Avaya Solution & Interoperability Test Lab

Application Notes for Upstream CMS DB Interface Server with Avaya Call Management System using ODBC Interface – Issue 1.0

Abstract

These Application Notes describe the configuration steps required to integrate Upstream CMS DB Interface Server with Avaya Call Management System (CMS) via an ODBC connection. Upstream CMS DB Interface Server periodically fetches internal call records from Avaya Call Management System and put in a SQL Server for Upstream's UpTake analytics application to use. The internal call records from Avaya Call Management System record the call center activities that have occurred in the Avaya Aura™ Communication Manager and are kept in an Informix database table.

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 Upstream CMS DB Interface Server with Avaya Call Management System (CMS) via an ODBC connection. Upstream CMS DB Interface Server periodically fetches CMS internal call records and put in a SQL Server for Upstream's UpTake analytics application to use. The CMS internal call records record the call center activities that have occurred in the Avaya Aura™ Communication Manager and are kept in an Informix database table.

Upstream CMS DB Interface Server extracts only a subset of data items in the Avaya Call Management System call record. The list of the data items is listed in the Appendix of these Application Notes.

1.1. Interoperability Compliance Testing

The interoperability compliance test included feature and serviceability testing.

The feature test focused on verifying the ability of Upstream CMS DB Interface Server to import ACD call records from Avaya Call Management System using the ODBC interface and to store the records in a SQL database.

The serviceability testing focused on verifying the ability of Upstream CMS DB Interface Server to recover from adverse conditions, such as disconnecting/reconnecting the Ethernet cable to the Upstream Server and to Avaya Call Management System, as well as power cycling of the Upstream Server.

1.2. Support

Contact Upstream Works Software for technical support via the web, phone, or email.

- **Web:** www. upstreamworks.com
- **Phone:** 800-808-5220
- **Email:** support@upstreamworks.com

2. Reference Configuration

The configuration illustrated below consists of Upstream CMS DB Interface Server and a SQL server with Avaya Call Management System, Avaya S8300 Server and G350 Media Gateway running Communication Manager, and Avaya 9600 Series IP telephones. The ACD call center was configured on Communication Manager with IP telephones assigned to each agent. The call record data was stored in an Informix database on CMS which was queried by Upstream CMS DB Interface Server over an ODBC connection to capture the data and stored in the SQL server.

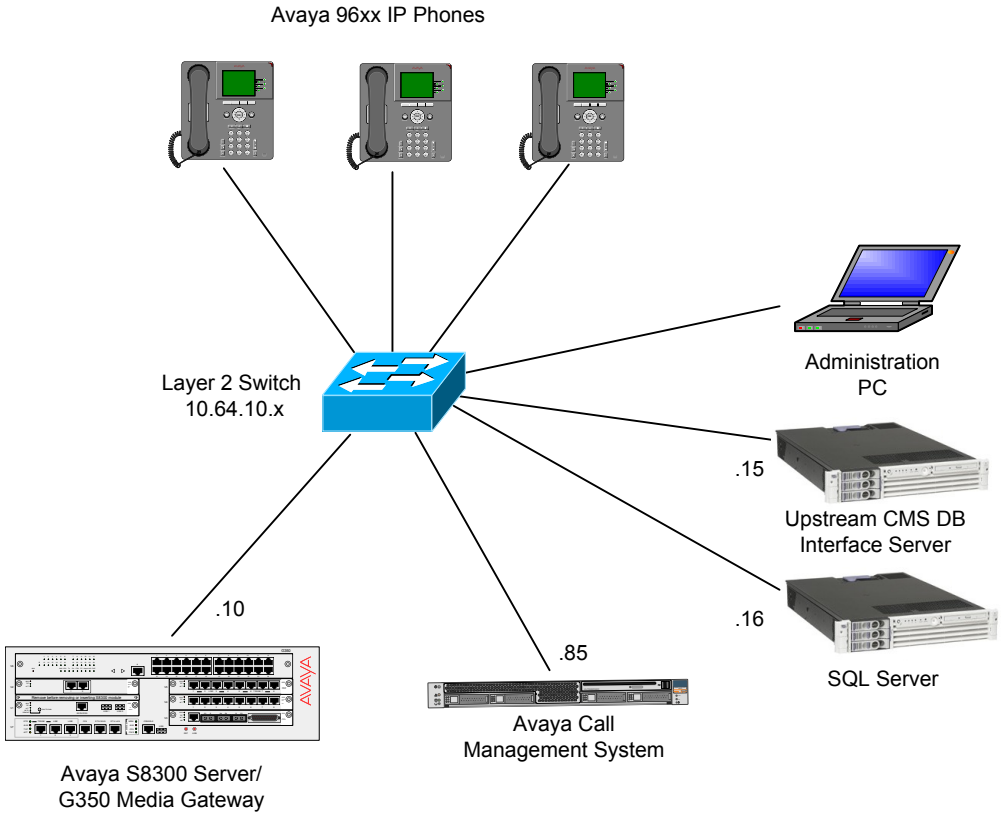


Figure 1: Upstream CMS DB Interface Server with Avaya Call Management System

3. Equipment and Software Validated

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

Equipment	Software
Avaya S8300C Servers with G350 Media Gateway	Avaya Aura™ Communication Manager 5.2.1 (R015x.02.1.016.4) with SP3 (Patch 18250)
Avaya Call Management System	Avaya Call Management System R16
Avaya 9600 Series IP Telephones	3.1.1 (H.323)
Upstream CMS DB Interface Server with IBM Informix 32-bit ODBC driver running on Windows 2003 R2 64-bit Server	V7.60 (ODBC driver) 3.82
Microsoft SQL Server running on Windows 2003 R2 64-bit Server	Microsoft SQL Server 2008 R2 Express Advanced Edition

4. Configure Avaya Aura™ Communication Manager

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

- Verify Avaya Aura™ Communication Manager License
- Configure Adjunct CMS release
- Configure IP Node Names for Avaya Call Management System
- Configure Processor Channel
- Configure Measured Skills

It is assumed that basic contact center features and objects such as EAS, VDN, Vector, Skill and Agents have already been administered.

4.1. Verify Avaya Aura™ Communication Manager License

Log into the System Access Terminal (SAT) to verify that the Communication Manager license has proper permissions for features illustrated in these Application Notes. Use the "display system-parameters customer-options" command to verify that the **G3 Version** field is set to "V15" on **Page 1**, as shown below.

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

    G3 Version: V15                             Software Package: Standard
      Location: 1                            RFA System ID (SID): 1
      Platform: 13                           RFA Module ID (MID): 1

                                                           USED
                               Platform Maximum Ports: 900   158
                                    Maximum Stations: 450   25
                              Maximum XMOBILE Stations: 450   0
                   Maximum Off-PBX Telephones - EC500: 450   0
                   Maximum Off-PBX Telephones -   OPS: 450   0
                   Maximum Off-PBX Telephones - PBFMC: 0     0
                   Maximum Off-PBX Telephones - PVFMC: 0     0
                   Maximum Off-PBX Telephones - SCCAN: 450   0
```

Navigate to **Page 6**, and verify that the **Call Center Release** field is set to "5.0", as shown below.

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

                          Call Center Release: 5.0

                                 ACD? y                        Reason Codes? y
                       BCMS (Basic)? y                Service Level Maximizer? n
         BCMS/VuStats Service Level? n              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? n                          Timed ACW? y
      DTMF Feedback Signals For VRU? n                  Vectoring (Basic)? y
                  Dynamic Advocate? n                Vectoring (Prompting)? y
       Expert Agent Selection (EAS)? y              Vectoring (G3V4 Enhanced)? y
                           EAS-PHD? n               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)? n      Vectoring (Best Service Routing)? y
    Multiple Call Handling (Forced)? n                 Vectoring (Holidays)? y
  PASTE (Display PBX Data on Phone)? n                 Vectoring (Variables)? y
```

4.2. Configure 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 CMS and submit the change. In this case, "R15/R16" was entered to reflect that CMS R16 is used in the compliant test configuration.

```
change system-parameters features                               Page  12 of  18
                      FEATURE-RELATED SYSTEM PARAMETERS

  AGENT AND CALL SELECTION
                         MIA Across Splits or Skills? y
                          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): R15/R16
                                     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
```

4.3. Configure IP Node Name for Avaya Call Management System

Use the "change node-names ip" command to add a node name for CMS. This node name will be used for setting up the processor Channel between CMS and Communication Manager as described in the next section. In the screenshot below "cms16" and "10.64.10.85" are entered as **Name** and **IP Address** for CMS. 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
avayaiq               10.64.10.90
cms16                 10.64.10.85
default               0.0.0.0
procr                 10.64.10.10
```

4.4. Configure Processor Channel

Assign a new processor 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:** "p" for Processor Ethernet
- **Interface Chan:** TCP port number for CMS. In this case "5001"
- **Destination Node:** CMS server node name from **Section 4.3**
- **Destination Port:** "0"
- **Session Local:** Local port for CMS. In this case "2"
- **Session Remote:** Remote port for CMS. In this case "2"

The values of the **Interface Chan, Session Local, and Session Remote** fields must match the switch configuration defined in CMS. See **Section 5.1** for switch configuration information in 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    p   5001  cms16           0      2     2
  2:   y    ccr            s    p   5003  avayaiq         0      2     2
```

4.5. Configure Measured Skill

In order for a call to a skill to be recorded in the CMS Informix call record table and retrieved by the Upstream CMS DB Interface Server, the skill has to have the **Measured** field turned on. Enter the "change hunt-group n" command, where "n" is the number of the skill group to be measured by CMS. Go to page 2. Set the **Measured** field to "external" or "both" and submit the change. Repeat this step for all the skill groups that need to be measured by CMS.

```
change hunt-group 12                                          Page   2 of   3
                                  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):


Interruptible Aux Threshold: none
                                Redirect on No Answer (rings):
                                             Redirect to VDN:
                   Forced Entry of Stroke Counts or Call Work Codes? n
```

5. Configure Avaya Call Management System

This section provides the procedures for configuring CMS which include the following areas:

- Display Switch Configuration
- Verify Activation State of External Call History
- Configure Data Storage Allocation

5.1. Display Switch Configuration

CMS receives call center information from Communication Manager. Communication Manager is referred to as a switch or an ACD in CMS. A switch has to be configured in CMS to enable the communication between the CMS and Communication Manager. These Application Notes assume that the switch configuration has been defined in the CMS during CMS installation.

To display the switch configuration in CMS, telnet into CMS using proper credentials. Run the "cmssvc" command to view the **Avaya™ Call Management System Service Menu**. Select **6** to display switch information.

```
# 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
```

The system prompts the user to select an ACD. Enter the ACD number that corresponds to the Communication Manager in the test configuration. The system then displays the information of the ACD.

```
Select an ACD
   1) DADS
   2) devcon10
   3) S8720_in_D4H26
Enter choice (1-3) or q to quit: 2
Switch administration for acd 2:
        Switch name: devcon10
        Switch model: Communication Mgr 5.2
        Vectoring: y
        Expert Agent Selection: y
        Central office disconnect supervision: y
        Local port: 2
        Remote port: 2
        Link: TCP/IP 10.64.10.10 5001
```

The ACD number is part of the call record. It can be used as a part of the SQL query by Upstream CMS DB Interface Server to identify the ACD it wants to get call records for.

5.2. Verify Activation State of External Call History

CMS supports both an internal call record feature and an External Call History capability. However, when the External Call History capability is activated, the internal call record feature will be automatically disabled. The Upstream CMS DB Interface Server depends on the CMS internal call record feature, therefore the External Call History package cannot be activated on CMS. From CMS command prompt, run the "cmssvc" command and select **1** to display the **auth_display** page.

```
# 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
```

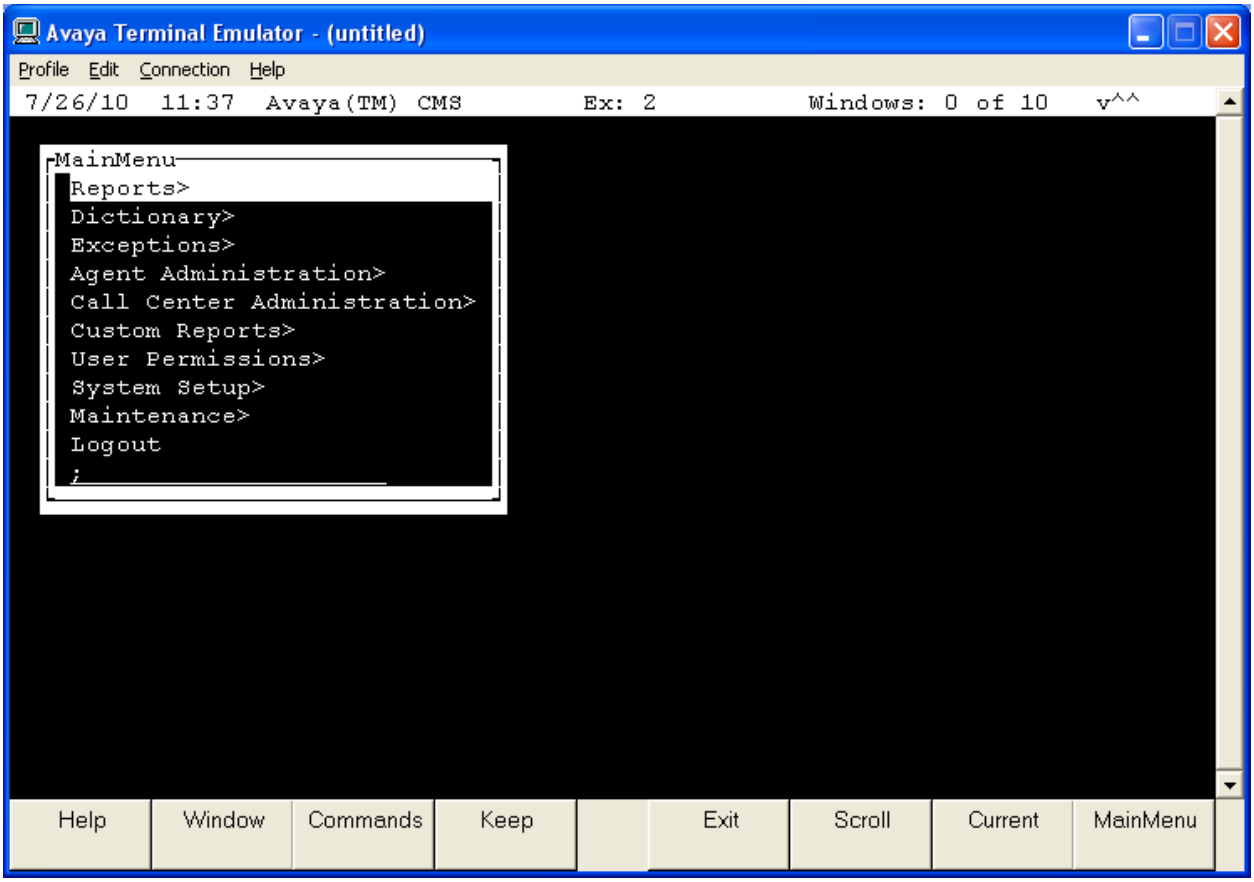
On the Auth_diaplay page, verify that the **Authorization** column does not show activated for the **external call history** capability. If it does, contact your Avaya representative to remove the External Call History package.

```
                                Version purchased:   R16

                              Capability/Capacity   Authorization
                              -------------------   -------------
                                        vectoring   authorized
                                      forecasting   installed
                                         graphics   authorized
                                external call history   authorized
                               expert agent selection   authorized
                                 external application   not authorized
                        global dictionary/ACD groups   authorized
                                 Avaya CMS Supervisor   authorized
                                Avaya Report Designer   authorized
           Maximum number of split/skill members   5000
                              Maximum number of ACDs   4
        Simultaneous Avaya CMS Supervisor logins   100
               Number of authorized agents (RTU)   1000
```

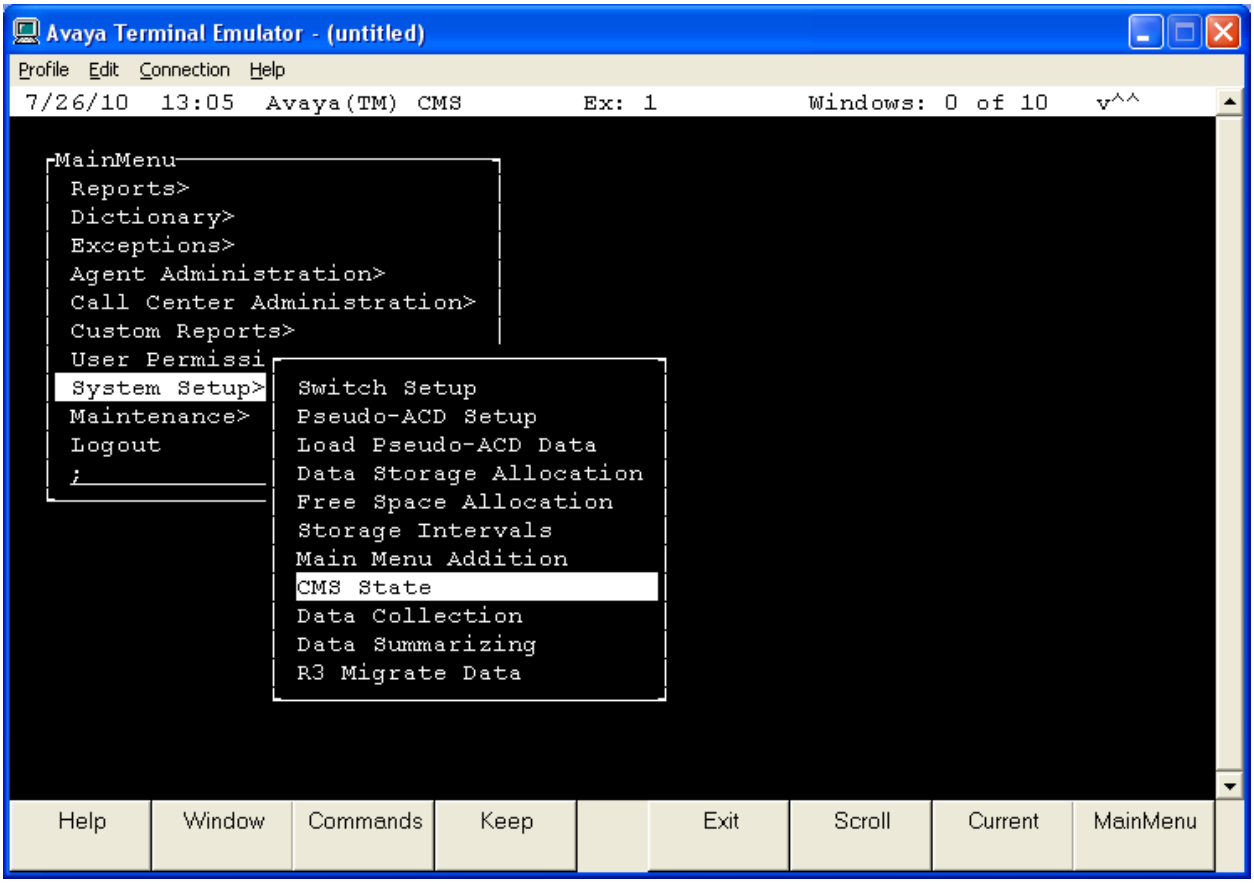
5.3. Configure Data Storage Allocation

For call records to be stored in CMS for a particular ACD, call record storage space has to be allocated explicitly for the ACD. The storage space is configured through the CMS Terminal Emulator.

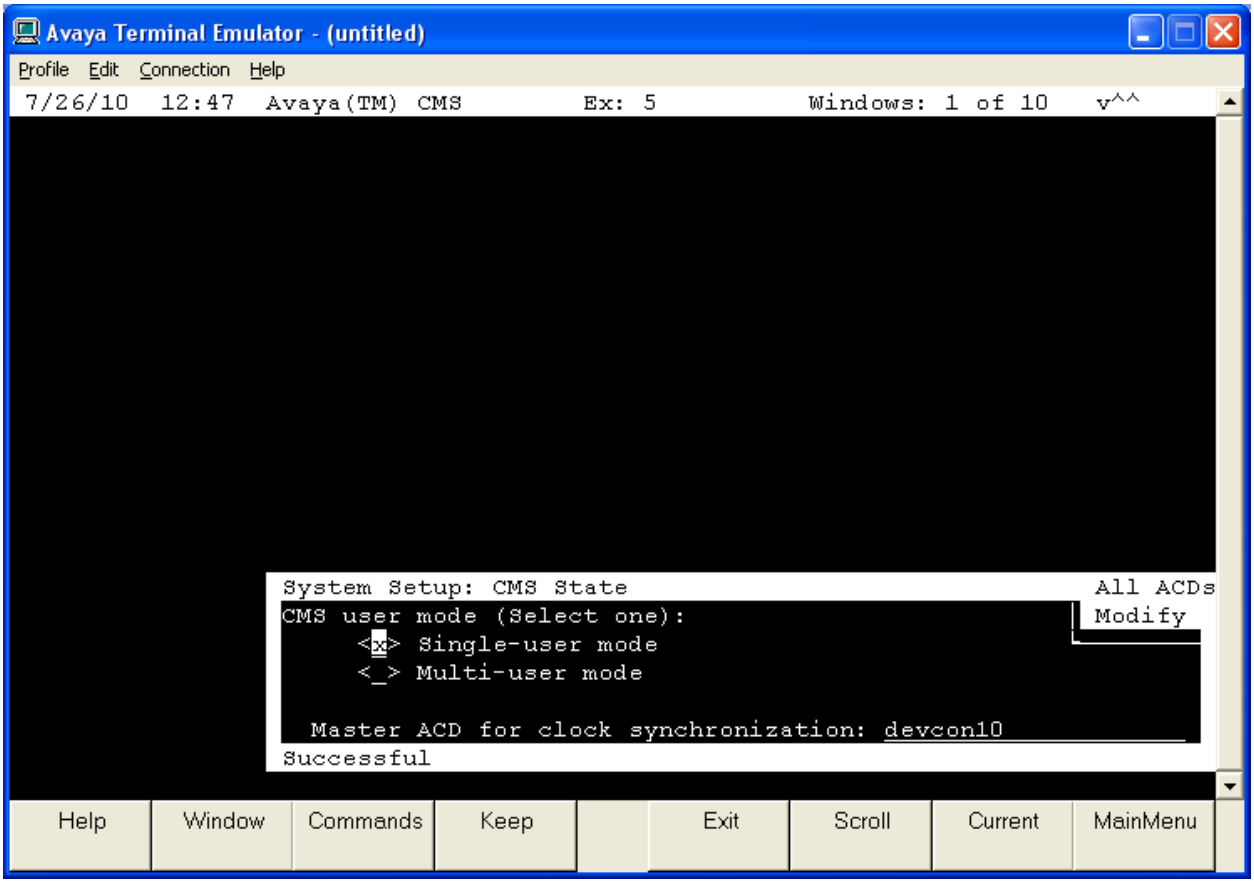
From the PC running the Avaya CMS Terminal Emulator, navigate to **start → All Programs → Avaya → Terminal Emulator R16 → Terminal Emulator R16**. The **Avaya Terminal Emulator** application is launched. Connect the Terminal Emulator to CMS and log in with proper credentials (not shown). The Main Menu is displayed.



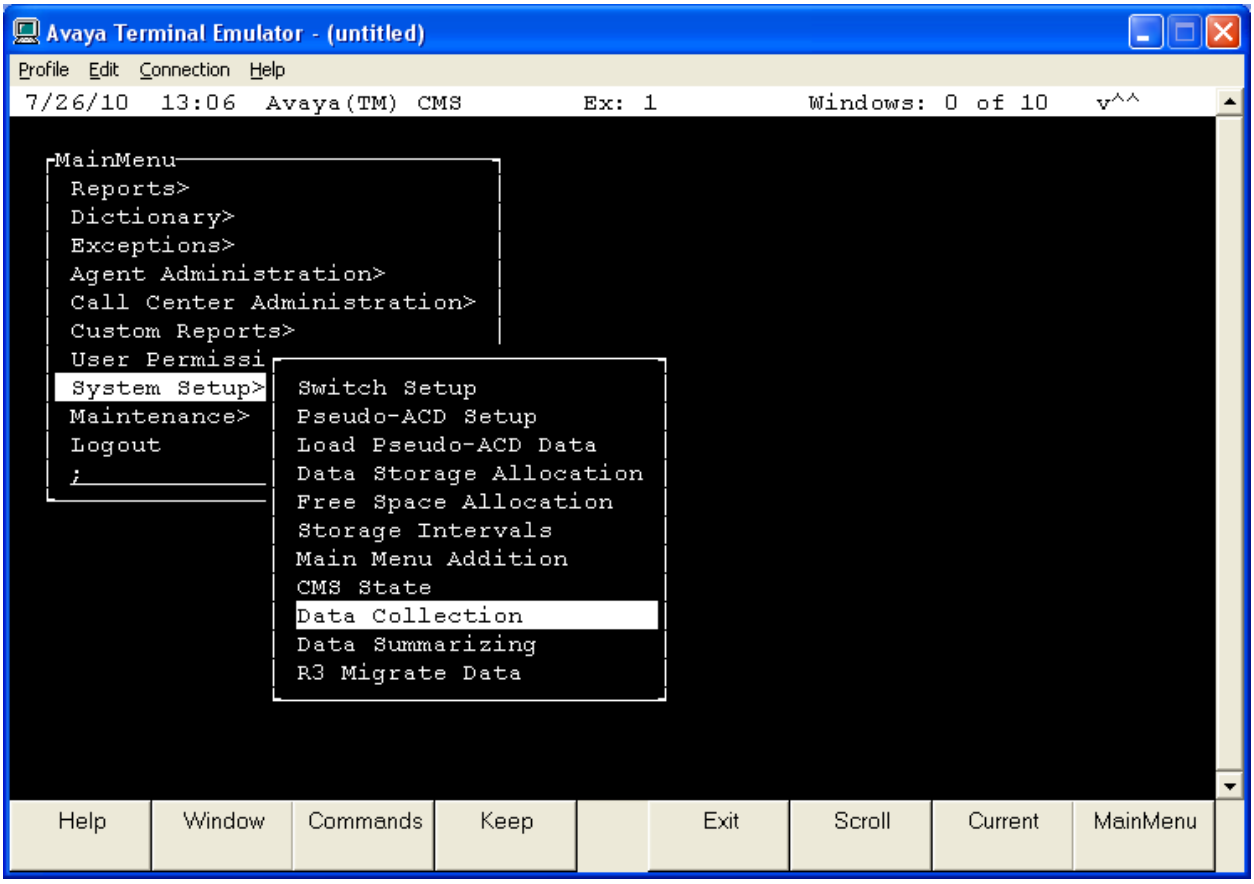
To allocate call record storage space, the CMS has to be in Single-user mode and data collection has to be turned off for all the ACD's. Navigate to **System Setup → CMS State** as shown below.



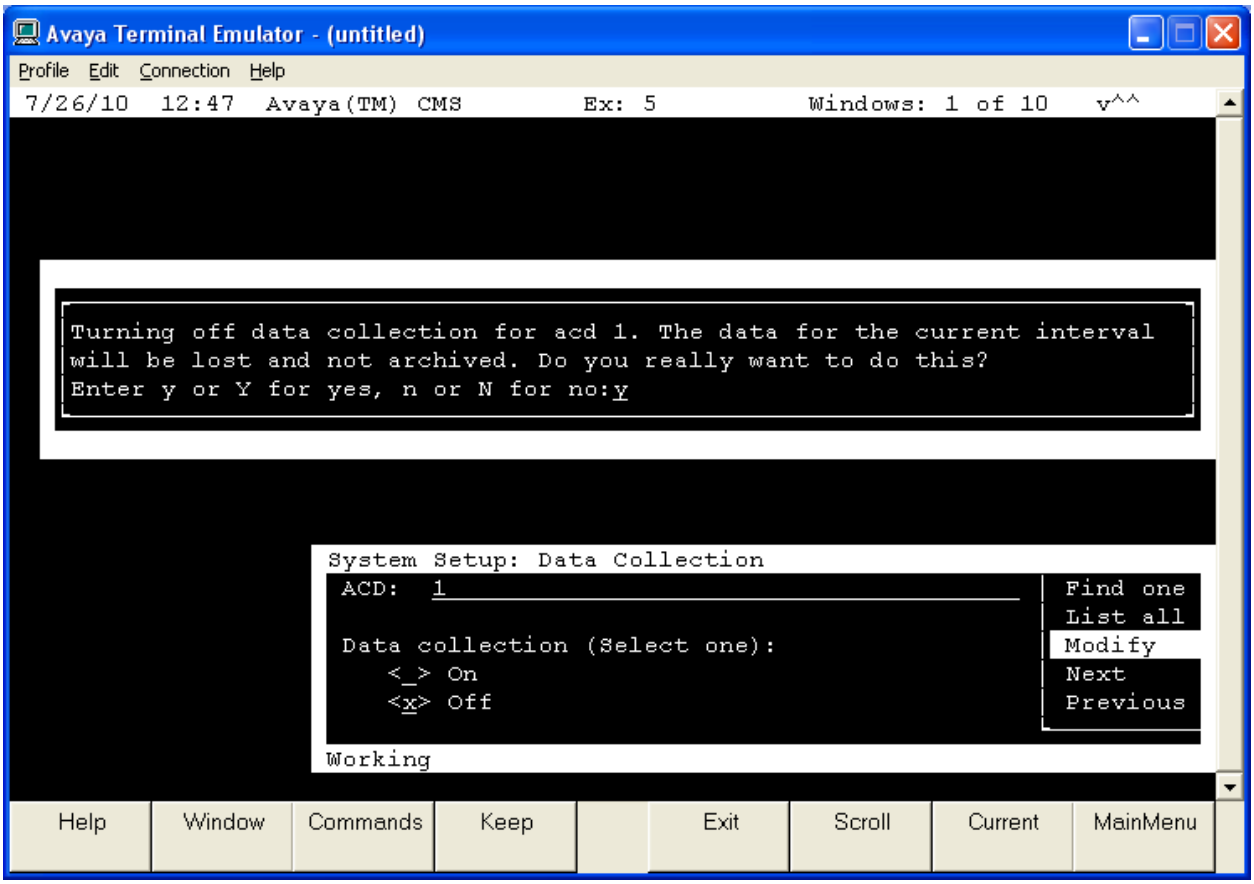
The following window is displayed. Select **Single-user mode** by entering an "x". Select **Modify**.



Navigate to **System Setup → Data Collection** as shown below.

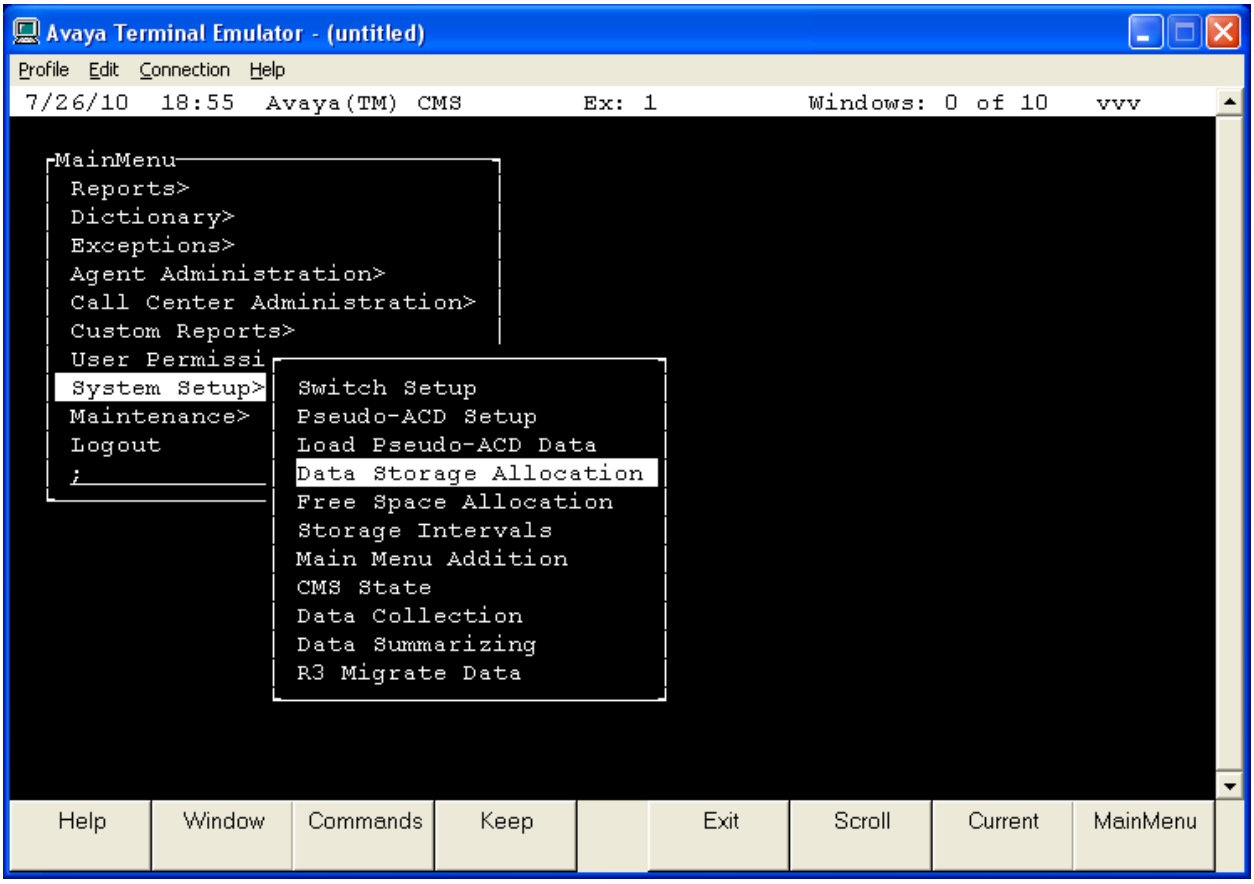


The following window is displayed. Enter “1” to the ACD field. Under **Data Collection** section, select **Off** by entering an “x”. Select **Modify** and enter “y” to confirm.

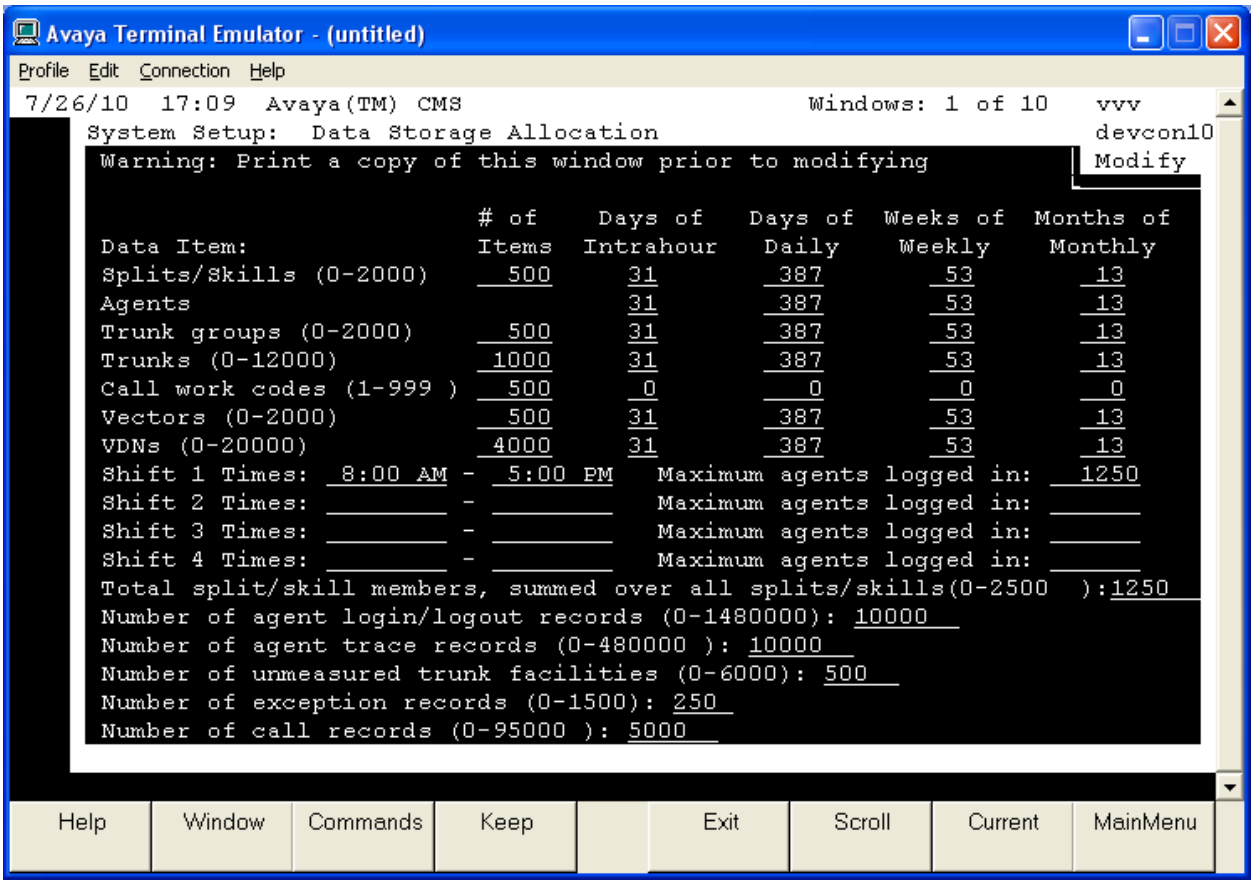


Repeat the procedure for other ACDs.

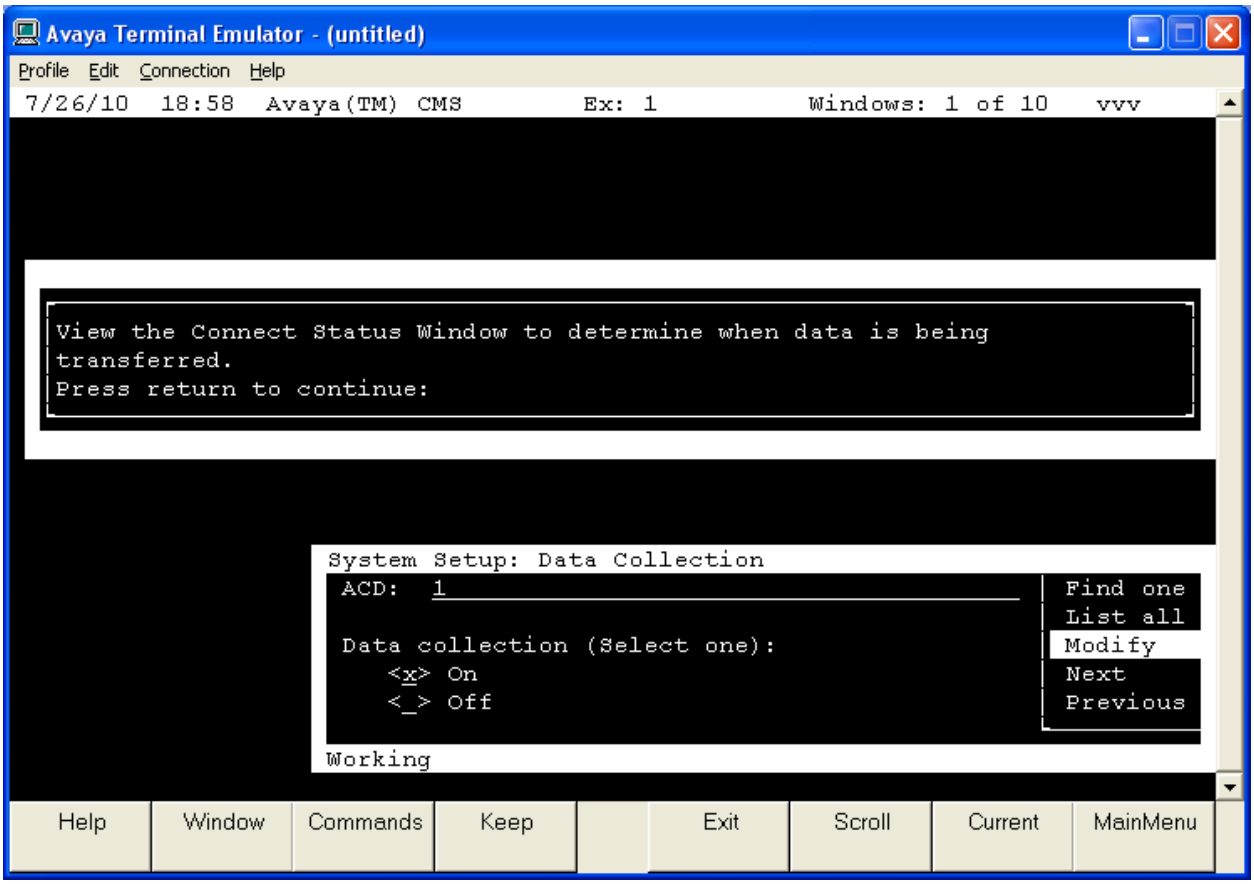
Navigate to **System Setup → Data Storage Allocation** as shown below.



The following window is displayed. Set the **Number of call records** field to "5000" as shown below. Select **Modify** and enter "y" to confirm.

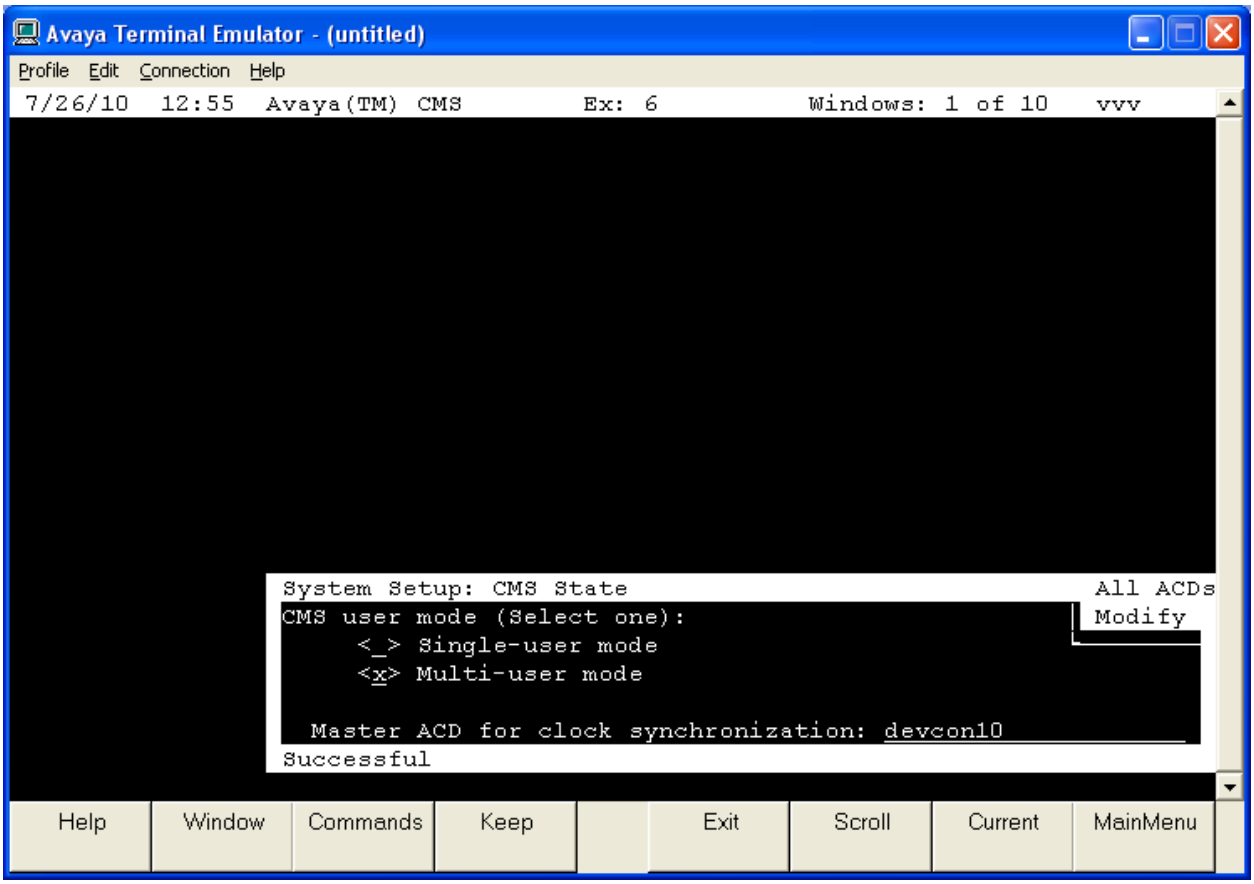


Navigate to **System Setup → Data Collection** (not shown). Enter "1" to the ACD field. Under **Data Collection** section, select **On** by entering an "x" Select **Modify** and press Enter.



Repeat the procedure for other ACD's.

Navigate to **System Setup → CMS State** (not shown). Select **Multi-user mode** by entering an "x". Select **Modify**.



6. Configure Upstream CMS DB Interface Server

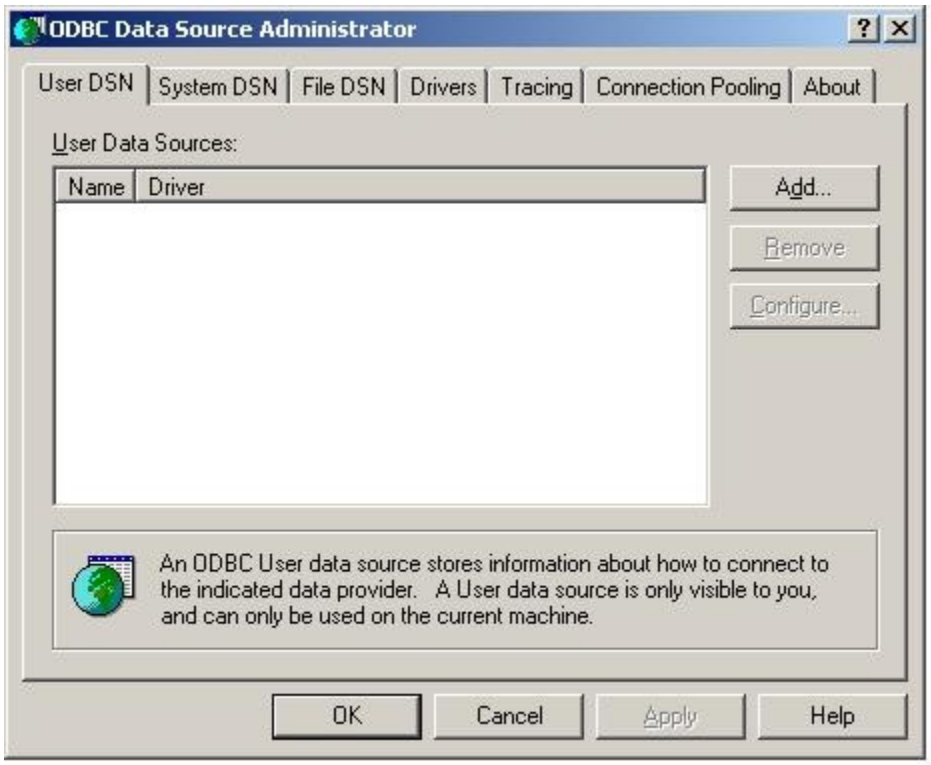
The Upstream CMS DB Interface Server fetches call records from CMS and stores them in an accompanying SQL server. This section describes the configuration required on the Upstream CMS DB Interface Server to fetch data from CMS. The configuration on the Upstream server for storing data to the SQL server as well as the configuration on the SQL Server are outside the scope of these Application Notes and will not be described. The procedure for configuring Upstream CMS DB Interface Server fall into the following areas:

- Configure ODBC Interface to CMS
- Create Upstream Works CMS DB Interface Service
- Configure Upstream CMS DB Interface Server

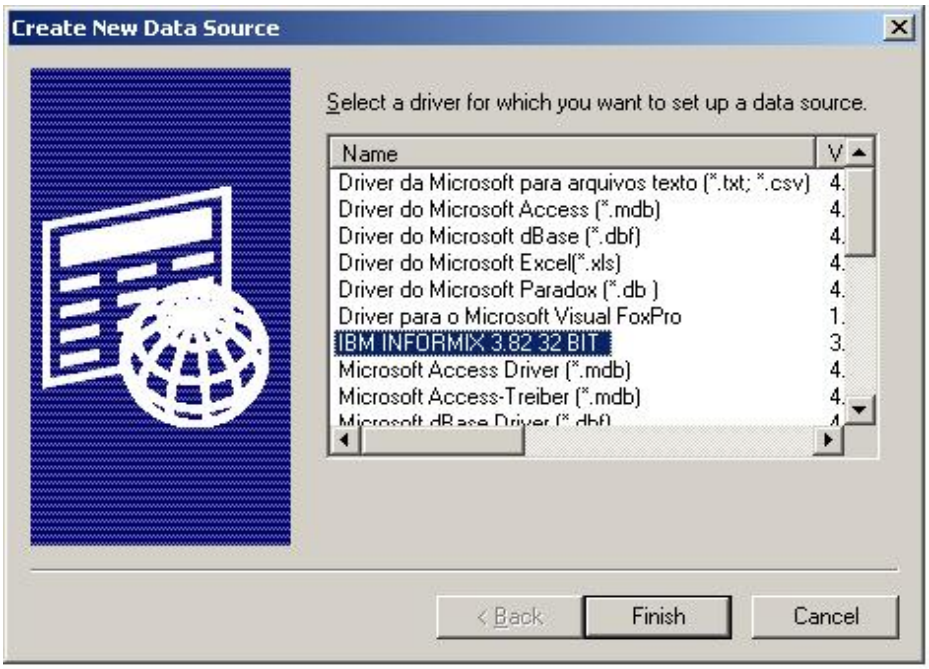
6.1. Configure ODBC Interface to CMS

This section covers the configuration of the ODBC interface to CMS. A connection to the CMS Informix database is established using IBM Informix ODBC 3.82 client software installed on the Upstream CMS DB Interface Server. The ODBC software comes with CMS. It can also be downloaded from the IBM website. For the compliance test, the IBM Informix ODBC 3.82 driver software was downloaded from the IBM website and installed on the Upstream server.

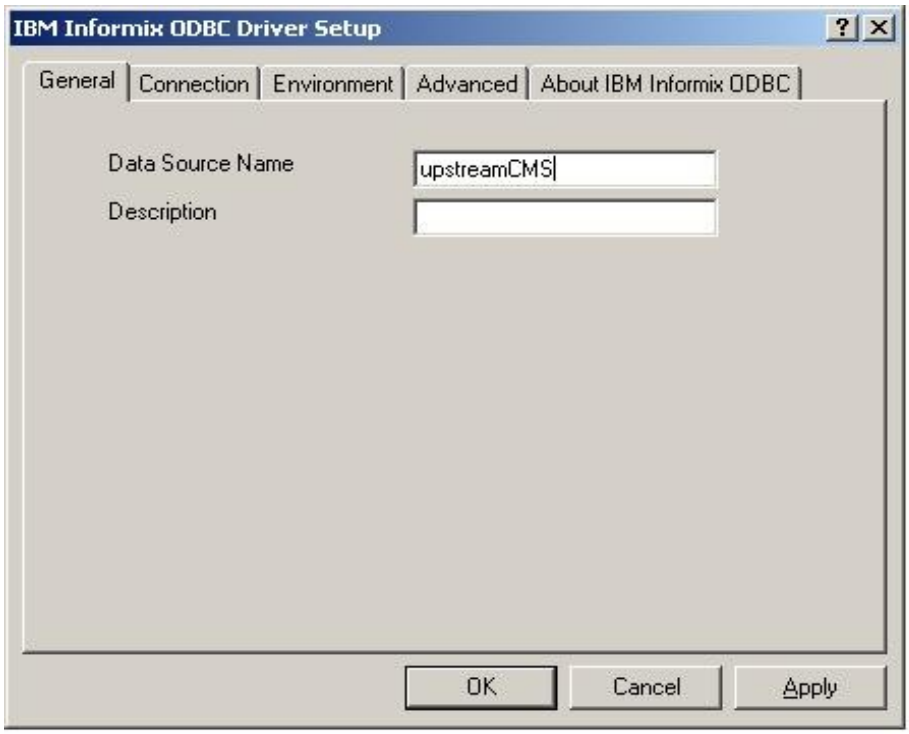
To configure the ODBC interface, navigate to **Control Panel → Administrative Tools → Data Sources (ODBC)** from the Upstream CMS DB Interface Server. The **ODBC Data Source Administrator** window is displayed.



Select the **System DSN** tab (not shown) and click **Add** to add a new system data source. The following window is displayed. Select **IBM INFORMIX 3.82 32 BIT** driver. Click **Finish**.

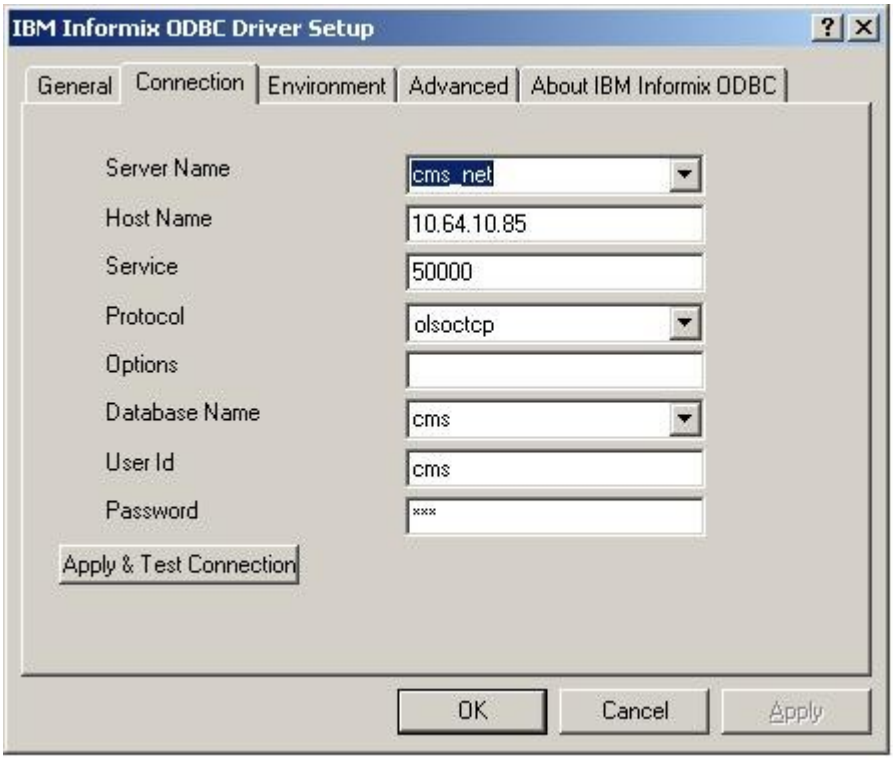


The following window is displayed. Specify a descriptive name for the data source such as **upstreamCMS**. Click **Apply**.



Select the **Connection** tab. Enter the following values for the specified fields:

- **Server Name**: "cms_net" from the dropdown menu
- **Host Name**: "10.64.10.85" which is the IP address of the CMS
- **Service**: "50000"
- **Protocol:** **"**olsoctcp" from the dropdown menu
- **Database Name:** **"**cms" from the dropdown menu
- **User Id:** a CMS user with normal user privilege
- **Password:** password of the above user



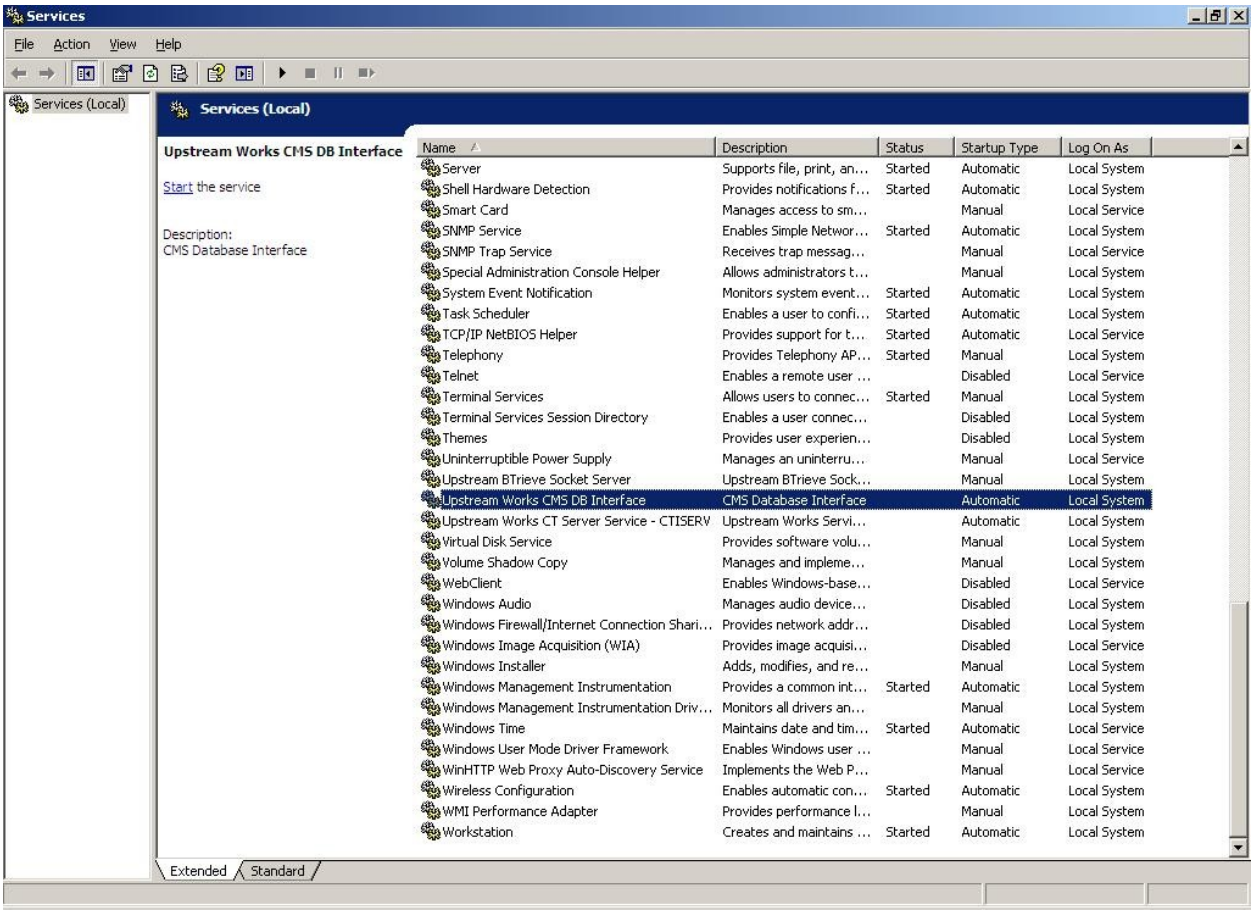
Click **OK**.

6.2. Create Upstream Works CMS DB Interface Service

Start a Command Prompt window. Change directory to **upstream** and run the "cms /wrhklm /register" command to create an 'Upstream Works CMS DB Interface' service. The response will indicate that the service has been created but no ACDs have been configured. It is ok because the ACDs will be created and configured in the next several steps. The following screenshot shows the commands and the responses.

```
C:\Documents and Settings\Administrator>cd \upstream

C:\upstream>cms /wrhklm /register
Service 'UpstreamCMS' created.
No ACDs are configured!
```

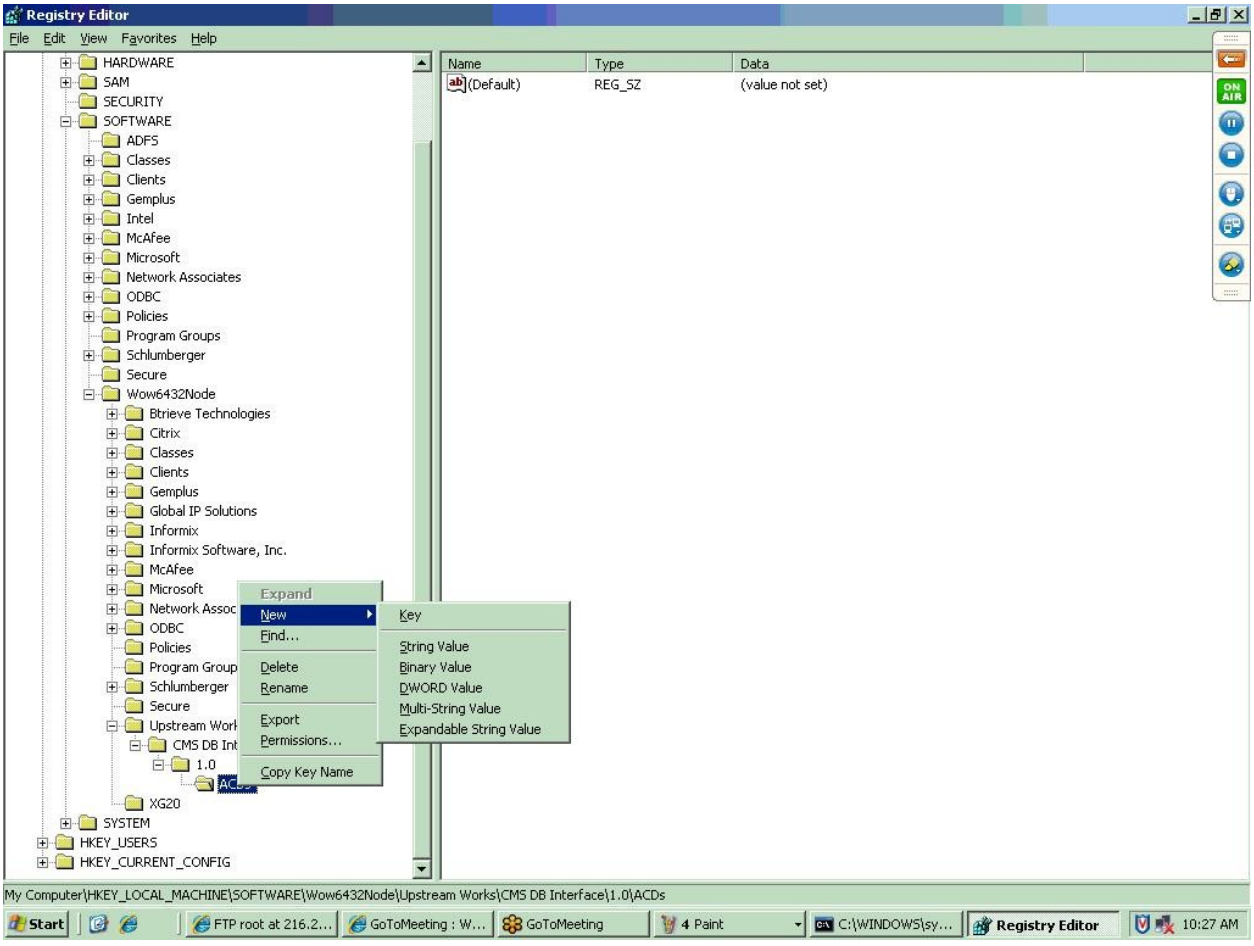
Navigate to **Control Panel → Administrative Tools → Services** to verify that the 'Upstream Works CMS DB Interface' service has been created.



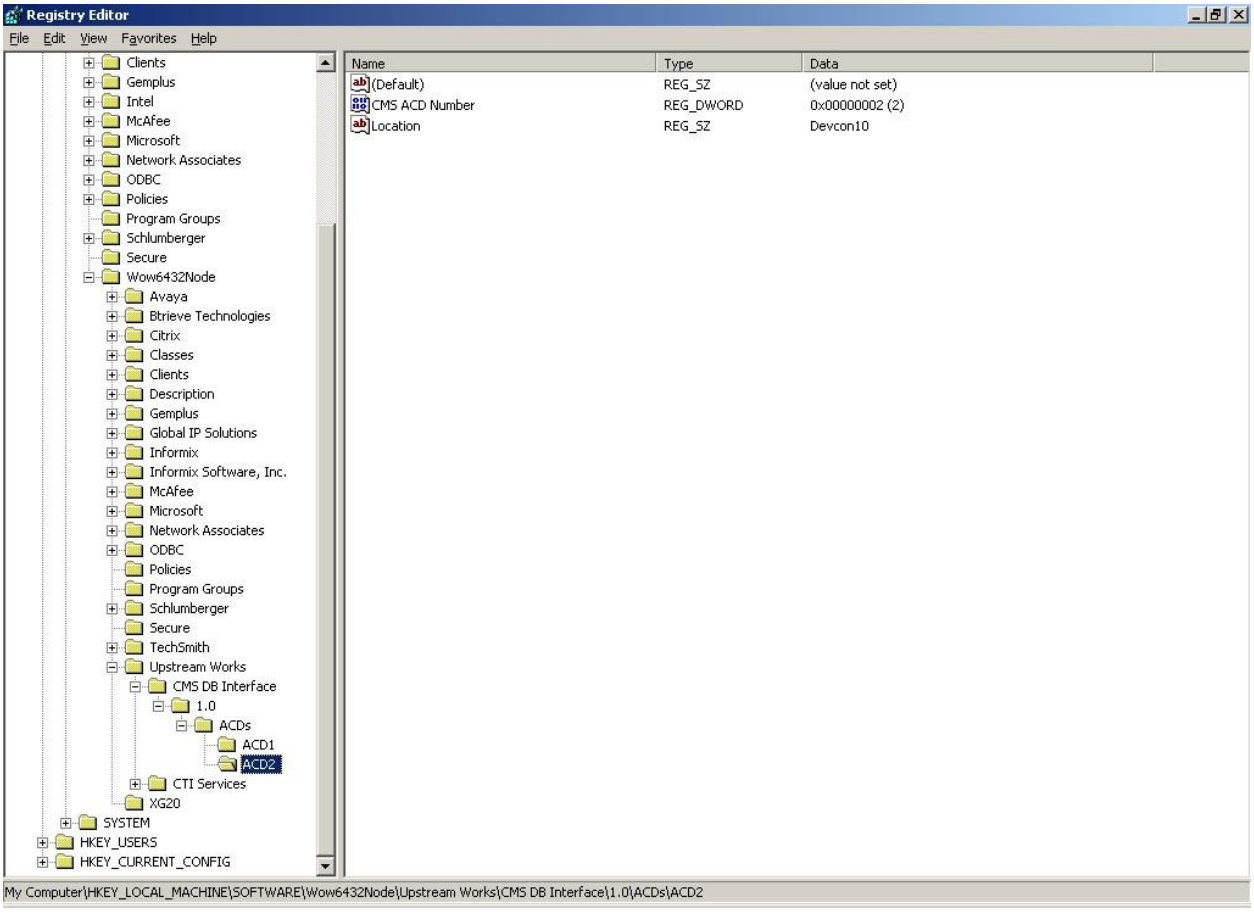
6.3. Configure Upstream CMS DB Interface Server

All the configuration information of the Upstream CMS DB Interface Server is stored in the Windows server registry. Enter the "regedit" command in the Command Prompt window to configure the server.

The following Registry Editor window is popped up. From the left pane, navigate to **computer\HKEY_LOCAL_MACHINE\SOFTWARE\ Wow6432Node\Upstream Works\CMS DB Interface\1.0\ACDs**. Right click the item and select **New → Key**.



A sub-key will be created under the **ACDs** key. Enter a name such as "ACD1" and press **Enter**. At the Command Prompt window, run the "cms /wrhklm" command to populate the **ACD1** sub-key (not shown). Click the **ACD1** sub-key will show in the right pane that the **CMS ACD Number** and **Location** fields have been populated. Right click the **CMS ACD Number** field, select **modify,** and enter "1" in the **Value data** space (not shown). Right click the **Location** field, select **modify,** and enter a text string in the **Value data** space (not shown). The following window shows that the **ACD1** sub-key has been created and populated. Repeat the process to add and populate **ACD2** which is the ACD used in the compliance test.



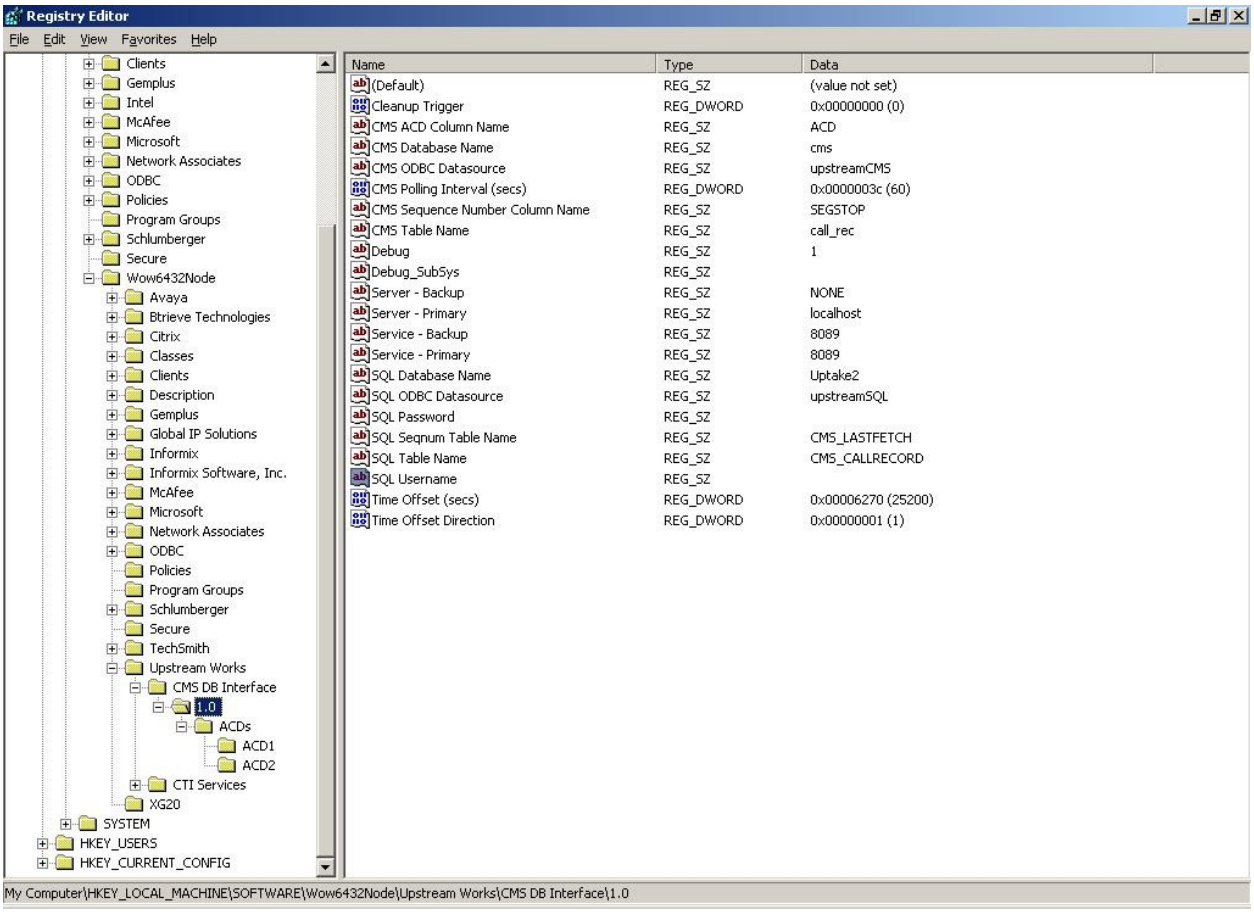
After the ACD sub-keys are created, click **1.0** in the left pane. The corresponding fields will be displayed in the right pane. Modify the values of the following fields by right clicking each field, selecting **modify**, and entering the value in the **Value data** space (not shown).

- **CMS ODBC Datasource**: "upstreamCMS" as configured in **Section 6.1**
- **CMS Polling Interval (secs)**: "60**".** 60 was the value used for this compliance test. The user may choose to use a larger number.

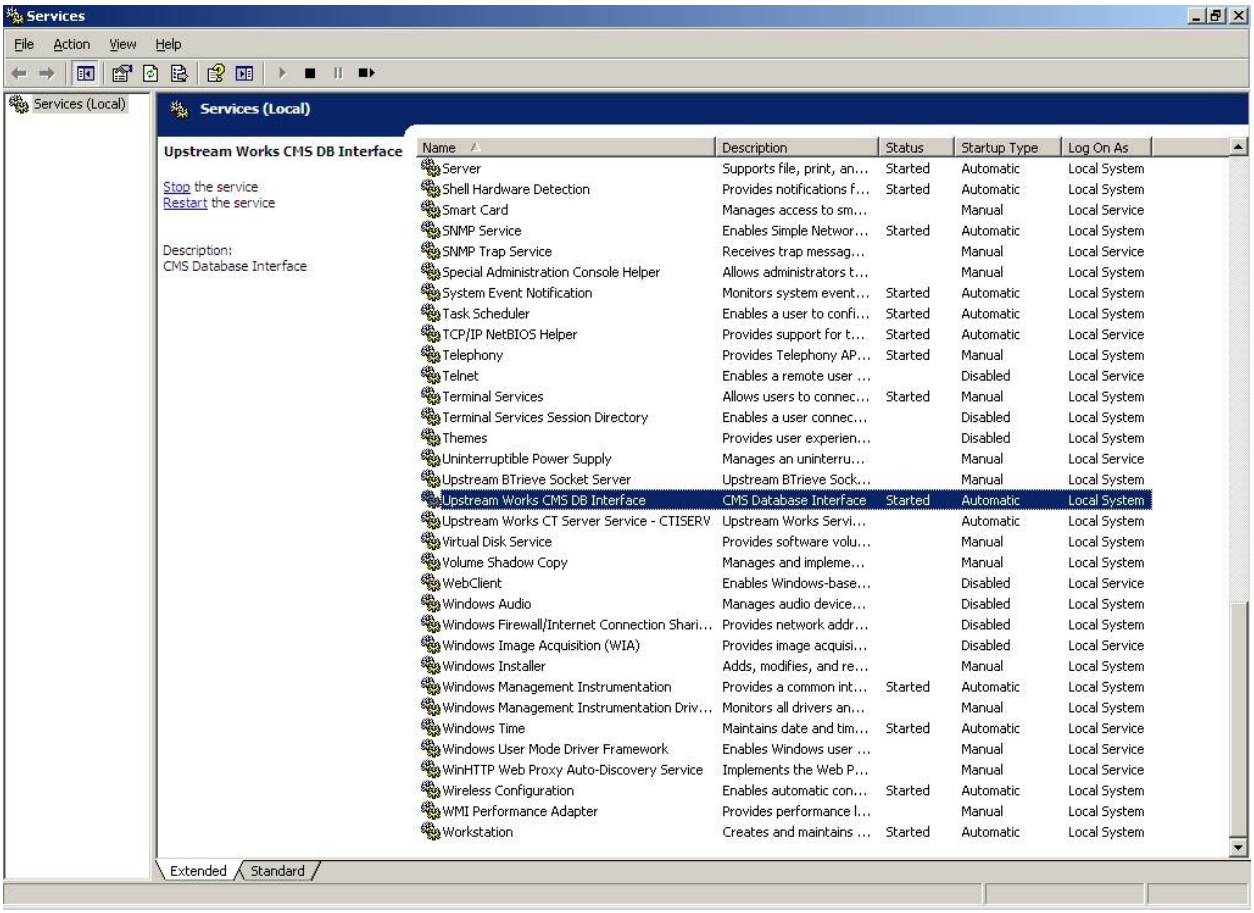
Note that the following fields are used for the interactions with the SQL Server. The values must match what are configured in the SQL Server and the name of the SQL ODBC data source. The configurations on the SQL Server and of the SQL ODBC driver are outside the scope of these application notes and are not described.

- **SQL Database Name**: configured in the SQL server
- **SQL ODBC Datasource**: name of the SQL ODBC data source
- **SQL Password**: configured in the SQL server
- **SQL Username**: configured in the SQL server

Retain the default values for other fields.



Navigate to **Control Panel → Administrative Tools → Services** to start the 'Upstream Works CMS DB Interface' service.



7. General Test Approach and Test Results

The interoperability compliance test focused on verifying the ability of Upstream CMS DB Interface Server to import ACD call record data from CMS using the ODBC interface and to store the records in a SQL database.

Most of the feature test cases were performed manually. ACD calls were made to the measured skills and routed to agents to generate call records. Various call scenarios (e.g. hold, transfer, agent drop, customer drop, etc) were used to populate different fields in the call records. The accuracy of the data was verified.

An ACD simulator was used to automatically generate a larger number of calls to the measured skills and agents. The accuracy of number of call records retrieved and stored by Upstream CMS DB Interface Server was verified.

The serviceability test cases were performed manually by disconnecting/connecting the Ethernet connection to Upstream CMS DB Interface Server and to CMS as well as by power cycling of the Upstream Server.

All test cases were executed and passed.

8. Verification Steps

This section provides the tests that can be performed to verify proper configuration of Communication Manager, Call Management System and Upstream CMS DB Interface Server.

8.1. Verify Avaya Aura™ Communication Manager

Verify the status of the processor channel by using the "status processor-channels n" command, where "n" is the processor channel number from **Section 4.4**. Verify that the **Session Layer Status** is "In Service", and that the **Socket Status** is "TCP connected", as shown below.

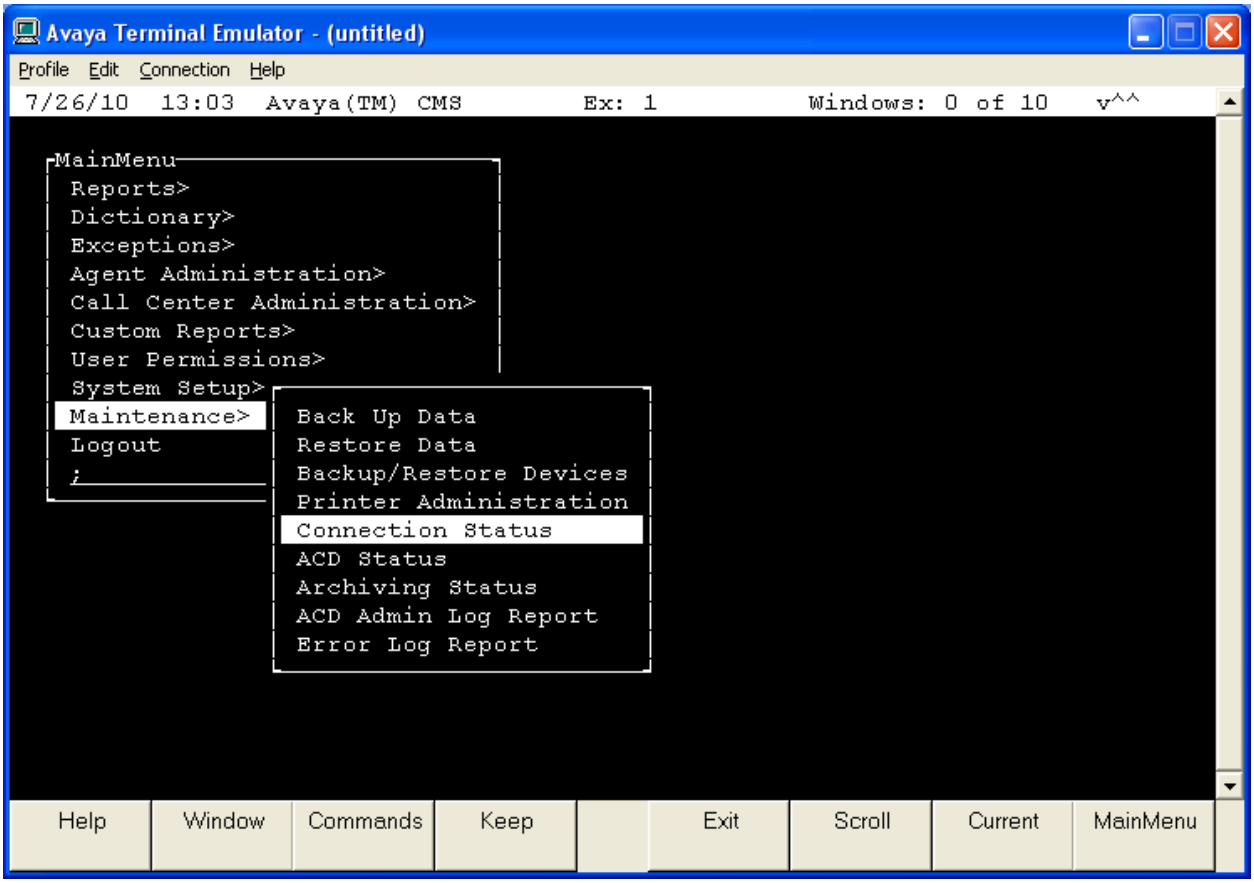
```
status processor-channels 1
                        PROCESSOR-CHANNEL STATUS

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

            Last Failure: Far end sent disconnect
                      At: 07/26/10 11:29
```

Verify the status of the processor ethernet link by using the "status link procr" command. Verify that the **Link Status** is "inservice", and that the **Active Channels** is "1", as shown below.

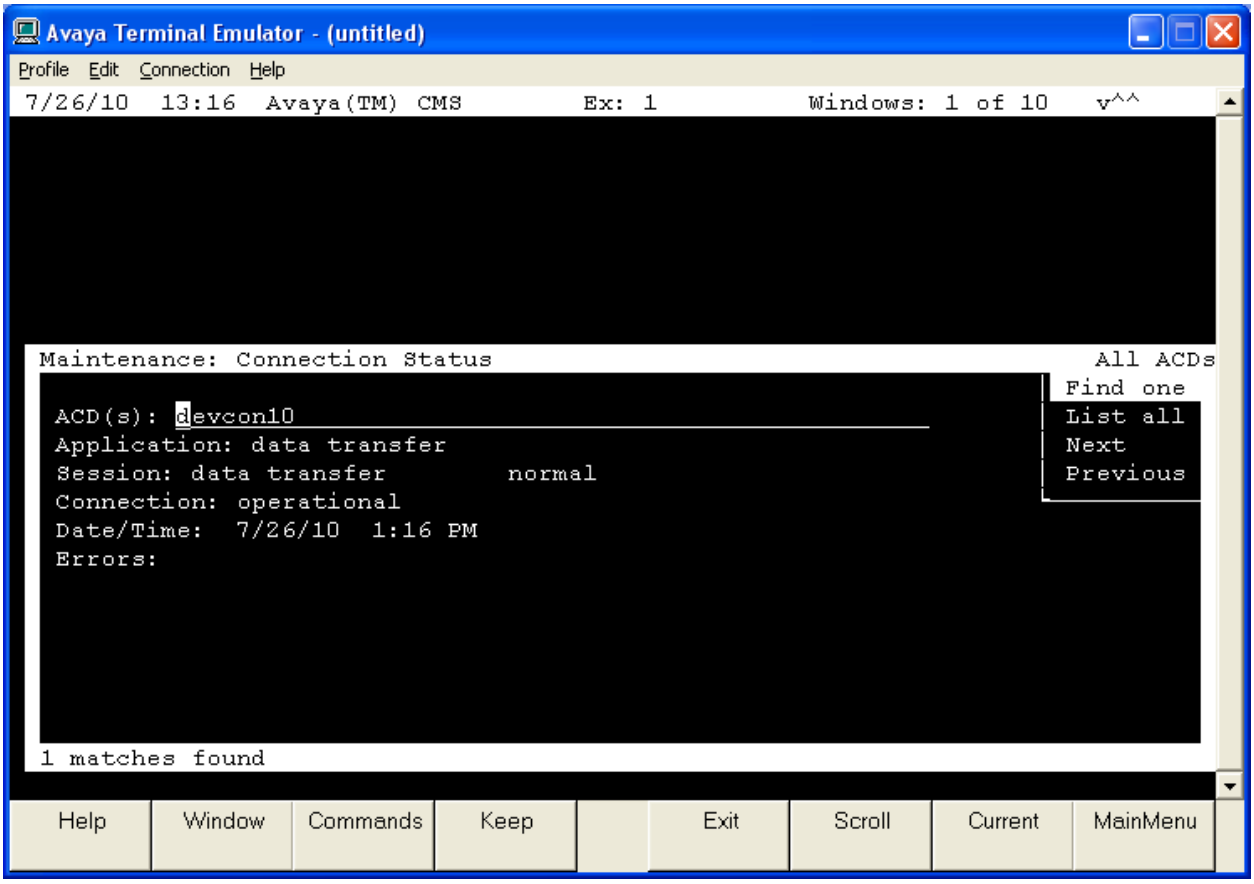
```
status link procr                                           Page   1 of   2
                               LINK/PORT STATUS

                 Link Number: 255
                 Link Status: inservice
                   Link Type: processor

       Service Port Location: eth1.0000


                   Node Name: procr
           Source IP Address: 10.64.10.10/24

           Broadcast Address: 10.64.10.255

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

8.2. Verify Avaya Call Management System

From the PC running the Avaya CMS Terminal Emulator, select **start → All Programs → Avaya → Terminal Emulator R16 → Terminal Emulator R16**. The Terminal Emulator application is launched. Connect the Terminal Emulator to CMS and log in with proper credentials (not shown). The Main Manu is displayed. Select **Maintenance → Connection Status**, as shown below.



Enter the corresponding **ACD(s)** number. For the compliance testing, the corresponding switch connection is ACD system "2". Select **Find one**. The name of the switch and the connection status is displayed. Check the status in the **Session** and **Connection** fields, as shown below.

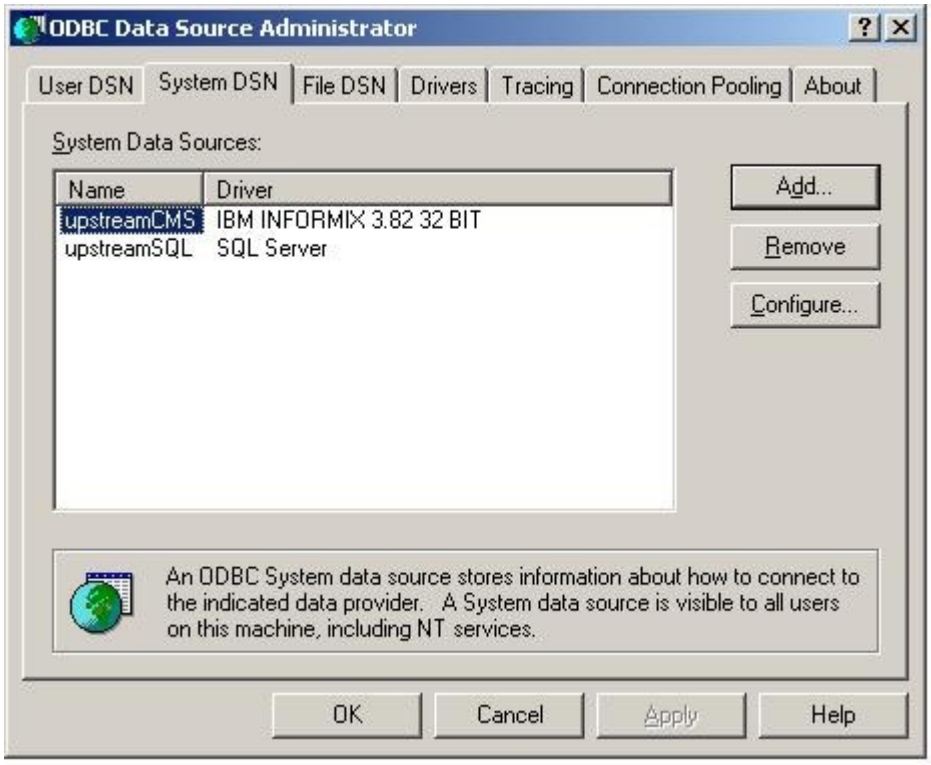


8.3. Verify Upstream CMS DB Interface Server

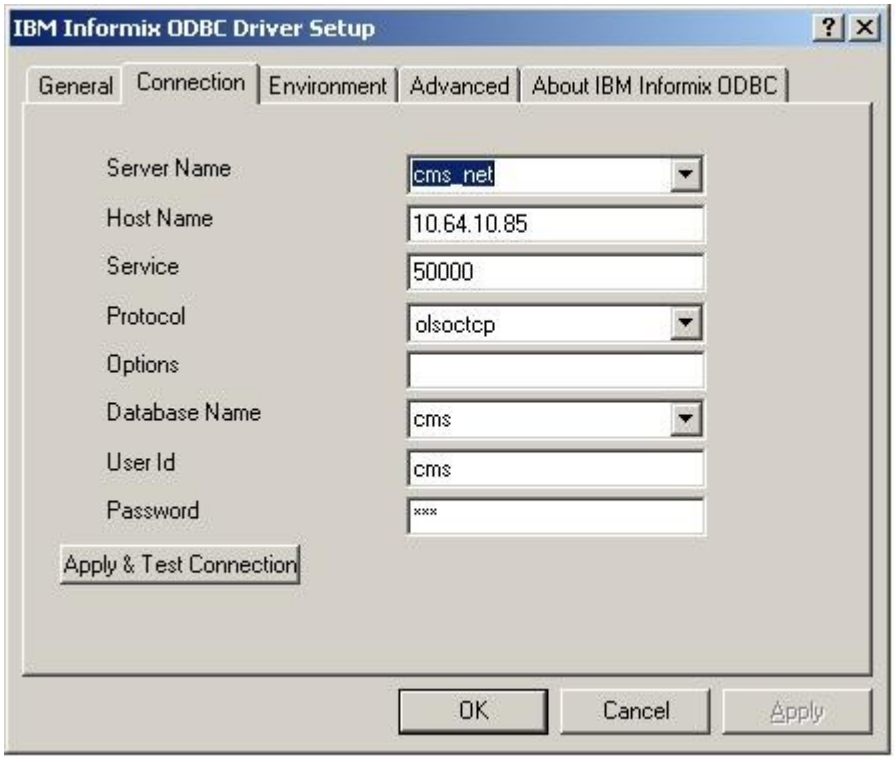
This section verifies the ODBC connection on Upstream CMS DB Interface Server and that call record data can be captured and displayed in the SQL Server.

8.3.1. Verify ODBC Connection

To test the ODBC connection, navigate to **Control Panel → Administrative Tools → Data Sources (ODBC).** Select the **System DSN** tab. The following window is displayed. Select the **upstreamCMS** data source and click the **Configure…** button.



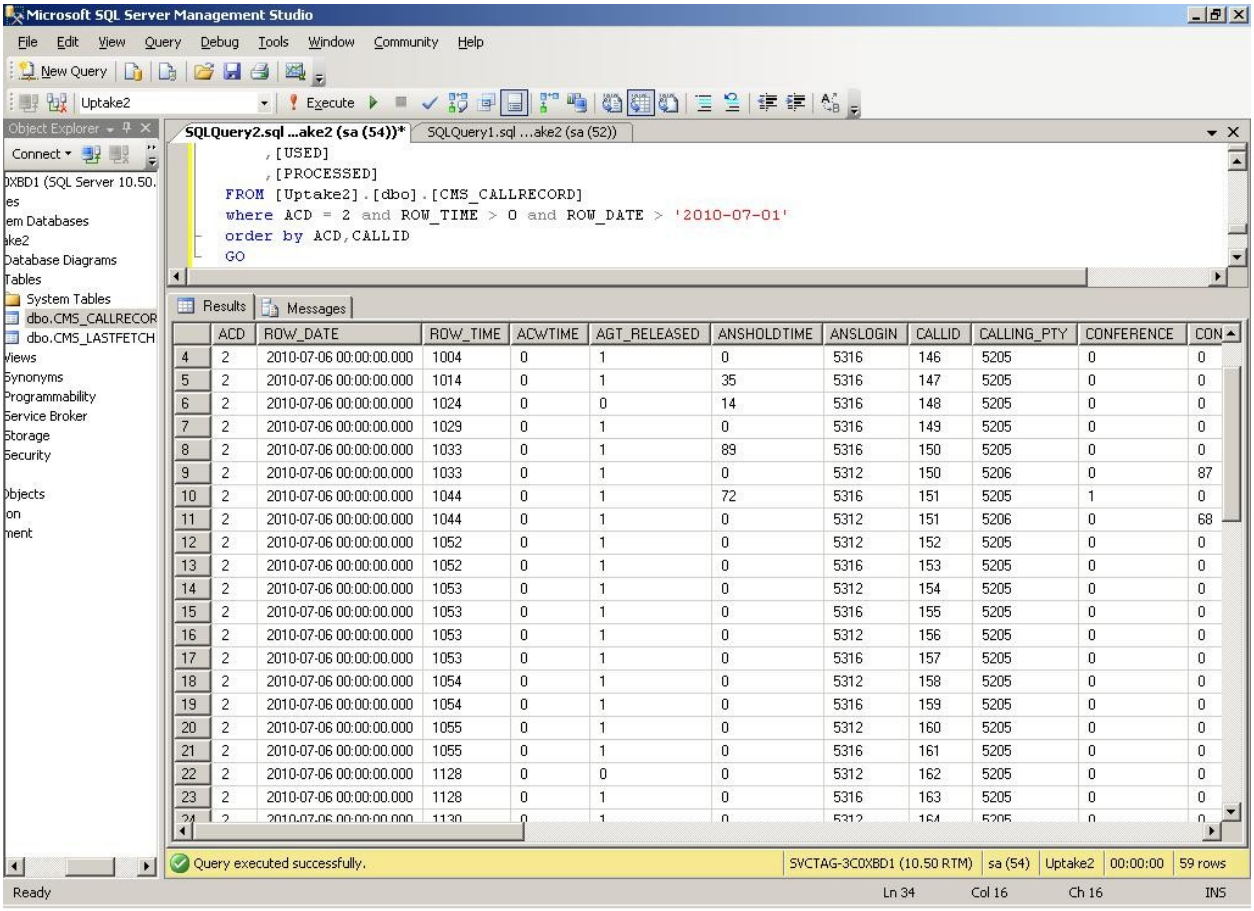
The following window is display.



Click the **Apply & Test Connection** button and verify that the test was successful as shown below.

8.3.2. Verify Call Records

From the SQL Server, use the Microsoft SQL Server Management Studio and a SQL query provided by Upstream to display the call records received, as shown below.



9. Conclusion

These Application Notes describe the configuration steps required for Upstream CMS DB Interface Server to successfully interoperate with Avaya Call Management System using ODBC interface. All feature and serviceability test cases were completed successfully.

10. References

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

[1] *Administering Avaya Aura™ Communication Manager*, Document 03-300509, Issue 5.0, Release 5.2, May 2009, available at http://support.avaya.com.

[2] *Avaya Call Management System Switch Connections, Administration, and Troubleshooting*, November 2009, available at http://support.avaya.com.

[3] *Avaya Call Management System Release 16 ODBC and JDBC*, November 2009, available at http://support.avaya.com.

[4] *Avaya Call Management System Release 16 Database Items and Calculations*, November 2009, available at http://support.avaya.com.

APPENDIX:

Data Items retrieved by Upstream CMS DB Interface Server

The following table lists the call record data items extracted by Upstream CMS DB Interface Server from CMS using the ODBC interface. These data items are defined in **[4]**.

- ACD
- ACWTIME
- AGT_RELEASED
- ANSHOLDTIME
- ANSLOGIN
- CALLID
- CALLING_PTY
- CONFERENCE
- CONSULTTIME
- DIALED_NUM
- DISPOSITION
- DISPTIME
- DISPVDN
- DURATION
- HELD
- HOLDABN
- ORIGHOLDTIME
- ORIGLOGIN
- ROW_DATE
- ROW_TIME
- SEGMENT
- SEGSTART (use epoch time in CMS and date-time format in SQL. Can also add a time offset by Upstream)
- SEGSTOP (use epoch time in CMS and date-time format in SQL. Can also add a time offset by Upstream)
- SPLIT1
- SPLIT2
- SPLIT3
- TALKTIME
- TRANSFERRED
- UCID

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.