



## **Avaya Solution & Interoperability Test Lab**

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### **Application Notes for configuring Resource Software International Shadow Call Management System (CMS) Version 4.3.0 with Avaya Communication Server 1000 Release 7.6 using Serial Port Connectivity – Issue 1.0**

#### **Abstract**

These Application Notes describe a solution comprised of the Avaya Communication Server 1000 7.6 and the Resource Software International Shadow CMS Version 4.3.0. During the compliance testing, the Resource Software International Shadow CMS Application was able to utilize the serial port to collect the call records from the Avaya Communication Server 1000 and then extract these records from the raw database to formulate it into customer call accounting reports.

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

Resource Software International (RSI) Shadow CMS Application is a Call Accounting and Usage Management solution for Enterprise Businesses. The solution comprises of the Shadow CMS Application server, which is running on a Windows XP Professional Operating System. The server is connected to the Avaya Communication Server 1000 (hereafter referred to as CS 1000) via the serial port. The application will extract the raw data from the serial port of the CS 1000 and populate it into a database for further processing.

## 2. General Test Approach and Test Results

The general test approach was for the Shadow CMS server to communicate directly with the CS 1000 via serial port connectivity. The raw Call Detail Record (CDR) is directly collected from the CS 1000. Run the Shadow CMS Application to pull the raw call records from the database file and then generate the required reports. The data in the report should match the raw call records.

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 objective of this interoperability compliance testing was to verify the following:

- Collect various CDR records such as internal, inbound/outbound via SIP trunks, transfer, conference, charge account and authorization code from the CS 1000 raw data via the serial port and display in reports.
- Serviceability.

### 2.2. Test Results

The objectives outlined in the **Section 2.1** were verified and met. All test cases were executed and they all passed.

### 2.3. Support

Technical support for Shadow CMS can be obtained by RSI via,

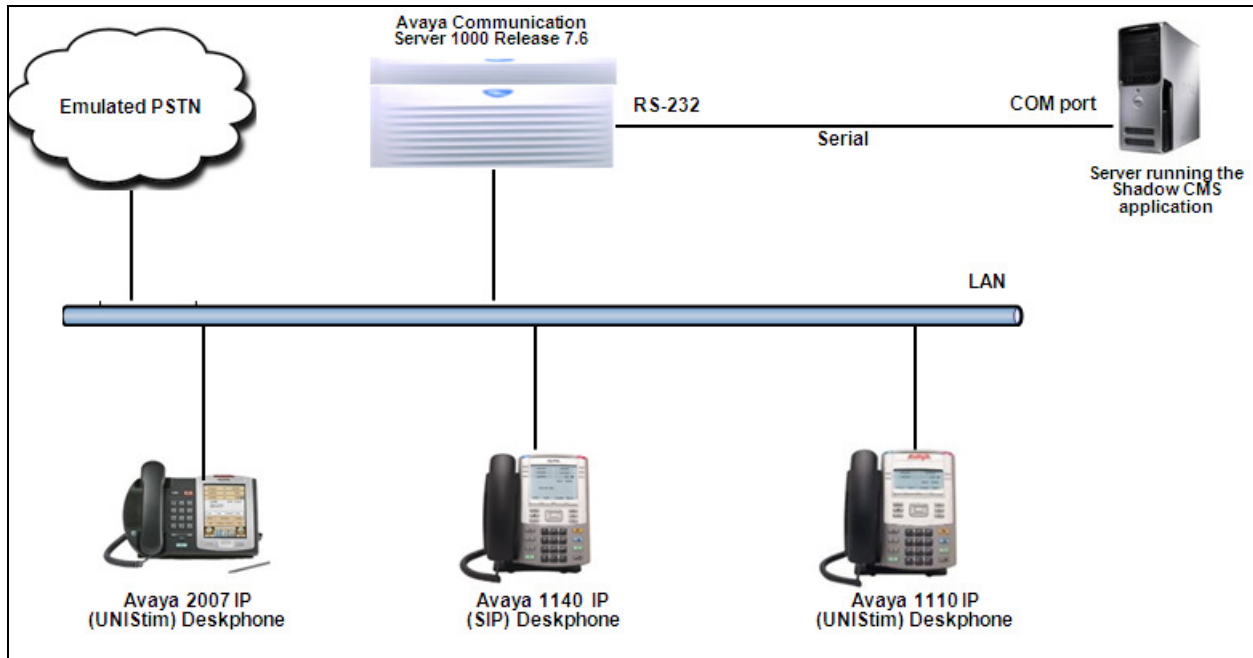
Web: <http://www.telecost.com>

Phone: 905-576-4575 (Canada)/ 718-701-0945 (US)

Email: [support@telecost.com](mailto:support@telecost.com)

### 3. Reference Configuration

**Figure 1** illustrates the network diagram configuration used during the compliance testing between the Shadow CMS 4.3.0 Application and Avaya Communication Server 1000 Release 7.6. The raw CDR from CS1000 was collected using the serial connectivity between the CS1000 and the Shadow CMS server.



**Figure 1: Test Configuration Diagram**

## 4. Equipment and Software Validated

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

Equipment	Software
Avaya Communication Server 1000	7.6
Avaya IP Phones <ul style="list-style-type: none"><li>• 2007(UNIStm)</li><li>• 1110 (UNIStm)</li><li>• 1140 (SIP)</li></ul>	0621C8L 0623C8Q 4.03.12.00
Shadow CMS installed on MS Windows XP Pro	4.3.0.014

## 5. Configure Avaya Communication Server 1000

This document assumes that the Avaya CS 1000 was properly installed and configured as per the product document, for more information about how to install, configure and administer CS 1000 refer to **Section 9**. This section provides only the steps on how to configure the CDR feature on the CS 1000.

### 5.1. Check software packages for CDR feature

The configuration of CS1000 was performed using the Command Line Interface (CLI).

Use overlay **LD 22** to print all necessary software packages that are required for the CDR feature on the CS 1000.

```
>ld 22

REQ  prt
TYPE pkg
CDR      4  (Call Detail Recording)
CTY      5  (Call Detail Recording on Teletype Terminal)
CHG     23  (Charge Account for CDR)
BAUT     25  (Basic Authorization Code)
ICDR    108 (Internal Call Detail Recording)
CDRE    151 (Call Detail Recording Expansion)
FCDR    234 (New Call Detail Recording)
CDRX    259 (Call Detail Recording Enhancement)
```

## 5.2. Configure TTY Port for CDR

Use overlay **LD 17** to create a TTY port under the **ADAN** gate opener. This TTY port will be used for the serial connectivity between the CS1000 and the Shadow CMS server.

```
ADAN      TTY 13
CTYP MGC
IPMG 4 0 → Physical location of the MGC on CS1000
DNUM 13 → Same number as the TTY number
PORT 1 → Physical port used for serial connectivity
DES CDR1
BPS 9600 → Baud rate used for serial connectivity
BITL 8 → Bit rate used for serial connectivity
STOP 1
PARY NONE → Parity used for serial connectivity
FLOW NO
USER CTY → Call Detail Recording on Teletype Terminal
```

## 5.3. Administer CS 1000 CDR feature

Use overlay **LD 15** to enable CDR feature in customer data block (CDB) of CS 1000 system under the **CDR\_DATA** gate opener.

```
>ld 15
REQ: chg
TYPE: CDR

TYPE CDR_DATA
CUST 0
CDR YES
  IMPH NO
  OMPH NO
  AXID YES
  TRCR No
  CDPR YES
  ECDR YES
  BDI YES
  OTCR YES
  PORT 13 → This number should match the TTY number configured in
             Section 5.2
  CNI DGTS
  BCAP NO
CHLN 5
FCAF NO
```

Use overlay **LD 17** to change format for CDR to new under the **PARM** gate opener.

```
>ld 17
REQ  chg
TYPE parm
FCDR NEW
```

User overlay **LD 16** to enable CDR feature in route data block (RDB) for trunks.

```
>ld 16
REQ  chg
TYPE rdb
CUST 0
ROUT 10
CDR  YES (Call Detail Recording)
INC  YES (CDR records generated on incoming calls)
LAST YES (CDR record printing content option for redirected calls)
TTA  YES (Time To Answer output in CDR)
ABAN YES (Abandoned call records output for this route)
CDRB YES (Abandoned call on busy tone records)
QREC Yes (CDR ACD Q initial connection records to be generated)
OAL  YES (CDR on outgoing calls)
AIA  YES (CDR on Outgoing Toll calls)
OAN  YES (CDR timing starts On Answer supervision of outgoing calls)
OPD  YES (Outpulsed Digits in CDR)
```

Use overlay **LD 11** to set class of services Incoming Call Detail Recording Allowed (ICDA) and Abandon Call Allowed (ADBA) for the CS 1000 phones whose CDR needs to be collected.

```
>ld 11
REQ: chg
TYPE: 1120
TN   96 1 0 6
ECHG yes
ITEM cls icda abda
```

## 5.4. Connecting the CS1000 to the Shadow CMS Server

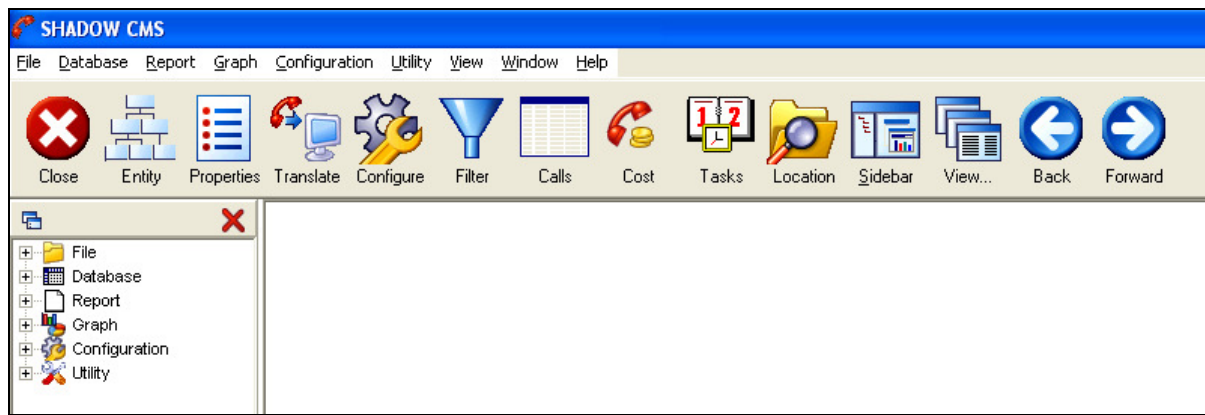
This section explains the hardware connection between the CS1000 and the server.

Connect one end of the 9 pin serial cable to the RS-232 port of the CS1000 and the other end to the COM1 port of the Shadow CMS server via a null modem. ~~Once the server is powered on, it starts to collect the CDR that is being outputted by the CS1000.~~

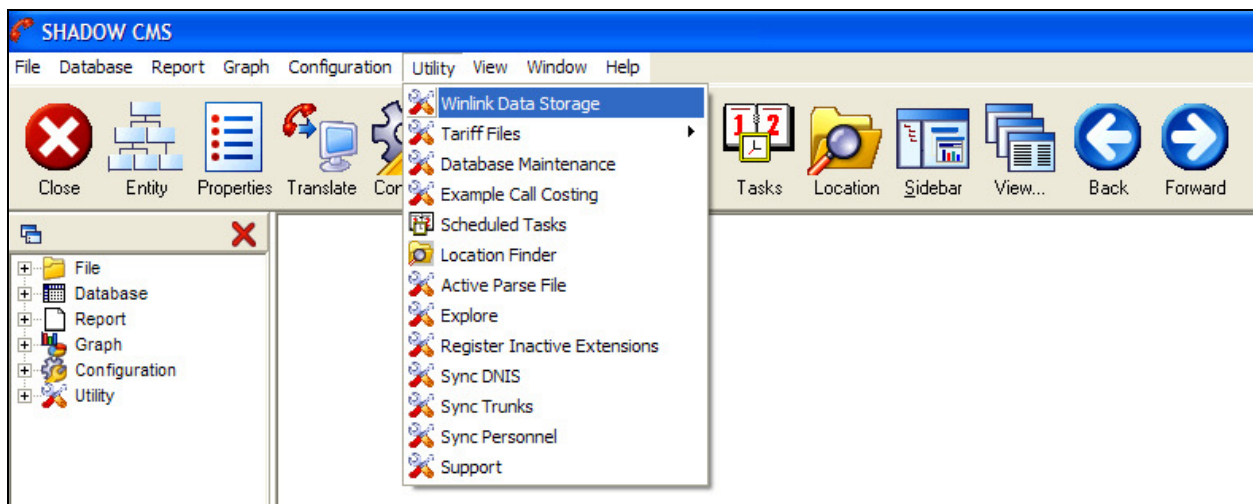
## 6. Configure Shadow CMS Application

This section describes the operation of Shadow CMS. The Shadow CMS collects the raw CDR data from the CS1000 using the Winlink Data Storage utility. This raw CDR data is then transformed into call records, which are then immediately available for reporting. RSI installs, configures, and customizes the Shadow CMS application for their end customers. For further information regarding installation and configuration of Shadow CMS, refer to **Section 9**.

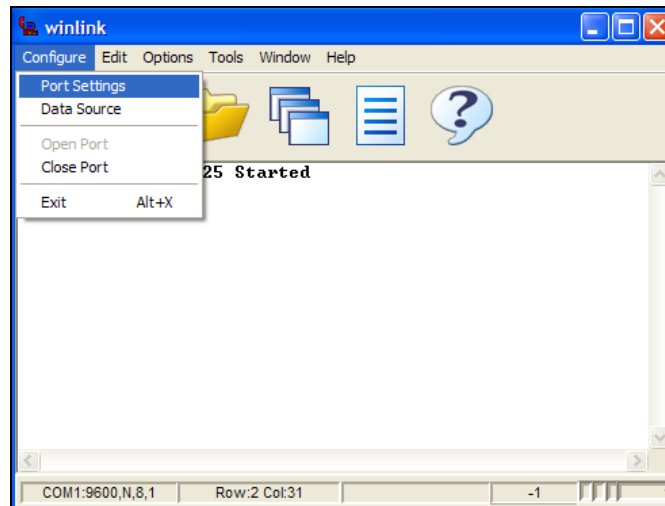
To launch the Shadow CMS application from the server where the application is installed, navigate to the menu **Start → Program → RSI → CMS → CMS** (not shown). The Shadow CMS window is displayed as shown below.



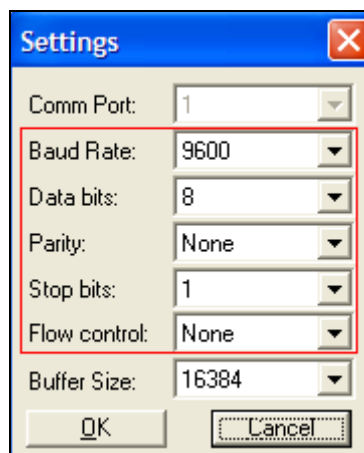
To configure raw CDR data collection for the Shadow CMS through serial connection, navigate to **Utility → Winlink Data Storage** as shown in the screen below.



The **winlink** window is displayed as shown below. Navigate to **Configure → Port Settings**.

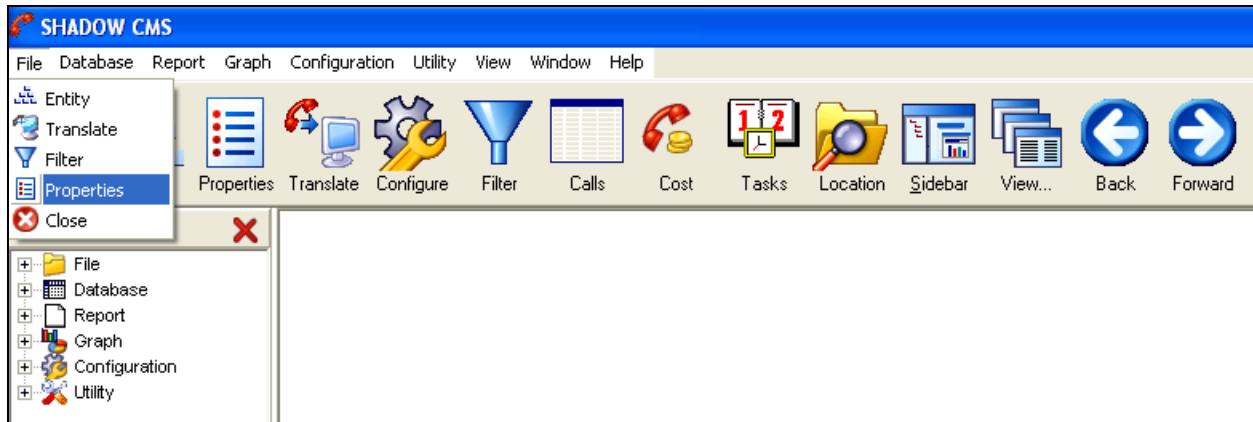


In the **Settings** window, select the **Baud Rate**, **Data bits**, **Parity**, **Stop bits** and **Flow control** values to match that of the TTY port values of the CS1000 as explained in **Section 5.2**. Retain default values for all other fields and click **OK** to complete the configuration. Once connection is established with the CS1000, raw CDR data can be seen in the above **winlink** window (not shown).

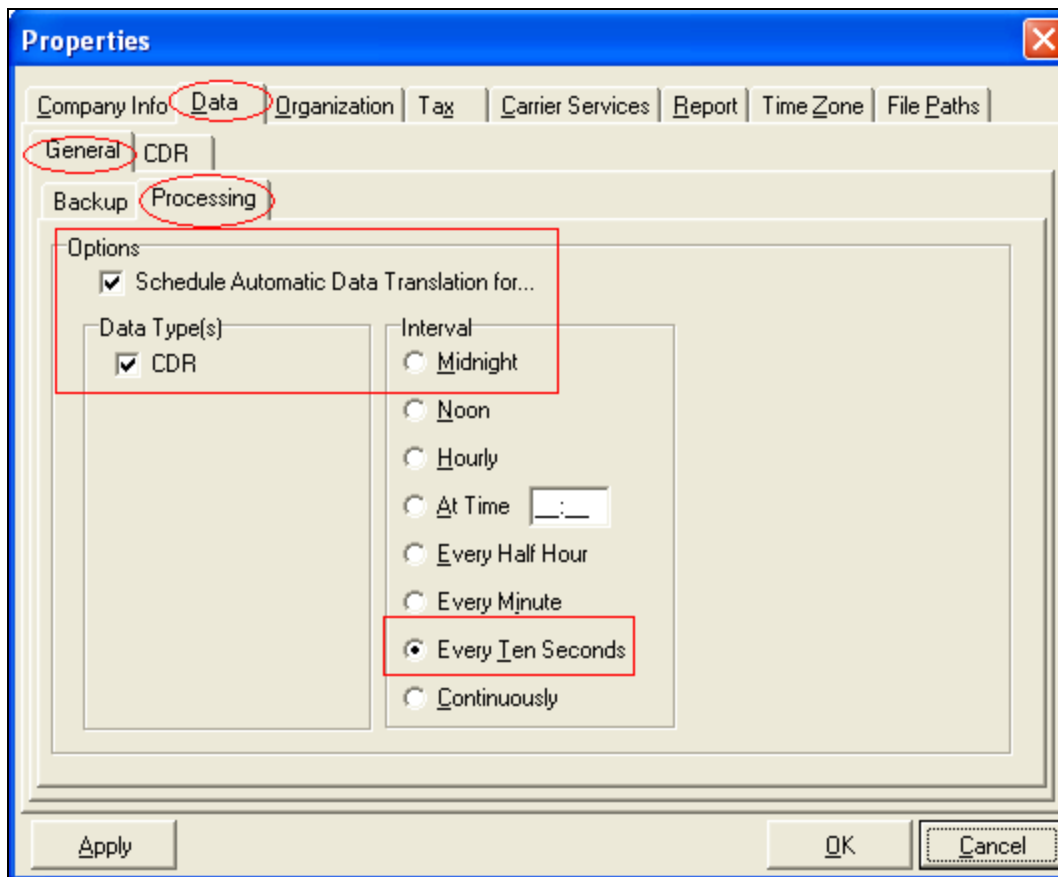




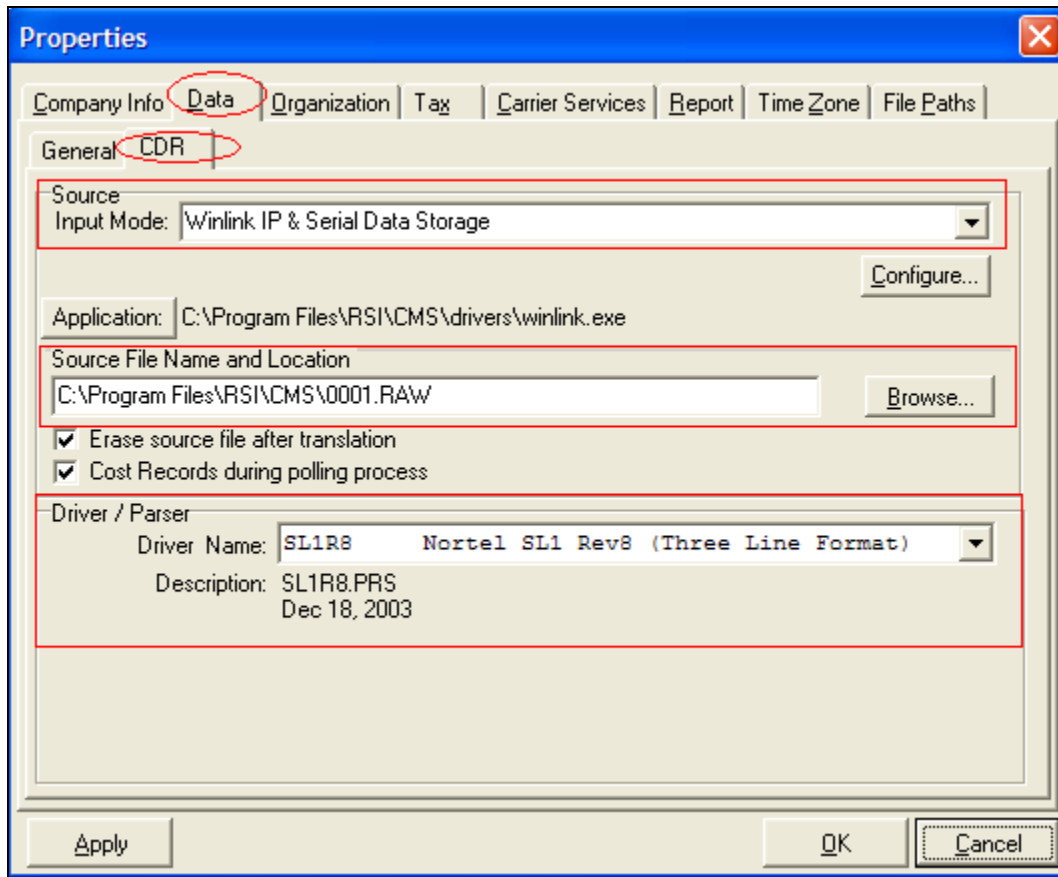
To configure format for the Shadow CMS, navigate to **File → Properties** as shown in the screen below.



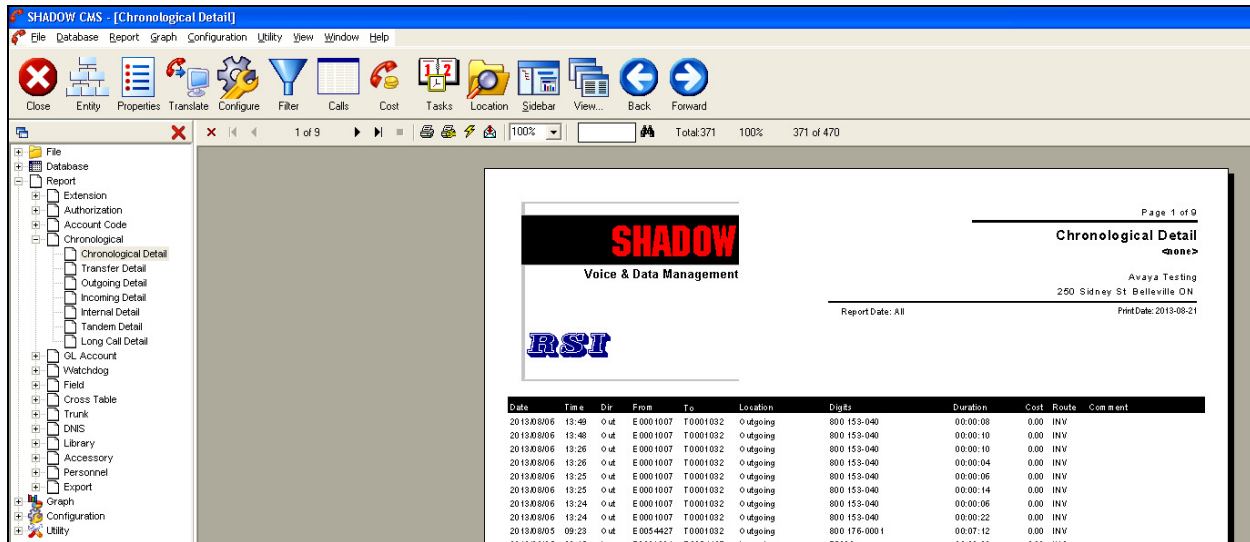
The **Properties** window is displayed as shown in the screen below. Set a schedule for the Shadow CMS to collect the raw CDR data by navigating to **Data → General → Processing** Tab. Under **Options** check the box for **Schedule Automatic Data Translation for...** and under **Data Type(s)** check the box for **CDR**. Select an **Interval** for collecting the raw CDR data. During compliance testing **Every Ten Seconds** was selected. Click **Apply**.



In the same **Properties** window, navigate to **Data** → **CDR** Tab. In the **Source** section select **Winlink IP & Serial Data Storage** from the drop down menu for **Input Mode**. Under **Source File Name and Location** browse to the path where the RAW file is stored on the server. In the **Driver/Parser** section, select **SL1R8 Nortel SL1 Rev8 (Three Line Format)** from the drop down menu for **Driver Name**. Retain default values for all other fields and click **Apply** to complete the configuration.



To run reports on the Shadow CMS, from the left navigation pane, expand the **Report** tab and select type of report, in this example is Chronological Detail. The Chronological Detail query window is displayed, click **OK** button on this window to launch the report (not shown). The Chronological Detail report is shown as screen below.



## 7. Verification Steps

The following are typical steps to verify the interoperability between the Shadow CMS 8.3 Application and Avaya CS 1000.

- Connect the serial cable between the Shadow CMS server and the CS 1000 system.
- Configure the Shadow CMS Application to retrieve call records via the serial connectivity.
- Place various call types such as: internal, outgoing, incoming, PSTN, charge account, authorization code and tandem calls from/to the CS 1000 system which has the CDR feature enabled and verify that the call records are sent to the Winlink Data Storage application.
- From the Shadow CMS server, start the collection process and generate the detail call record database.
- Generate the call accounting report.
- Verify that the report shows correctly information of call records such as Date/Time, Duration, Extension used, Report Dialed Number, Call Type, Auth Call Code, Charge Account ...etc.
- For serviceability disconnect the serial connection or close the Winlink Data Storage utility. Shadow CMS will not be able to collect the raw CDR data and any records generated at this time by the CS1000 are lost.

## 8. Conclusion

All of the executed test cases have passed and met the objectives outlined in **Section 2.1**. Shadow CMS version 4.3.0 is compliant tested with the Avaya Communication Server 1000 Release 7.6.

## 9. Additional References

Product documentation for Avaya CS 1000 products may be found at:

<https://support.avaya.com>

- [1] Avaya Communication Server 1000E Installation and Commissioning.
- [2] Avaya CS 1000 Co-resident Call Server and Signaling Server Fundamentals.
- [3] Avaya CS 1000 Element Manager System Reference – Administration.
- [4] Avaya Call Detail Recording Fundamentals Avaya Communication Server 1000.
- [5] Avaya Software Input Output Reference – Administration Avaya Communication Server 1000.

Product documentation for RSI Shadow CMS Application can be found at:

<http://www.telecost.com/>

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