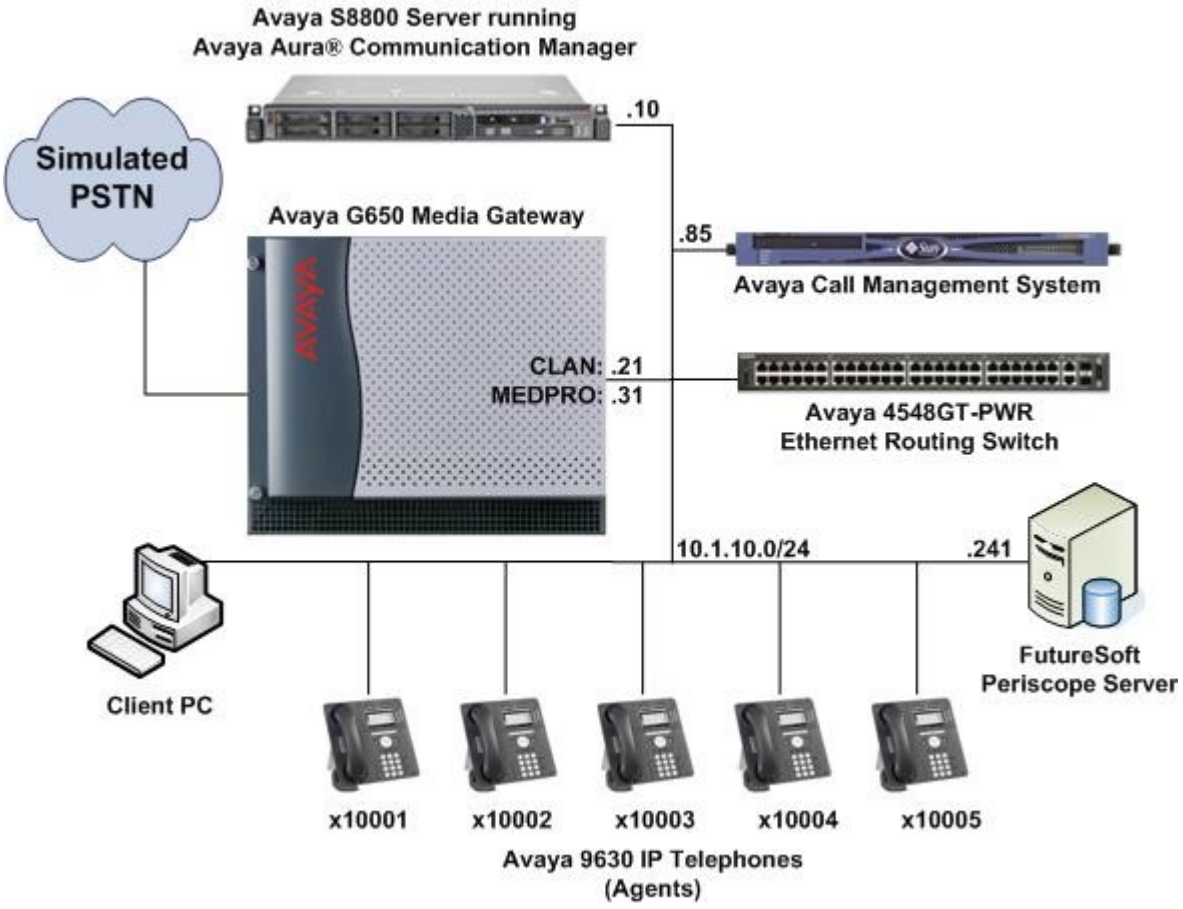



**Figure 1: FutureSoft Periscope with Avaya Call Management System**

# 4. Equipment and Software Validated

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

| Equipment | Software |
|---|---|
| Avaya Call Management System | Release 16.2<br>(r16.2da.h) |
| Avaya S8800 Server | Avaya Aura® Communication Manager<br>6.0.1 Service Pack 4<br>(00.1.510.1-19100) |
| Avaya G650 Media Gateway<br>• TN2312BP IP Server Interface<br>• TN799DP C-LAN Interface<br>• TN2302AP IP Media Processor | -<br>HW07, FW054<br>HW01, FW040<br>HW20, FW121 |
| Avaya 9630 IP Telephones | 3.1 Service Pack 1 (H.323) |
| Avaya 4548GT-PWR Ethernet Routing Switch | V5.4.0.008 |
| FutureSoft Periscope<br>running on Microsoft Windows Server 2003 Standard Edition | 1.0 |

# 5. Configure Avaya Aura® Communication Manager

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

- Verify Communication Manager software options
- Administer adjunct CMS release
- Administer IP node name for CMS
- Administer processor interface channel
- Administer measured Skilled Hunt Group
- Administer Measured Vector Directory Number
- Administer Measured Trunk Group

The detailed administration of contact center devices such as Skilled Hunt Group, VDN, Vector, and Agents are assumed to be in place. These Application Notes will only cover how to enable Skilled Hunt Group and Agent data to be sent to Avaya CMS.

## 5.1. Verify Communication Manager Software Options

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 to verify that the **G3 Version** field is set to **V16** on Page 1, as shown below.

```
display system-parameters customer-options                    Page   1 of  11
                            OPTIONAL FEATURES

    G3 Version: V16                              Software Package: Enterprise
      Location: 2                                 System ID (SID): 1
      Platform: 28                                Module ID (MID): 1

                                                        USED
                                Platform Maximum Ports: 65000 280
                                     Maximum Stations: 1000  166
                                Maximum XMOBILE Stations: 41000 0
                    Maximum Off-PBX Telephones - EC500: 1000  0
                    Maximum Off-PBX Telephones -   OPS: 1000  15
                    Maximum Off-PBX Telephones - PBFMC: 1000  0
                    Maximum Off-PBX Telephones - PVFMC: 1000  0
                    Maximum Off-PBX Telephones - SCCAN: 0     0
                         Maximum Survivable Processors: 10    1

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

Navigate to Page 6, and verify that the **Call Center Release** field is set to **6.0**, as shown below.

```
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.)
```

## 5.2. Administer Adjunct CMS Release

Use the **change system-parameters features** command and navigate to **Page 12**. Set the **CMS (appl mis)** field to the software release of the Avaya CMS. In this case, **R16.1/R16.x** is used to correspond to Avaya CMS software release R16.2.

```
change system-parameters features                              Page  12 of  18
                        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):

                                BCMS/VuStats LoginIDs? y
                    BCMS/VuStats Measurement Interval: hour
            BCMS/VuStats Abandon Call Timer (seconds):
                      Validate BCMS/VuStats Login IDs? n
                             Clear VuStats Shift Data: on-login
                  Remove Inactive BCMS/VuStats Agents? n
```

## 5.3. Administer IP Node Name for CMS

Use the **change node-names ip** command, to add an entry for Avaya CMS. In this case, **cms1** and **10.1.10.85** are entered as **Name** and **IP Address** for the Avaya CMS server. The actual node names and IP addresses may vary. Submit these changes.

```
change node-names ip                                           Page   1 of   2
                                  IP NODE NAMES
    Name                 IP Address
Gateway001             10.1.10.1
cms1                   10.1.10.85
default                0.0.0.0
msgserver              10.1.10.20
procr                  10.1.10.10
```

## 5.4. Administer Processor Interface Channel

Assign a new processor interface channel with the **change communication-interface processor-channels** command. Add an entry with the following values, and submit these changes.

- **Enable:** **y**.
- **Appl.:** **mis**.
- **Mode:** **s** for server mode.
- **Interface Link:** **pv4** for processor ethernet running IP version 4 (IPv4).
- **Interface Chan:** TCP channel number for Avaya CMS. In this case **5001**.
- **Destination Node:** Avaya CMS server node name from **Section 5.3**.
- **Destination Port:** **0**.
- **Session Local:** Local channel number in **Proc Chan** field. In this case **1**.
- **Session Remote:** Corresponding channel number in **Proc Chan** field. In this case **1**.

The **Interface Chan** field contains the Avaya CMS TCP channel number, which is defined as part of the Avaya CMS installation. For the compliance testing, the default TCP channel number of **5001** was used. Refer to **Section 6.1** to verify the settings on Avaya CMS.

```
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  cms1            0      1     1
```

## 5.5. Administer Measured Skilled Hunt Group

Use the **change hunt-group n** command, where **n** is the hunt group number to be measured by Avaya CMS. On Page 2, set the **Measured** field to **external** or **both** to enable real-time measurement data on the skilled hunt group and the associated agents to be sent to Avaya CMS. Repeat this step for all skilled hunt groups that will be measured by Avaya CMS.

```
change hunt-group 1                                          Page   2 of   4
                                  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:
 Timed ACW Interval (sec):
   Multiple Call Handling: none
```

## 5.6. Administer Measured Vector Directory Number

Use the **change vdn n** command, where **n** is the Vector Directory Number (VDN) to be measured by Avaya CMS. On Page 1, set the **Measured** field to **external** or **both** to enable real-time measurement data on the VDN to be sent to Avaya CMS. Repeat this step for all VDNs that will be measured by Avaya CMS.

```
change vdn 14001                                              Page   1 of   3
                          VECTOR DIRECTORY NUMBER

                           Extension: 14001
                               Name*: Sales
                         Destination: Vector Number        1

                 Meet-me Conferencing? n
                   Allow VDN Override? n
                                 COR: 1
                                 TN*: 1
                            Measured: both
       Acceptable Service Level (sec): 20

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

## 5.7. Administer Measured Trunk Group

Use the **change trunk-group n** command, where **n** is the trunk group number to be measured by Avaya CMS. On Page 3, set the **Measured** field to **external** or **both** to enable real-time measurement data on the trunk group to be sent to Avaya CMS. Repeat this step for all trunk groups that will be measured by Avaya CMS.

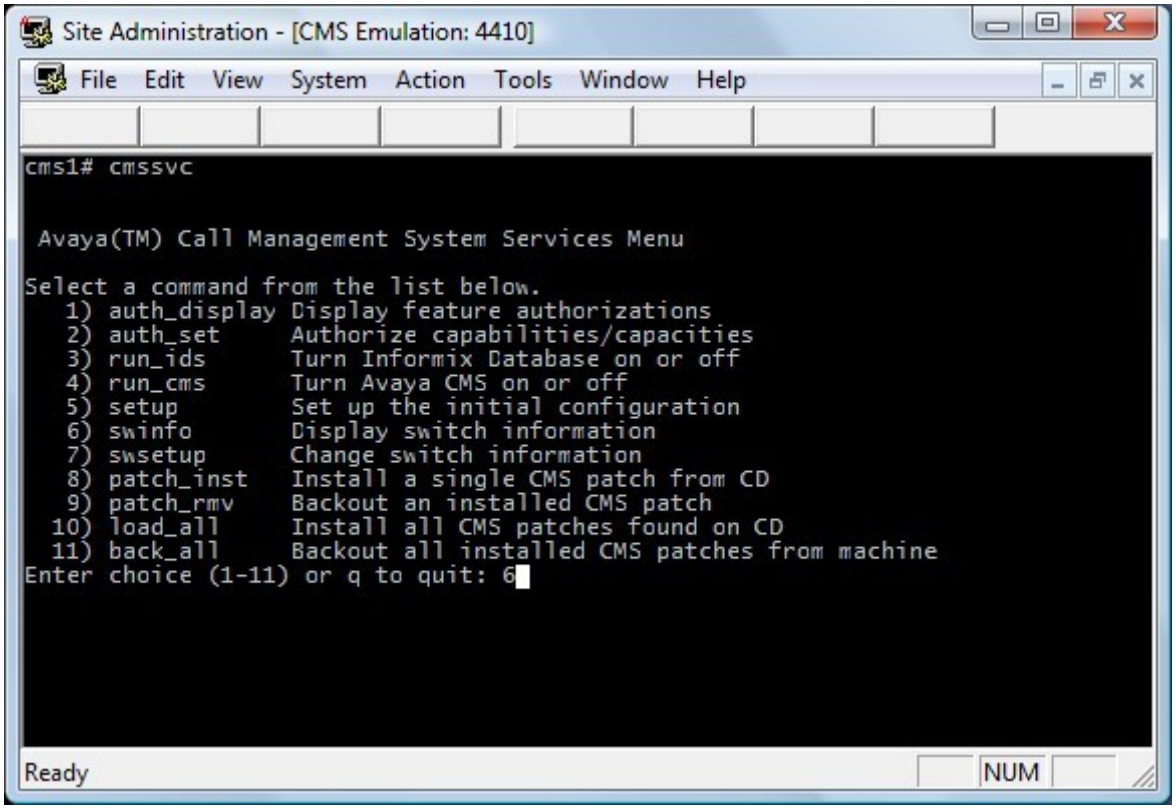
```
change trunk-group 20                                         Page   3 of  21
TRUNK FEATURES
          ACA Assignment? n            Measured: both      Wideband Support? n
                                Internal Alert? n        Maintenance Tests? y
                              Data Restriction? n     NCA-TSC Trunk Member:
                                     Send Name: y      Send Calling Number: y
            Used for DCS? n                           Send EMU Visitor CPN? n
   Suppress # Outpulsing? y    Format: public
 Outgoing Channel ID Encoding: preferred     UUI IE Treatment: service-provider

                                              Replace Restricted Numbers? n
                                             Replace Unavailable Numbers? n
                                                   Send Connected Number: n
Network Call Redirection: none                  Hold/Unhold Notifications? n
             Send UUI IE? y     Modify Tandem Calling Number: no
               Send UCID? n
 Send Codeset 6/7 LAI IE? y                        Ds1 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

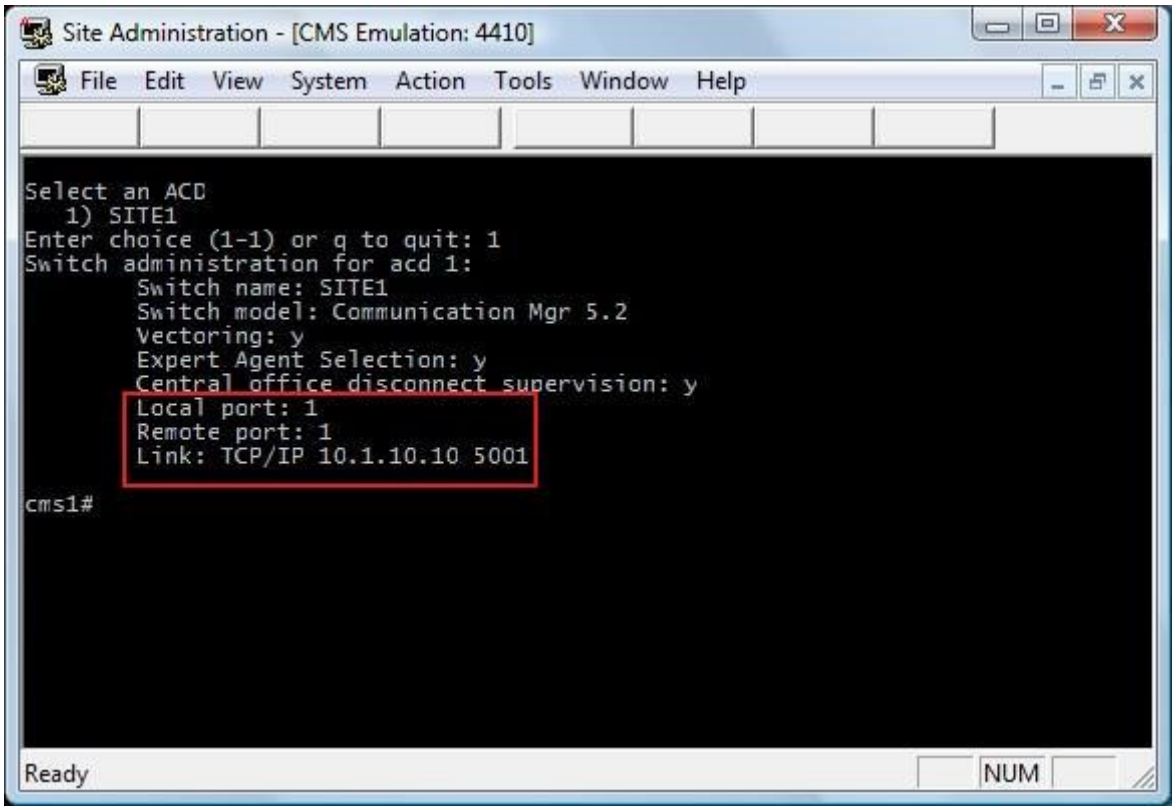
The initial configuration of Avaya Call Management System to interface with Communication Manager is assumed to be in place and thus will not be described in these application notes. Refer **to Reference [2]** for further information.

## 6.1. Verify CMS Setup

Use a terminal emulator to connect to the Avaya CMS server, and log in with the proper credentials (not shown). Enter **cmssvc** at the command prompt to display the **Avaya Call Management System Services Menu** screen. Select **6** to display the switch information.



Enter **1** to select the ACD defined. Verify that the **Local port**, **Remote port** and **Link** correspond to the configuration on Communication Manager in **Section 5.3** and **5.4**.




## 6.2. Configure ODBC Access

The IBM Informix database management system (DBMS) used by CMS, supports IBM Informix ODBC and JDBC clients. CMS is now delivered with this ODBC and JDBC network connectivity enabled. No further configuration is required. ODBC and JDBC clients allow for direct access to the IBM Informix database that CMS uses and all of the CMS call center data.

# 7. Configure FutureSoft Periscope

This section provides the procedures for installing and configuring the IBM Informix ODBC Driver on the FutureSoft Periscope server. The procedures include the following areas:

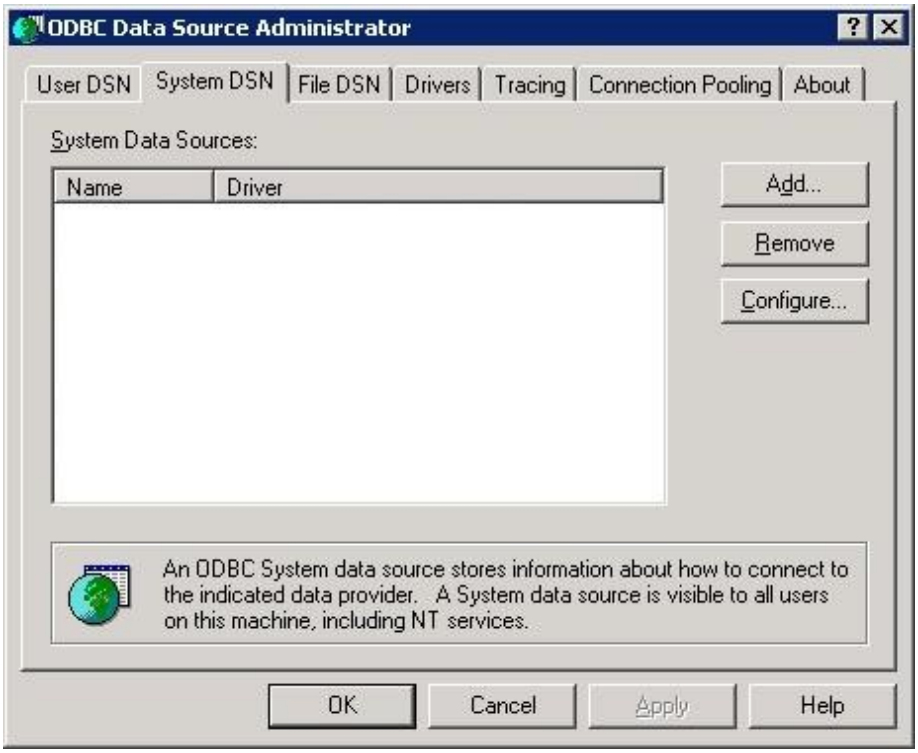
- Install IBM Informix Client-SDK3.50
- Configure IBM Informix ODBC Driver
- Configure Linked Server

## 7.1. Install IBM Informix Client-SDK 3.50

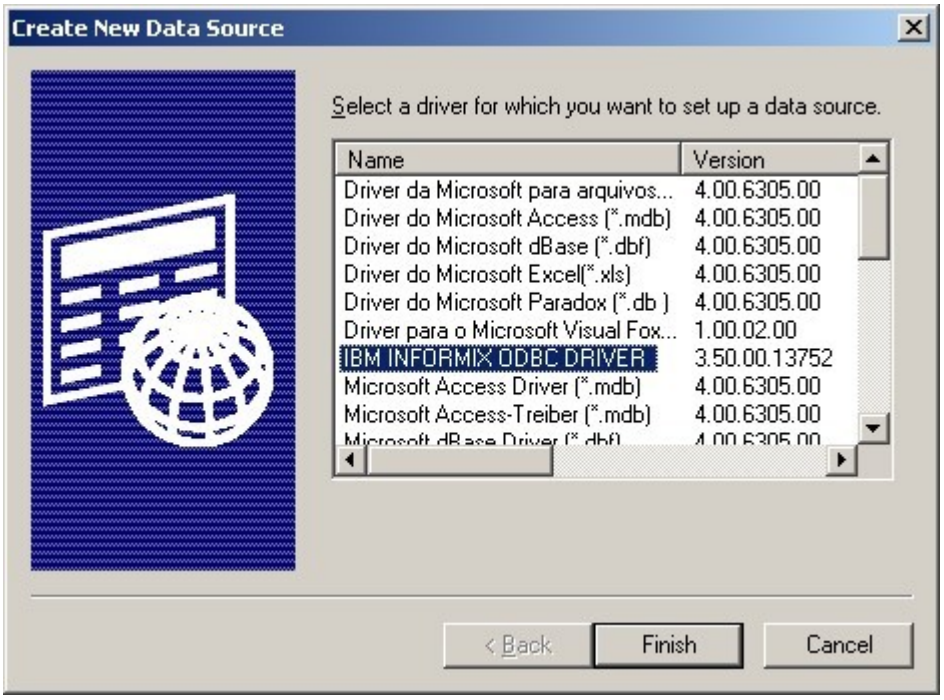
The IBM Informix ODBC Driver is included with the IBM Informix Client-SDK 3.50 software shipped together with the Avaya CMS. The setup process to install **IBM Informix Client-SDK3.50** is by using the Install Shield Wizard as described in **Reference [3]**.

## 7.2. Configure IBM Informix ODBC Driver

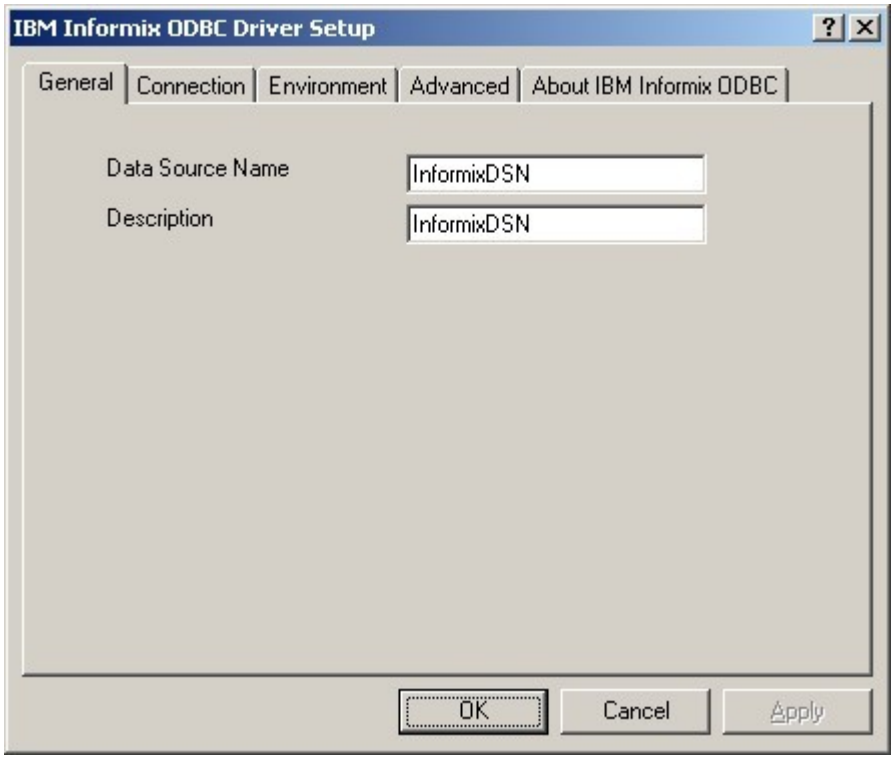
From **Control Panel > Administrative Tools**, double-click **Data Sources (ODBC)** (not shown). Select the **System DSN** tab and click **Add**.



Select **IBM INFOMIX ODBC DRIVER** and click **Finish**.

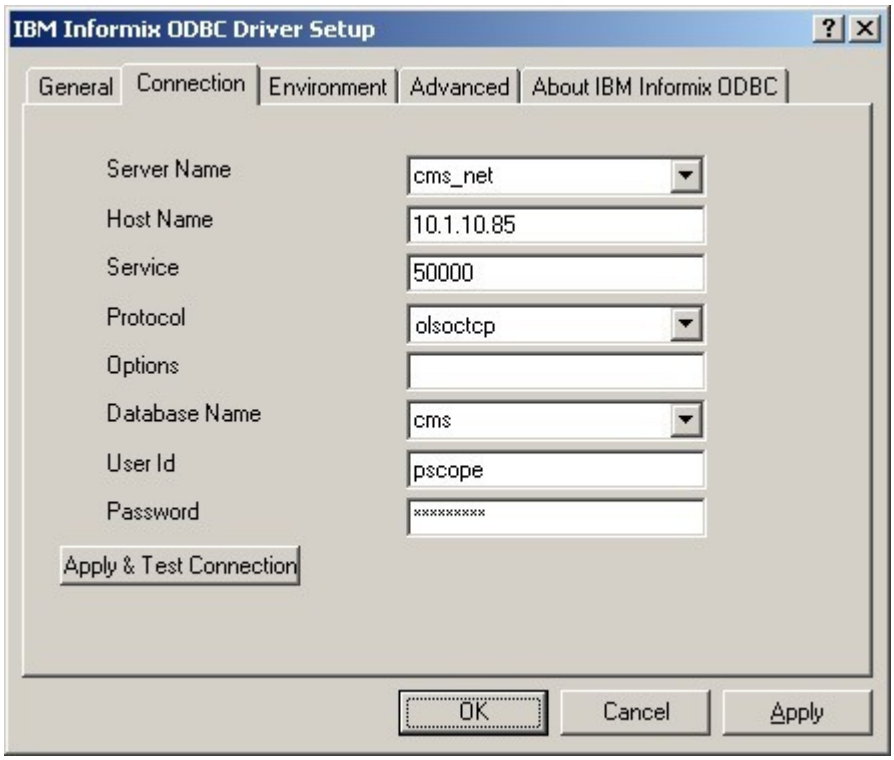



Specify the **Data Source Name** and **Description** as shown below. The Data Source Name will be used to configure the Linked Server in **Section 7.3**.



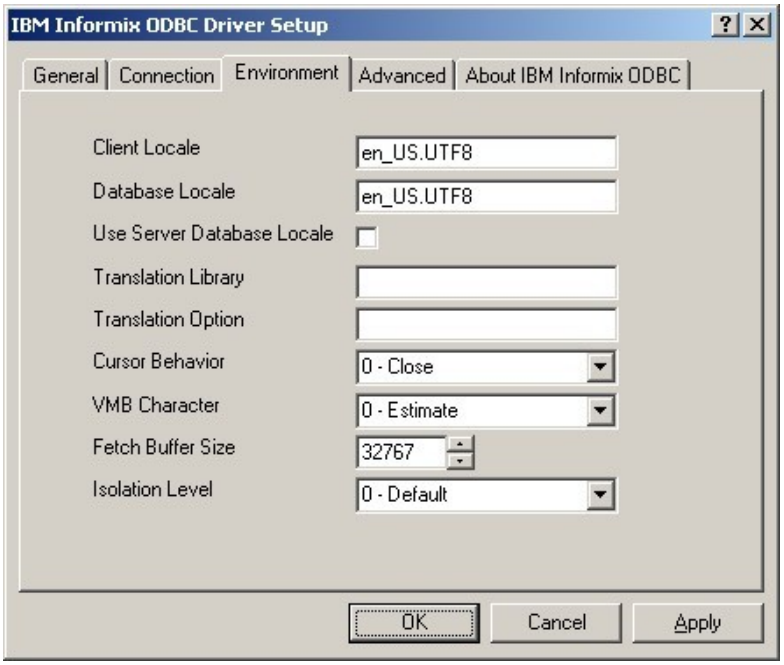
Select the **Connection** tab and configure the values as follows. Refer to **Reference [3]** for the detail explanation of each field.

- **Server Name:** **cms_net**.
- **Host Name:** IP address of Avaya CMS, in this case, it is **10.1.10.85**.
- **Service:** **50000**.
- **Protocol:** **olsoctcp**.
- **Database Name:** **cms**.
- **User Id:** A valid user on CMS, in this case is **pscope**.
- **Password:** Password of the User Id used.

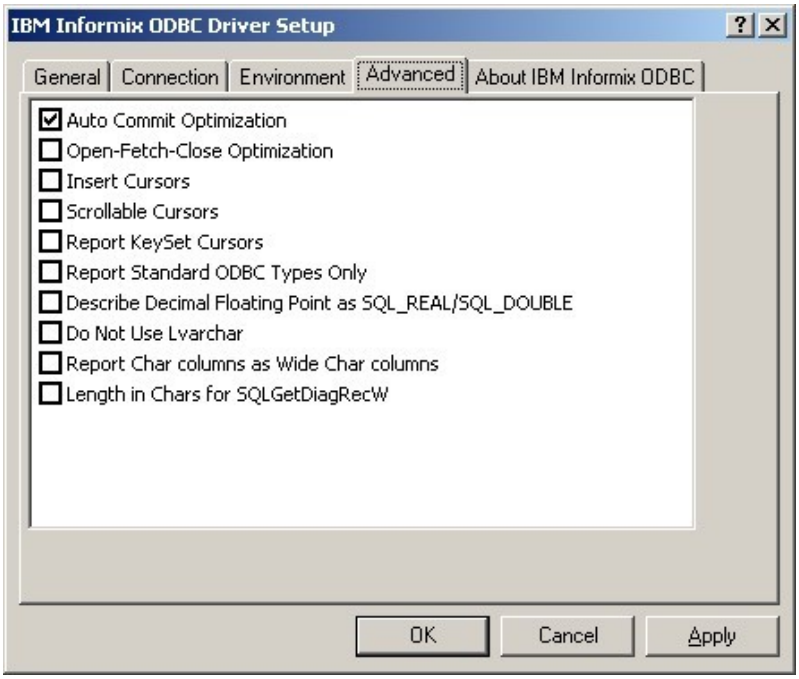


Select the **Environment** tab and configure the values as shown below. Use the default values for all other fields.

- **Client Locale: en_US.UTF8**
- **Database Locale: en_US.UTF8**



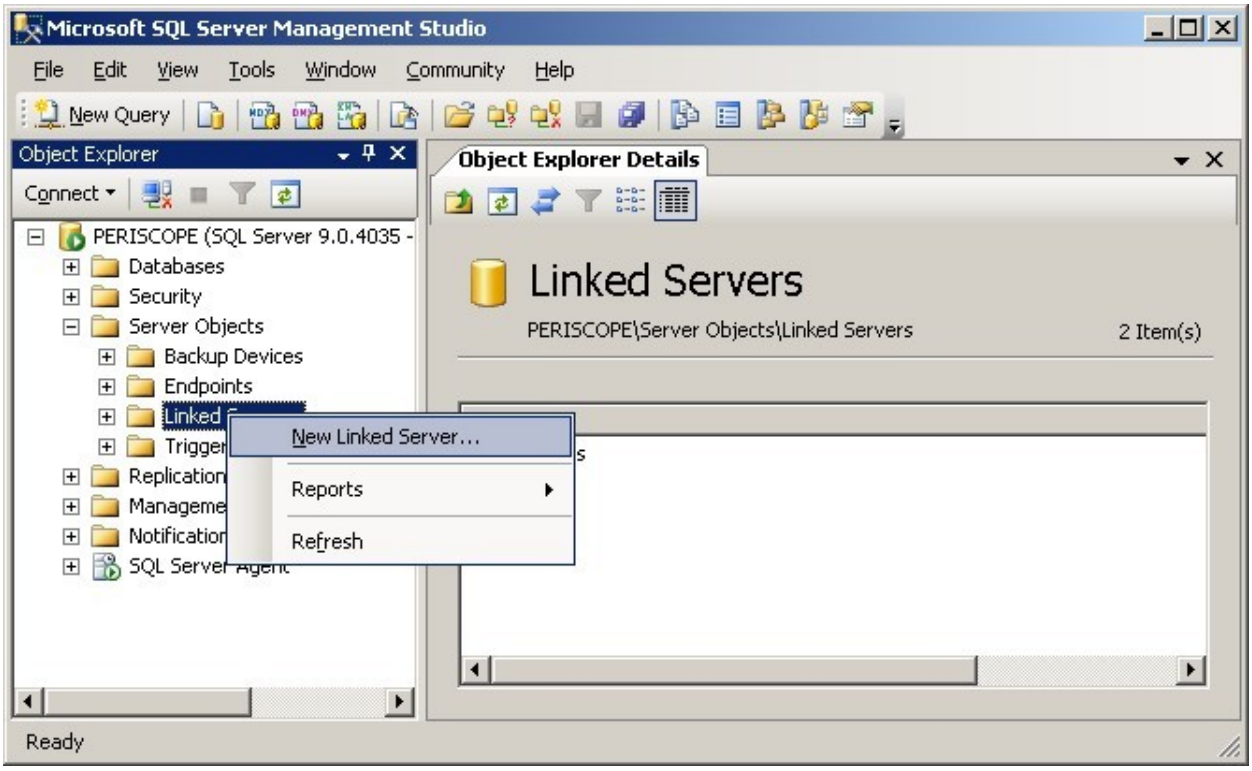

Select the **Advanced** tab and verify the following default values are used. Click **OK**.



## 7.3. Configure Linked Server

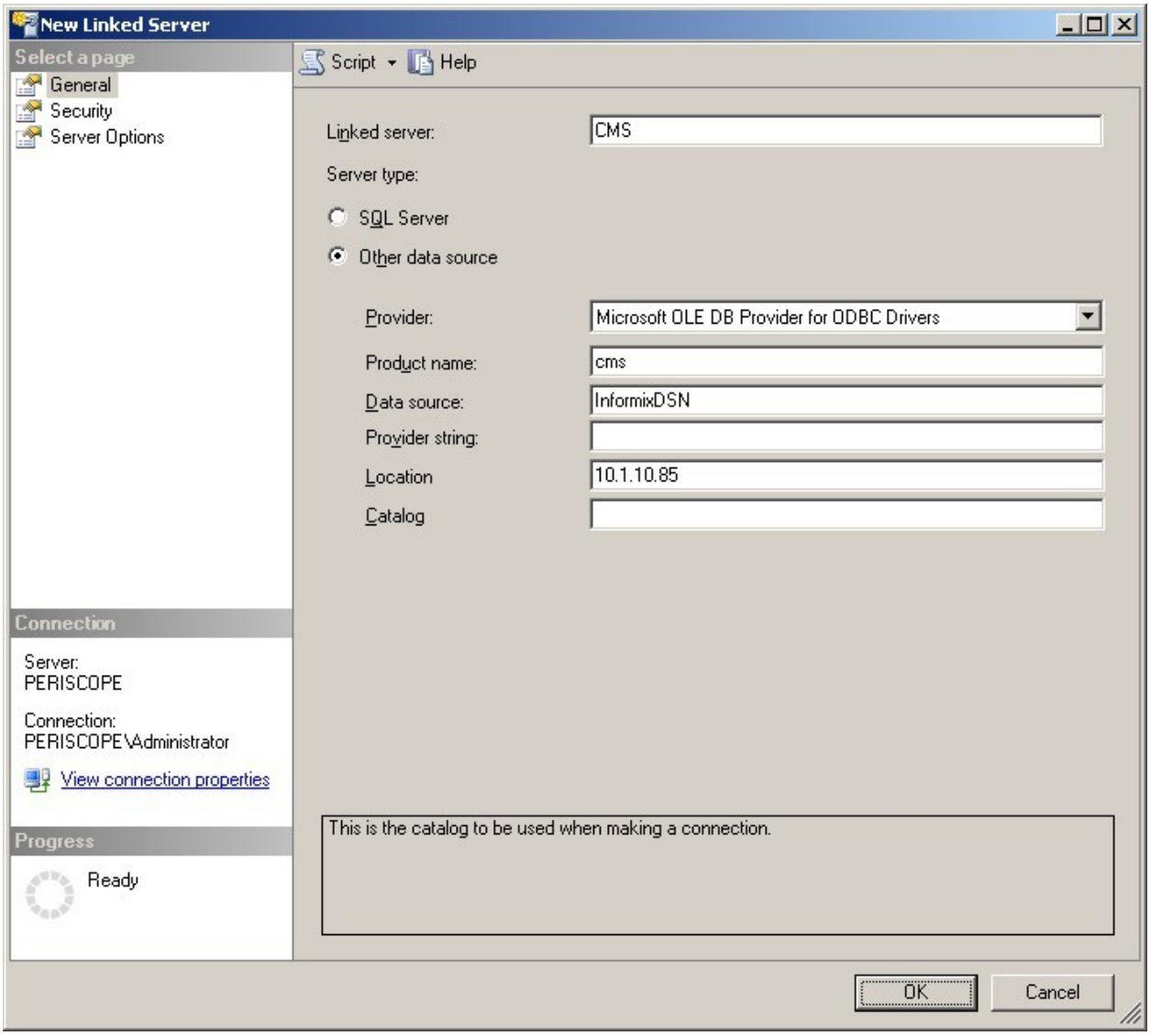
FutureSoft Periscope uses the Microsoft SQL Server 2005 installed on the Periscope server for data storage. A Linked Server definition is created in SQL Server 2005 to allow Periscope to retrieve the call center data from the IBM Informix database residing on Avaya CMS.

Select **Start > All Programs > Microsoft SQL Server 2005 > SQL Server Management Studio** to launch the program (not shown) and log in using an account with administrative privileges. Expand **Server Objects**, right-click on **Linked Servers** and select **New Linked Server**.



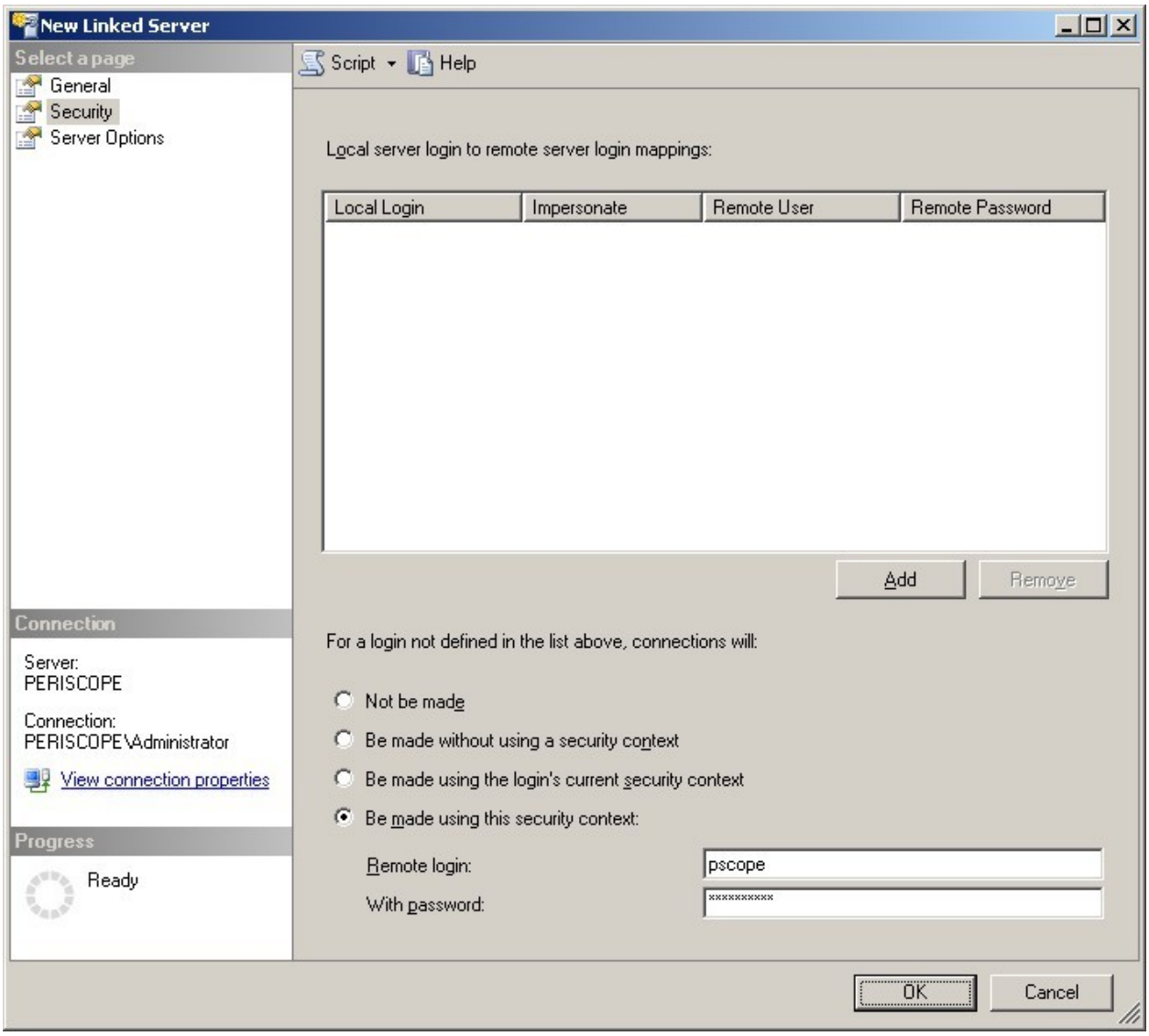
Select the **General** page and configure the values as follows.

- **Linked server:** **CMS**.
- **Server type:** **Other data source**.
- **Provider:** **Microsoft OLE DB Provider for ODBC Drivers**.
- **Product Name:** **cms**.
- **Data Source:** Enter the Data Source Name **InformixDSN** created in **Section 7.2**.
- **Location:** Enter the IP address of the CMS server, which is **10.1.10.85**.



Select the **Security** page and configure the values as follows.

- **Remote login:** A valid user on CMS, in this case is **pscope**.
- **With password:** Password of the Remote login used.



# 8. Verification Steps

This section provides the tests that can be performed to verify proper configuration of Avaya Aura® Communication Manager, Avaya Call Management System and FutureSoft Periscope.

## 8.1 Verify Communication Manager

Verify the status of the processor interface channel by using the **status processor-channels n** command, where **n** is the processor channel number from **Section 5.4**. Verify that the **Session Layer Status** is **In Service**, and that the **Socket Status** is **TCP connected**, as shown below.

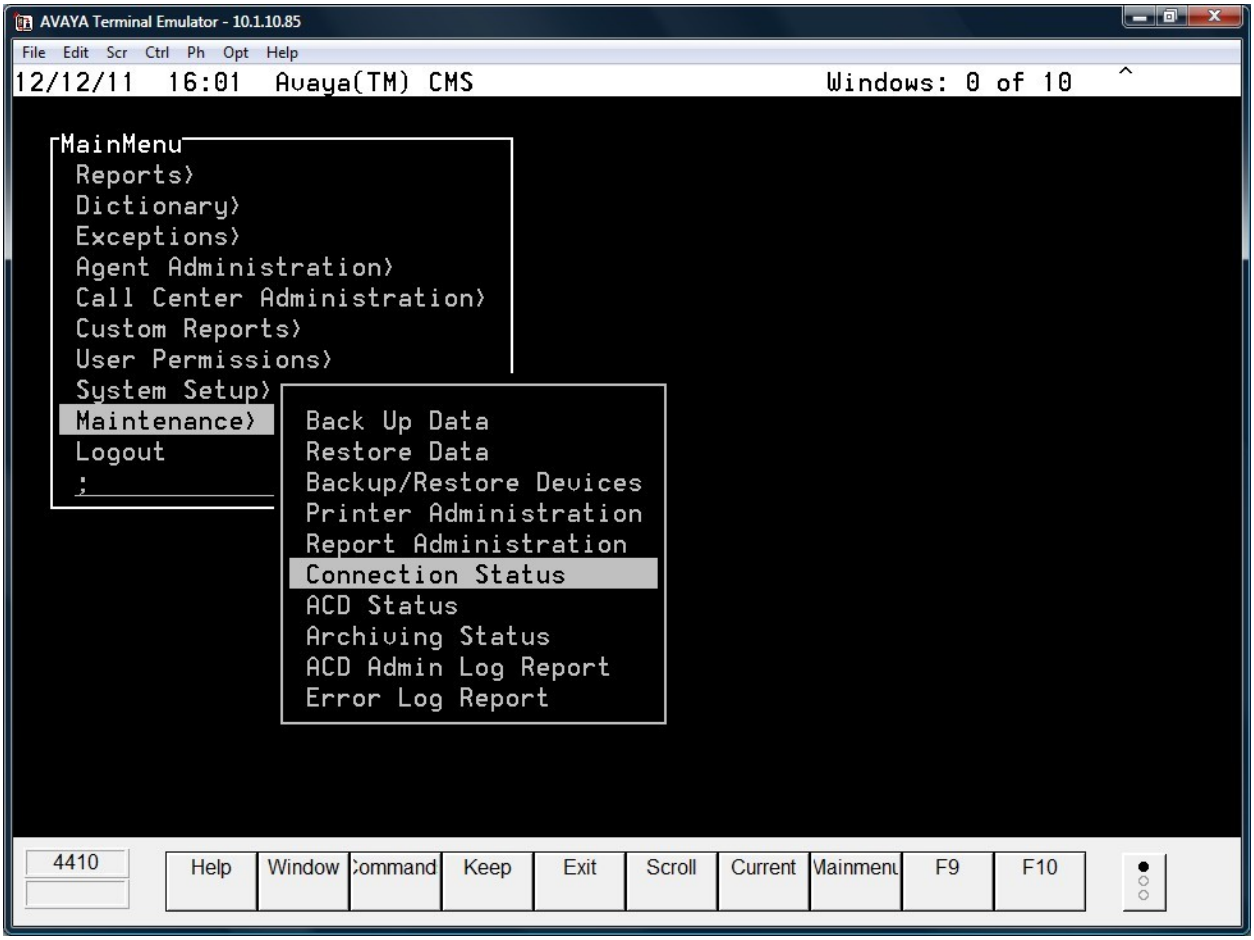
```
status processor-channels 1
                        PROCESSOR-CHANNEL STATUS

          Channel Number: 1
    Session Layer Status: In Service
           Socket Status: TCP connected
             Link Number: pv4
               Link Type: processor ethernet
   Message Buffer Number: 0

            Last Failure: None
                      At:
```

Verify the status of the processor ethernet link by using the **status link procr** command. Verify that the **Link Status** is **inservice** as shown below.

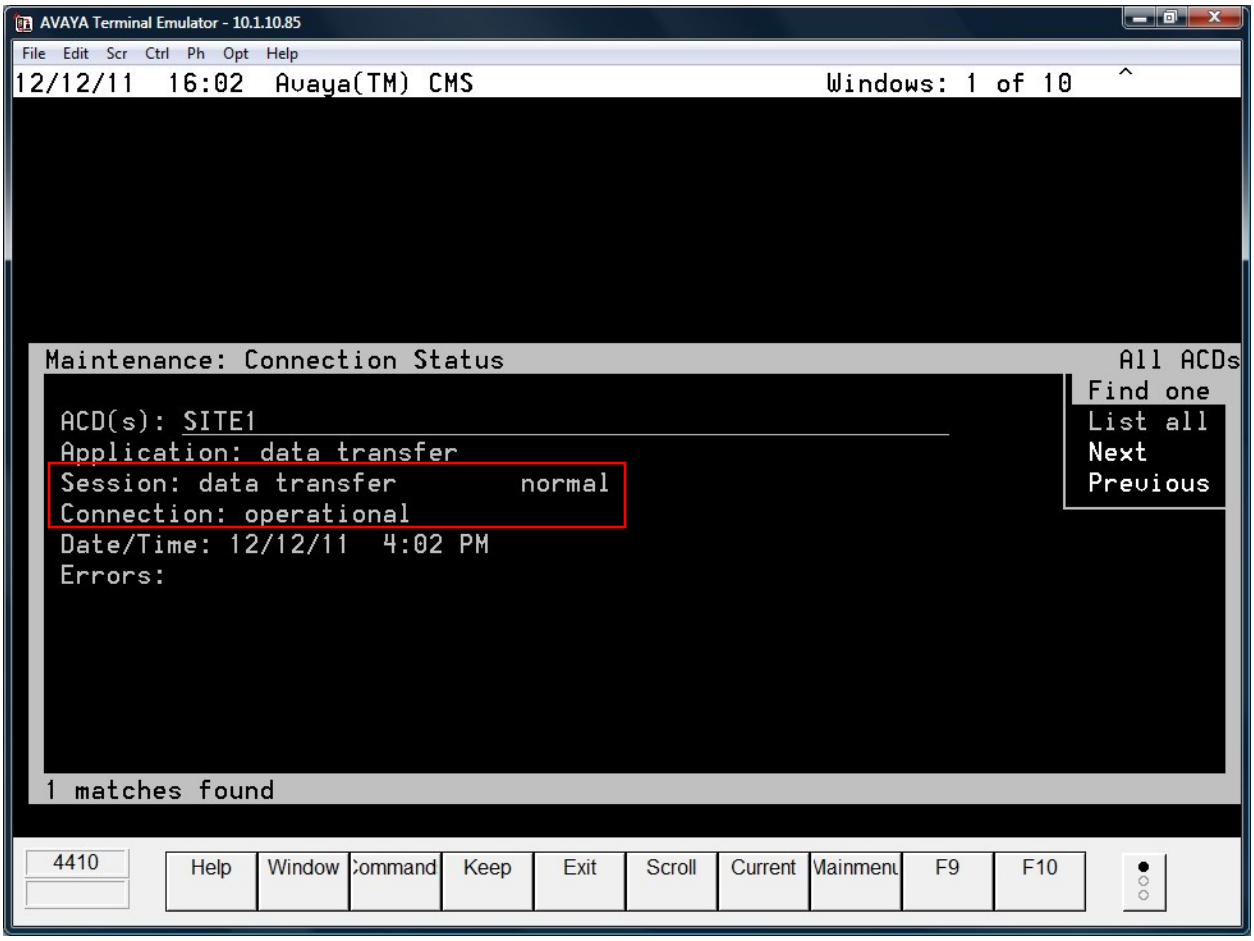
```
status link procr                                              Page   1 of   2
                               LINK/PORT STATUS


                 Link Status: inservice
                   Link Type: processor

       Service Port Location: eth0

                   V4 Parameters
                   Node Name: procr
           Source IP Address: 10.1.10.10/24

           Broadcast Address: 10.1.10.255

                     Enabled? yes
            Maintenance Busy? no
             Active Channels: 1
```

## 8.2 Verify Call Management System

Use a terminal emulator to connect to the Avaya CMS server, and log in with the proper credentials. Enter **cms** at the command prompt (not shown) to display the **MainMenu** screen. Verify the status of the connection to Communication Manager by selecting **Maintenance → Connection Status**, as shown below.

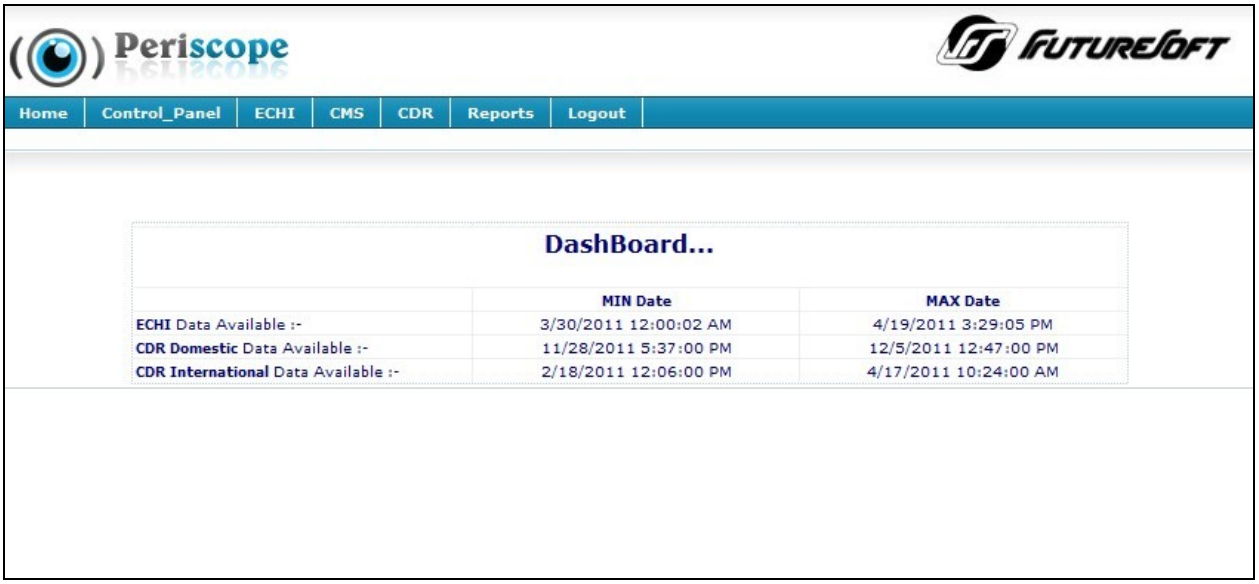


Tab over to **Find one** and press **Enter**. The switch connection status is displayed. Check the status in the **Session** and **Connection** fields, as shown below.



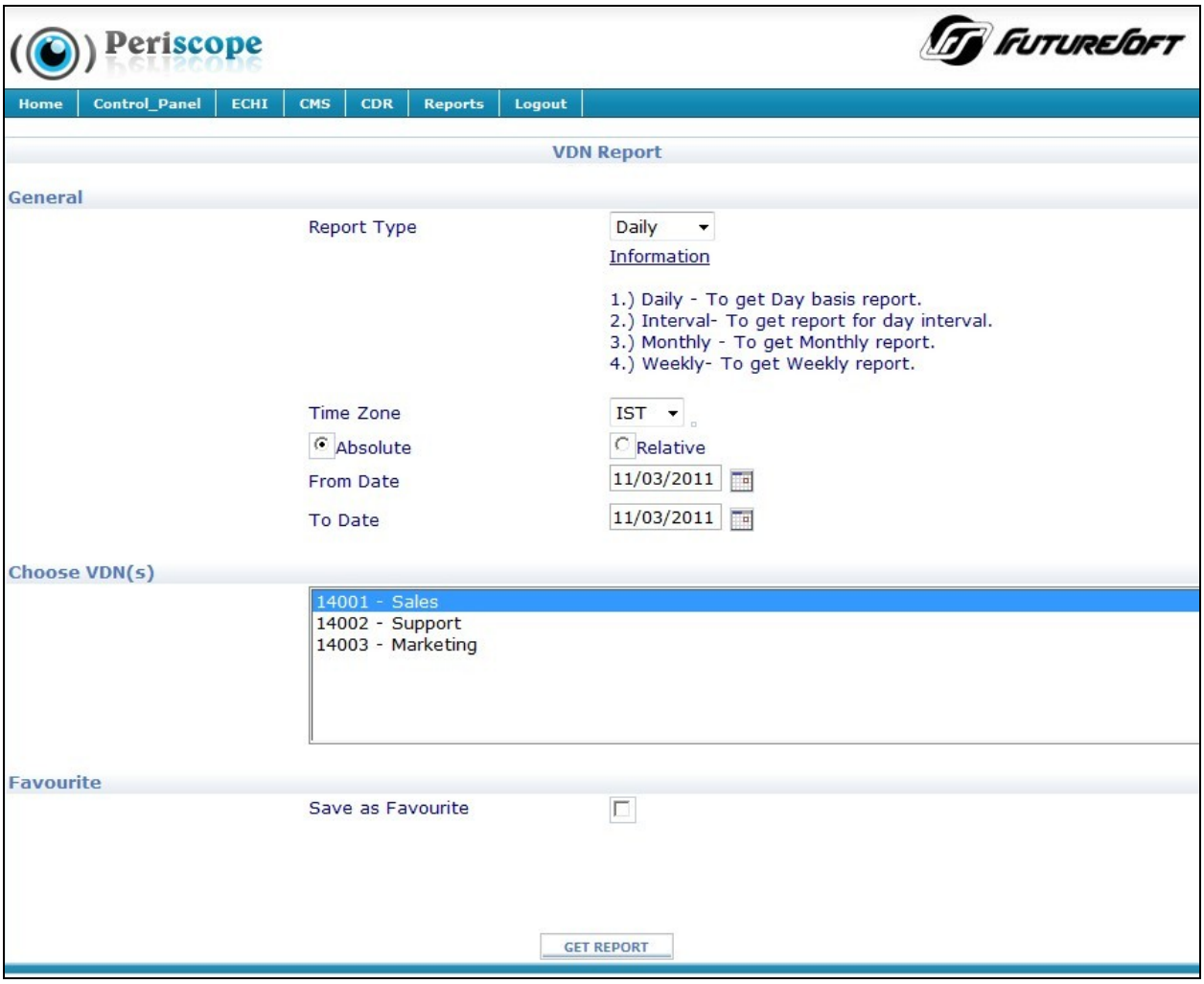
## 8.3 Verify FutureSoft Periscope

Using Internet Explorer, browse to http://<ip_addr>/Periscope/, where **ip_addr** is the IP address of the Periscope server. Log in using an account with administrative privileges (not shown) to display the Dashboard as shown below.

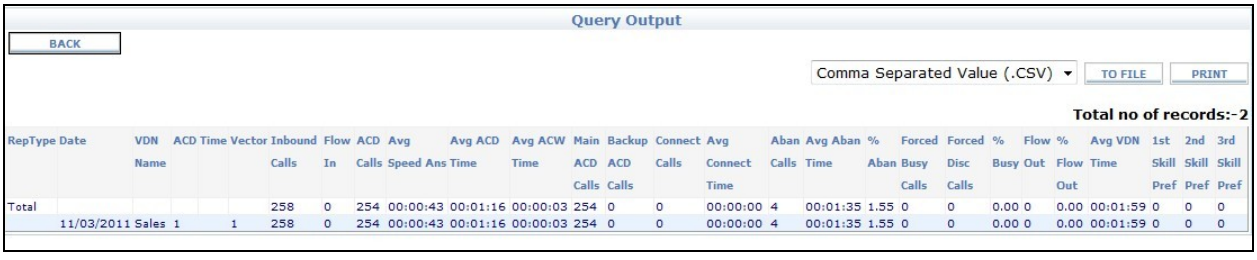



Select the VDN report using **CMS → Standard → VDN_Report → VDN_Reports** from the menu.

In the **VDN Report** page, select a Report Type (e.g. **Daily**) and select the appropriate date and VDN as shown below. Click **GET REPORT**.




Verify that the data (e.g. Inbound Calls, Avg ACD Time) which was obtained from the Avaya CMS is accurate by running a similar historical VDN report on CMS. To generate reports on Avaya CMS, refer to **Reference [5]**.




| RepType | Date | VDN Name | ACD | Time | Vector | Inbound Calls | Flow In | ACD Calls | Avg Speed Ans | Avg ACD Time | Avg ACW Time | Main ACD Calls | Backup ACD Calls | Connect Calls | Avg Connect Time | Aban Calls | Avg Aban Time | % Aban | Forced Busy Calls | Forced Disc Calls | % Busy | Flow Out | % Flow Out | Avg VDN Time | 1st Skill Pref | 2nd Skill Pref | 3rd Skill Pref |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total | | | | | | 258 | 0 | 254 | 00:00:43 | 00:01:16 | 00:00:03 | 254 | 0 | 0 | 00:00:00 | 4 | 00:01:35 | 1.55 | 0 | 0 | 0.00 | 0 | 0.00 | 00:01:59 | 0 | 0 | 0 |
| | 11/03/2011 | Sales | 1 | | 1 | 258 | 0 | 254 | 00:00:43 | 00:01:16 | 00:00:03 | 254 | 0 | 0 | 00:00:00 | 4 | 00:01:35 | 1.55 | 0 | 0 | 0.00 | 0 | 0.00 | 00:01:59 | 0 | 0 | 0 |

# 9. Conclusion

These Application Notes describe the configuration steps required for FutureSoft Periscope 1.0 to successfully interoperate with Avaya Call Management System Release 16.2 using the ODBC interface. All feature and serviceability test cases were completed successfully.

# 10. Additional References

The following documents are available at http://support.avaya.com.

[1] *Administering Avaya Aura® Communication Manager*, Release 6.0, Document No. 03-300509, August 2010.

[2] *Avaya Call Management System Release 16.2 Switch Connections, Administration, and Troubleshooting*, June 2010.

[3] *Avaya Call Management System Release 16.2 ODBC and JDBC*, November 2010.

[4] *Avaya Call Management System Release 16.2 Database Items and Calculations*, November 2010.

[5] *Avaya Call Management System Release 16.2 Administration*, November 2010.

Product information on FutureSoft Periscope can be found at http://www.futuresoftindia.com/solutions/telecom/periscope.html.

The following documents are available from FutureSoft upon request.

[6] *FutureSoft Periscope User Manual*.

[7] *FutureSoft Periscope Installation Guide*.

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.