Avaya Solution & Interoperability Test Lab

Application Notes for the Mind CTI PhonEX ONE with Avaya Communication Manager - Issue 1.0

Abstract

These Application Notes describe the configuration steps required for the Mind CTI PhonEX ONE call accounting software to successfully interoperate with Avaya Communication Manager.

PhonEX ONE is a call accounting software that interoperates with Avaya Communication Manager over a Call Detail Recording link running the Avaya Reliable Session Protocol. Call records can be generated for various types of calls. The Mind CTI PhonEX ONE collects, and processes the call records. Serviceability and performance tests were conducted to assess the reliability of the solution.

Information in these Application Notes has been 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

The overall objective of this interoperability compliance testing is to verify that the Mind CTI PhonEX ONE call accounting software can interoperate with Avaya Communication Manager 3.1. PhonEX ONE connects to Avaya Communication Manager over the local or wide area network using a Call Detail Record (CDR) link running the Avaya Reliable Session Protocol (RSP) in a passive server mode. Avaya Communication Manager is configured to send Call Detail Recording (CDR) data to PhonEX ONE using a specific TCP/IP port. Serviceability and performance tests were conducted to assess the reliability of the solution.

Mind CTI provides call accounting systems for the enterprise market. PhonEX ONE, based on Microsoft.NET technology and Microsoft SQL database, is an enterprise billing, accounting solution that provides tracking and reporting of voice and data across traditional telephony networks and IP networks. PhonEX ONE is designed with a modular architecture, residing in one or several servers, according to the size of the enterprise. Mind CTI PhonEX ONE can collect CDR records from multiple Avaya Communication Managers. The CDR collection was verified for two Avaya Communication Managers during the compliance testing.

Figure 1 illustrates the network configuration used to verify the compliance testing. The configuration details, provided in these Application Notes, focus on the interfaces between Avaya Communication Manager and the Mind CTI PhonEX ONE. **Figure 1** shows two separate communication systems each running Avaya Communication Manager on separate media servers. Site A is comprised of Avaya S8700 Media Servers and a G650 Media Gateway, and has connections to the following: Avaya 4600 Series IP Telephones, an Avaya Digital Telephone, a PRI trunk to the PSTN, and Mind CTI PhonEX ONE. Site B is comprised of an Avaya S8300 Media Server with a G350 Media Gateway, and has connections to Avaya 4600 Series IP Telephones and an Avaya Digital Telephone. Site A and B are networked via a H.323 IP trunk.

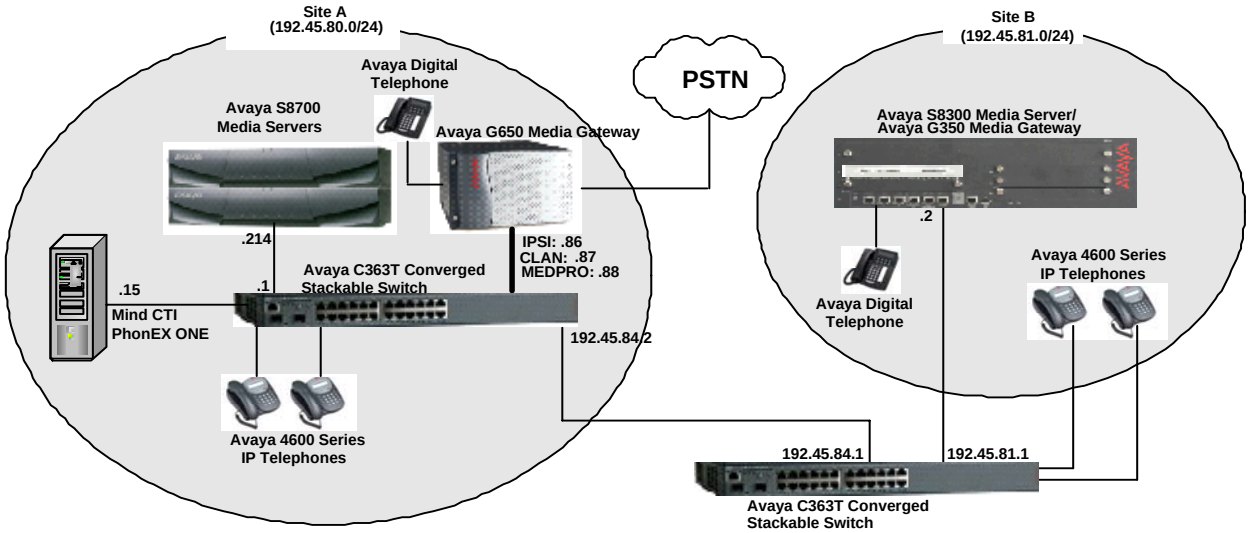


Figure 1. Test configuration of PhonEX ONE with Avaya Communication Manager

2. Equipment and Software Validated

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

Equipment		Software
Avaya S8700 Media Server		Avaya Communication Manager 3.1 (R013x.01.0.628.6)
Avaya G650 Media Gateway		
	TN2312BP IPSI TN799DP CLAN TN2302AP MEDPRO	HW11 FW030 HW20 FW017 HW01 FW108
Avaya S8300 Media Server		Avaya Communication Manager 3.1 (R013x.01.0.628.6)
Avaya G350 Media Gateway		25.23.0
Avaya 4600 Series IP Telephone		
	4620 4625	2.3 2.5
Avaya Digital Telephones		-
Avaya C363T Converged Stackable Switch (Layer 3)		4.5.14
Mind CTI PhonEX ONE on Windows Server 2003		2.10

3. Configure Avaya Communication Manager

This section provides the procedures for configuring the Call Detail Recording (CDR) feature in Avaya Communication Manager. All configuration changes in Avaya Communication Manager are performed through the System Access Terminal (SAT). These steps describe the procedure used for the Avaya S8700 Media Server. All steps are the same for the other media servers unless otherwise noted. Avaya Communication Manager will be configured to generate CDR records and send CDR records to the IP address of the Mind CTI PhonEX ONE, using RSP over TCP/IP. For the Avaya S8700 Media Server, the CDR link originates at the IP address of the C-LAN board, and terminates at PhonEX ONE. For the Avaya S8300 Media Server, the CDR link originates at the IP address of the local media server (with node-name – "procr") and terminates at PhonEX ONE.

The highlights in the following screens indicate the parameter values used during the compliance test.

Use the **change node-names ip** command to create a new node name, for example, **phonexone**. This node name is associated with the IP Address of PhonEX ONE. The CLAN entry on this form was previously administered.

```
change node-names ip                                            Page   1 of   1
                                   IP NODE NAMES
    Name                IP Address            Name                IP Address
phonexone             192.45 .80 .15                              .   .   .
CLAN                  192.45 .80 .87                              .   .   .
MEDPRO                192.45 .80 .88                              .   .   .
S8300                 192.45 .81 .11                              .   .   .
default               0  .0  .0  .0                               .   .   .
procr                 192.45 .80 .214                             .   .   .
```

Use the **change ip-services** command to define the CDR link to use RSP over TCP/IP. To define a primary CDR link, the following information should be provided:

- Service Type: **CDR1** [If needed, a secondary link can be defined by setting Service Type to CDR2.]
- Local Node: **CLAN** [For the Avaya S8700 Media Server, the Local Node is set to the node name of the C-LAN board. If the Avaya S8300 Media Server was utilized, set the Local Node to "procr".]
- Local Port: **0** [The Local Port is fixed to 0 because Avaya Communication Manager initiates the CDR link.]
- Remote Node: **phonexone** [The Remote Node is set to the node name defined previously.]
- Remote Port: **9000** [The Remote Port may be set to a value between 5000 and 64500 inclusive and must match the port configured in PhonEX ONE.]

```
change ip-services                                              Page   1 of   4

                                   IP SERVICES
 Service      Enabled      Local        Local        Remote       Remote
  Type                     Node         Port         Node         Port
CDR1                   CLAN             0        phonexone        9000
```

On Page 3, enable the Reliable Session Protocol (RSP) for the CDR link by setting the Reliable Protocol field to **y**.

```
change ip-services                                              Page   3 of   4

                              SESSION LAYER TIMERS
  Service      Reliable  Packet Resp   Session Connect  SPDU  Connectivity
   Type        Protocol     Timer        Message Cntr    Cntr     Timer

 CDR1            y          30                3           3         60
```

Enter the **change system-parameters cdr** command from the SAT to set the parameters for the type of calls to track and the format of the CDR data. The example below shows the settings used during the compliance test.

- CDR Date Format: **month/day**
- Primary Output Format: **customized**
- Primary Output Endpoint: **CDR1**

The remaining parameters define the type of calls that will be recorded and what data will be included in the record. See reference [2] for a full explanation of each field. The test configuration used some of the more common fields described below.

- Intra-switch CDR: **y** [Allows call records for internal calls involving specific stations. These stations must be specified in the intra-switch cdr form.]
- Record Outgoing Calls Only?: **n** [Allows incoming trunk calls to appear in the CDR records along with the outgoing trunk calls.]
- Outg Trk Call Splitting?: **y** [Allows a separate call record for any portion of an outgoing call that is transferred or conferenced.]
- Inc Trk Call Splitting?: **y** [Allows a separate call record for any portion of an incoming call that is transferred or conferenced.]

When the customized format is selected for the Primary Output Format field, the CDR SYSTEM PARAMETERS form adds a second page.

```
change system-parameters cdr                                      Page   1 of   1
                            CDR SYSTEM PARAMETERS

 Node Number (Local PBX ID): 1                       CDR Date Format: month/day
      Primary Output Format: customized    Primary Output Endpoint: CDR1
    Secondary Output Format:
           Use ISDN Layouts? n
       Use Enhanced Formats? n      Condition Code 'T' For Redirected Calls? n
Modified Circuit ID Display? n                   Remove # From Called Number? n
                   Record Outgoing Calls Only? n            Intra-switch CDR? y
  Suppress CDR for Ineffective Call Attempts? y     Outg Trk Call Splitting? y
      Disconnect Information in Place of FRL? n       Outg Attd Call Record? y
                                                    Interworking Feat-flag? n
 Force Entry of Acct Code for Calls Marked on Toll Analysis Form? n
                                    Calls to Hunt Group - Record: member-ext
Record Called Vector Directory Number Instead of Group or Member? n

     Inc Trk Call Splitting? y                   Inc Attd Call Record? y
  Record Non-Call-Assoc TSC? n            Call Record Handling Option: warning
      Record Call-Assoc TSC? n   Digits to Record for Outgoing Calls: dialed
   Privacy - Digits to Hide: 0                CDR Account Code Length: 6
```

On Page 2 of the CDR SYSTEM PARAMETERS form, add specific **Data Item** and **Length** of the data items. The following screen shows a sample customized format.

```
change system-parameters cdr                                          Page   2 of   2
                              CDR SYSTEM PARAMETERS

     Data Item - Length          Data Item - Length          Data Item - Length
 1: time              - 4   17: node-num         - 2   33:                  -
 2: duration          - 4   18: ins              - 3   34:                  -
 3: cond-code         - 1   19: ixc-code         - 3   35:                  -
 4: code-dial         - 4   20: bcc              - 1   36:                  -
 5: code-used         - 4   21: ma-uui           - 1   37:                  -
 6: dialed-num        - 15  22: res_flag         - 1   38:                  -
 7: calling-num       - 10  23: tsc_ct           - 4   39:                  -
 8: acct-code         - 15  24: tsc_flag         - 1   40:                  -
 9: auth-code         - 7   25: space            - 1   41:                  -
10: space             - 2   26: date             - 6   42:                  -
11: frl               - 1   27: space            - 1   43:                  -
12: in-crt-id         - 3   28: vdn              - 5   44:                  -
13: out-crt-id        - 3   29: return           - 1   45:                  -
14: feat-flag         - 1   30: line-feed        - 1   46:                  -
15: attd-console      - 2   31:                  -     47:                  -
16: in-trk-code       - 4   32:                  -     48:                  -

                                 Record length = 111
```

If the Intra-switch CDR field is set to **y** on Page 1 of the CDR SYSTEM PARAMETERS form, then use the **change intra-switch-cdr** command to define the extensions that will be subject to call detail records. In the Assigned Members field, enter the specific extensions whose usage will be tracked with the CDR records.

```
change intra-switch-cdr                                               Page   1 of   2
                              INTRA-SWITCH CDR

Assigned Members:   4    of 5000   administered
  1: 22001     19:          37:          55:          73:          91:
  2: 22002     20:          38:          56:          74:          92:
  3: 22005     21:          39:          57:          75:          93:
  4: 22007     22:          40:          58:          76:          94:
  5:           23:          41:          59:          77:          95:
  6:           24:          42:          60:          78:          96:
  7:           25:          43:          61:          79:          97:
```

For each trunk group for which CDR records are desired, verify that CDR reporting is enabled. Use the **change trunk-group *n*** command, where ***n*** is the trunk group number, to verify that the CDR Reports field is set to **y**. This applies to all types of trunk groups.

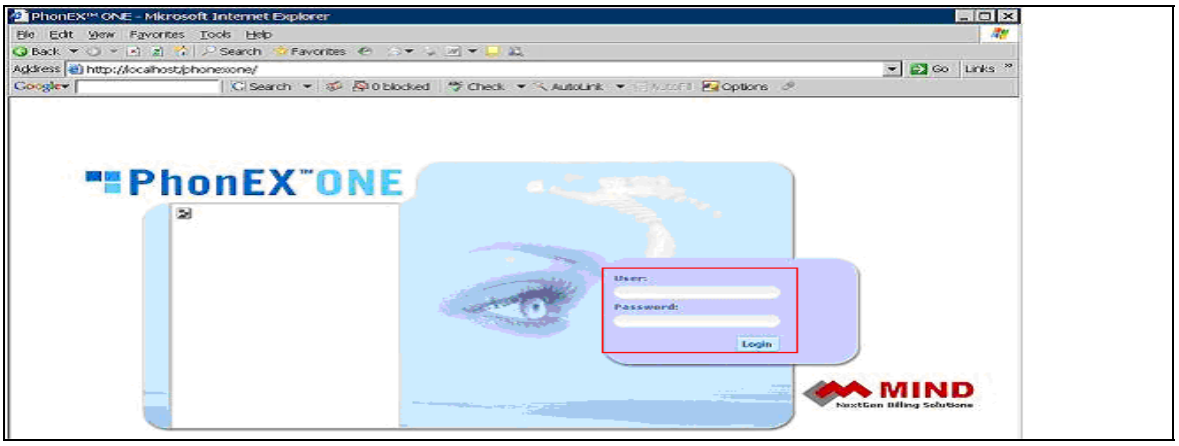
```
change trunk-group 80                                          Page   1 of  20
                                TRUNK GROUP

Group Number: 80                   Group Type: isdn          CDR Reports: y
  Group Name: OUTSIDE CALL                 COR: 1        TN: 1        TAC: 103
   Direction: two-way        Outgoing Display? y         Carrier Medium: PRI/BRI
 Dial Access? y                Busy Threshold: 255       Night Service:
Queue Length: 0
Service Type: tie                    Auth Code? n            TestCall ITC: rest
                           Far End Test Line No:
TestCall BCC: 4
TRUNK PARAMETERS
         Codeset to Send Display: 6     Codeset to Send National IEs: 6
        Max Message Size to Send: 260   Charge Advice: none
  Supplementary Service Protocol: a     Digit Handling (in/out): enbloc/enbloc

            Trunk Hunt: cyclical
                                                     Digital Loss Group: 13
Incoming Calling Number - Delete:     Insert:                  Format:
              Bit Rate: 1200         Synchronization: async    Duplex: full
 Disconnect Supervision - In? y  Out? y
 Answer Supervision Timeout: 0
```

4. Configure PhonEX ONE

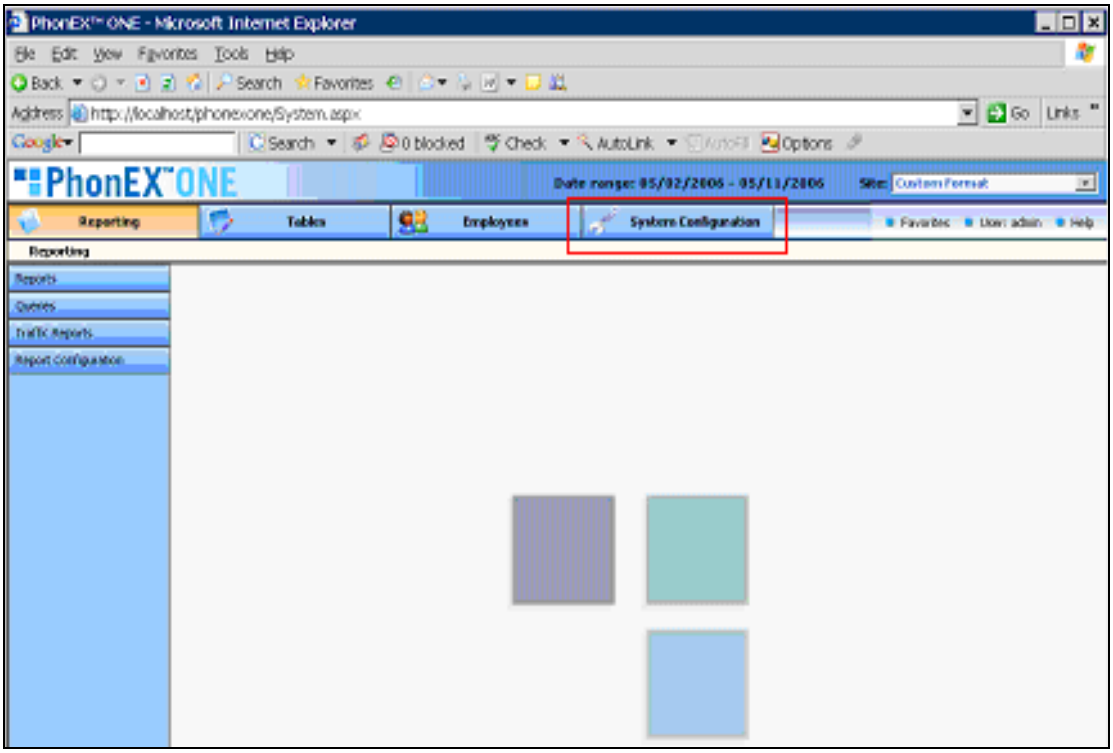
This section describes the configuration of the Mind CTI PhonEX ONE. PhonEX ONE connects to Avaya Communication Manager via RSP over the TCP/IP port. CDR data is sent from Avaya Communication Manager into PhonEX ONE where the raw data is transformed into call records, which are then immediately available for reporting.

4.1. Creating a Site and Data Source

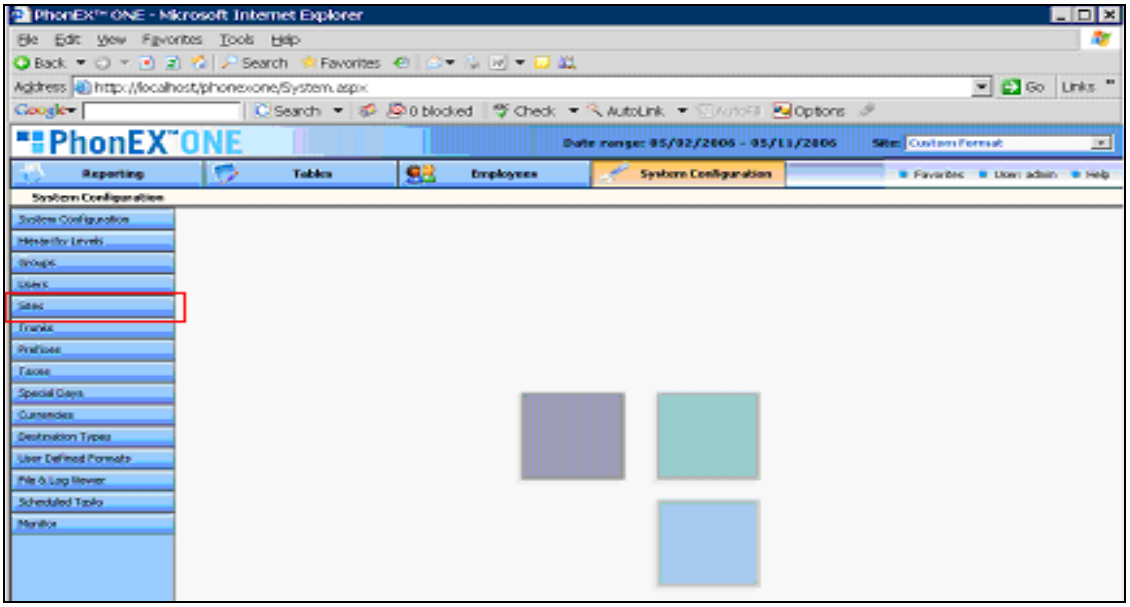
From the PC installed with PhonEX ONE call accounting software, enter http://<IP address of the PhonEX ONE server>/phonexone in the URL to access the Login page. From the Login page, shown below, provide appropriate credentials and click the **Login** button to access the Reporting page.



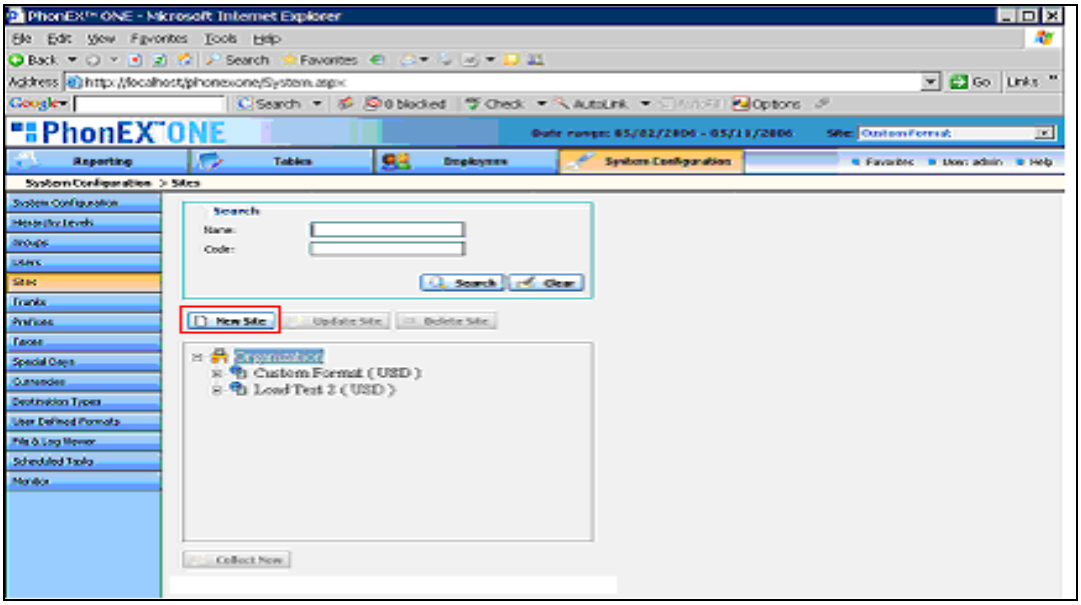
The following displays the Reporting page. To begin configuration of a particular site, click the **System Configuration** button from the top menu.



The following displays the System Configuration page. From the System Configuration page, click the **Sites** button in the left pane to access the Site page.



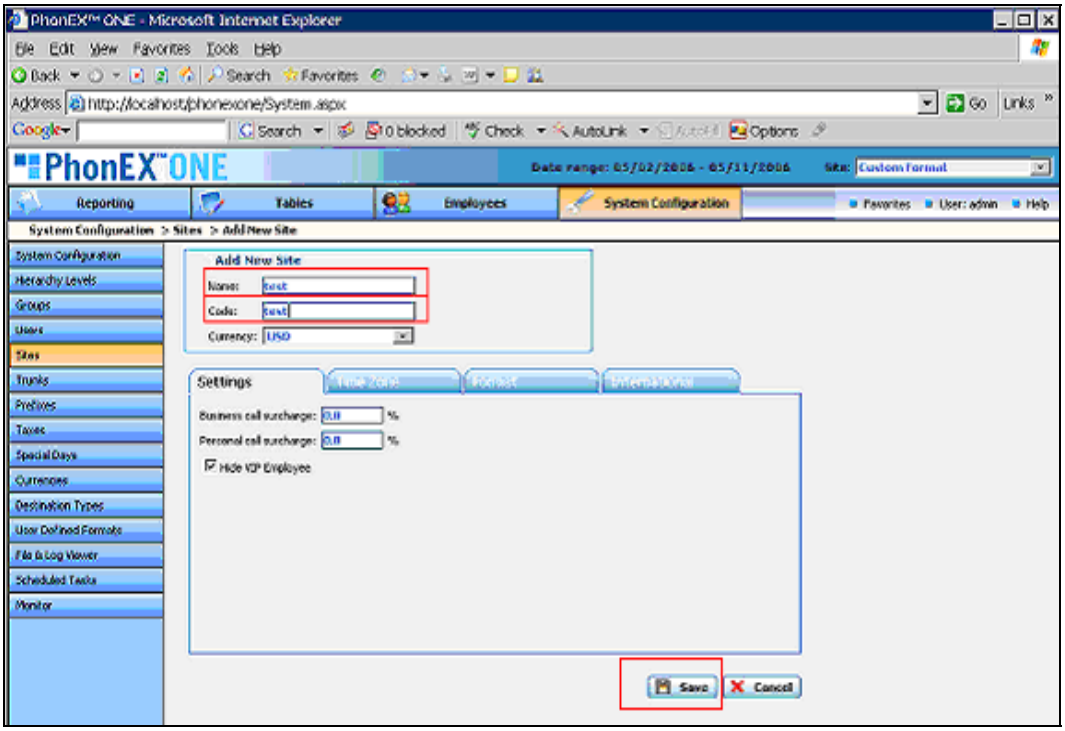
From the System Configuration → Sites page, click the **New Site** button to configure a site.



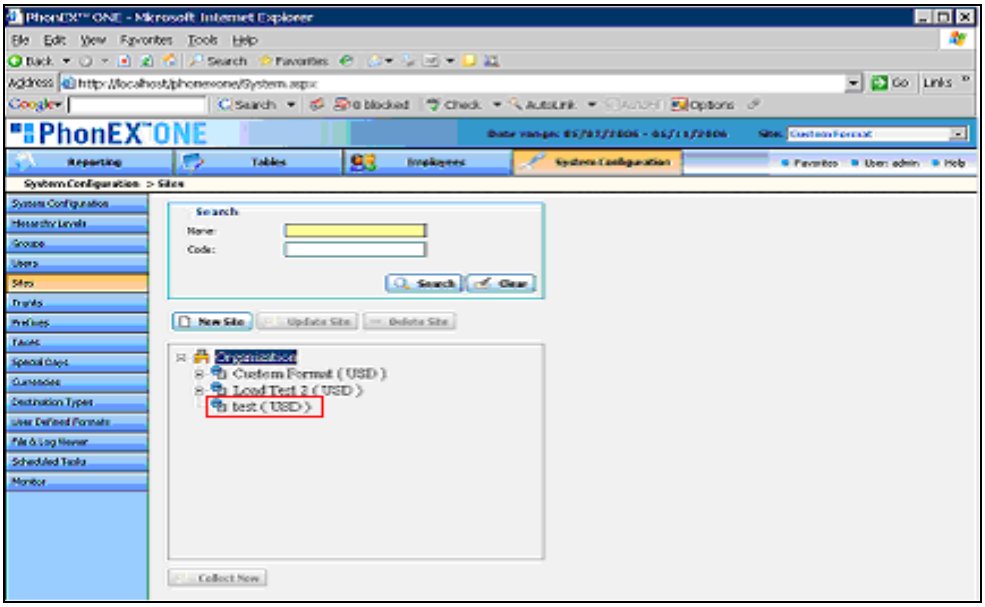
From the System Configuration → Sites → Add New Site page and provide the information on the following fields:

- Site Name
- Site Code

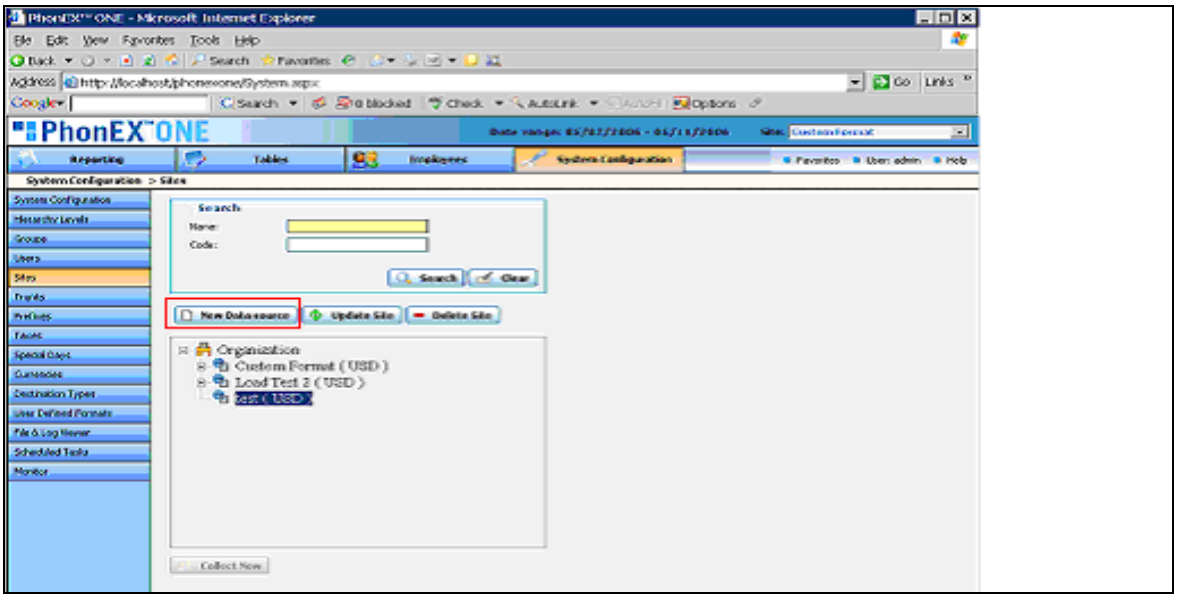
Click the **Save** button to add the site.



When the addition of the site is saved, the screen will redirect to the System Configuration → Sites page. In the System Configuration → Sites page, the new site should be visible for the configuration. Click the New Site that was just created.



Click the **New Data source** button to create a data source for the site.

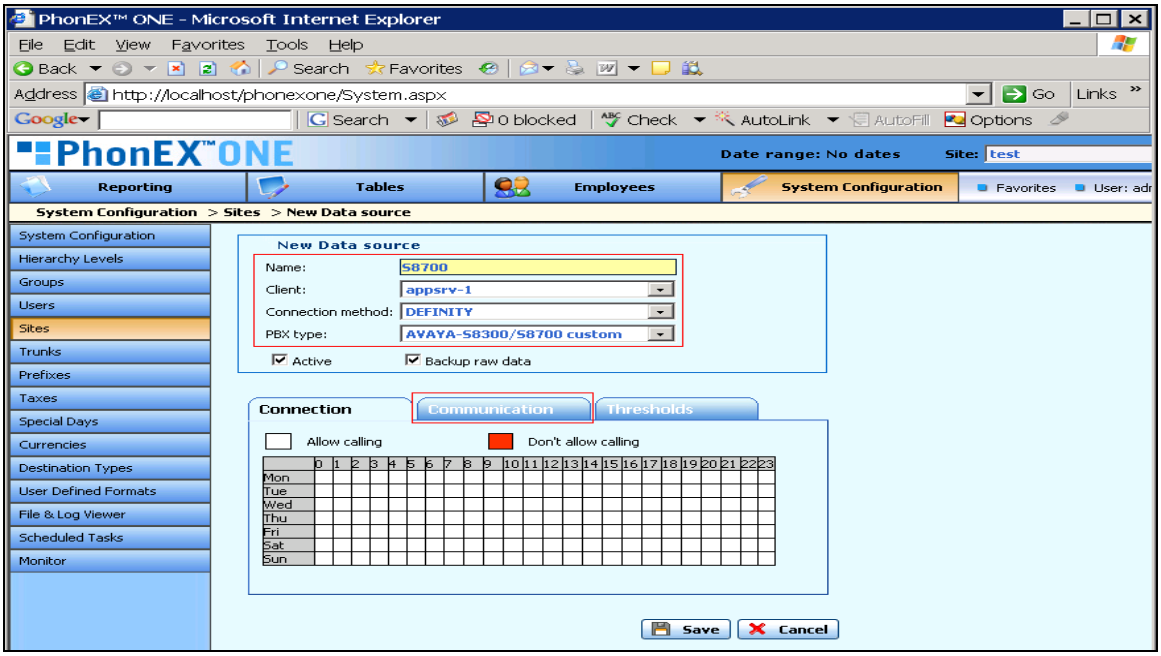


From the System Configuration → Site → New Data source page, provide the following information:

- Name – data source name.
- Client – host name of the machine, on which PhonEX ONE is installed.
- Connection method – select **Definity** using the drop-down menu.

- PBX type – select **AVAYA-S8300/S8700 custom** using the drop-down menu.

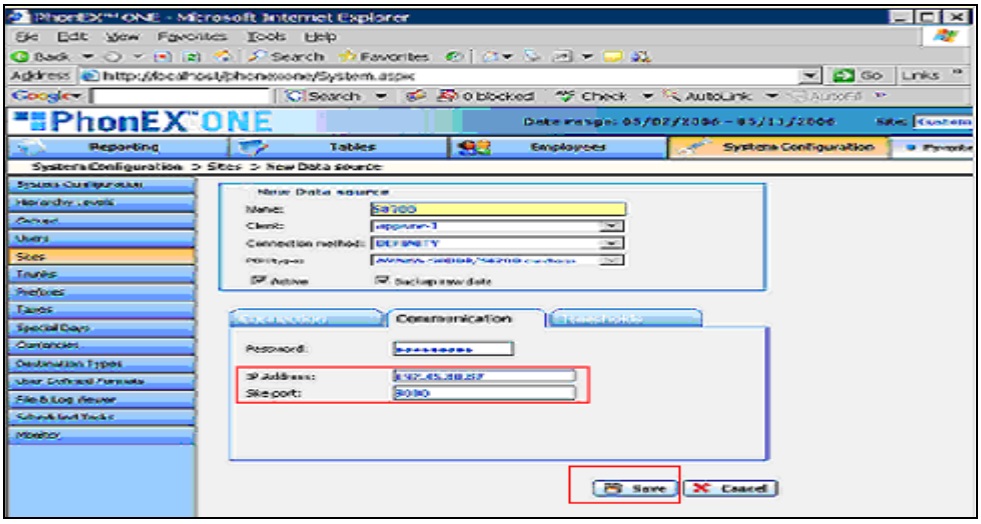
Click the **Communication** button after the configuration is completed.



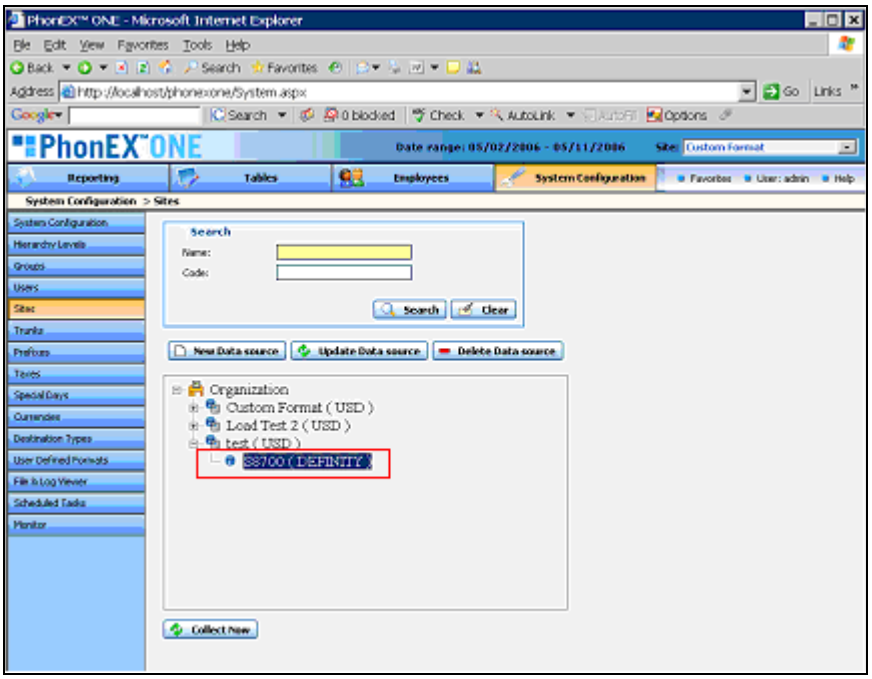
After the Communication button is clicked, the following screen will be displayed. In this page, provide the following information:

- IP Address – IP Address of the C-LAN board in Avaya Communication Manager.
- Site port – This port number must match with the Remote Port number configured on Page 1 of the IP SERVICES form in Avaya Communication manager.

After completion, click the **Save** button.

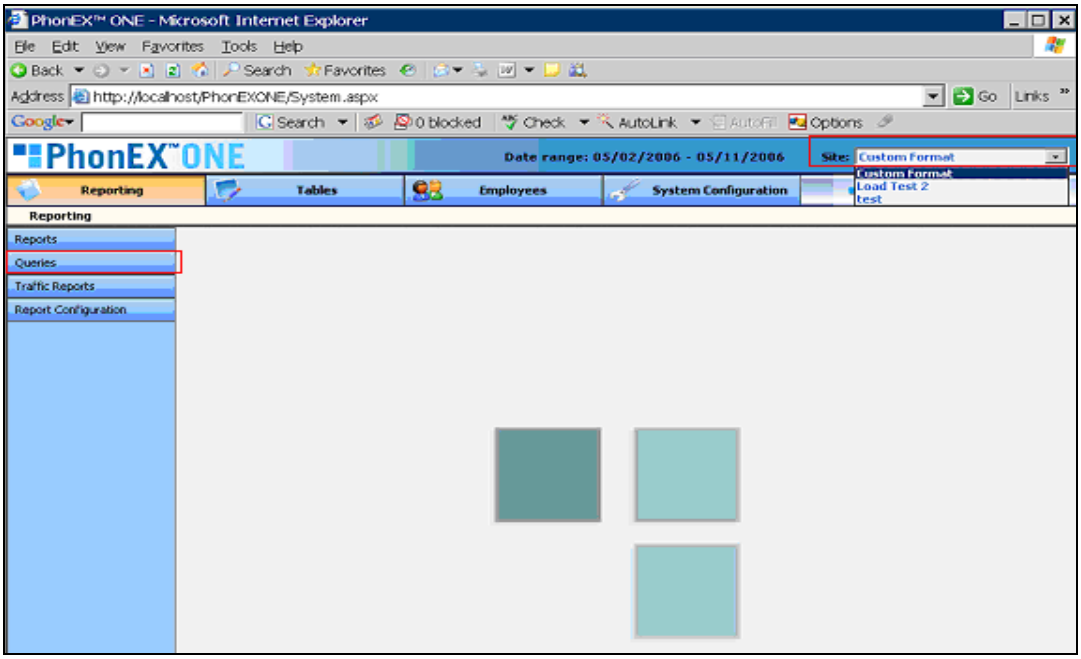


After the saving of the configuration is completed, the screen will redirect to the System Configuration → Sites page. The newly created data source becomes visible as shown below.

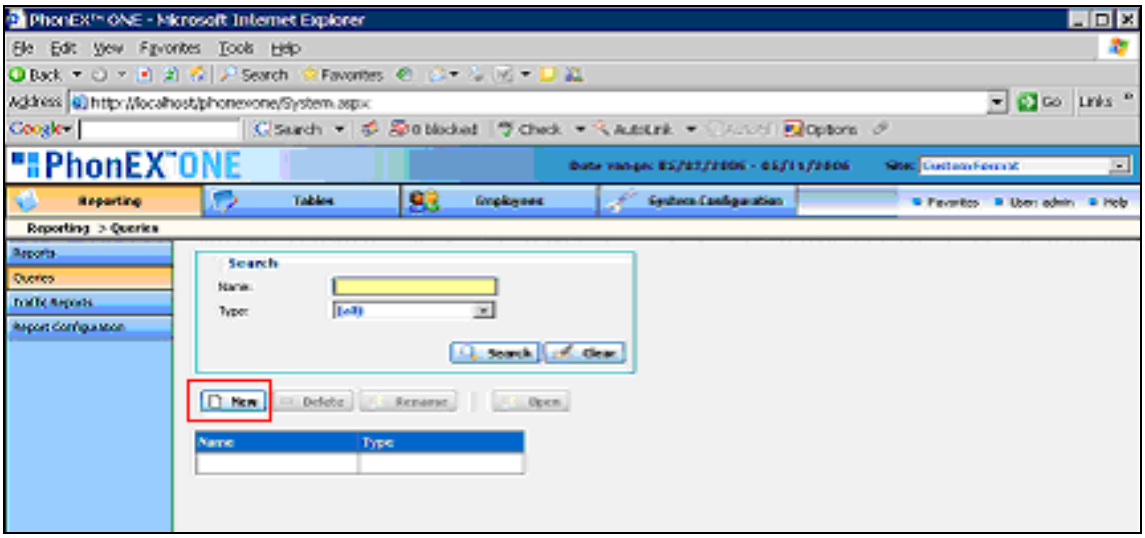


4.2. Generating CDR Reports

From the Reporting page, select the Site for which the CDR records will be generated by using the drop-down menu. Click the **Queries** button from the left pane.

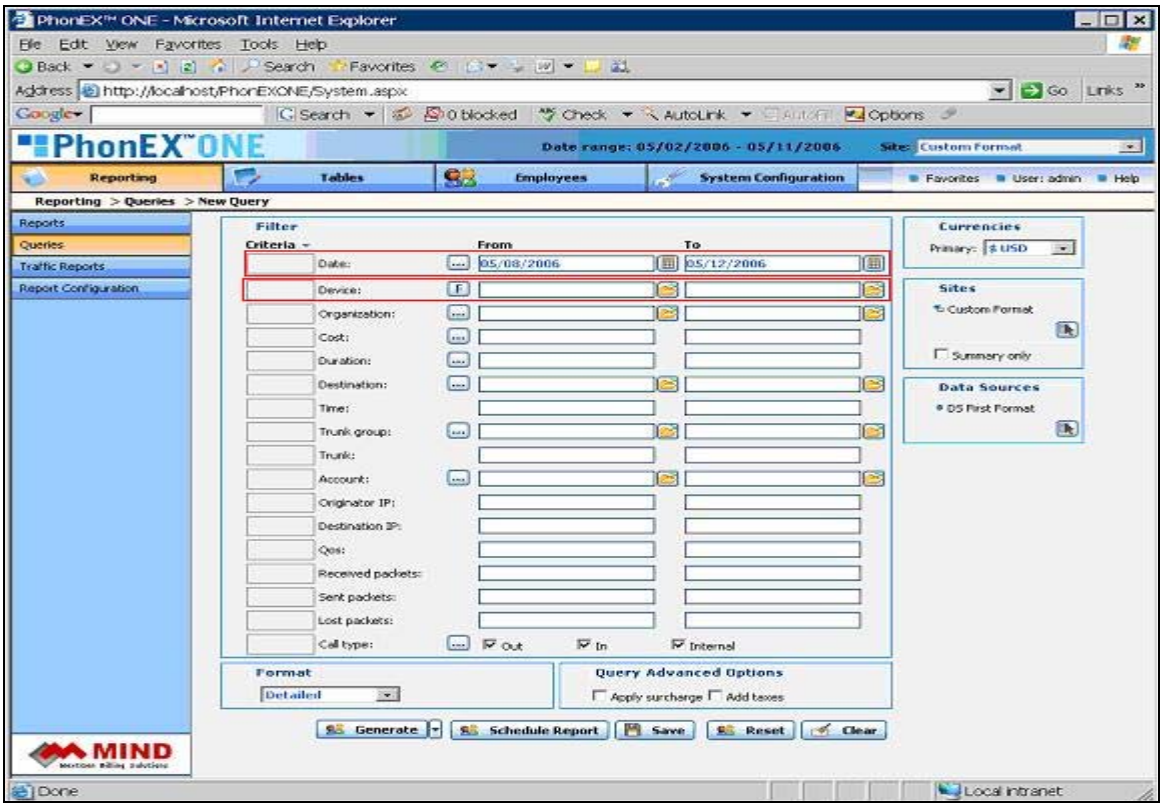


From the Reporting → Queries page, click the **New** button to add a new query.

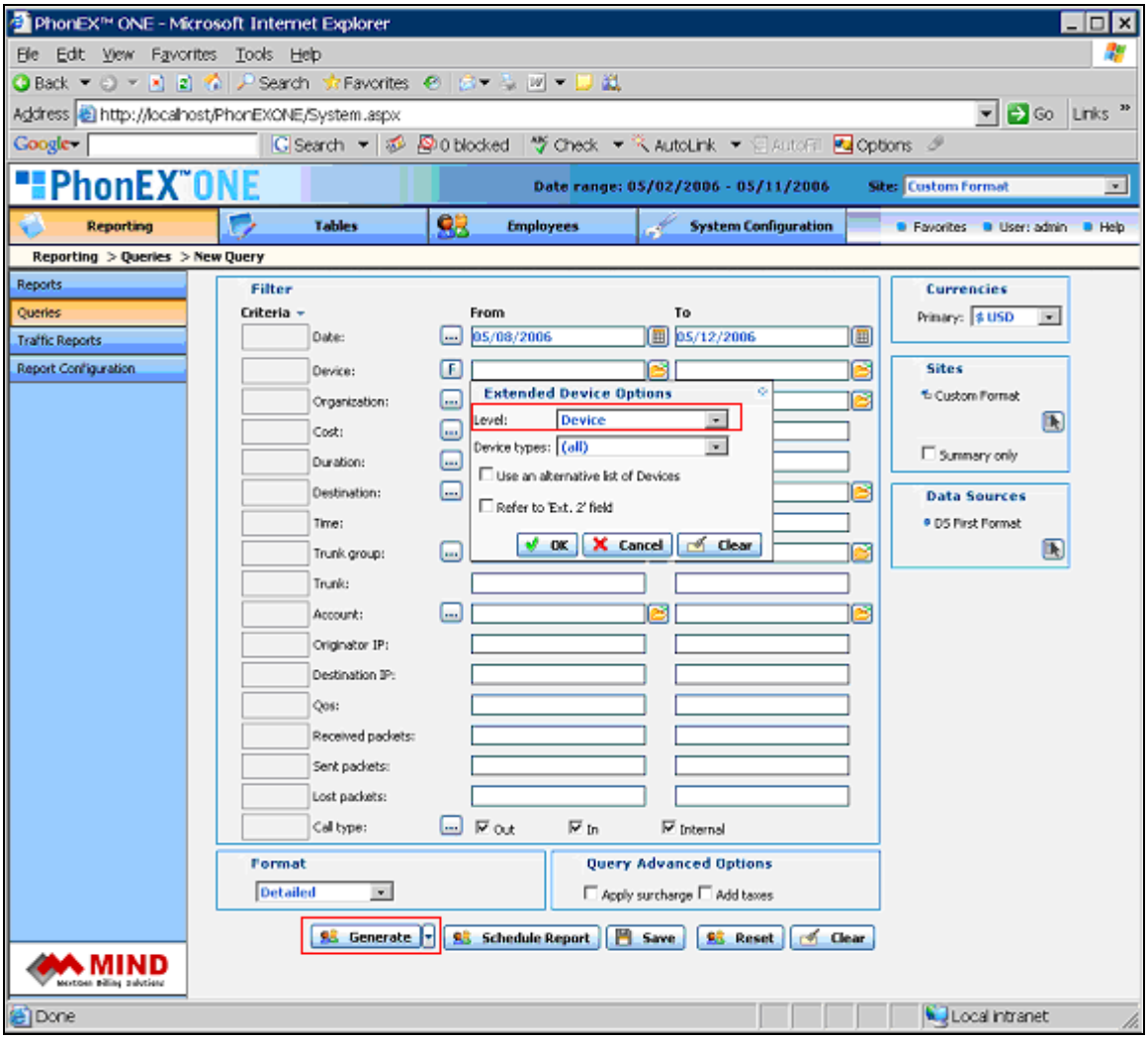


The following screen shows the Reporting → Queries → New Query page. Provide the following information:

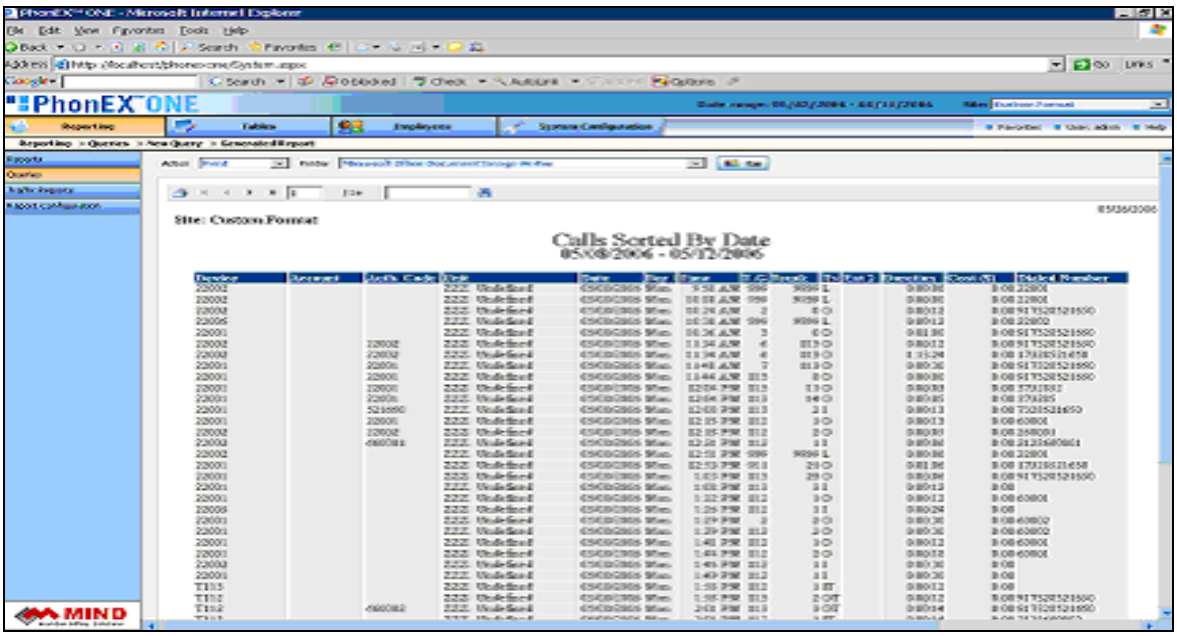
- Date – Select the CDR reporting dates using the Calendar icon (▦).
- Device – Click the icon (F) in the Device field.



When the **icon (** **)** in the Device field is clicked, the Extended Device Options screen will be displayed. Select the **Level** field to be **Device** using the drop-down menu. This will enable the CDR Report to include the initiating calling number. Click the **Generate** button to generate the report.

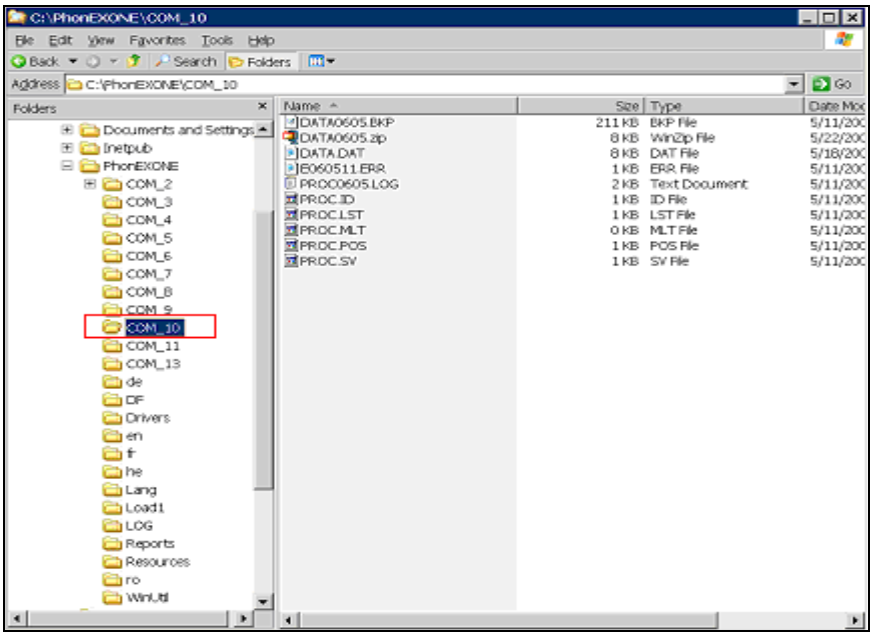


The following screen displays the sample CDR Report.

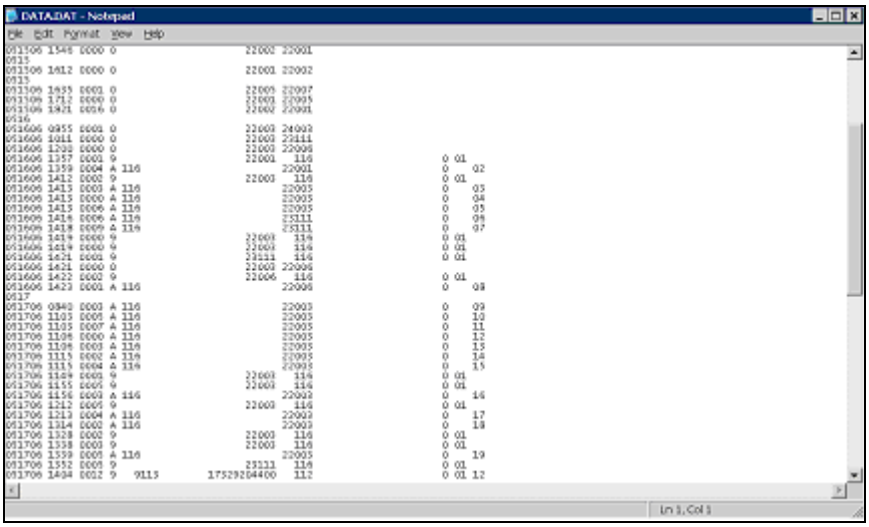


4.3. Generating CDR Raw Data

As mentioned in the previous section, PhonEX ONE automatically creates the directory where the raw data will be stored, when a new data source is added. The new directory appears in the form of "COM_**X**", where **X** is the accruement number of the last directory. The following screen shows the sample directory created by PhonEX ONE. To get to this page, navigate to **C:\PhonEXONE\COM_10**, using Windows Explorer.



In the directory, select the file called **DATA.DAT** and the following raw data screen will be displayed.



5. Interoperability Compliance Testing

Interoperability compliance testing included feature, serviceability, and performance. The feature testing evaluated the ability of PhonEX ONE to collect and process CDR records for various types of calls. A customized format, which Mind CTI provided, was utilized during the compliance test. The serviceability test introduced failure scenarios to see if PhonEX ONE can resume CDR collection after recovery. The performance test utilized bulk call volumes to generate a substantial amount of CDR records.

5.1. General Test Approach

The general test approach was to manually place intra-switch calls, inter-switch calls, inbound and outbound PSTN trunk calls to and from the telephones controlled by the Avaya Media Servers, and verifies that PhonEX ONE collects the CDR records and reports the correct attributes of the call. For serviceability testing, logical links were disabled/re-enabled, and media servers were reset. For performance testing, a call generator was used to place calls over an extended period of time.

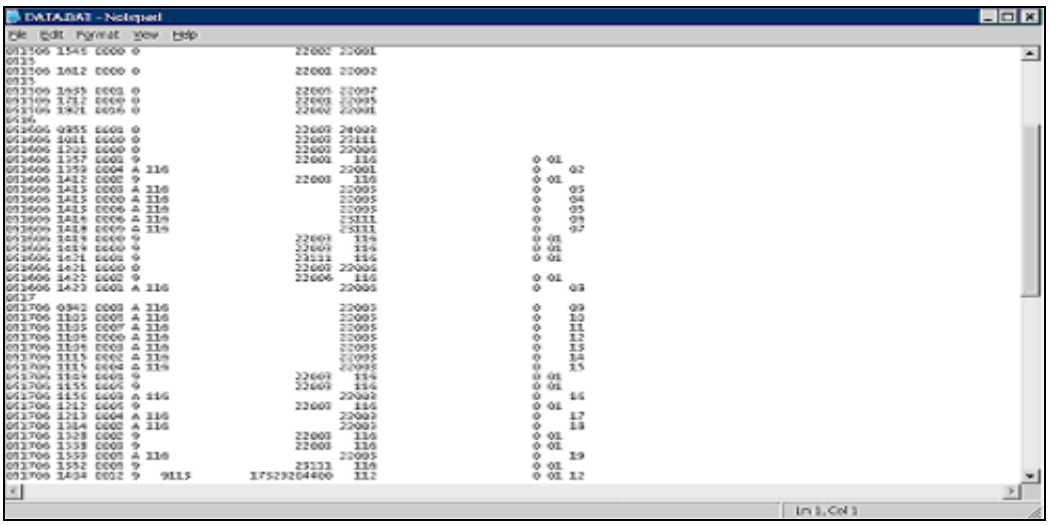
5.2. Test Results

All feature, serviceability and performance tests passed. PhonEX ONE successfully captured and processed call records from Avaya Communication Manager. PhonEX ONE also successfully processed the CDR data, and produced call accounting reports. Types of calls generated during the compliance test include: intra-switch calls, inbound/outbound PSTN trunk calls, inbound/outbound inter-switch H.323 IP trunk calls, transferred calls, and conferenced calls. Performance tests verified that PhonEX ONE could collect call records during a sustained, high volume of calls.

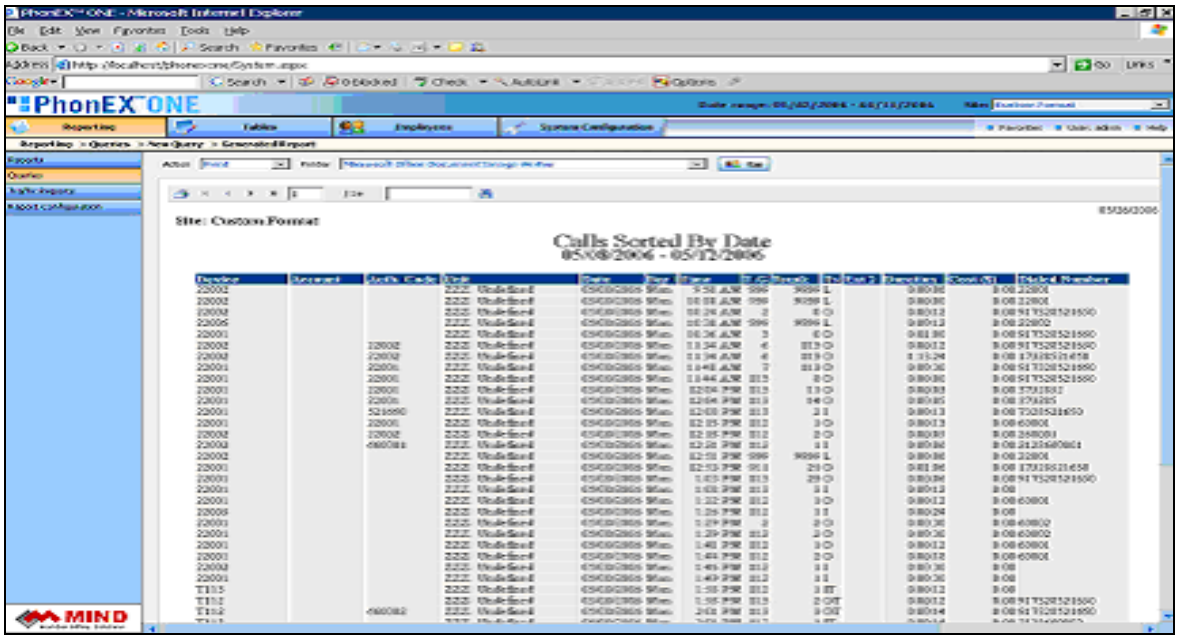
6. Verification Steps

The following steps may be used to verify the configuration:

- On the SAT of each Avaya Media Server, enter the **status cdr-link** command and verify that the CDR link state is up.
- Place a call and verify that PhonEX ONE received the CDR record for the call. Compare the values of the data fields in the CDR record with the expected values, and verify that they match. The following screen shows the sample CDR record (raw data) received from Avaya Communication Manager.



- Place internal, inbound trunk, and outbound trunk calls to and from various telephones, generate an appropriate report in PhonEX ONE, and verify the report's accuracy. The following shows a sample report from PhonEX ONE.



7. Support

Technical support for PhonEX ONE can be obtained by contacting Mind CTI via the support link at http://www.mindcti.com.

8. Conclusion

These Application Notes describe the procedures for configuring the Mind CTI PhonEX ONE to collect call detail records from Avaya Communication Manager running on Avaya Media Servers. PhonEX ONE successfully passed all compliance testing.

9. References

This section references the Avaya and Mind CTI documentation that are relevant to these Application Notes.

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

[1] *Feature Description and Implementation For Avaya Communication Manager*, Release 3.1, Issue 4, February 2006, Document Number 555-245-205.
[2] *Administrator Guide for Avaya Communication Manager*, Release 3.1, Issue 2, February 2006, Document Number 03-300509

The following documents are utilized for installation and configuration of PhonEX ONE.

[3] *PhoneEX ONE 2.2 System Configuration User Manual*
[4] *PhoneEX ONE 2.2 Installation Technical 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 Developer*Connection* Program at devconnect@avaya.com.