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Avaya Solution & Interoperability Test Lab

Application Notes for 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.

The Mind CTI PhonEX ONE is a call accounting software that interoperates with Avaya Communication Manager over the Avaya Reliable Session Protocol (RSP). Call records can be generated for various types of calls. Mind CTI PhonEX ONE collects, and processes the call records. The serviceability, Local Survivable Process (LSP) mode, and performance tests were conducted to assess the reliability of the solution.

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

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 5.1. Mind CTI PhonEX ONE connects to Avaya Communication Manager over the local or wide area network using a CDR link running on RSP. Avaya Communication Manager is configured to send CDR records to Mind CTI PhonEX ONE using a specific TCP/IP port. The serviceability, LSP mode, and performance tests were conducted to assess the reliability of the solution.

Mind CTI PhonEX ONE provides call accounting systems for the enterprise market. Mind CTI 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. Mind CTI 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.

Figure 1 illustrates a sample configuration that was used for the compliance test. The configuration consists of three Avaya Servers running Avaya Communication Manager. Site A is comprised of Avaya Communication Manager running on Avaya S8720 Servers with an Avaya G650 Media Gateway. Site B is comprised of Avaya Communication Manager running on an Avaya S8300 Server residing in an Avaya G700 Media Gateway. Each Avaya Communication Manager is connected to an IP network comprised of an Extreme Networks Summit 48 layer 3 switch. Mind CTI PhonEX ONE is running on a Windows 2003 Server remotely connected to the IP network through a firewall, and has a RSP session established to each Avaya Communication Manager to collect CDR records. Each system has trunks and phones to generate calls. Avaya 4600 Series IP Telephones, Avaya 9600 Series IP Telephones, and Avaya 6400D Series Digital Telephones are registered to both Avaya S8720 and S8300 Servers. In addition, there is an H.323 IP trunk established between the two media servers.

Site C is comprised of an Avaya S8300 Server with an Avaya G350 Media Gateway, which has connections to an Avaya 4600 Series IP Telephone and Avaya 6400D Series Digital Telephone. The Avaya S8300 Server, installed with Local Survivable Processor (LSP) license, is setup as a LSP to Site A.
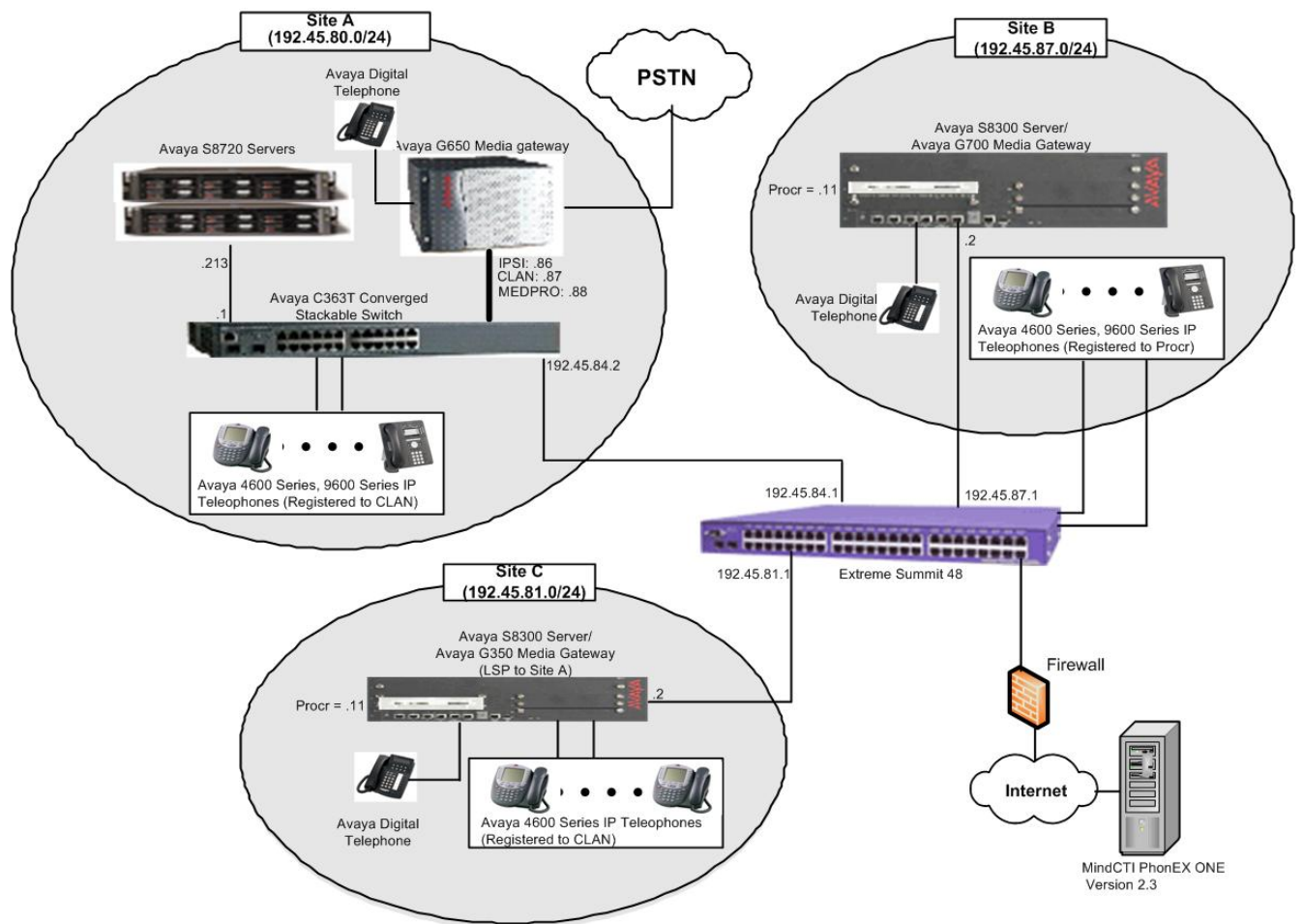
Figure 1. Test configuration of PhonEX ONE with Avaya Communication Manager

2. Equipment and Software Validated

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

Equipment	Software
Avaya S8720 Servers	Avaya Communication Manager 5.1 (R015x.01.0.414.3 w/ SP 15962)
Avaya G650 Media Gateway	
TN2312BP IPSI	HW11 FW030
TN799DP CLAN	HW20 FW017
TN2302AP MEDPRO	HW01 FW108
Avaya S8300 Server	Avaya Communication Manager 5.1 (R015x.01.0.414.3 w/ SP 15962)
Avaya G700 Media Gateway	28.17
Avaya S8300 Server (with LSP License)	Avaya Communication Manager 5.1 (R015x.01.0.414.3 w/ SP 15962)
Avaya G350 Media Gateway	26.31
Avaya 4600 Series IP Telephone	
4620SW	2.83
4625SW	2.83
Avaya 9600 Series IP Telephone	
9630	1.5
9650	1.5
Avaya 64xx Series Digital Telephones	
6408D+	-
6402D	-
Analog Telephone	-
Avaya C363T Converged Stackable Switch (Layer 3)	4.5.14
Extreme Summit 48 Switch (Layer 3)	4.1.21
Mind CTI PhonEX ONE on Windows 2003 Server with Service Pack 1	2.3

3. Configure Avaya Communication Manager

This section provides procedures for configuring the 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 S8720 Server. All steps are the same for the other Avaya Servers unless otherwise noted. Avaya Communication Manager will be configured to generate CDR records and send CDR records to the IP address of Mind CTI PhonEX ONE, using RSP over TCP/IP. For the Avaya S8720 Server, the CDR link originates at the IP address of the CLAN board, and terminates at the PhonEX ONE. For the Avaya S8300 Server, the CDR link originates at the IP address of the local server (with node-name – "procr") and terminates at the PhonEX ONE. The highlights in the following screens indicate the parameter values used during the compliance test.

Enter 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 the PhonEX ONE. The CLAN entry on this form was previously administered.

Note: *The IP address of Mind CTI PhonEX ONE is not displayed, since the test utilized the public IP address.*

```
change node-names ip                                        Page   1 of   1
                              IP NODE NAMES
     Name             IP Address           Name         IP Address
phonexONE         xxx.xxx .xxx .xxx                      .    .    .
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                        .    .    .
```

Enter the **change ip-services** command to define the CDR link to use RSP over TCP/IP. 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 Avaya S8720 Server, the Local Node is set to the node name of the CLAN board. If Avaya S8300 Server was utilized, set the Local Node to **procr**.]
- Local Port: 0 [The Local Port is fixed to 0.]
- 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 the 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. Provide the following information:

- 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.

- Enable CDR Storage on Disk?: **y** [Enable the Survivable CDR feature. Default is **n**.]
- Use Legacy CDR Formats?: **n** [Allows CDR formats to use 5.x CDR formats. If the field is set to **y**, then CDR formats utilize the 3.x CDR formats.]
- Intra-switch CDR: **y** [Allows call records for internal calls involving specific stations. Those 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.]

```
change system-parameters cdr                                 Page   1 of   2
                            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                 Enable CDR Storage on Disk? y
         Use Enhanced Formats? n     Condition Code 'T' For Redirected Calls? y
      Use Legacy CDR Formats? n                  Remove # From Called Number? n
 Modified Circuit ID Display? n                           Intra-switch CDR? y
              Record Outgoing Calls Only? n       Outg Trk Call Splitting? y
 Suppress CDR for Ineffective Call Attempts? y        Outg Attd Call Record? n
     Disconnect Information in Place of FRL? 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
 Record Agent ID on Incoming? n        Record Agent ID on Outgoing? n
 Inc Trk Call Splitting? 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
```

When the customized format is selected for the Primary Output Format field, the CDR SYSTEM PARAMETERS form adds a second page. 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: date            - 6   17: acct-code      - 15   33: node-num         - 2
 2: space           - 1   18: space          - 1   34: space            - 1
 3: time            - 4   19: auth-code      - 7   35: ins              - 3
 4: space           - 1   20: space          - 1   36: space            - 1
 5: sec-dur         - 5   21: frl            - 1   37: ixc-code          - 4
 6: space           - 1   22: space          - 1   38: ma-uui            - 1
 7: cond-code       - 1   23: in-crt-id      - 3   39: res_flag          - 1
 8: space           - 1   24: space          - 1   40: tsc_ct            - 4
 9: code-dial       - 4   25: out-crt-id     - 3   41: tsc_flag          - 1
10: space           - 1   26: space          - 1   42: space            - 1
11: code-used       - 4   27: feat-flag      - 1   43: vdn              - 13
12: space           - 1   28: space          - 1   44: return            - 1
13: dialed-num      - 23  29: attd-console   - 4   45: line-feed         - 1
14: space           - 1   30: space          - 1   46:                   -
15: calling-num     - 15  31: in-trk-code    - 4   47:                   -
16: space           - 1   32: space          - 1   48:                   -


                         Record length = 150
```

If the Intra-switch CDR field is set to **y** on Page 1 of the system-parameters cdr form, then enter 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.

Note: *To simplify the process of adding multiple extensions in the **Extension** field, the Intra-switch CDR by COS feature may be utilized in the SPECIAL APPLICATIONS form under the system-parameters section. To utilize this feature, contact an authorized Avaya account representative to obtain the license.*

```
change intra-switch-cdr                                      Page   1 of   3
                        INTRA-SWITCH CDR

                           Assigned Members:   5   of 5000   administered
  Extension          Extension          Extension          Extension
   22001
   22002
   22003
   26001
   26007
```

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 MindCTI 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.
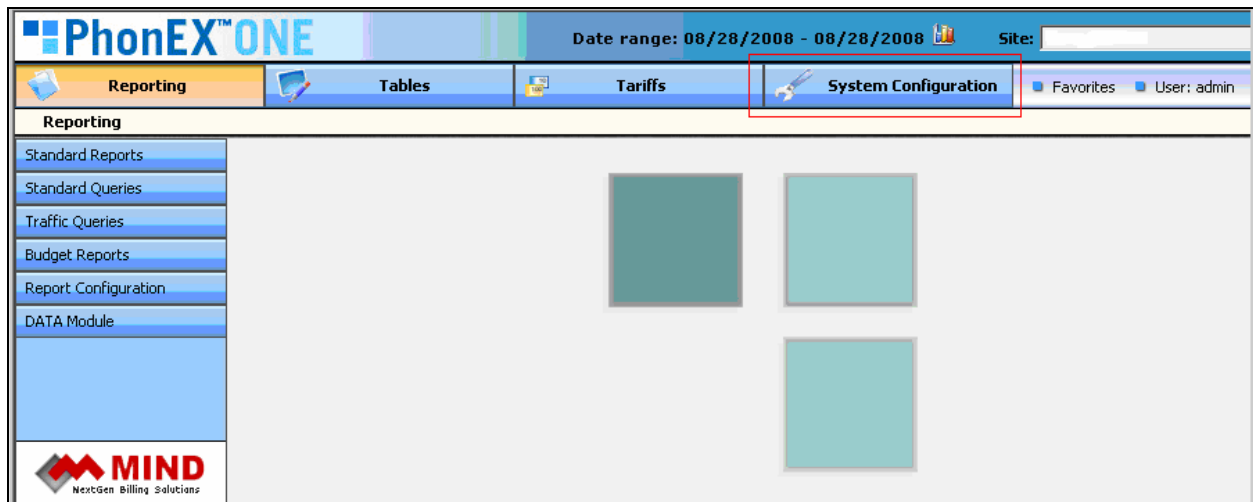
From the System Configuration page, click the **Sites** button in the left pane to access the Site page.
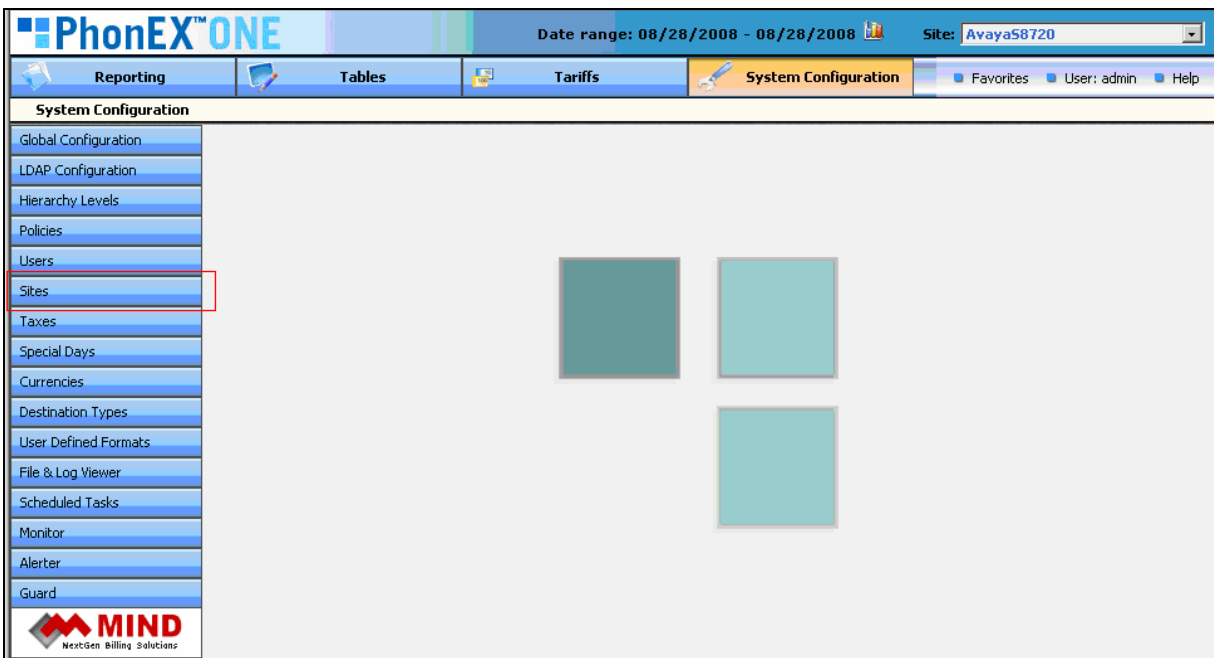
From the Sites page, click the **New Site** button to configure a site.

From the Add New Site page, provide the information on the following fields, and click the **Save** button to add the site:
- Site Name – Enter a descriptive name for the Site Name.
- Site Code – Enter a descriptive name for the Site Code.

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.

During the compliance test, two data resources were created. One data source is for a RSP
connection and the second data source for a SFTP connection.
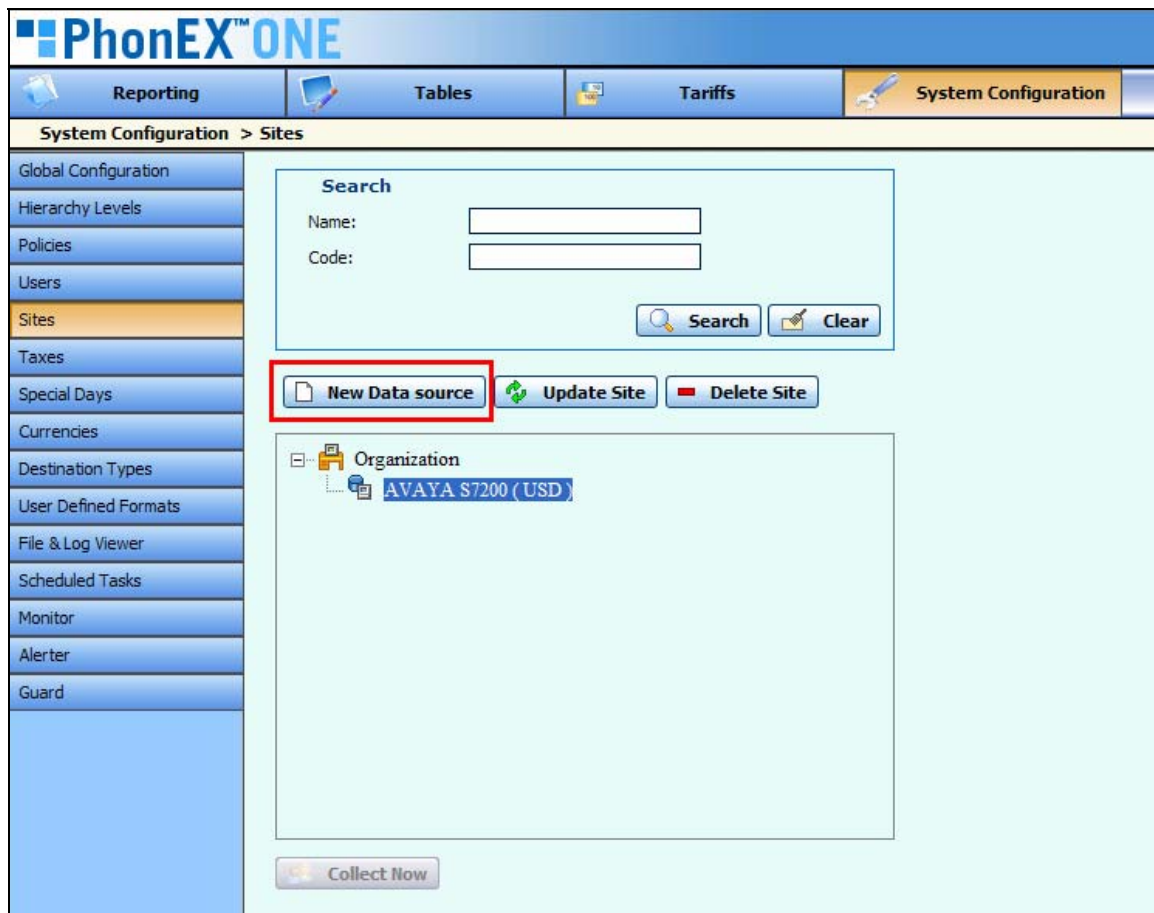
To create a data source for the RSP connection, provide the following information on the new Data source section from the New Data source page:

- Name – Enter a descriptive name for the data source name.
- CPS Server – Hostname of the machine, on which the PhonEX ONE is installed. As a default, the correct hostname is displayed.
- Connection method – Select **DEFINITY** using the drop-down menu.
- PBX type – Select **Avaya CM customized** using the drop-down menu. This form was configured by the Mind CTI engineer. The form includes the CDR format type that the compliance test utilizes.
- Directory – This field identifies the directory of incoming CDR records from Avaya Communication Manager.

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

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

- IP Address – IP Address of the CLAN 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 at the bottom of the screen.

Note: *The IP address of the CLAN board is not displayed, since the test utilized the NATed public IP address.*

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14 of 31
MindCTI-ACM51

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.
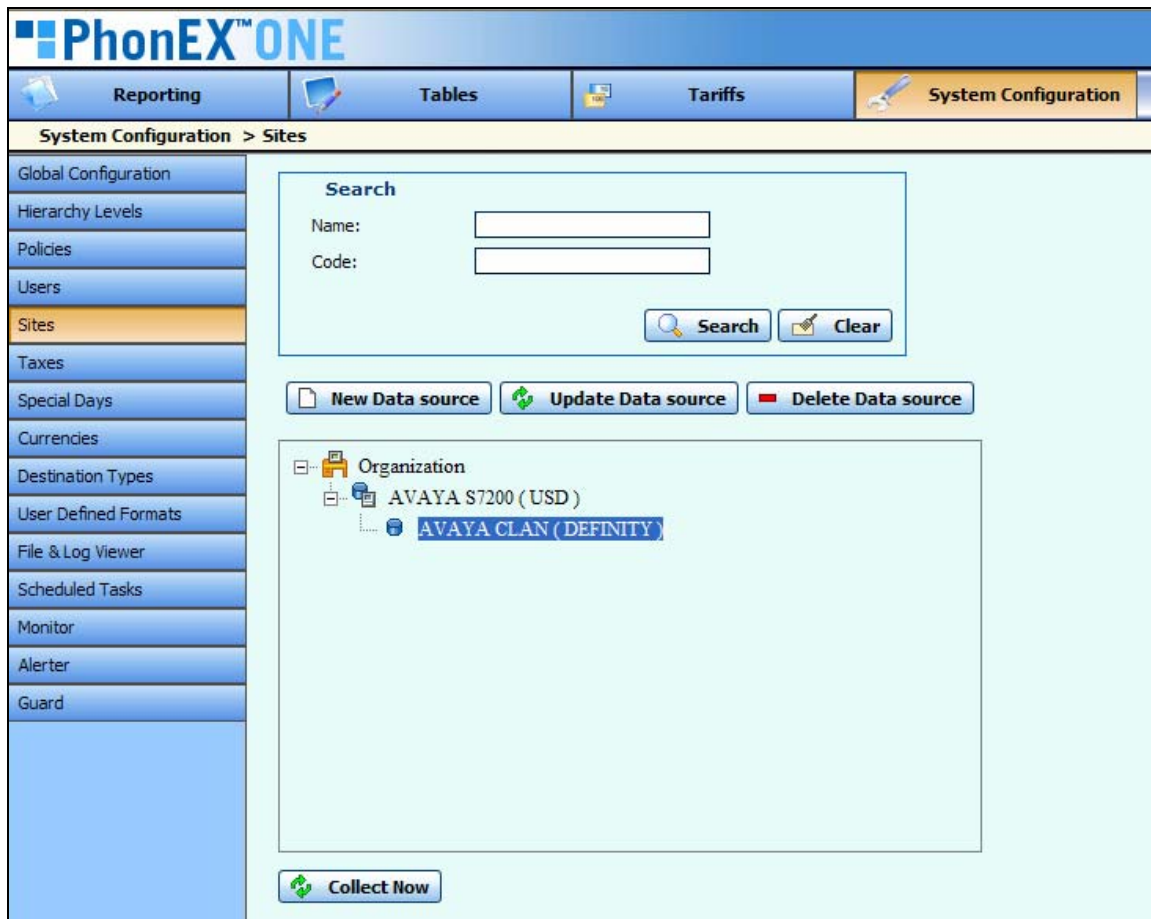
To create the second data source for the SFTP connection, provide the following information on the new Data source section from the New Data source page:

- Name – Enter a descriptive name for the data source name.
- CPS Server – Hostname of the machine, on which the PhonEX ONE is installed. As a default, the correct hostname is displayed.
- Connection method – Select **SFTP** using the drop-down menu.
- PBX type – Select **Avaya CM customized** using the drop-down menu. This form was configured by the Mind CTI engineer. The form includes the CDR format type that the compliance test utilizes.
- Directory – This field identifies the directory where CDR records from Avaya Communication Manager (LSP) will be stored.

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

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

- User Name – Enter the user name created in Avaya Communication Manager (S8720). For configuring a CDR user, refer to **Section 5.1.1**.
- Password – Enter the password created in Avaya Communication Manager (S8720). For configuring a CDR password, refer to **Section 5.1.1**.
- Server Name – The IP Address of Avaya Communication Manager (LSP).
- Site port – Enter **22** for the SFTP port.
- Remote path: This field identifies the directory where CDR records will be stored in Avaya Communication Manager (LSP). The directory is **\var\home\ftp\CDR**.
- Remote File: This field identifies the file that contains CDR records.

After completion, click the **Save** button at the bottom of the screen.

Note: *The IP address of the CLAN board is not displayed, since the test utilized the NATed public IP address.*

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17 of 31
MindCTI-ACM51

After the saving of the configuration is completed, the screen will redirect to the System Configuration → Sites page. Two data sources, which just created, become visible as shown below.

4.2. Generating CDR Reports

From the Reporting page, select **AvayaS8720** for the Sites field using the drop-down menu, for which the CDR records will be generated. Select **Standard Queries** from the left pane.
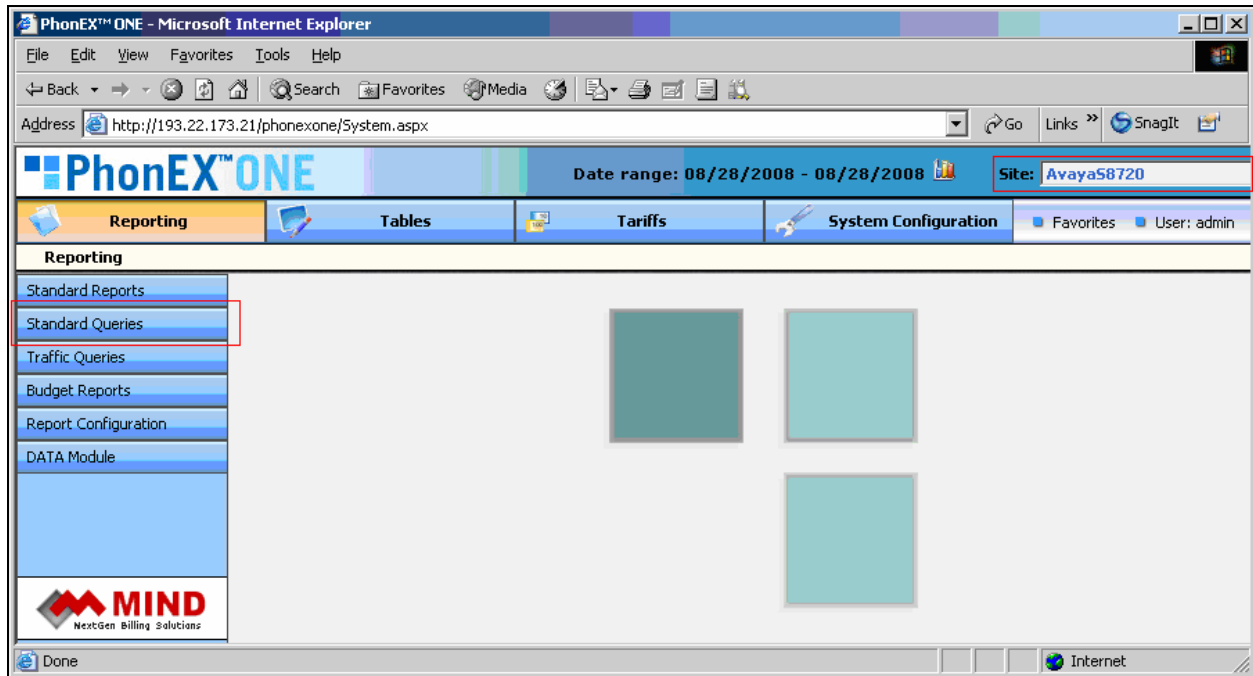
From the Standard Queries page, click the **New** button to add a new query.
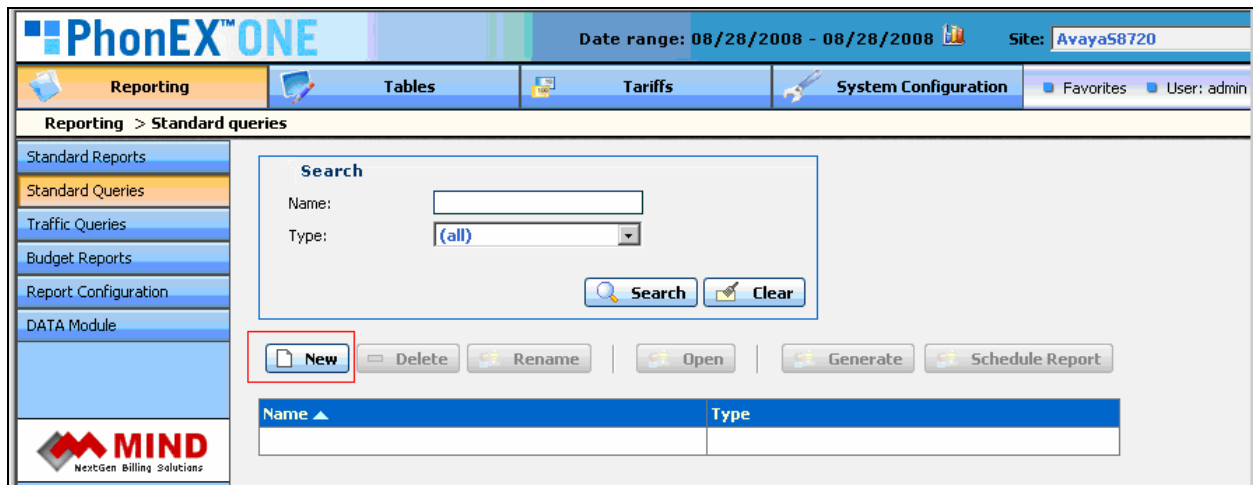
The following screen shows the New Standard Query page. Provide the following information, and click the **Generate** button.

- Date – Select the CDR reporting dates using the Calendar icon (▦).
- Call type – Check on the **Out**, **In**, and **Internal** boxes, so that Mind CTI PhonEX will process these call types to their reporting system.

4.3. Generating CDR Raw Data

As mentioned in **Section 4.1**, the 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 "DATAXY", where **X** indicates Year, and **Y** indicates Month. The following screen shows the sample directory created by PhonEX ONE. To get to this page, navigate to **C:\PhonEXONE\AvayaDefinity**, using Windows Explorer.
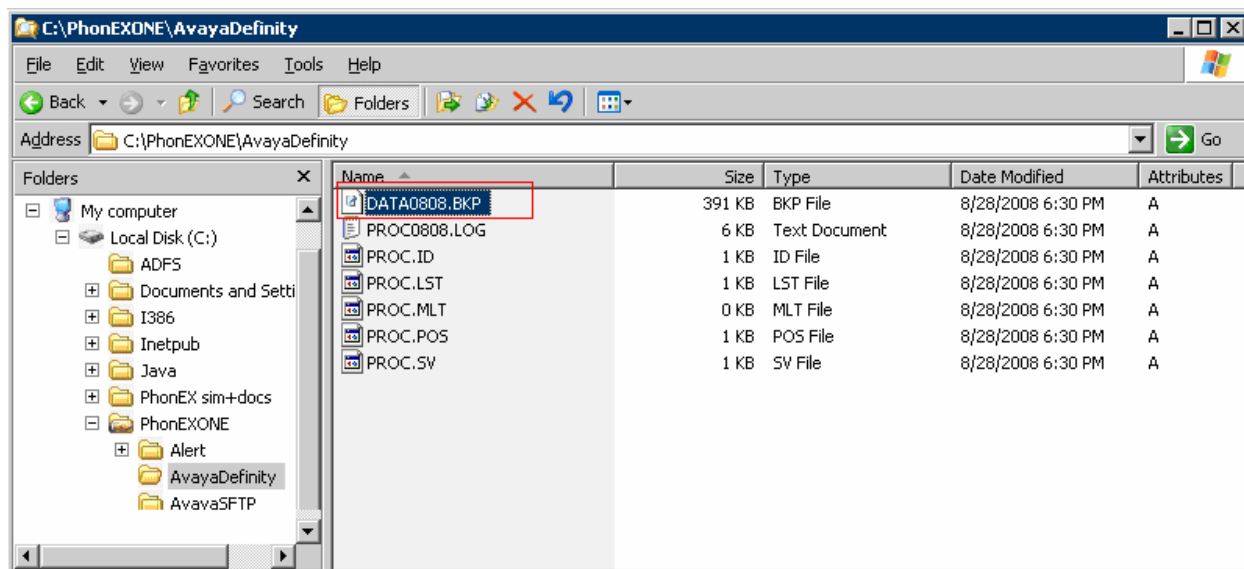
In the directory, select the file called **DATA0808.BKP,** and the following raw data screen will be displayed.
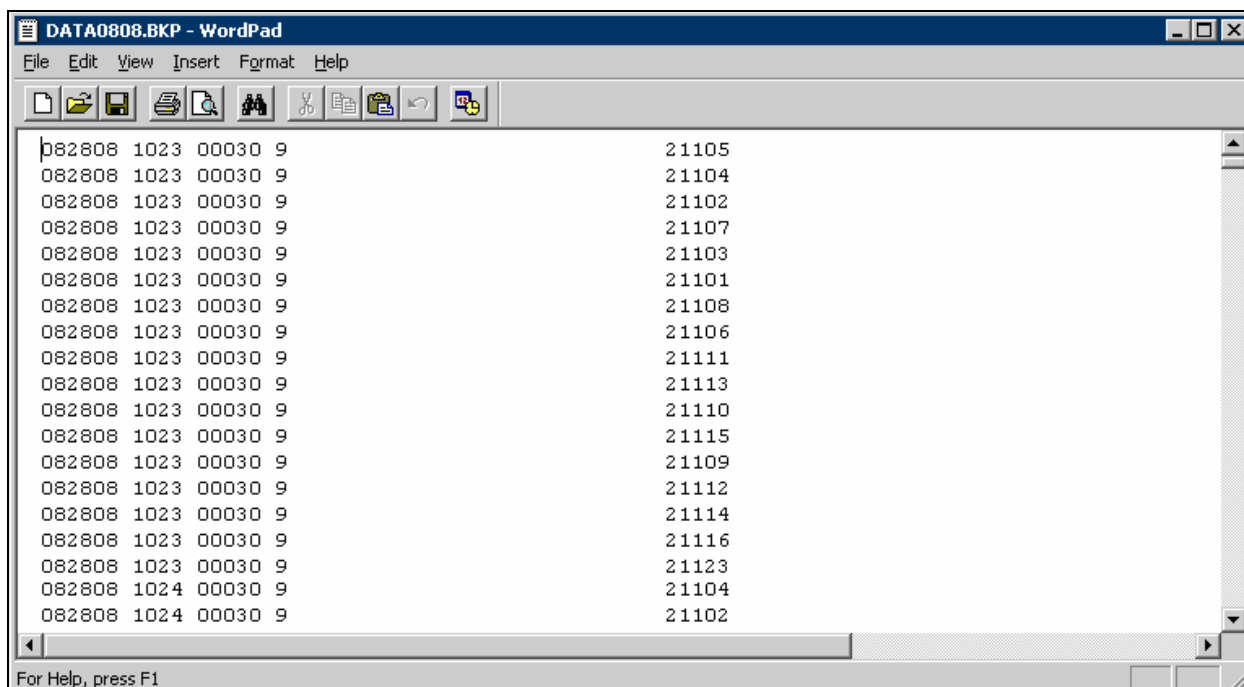
5. Configure the Avaya LSP Solution

This section describes how to configure the main Avaya Communication Manager and a LSP licensed Avaya Communication Manager to perform an Avaya LSP CDR solution. This section also includes the verification steps.

Solution & Interoperability Test Lab Application Notes

5.1. Configure the S8720 Server with G650 Media Gateway for the Avaya LSP Solution

This section describes how to configure the S8720 Server with a G650 Media Gateway for the Avaya LSP CDR Solution. The following steps must be performed:

- Create member credentials (username/password) for a sftp account
- Change "survivable-processor <assigned Survivable Processor node-name>" form
- Save the translation for LSP

5.1.1. CDR credentials for sftp

To create credentials, enter https://<IP address of Avaya S8720 Server> in the URL, and log in with the appropriate credentials for accessing the Integrated Management Standard Management Solutions pages. Select the **Launch Maintenance Web Interface** link.
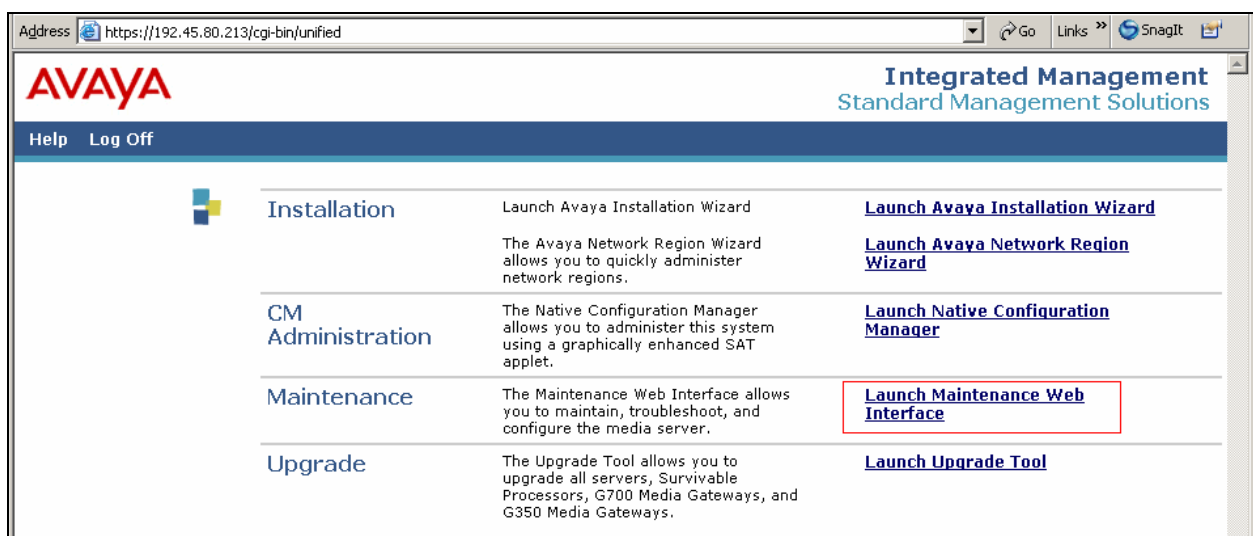
Select the **Administrator Accounts** link under the Security section.

In the Administrator Accounts page, check **CDR Access Only** box under the Add Login section. Select **Submit**

In the Administrator Accounts –Add Login: CDR Access Only page, provide the following information:

- Login name
- Enter password or key
- Re-enter password or key

The above credentials will be utilized to access the LSP licensed Avaya Communication Manager.

Click on **Submit**

5.1.2. Survivable-Processor Form

Enter the **change survivable-processor S8300** command, where **S8300** is an LSP licensed Avaya S8300 Server, configured in **Section 3**. Make sure that the Enabled field is set to **o** (overwrite), and the Store to dsk field is to **y**.

```
change survivable-processor S8300                              Page   2 of   3
                    SURVIVABLE PROCESSOR - IP-SERVICES
 Service     Enabled Store   Local              Local     Remote              Remote
  Type               to dsk  Node               Port      Node                Port
  CDR1          o        y
```

After **Section 5.1.1** and **5.1.2** are completed, run either the **save translation all** or **save translation lsp** command, so that the translation in Avaya S8720 Server will be pushed to the LSP licensed Avaya S8300 Server.

To confirm whether the translation is pushed to the LSP licensed Avaya Communication manager, execute the **list survivable-processor** command, and check the last Translations Updated field. The following shows a sample screen, resulted from performing the above command.

```
list survivable-processor


                           SURVIVABLE PROCESSORS
 Name            Type        IP Address     Reg LSP       Translations      Net
                                                Act       Updated           Rgn

 S8300           LSP         192.45 .81 .11  y    n       22:00 9/8/2008     1
 ESS             ESS         192.45 .80 .216 y            22:00 9/8/2008     2
```

5.2. Verification from the Avaya S8300 Server for the Avaya LSP Solution

This section describes how to verify the Avaya LSP CDR solution from the Avaya S8300 Server. Enter the **display ip-services** command. Notice that the Local Node field is changed to **procr**.

```
display  ip-services                                          Page   1 of   4


                             IP SERVICES
 Service     Enabled     Local         Local       Remote      Remote
  Type                   Node          Port        Node        Port
 CDR1                    procr         0           phonexONE    9000
```

Enter the **display survivable-processor S8300** command, and verify that the survivable-processor S8300 form in Avaya S8720 and S8300 Servers are identical.

```
display survivable-processor S8300                            Page   2 of   3
                    SURVIVABLE PROCESSOR - IP-SERVICES
 Service     Enabled Store   Local              Local     Remote              Remote
  Type               to dsk  Node               Port      Node                Port
  CDR1          o        y
```

6. Interoperability Compliance Testing

The compliance test included feature, serviceability, performance, and LSP testing. 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. The Avaya LSP solution was tested by removing the CLAN board in the Avaya G650 Media Gateway.

6.1. General Test Approach

The general test approach was to manually place intra-switch and inter-switch calls, inbound trunk and outbound trunk calls to and from telephones attached to the Avaya Servers, and verified that PhonEX ONE collected the CDR records and properly classified and reported the attributes of the call. For serviceability testing, physical and logical links were disabled/re-enabled, Avaya Servers were reset and the PhonEX ONE was restarted. The LSP test was performed from PhonEX ONE using the sftp command to Avaya S8300 Server (LSP) to collect the CDR records. For performance testing, a call generator was used to place calls over an extended period of time.

6.2. Test Results

All executed test cases passed. Mind CTI PhonEX ONE successfully collected the CDR records from Avaya Communication Manager via a RSP connection for all types of calls generated including intra-switch calls, inbound/outbound PSTN trunk calls, inbound/outbound private IP trunk calls, transferred calls, and conference calls. For serviceability testing, PhonEX ONE was able to resume collection of CDR records after failure recovery including buffered CDR records for calls that were placed during the outages. Mind CTI PhonEX ONE also successfully collected the CDR records from the Avaya S8300 Server using the sftp command. Performance tests verified that Mind CTI PhonEX ONE could collect call records during a sustained, high volume of calls.

7. Verification Steps

The following steps may be used to verify the configuration:
- On the SAT of the Avaya S8720 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 CDR records 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.

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28 of 31
MindCTI-ACM51

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

8. Support

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

9. Conclusion

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

10. 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] *Administrator Guide for Avaya Communication Manager*, Issue 4, January 2008, Document Number 03-300509.

[2] *Feature Description and Implementation For Avaya Communication Manager*, Issue 6, January 2008, Document Number 555-245-205

The following documents are utilized for installation and configuration of PhonEX ONE.
[3] *PhoneEX ONE 2.3 System Configuration User Manual*
[4] *PhoneEX ONE 2.3 Installation Technical Guide*

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