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Avaya Solution & Interoperability Test Lab

Application Notes for Resource Software International Shadow Call Management Software with Avaya IP Office - Issue 1.0

Abstract

These Application Notes describe the configuration steps required for Resource Software International Shadow Call Management Software (CMS) to work with Avaya IP Office. Shadow CMS is an application that captures Simple Message Detail Records (SMDR) / Call Detail Records (CDR) from Avaya IP Office. Call activity can be reported by extension, trunk, and account code. Information in these Application Notes was obtained through compliance testing and additional technical discussions. Testing was conducted via the Developer*Connection* Program at the Avaya Solution and Interoperability Test Lab.

1. Introduction

These Application Notes describe the configuration steps required for RSI Shadow CMS to work with Avaya IP Office. This call accounting product is distributed under the brand name Shadow within the United States and TeleCOST outside of the United States. This software can price calls using most commercially available carrier rate plans subscribed to by customers. The Report Generator provides users with access to both detail and summary reports. Shadow CMS is multi-site ready, supporting up to 10,000 unique locations, each with up to 10,000 extensions. The software can price calls using up to five different carriers or rate plans. A built-in Job Scheduler permits automatic, unattended generation of reports at scheduled intervals (i.e., daily, weekly, monthly, etc.). Most environments can install this application on an existing non-dedicated computer.

Shadow CMS is an application that listens for CDR/SMDR records from Avaya IP Office. The Shadow CMS winlink data collection module is used to listen for CDR/SMDR information from Avaya IP Office. This module is normally installed on the same computer as the Shadow CMS Administration/Reporting module, but can be deployed on a different computer. Call activity can be reported by extension, trunk, and account code.

The configuration in **Figure 1** shows a network consisting of an Avaya IP Office 412, Avaya IP Office Manager/Voicemail Pro PC, RSI Shadow CMS, and Avaya 4600 Series IP Telephones connected to an Avaya C363T-PWR Converged Stackable Switch. Avaya 6400 Series Digital Telephones are connected to an Avaya IP400 Digital Station Module that connects to Avaya IP Office.

Avaya IP Office 412 has T1, PRI and analog trunks to the central office. Avaya IP Office is configured to generate CDR data for all inbound, outbound, and internal calls.

Avaya IP Office CDR is configured to send the CDR records to a user-configured IP address and port. The Shadow CMS winlink module is configured to listen on the port configured on IP Office for CDR data. Once winlink receives the raw CDR data from IP Office, Shadow CMS translates the CDR record, and then stores the record for later retrieval and/or reporting by the end user.

The tested configuration is shown in **Figure 1**.
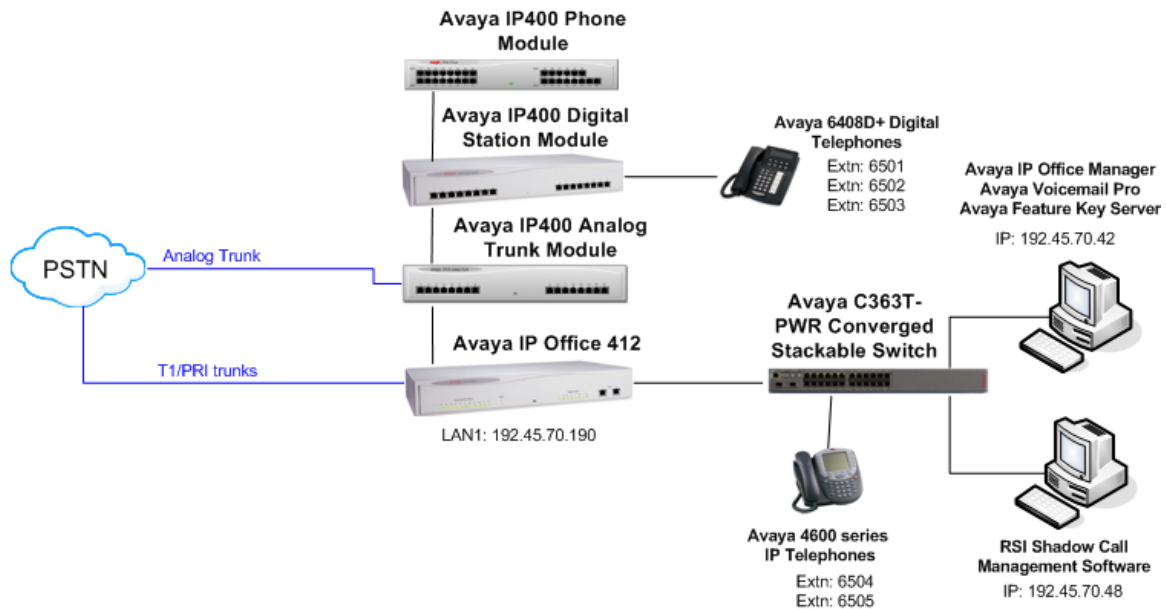
Figure 1 – Network Configuration Diagram

2. Equipment and Software Validated

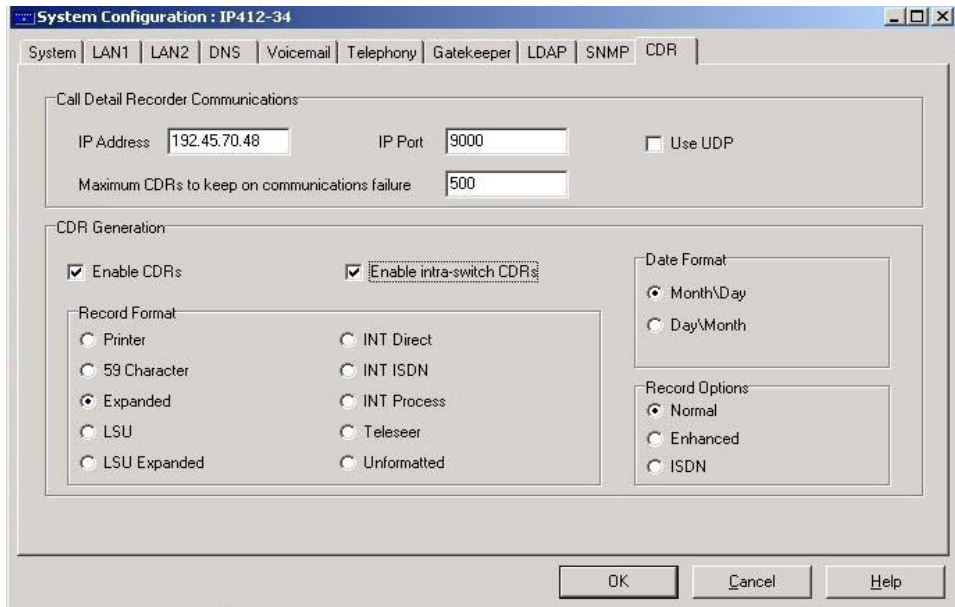The following products and software were used for the configuration in **Figure 1**:

Product	Software/Version
Avaya IP Office 412	3.1(48)
Avaya IP400 Office Analog Trunk Module	5.1(48)
Avaya IP400 Office Digital Station Module	5.1(48)
Avaya IP400 Office Phone Module	5.1(48)
Avaya IP Office Manager	5.1(48)
Avaya Voicemail Pro	3.1(16)
Avaya Feature Key Server	1.0
Avaya 4602SW IP Telephones	1.8
Avaya 4620SW IP Telephones	2.3
Avaya 6408D+ Digital Telephones	-
Avaya C363T-PWR Converged Stackable Switch	4.3.12
RSI Shadow Call Management Software	4.1.0
PCs for Avaya IP Office Manager, Avaya Voicemail Pro, and RSI Shadow CMS	Windows 2000 Professional Service Pack 4

Table 1 – Product and Software Version

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3. Configure Avaya IP Office

The configuration information provided in this section describes the steps required to set up Avaya IP Office to generate CDR data to a user-defined destination IP address and port.

For all other provisioning information, such as Avaya IP Office installation and configuration, etc., please refer to Avaya IP Office product documentation in reference [1].

Step	Description
	Login
1.	Log into the IP Office Manager PC and go to **Start → Programs → IP Office → Manager** to launch the Manager application. Log into the Manager application using the appropriate credentials.
2.	In the Manager window that appears, select **File → Open** to search for the IP Office system in the network.
3.	Log into IP Office using the appropriate login credentials to receive its configuration.
	Enable CDR
4.	In the Manager window, go to the Configuration Tree and double-click **System**. In the CDR tab of the System Configuration window that appears, check **Enable CDRs**, set **IP Address** to the IP address of the RSI Shadow CMS PC, set **IP Port** to the port that the RSI Shadow CMS will listen on, check **Enable intra-switch CDRs**, select **Expanded** for Record Format, select **Month\Day** for Date Format, select **Normal** for Record Options and click **OK**.
5.	In the Manager window, select **File → Save** to push the configuration to IP Office and wait for the system to update. This completes configuration of Avaya IP Office CDR.

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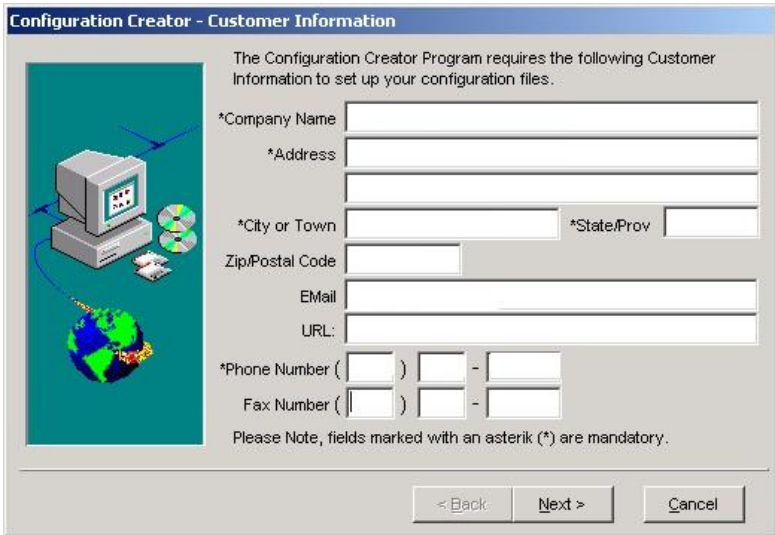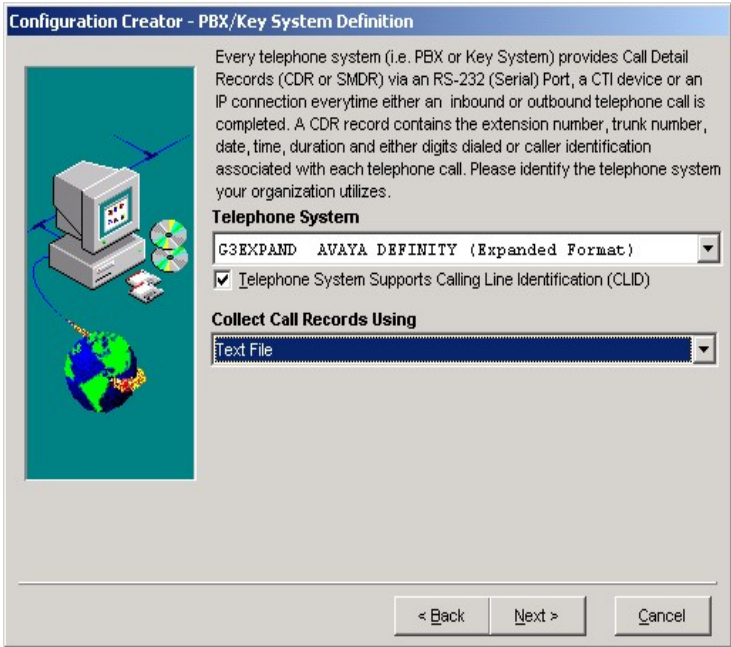©2006 Avaya Inc. All Rights Reserved.
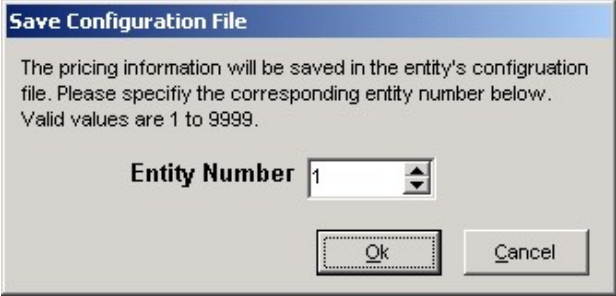4 of 17
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4. Configure RSI Shadow CMS

The configuration information provided in this section describes the steps required to configure RSI Shadow CMS to listen for CDR records from Avaya IP Office.

For all other provisioning information, such as software installation, installation of optional components, configuration of Shadow CMS for call accounting, report generation, etc., please refer to the RSI Shadow CMS product documentation in references [2] and [3].

The information provided in this section assumes the Shadow CMS has already been successfully installed and licensed on the PC.
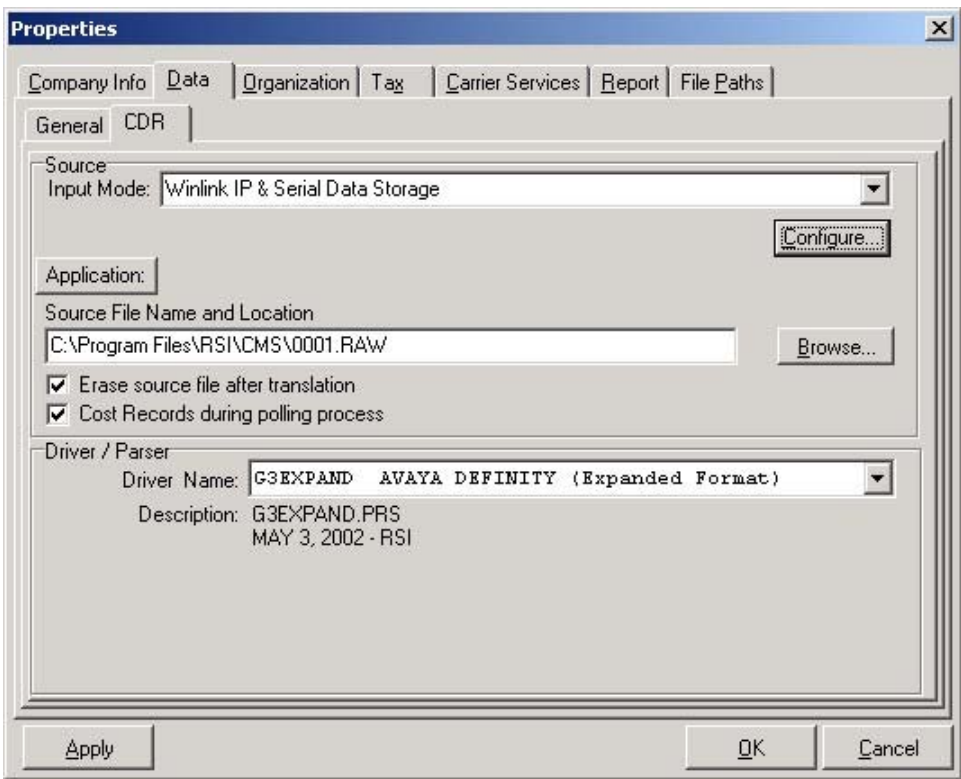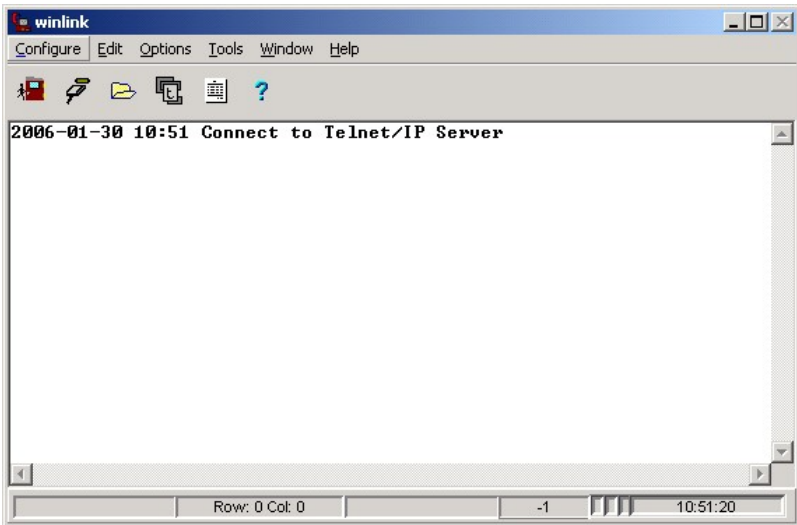
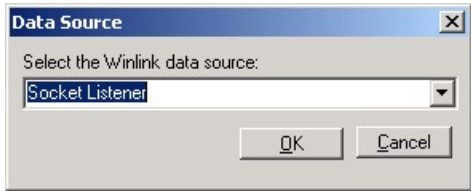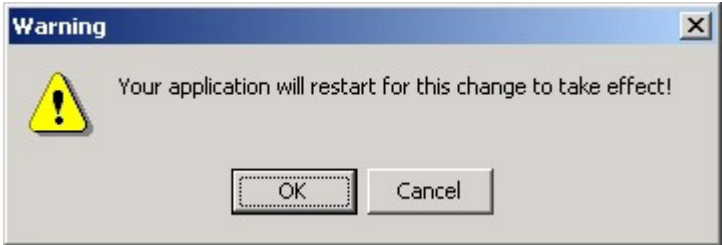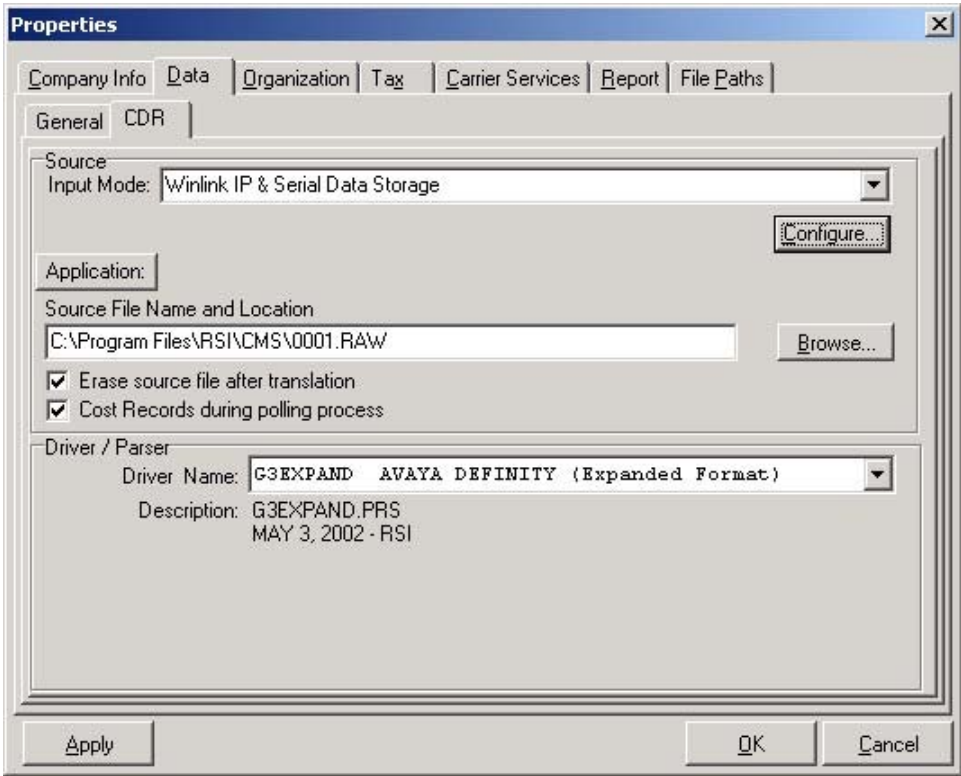| Step	Description
	Run Configuration Wizard
1.	Log into the Shadow CMS PC with the appropriate administrative credentials and navigate to **Start → Programs → RSI → CMS → Configuration Wizard**.
2.	In the RSI Call Accounting Configuration Creator window that appears, click **Next** to step through the configuration screens.

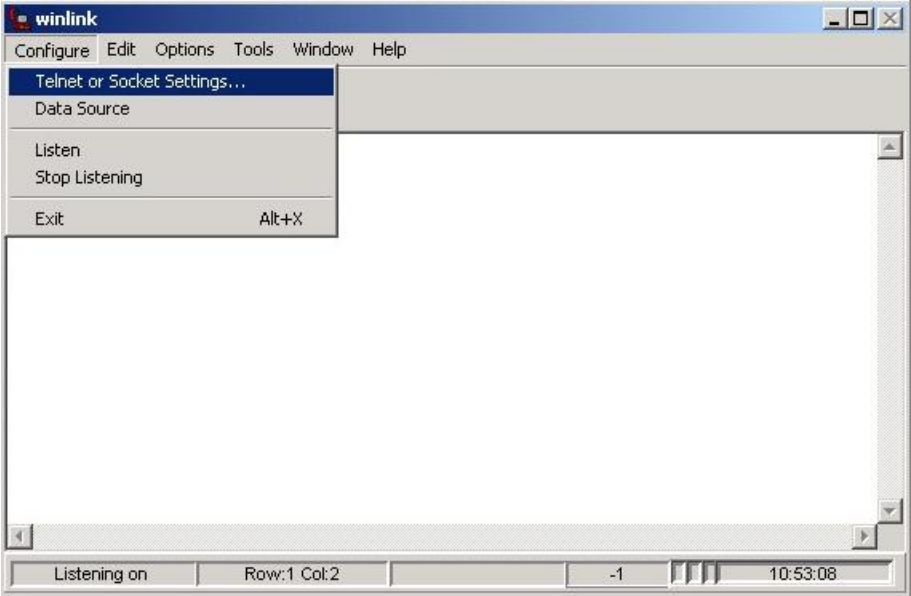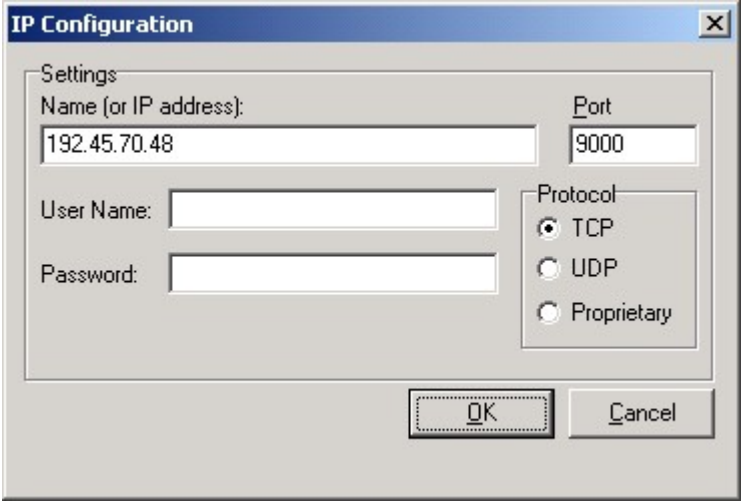| Step	Description
3.	In the Configuration Creator - Customer Information window, fill in the required information and click **Next**.
4.	In the Configuration Creator - PBX/Key System Definition window, select **G3EXPAND AVAYA DEFINITY (Expanded Format)** for Telephone System, check **Telephone System Supports Calling Line Identification (CLID)**, select **Text File** for Collect Call Records Using and click **Next**.

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Step	Description
5.	Continue to click on the **Next** button in the screens that follow modifying defaults as needed for local configuration until the Configuration Creator - Setup Completed window appears, then click **Finish**.
6.	In the Save Configuration File popup that appears, save the configuration to the entity number for this configuration such as Entity 0001 and click **Ok**. The Configuration Wizard will close after the **Ok** button is pressed.

Step	Description
	Configure CMS application
7.	Launch Shadow CMS by clicking **Start → Programs → CMS → CMS**.
8.	In the Entity popup that appears, select the entity number created in Step 6 and click **OK**.
9.	In the SHADOW Voice and Data Management CMS window that appears, select **File → Properties** in the pull-down menu.

Step	Description
10.	In the Properties window that appears, select the **Data → CDR** tab. Select **Winlink IP & Serial Data Storage** for Source Input Mode and select **G3EXPAND AVAYA DEFINITY (Expanded Format)** for Driver Name, and then click **Configure**.
11.	In the winlink window that appears, select **Configure → Data Source**.

Step	Description
12.	In the Data Source popup that appears, select **Socket Listener** for Select the Winlink data source and click **OK**.
13.	In the Warning popup that appears, click **OK**.
14.	In the Properties window, click **Configure** again to return to the winlink window.

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Step	Description
15.	In the winlink window, select **Configure → Telnet or Socket Settings…** from the pull-down menu.
16.	In the IP Configuration window that appears, set **Name (or IP address)** to the IP address of the Shadow CMS PC, **Port** to the port number configured in the IP Office CDR configuration form in Section 3, Step 4, and select **TCP** for Protocol. Click **OK**.
17.	In the winlink window, select **Configure → Listen** from the pull-down menu to put winlink into listen mode. This completes configuration of Shadow CMS.

5. Interoperability Compliance Testing

Interoperability compliance testing evaluated the ability of Shadow CMS to collect and process CDR records for various types of calls (inbound, outbound, internal, transfer, conference, etc.). A load test involving a high volume of calls was executed for one to two hours. Shadow CMS was configured to automatically retrieve, process, and store the CDR records for later report generation.

5.1. General Test Approach

The general test approach was to manually place intra-switch calls, inbound trunk and outbound trunk calls to and from telephones attached to Avaya IP Office and verify that Shadow CMS collects the CDR records and properly classifies and reports the attributes of the call. For the load test, a call generator was used to place 6080 calls over a two hour period with Shadow CMS configured to automatically retrieve, translate and store the CDR records for later report generation. Upon completion of the load test, the number of calls placed by the call generator matched the number of CDR records processed and reported by Shadow CMS.

5.2. Test Results

All feature and performance test cases that were executed passed. Shadow CMS successfully captured and processed call records from Avaya IP Office. For serviceability testing, Shadow CMS was able to resume CDR record collection for outages where Avaya IP Office was reset or lost network connectivity without requiring manual intervention. In cases where the Shadow CMS computer lost power or its network link, Shadow CMS was able to successfully resume collecting CDR records once it was back online but not for CDR records for calls that were placed during the outage. Since the current IP Office CDR implementation does not support Reliable Session Protocol, there is a chance of CDR record loss if there is a network failure.
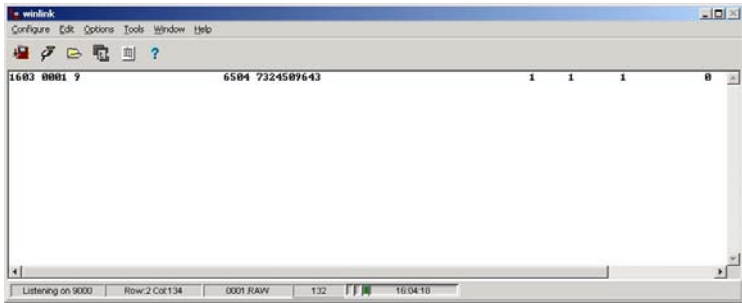
The following observations were made during testing:
- **Note1** - Shadow CMS reports calls as Inbound, Outbound, or Internal. It does not identify calls participating in either a conference call, transfer or going to voicemail.

- **Note2** – CDR records for internal call transfer do not match call-splitting behavior described in IP Office documentation. For example, when A (x6501) calls B (x6502), B transfers the call to C (x6504), the IP Office call splitting documentation states that two CDR records will be generated with the first one listing A as the calling number and B as the dialed number, and the second one listing A as the calling number and C as the dialed number. The CDR records generated list A as the calling number and B as the dialed number for the first record (correct), and B as the calling number and C as the dialed number (incorrect) for the second record.
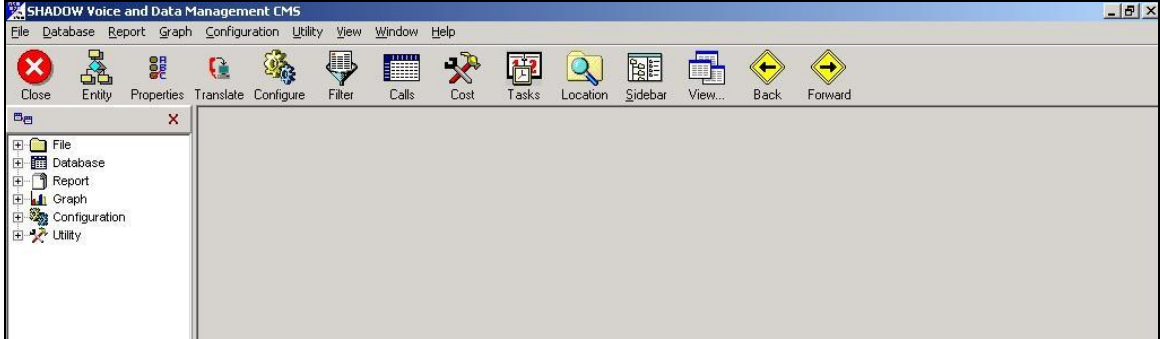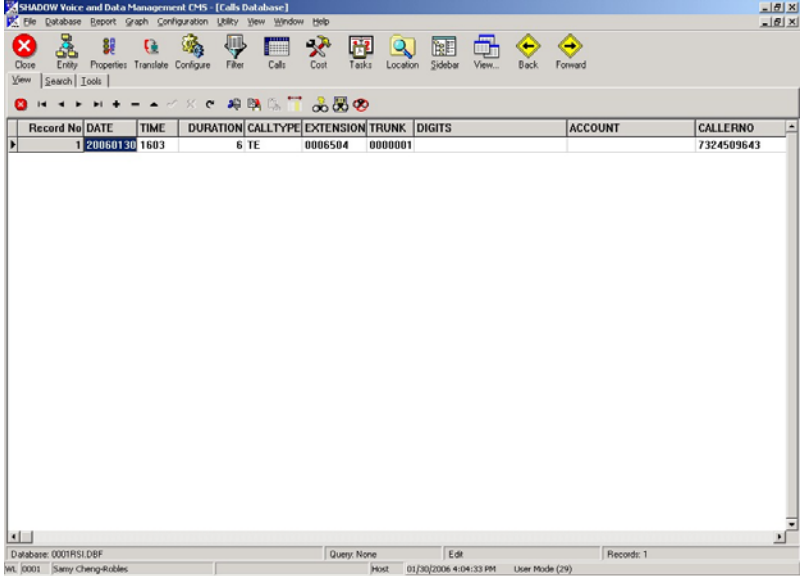 **Status:** Issue #BugDB00027272 was filed with the IP Office team.
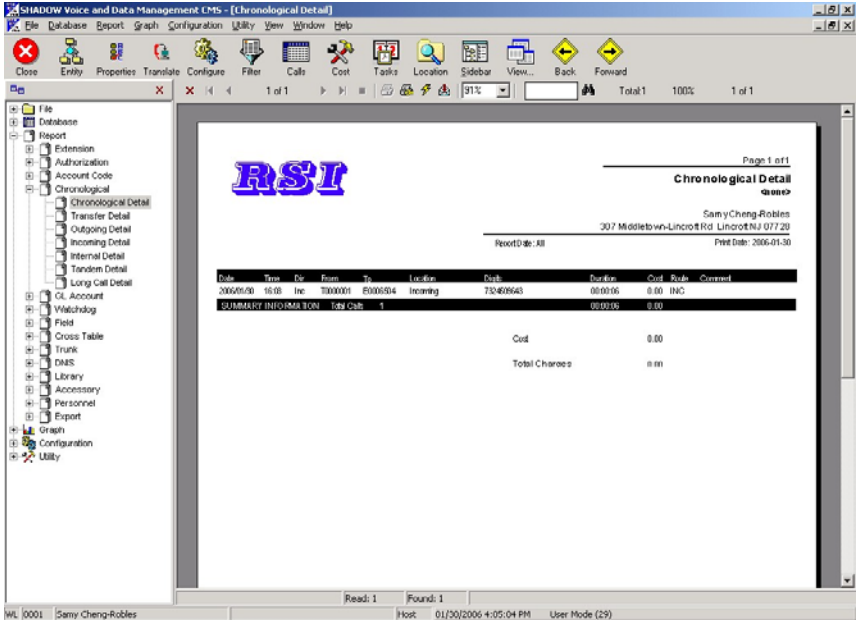
- **Note3** – CDR records for calls answered by Voicemail show Voicemail as the answering extension. Shadow CMS translates and reports calls answered by Voicemail as answered by extension 0000000.
  Status: RSI has been informed of this behavior.

- **Note4** – CDR records for calls to retrieve voicemail shows '?<vm extension number>' as destination number, e.g., '?6501'. Shadow CMS strips non-numeric values from the calling/destination number so that the report for this CDR record will show extension x6501 calling x6501.
  Status: RSI has been informed of this behavior.

- **Note5**: IP Office CDR does not provide DNIS information in generated CDR records.

6. Verification Steps

The following steps may be used to verify the configuration:

Step	Description
1.	Place a call to a telephone attached to Avaya IP Office, answer the call, and drop the call after a few seconds.
	To view raw CDR record received by Shadow CMS, look at the winlink window:
2.	A CDR record such as the one listed below will appear in the winlink window after the call is dropped.

Step	Description
	To manually translate the CDR record into the CMS call records database:
3.	In the SHADOW Voice and Data Management CMS window, select **File → Translate** in the pull-down menu to manually translate the CDR record.
4.	In the Translate Data window that appears, click **OK**. **Note**: Shadow CMS can be configured to automatically translate CDR data at user-defined time intervals. Please refer to the Shadow CMS documentation for information on how to configure this.
	To view CDR record parsed and stored by Shadow CMS into its database:
5.	In the SHADOW Voice and Data Management CMS window, select **Database → Calls Database** to view the incoming call parsed by Shadow CMS.

Step	Description
	To view CDR record in a sample Shadow CMS report:
6.	In the SHADOW Voice and Data Management CMS window, select **Report →** **Chronological → Chronological Detail** to view a report for the incoming call.

7. Support

Technical support for Shadow CMS can be obtained by contacting Resource Software International Systems, Ltd. at:

- Phone: 800.891.6014 / 905.576.4575
- E-mail: support@telecost.com
- Web: www.telecost.com

8. Conclusion

These Application Notes describe the steps for configuring the RSI Shadow CMS to retrieve SMDR/CDR data from Avaya IP Office. All test cases completed successfully.

9. References

The following Avaya product documentation can be found at http://support.avaya.com:

[1] Avaya IP Office 3.1 Installation Manual, Issue 13l (23rd January 2006)

The following Resource Software International product documentation is installed to the hard-drive during the CMS installation process:

[2] CMS Startup Guide
[3] CMS User Guide