



Avaya Solution & Interoperability Test Lab

Application Notes for MIND PhonEX and MEIPS Call Accounting Systems with Avaya Communication Manager - Issue 1.0

Abstract

These Application Notes describe the configuration steps required to enable the MIND PhonEX and MEIPS Call Accounting Systems to collect call detail records from the Avaya S8300 and S8700 Media Servers running Avaya Communication Manager. Multiple Call Detail Recording (CDR) links running Avaya's Reliable Session Protocol (RSP) were established between the Avaya Media Servers and the PhonEX / MEIPS applications over the IP network. Compliance testing verified that PhonEX / MEIPS were able to collect CDR records for incoming and outgoing trunk calls as well as intra-switch calls. Once the CDR records are collected, PhonEX / MEIPS processed and stored them in a customized database. The database can then be queried to generate reports and graphs for analysis of an organization's telephone usage and for billing purposes. Information in these 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

These Application Notes describe a Call Detail Recording (CDR) solution using the MIND PhonEX and MEIPS¹ Call Accounting Systems with the Avaya S8300 and S8700 Media Servers running Avaya Communication Manager. The CDR feature can generate call records for incoming and outgoing trunk calls and for intra-switch calls (i.e., calls between extensions on the local switch). Avaya Communication Manager can then send the call records to PhonEX / MEIPS over a CDR link established over a TCP/ IP network. To ensure reliable transmission of call records, the Avaya Reliable Session Protocol (RSP) may be enabled on the CDR links since PhonEX / MEIPS are RSP-enabled applications.

Communication Manager supports *standard* and *customized* CDR output formats. Although Communication Manager sends date information once a day (at midnight), or when the CDR device is connected, PhonEX / MEIPS require a date in each call record. Therefore, compliance testing was performed with the “int-direct” standard format and a “customized” output format programmed in the Avaya Media Servers and the PhonEX / MEIPS applications. The other *standard* output formats do not include the date in the call records. Communication Manager also supports primary and secondary CDR ports that operate independently of each other and may even be administered with different CDR formats. For the configuration described herein, the primary output format was set to “int-direct” and the secondary output format was set to “customized”.

Communication Manager generates CDR records for calls associated with trunk groups and local extensions that are enabled for CDR reporting and intra-switch CDR, respectively. The call records are then transmitted to the call accounting systems over the CDR links. RSP, a session layer protocol, provides a reliable transport mechanism for CDR records. Without RSP, potential data loss may occur as a result of network failures. If the CDR link is down, Communication Manager can buffer the CDR records until the CDR link becomes operational again. The maximum CDR records buffered by the S8300 and S8700 Media Servers are 500 and 17326, respectively. After CDR collection is performed, PhonEX / MEIPS can process the call records and store them in a customized database. The database can then be queried to generate reports and graphs for analysis of an organization’s telephone usage and for billing purposes. These functions are performed by applications in the MIND PhonEX / MEIPS software suite.

The configuration in **Figure 1** illustrates an enterprise network with an Avaya S8700 Media Server pair, a G600 Media Gateway, and an Avaya S8300 Media Server with a G700 Media Gateway interconnected via the PSTN and the IP network. The PhonEX and MEIPS Call Accounting Systems connect concurrently to each Avaya Media Server over the IP network. The Avaya Media Servers employ the primary and secondary CDR ports for connectivity to PhonEX and MEIPS, respectively. CDR records are sent from the Avaya Media Servers to PhonEX / MEIPS over a CDR link running RSP. For the S8700 Media Server, the CDR link is established through a C-LAN board in the G600 Media Gateway. For the S8300 Media Server, the CDR link is established through the Processor Ethernet. Avaya 4612 IP Telephones were

¹ MEIPS is an acronym that stands for MIND Enterprise IP System.

connected to the IP network and Avaya DCP Telephones were connected to a digital line card on each Avaya Media Gateway.

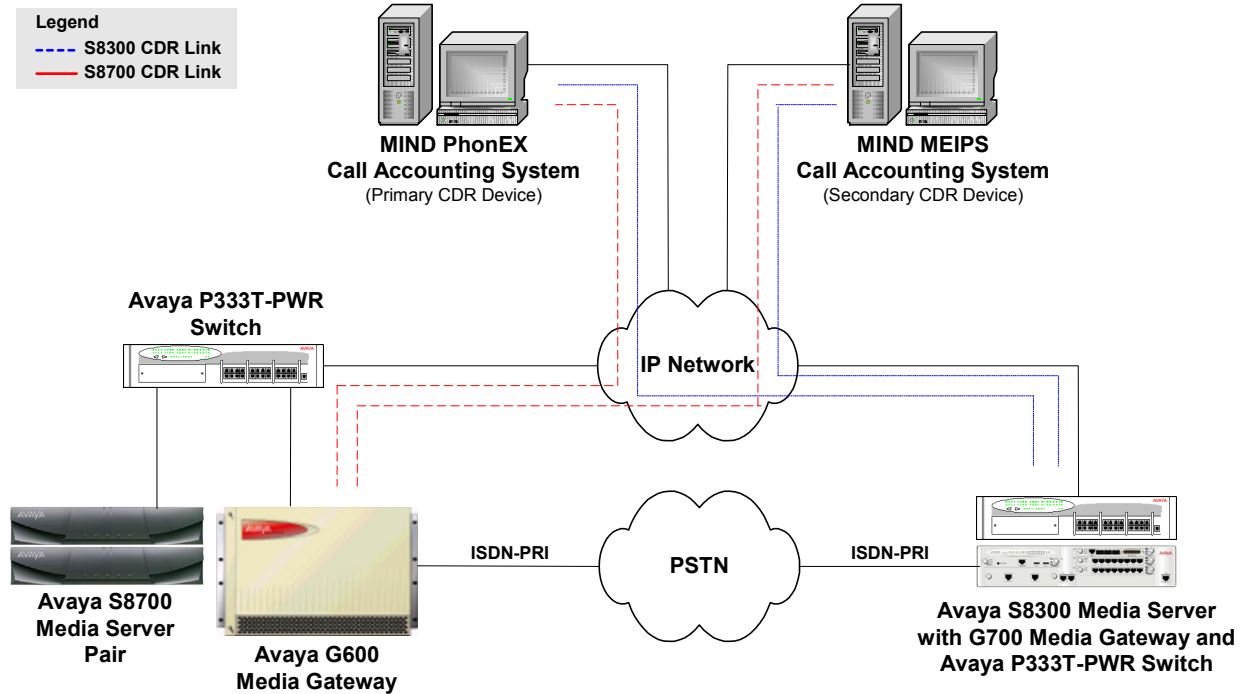


Figure 1: CDR Links between Avaya Media Servers and MIND PhonEX / MEIPS Call Accounting Systems

The following table presents the IP addresses of the network components illustrated in **Figure 1**.

Network Component	IP Address	CDR Link to...
Avaya S8300 Media Server	10.1.1.1	PhonEX / MEIPS
Avaya S8700 Media Server	192.45.100.10	N/A
Avaya G600 Media Gateway		
▪ TN799DP C-LAN Board in location "1A03"	192.45.100.16	MEIPS
▪ TN799DP C-LAN Board in location "2A03"	192.45.100.17	PhonEX
MIND PhonEX Call Accounting System	192.45.100.102	Avaya Communication Manager
MIND MEIPS Call Accounting System	192.45.100.105	

2. Equipment and Software Validated

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

Equipment	Software
Avaya S8300 Media Server with Avaya G700 Media Gateway	R012x.00.0.219.0
Avaya S8700 Media Server with Avaya G600 Media Gateway	R012x.00.0.219.0
MIND MEIPS Call Accounting System for Windows	3.00.015
MIND PhonEX Call Accounting System for Windows	8.00.015

3. Configure the Avaya S8300 Media Server

This section describes the procedure for configuring a primary and secondary CDR link on the S8300 Media Server. The S8300 Media Server is configured to generate CDR records for intra-switch calls and for incoming and outgoing trunk calls using the **int-direct** standard format and a **customized** CDR format. The customized CDR format was defined in Communication Manager. The primary CDR link is established between the S8300 processor and the PhonEX server and the secondary CDR link is established between the S8300 processor and the MEIPS server, as shown in **Figure 1**. The Avaya Reliable Session Protocol (RSP) is enabled on each CDR link for reliable delivery of CDR records.

The IP identity of the Avaya S8300 Media Server is configured using a web interface. To access the web interface, use the services port on the S8300 Media Server, which is pre-configured with IP address 192.11.13.6 and subnet mask 255.255.255.252. Configure a computer with IP address 192.11.13.5 and subnet mask 255.255.255.252. Connect the computer's Ethernet interface to the services port with a crossover Ethernet cable. Launch a web browser, turn proxies off, and connect to the URL <http://192.11.13.6>. Supply appropriate login and password credentials. After login, a main menu is presented along the left hand side. Click "Configure Server" and set the IP address of the S8300 Media Server. The IP address of the S8300 Media Server is set in the "Configure Interfaces" web page.

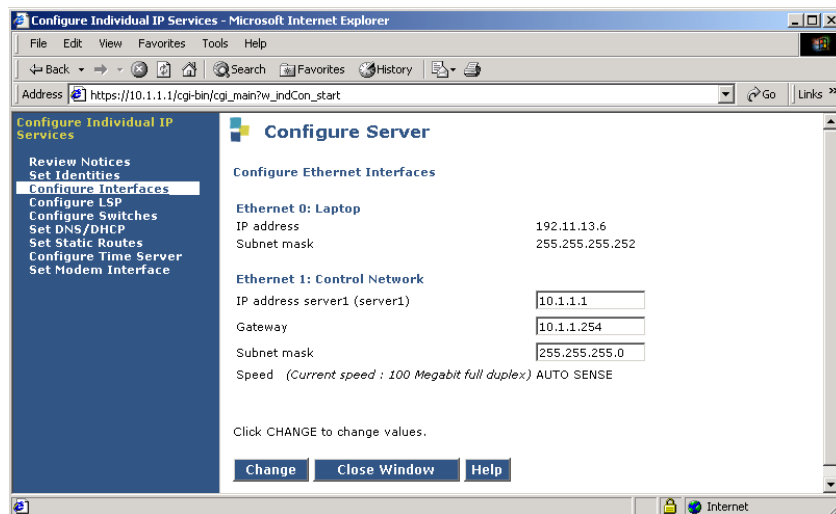


Figure 2: Server Configuration Screen

The following configuration is performed using the System Access Terminal (SAT) interface of the Avaya S8300 Media Server.

In the *node-names ip* form shown below, assign node names to the IP addresses of the PhonEX and MEIPS servers. The “procr” node name was automatically created when the network identity of the S8300 Media Server was configured via a web browser, as described above. These node names will be used in the *ip-services* form to specify the local and remote nodes of the primary and secondary CDR links. The local and remote nodes specify the two ends of a CDR link.

```
change node-names ip                                     Page 1 of 1
```

		IP NODE NAMES			
Name	IP Address	Name	IP Address		
MEIPS	192.45 .100.105		.	.	.
PhonEX	192.45 .100.102		.	.	.
S8700-clan	192.45 .100.17		.	.	.
default	0 .0 .0 .0		.	.	.
procr	10 .1 .1 .1		.	.	.

(5 of 5 administered node-names were displayed)
 Use 'list node-names' command to see all the administered node-names
 Use 'change node-names ip xxx' to change a node-name 'xxx' or add a node-name

Figure 3: IP Node Names Form

The *ip-services* screen specifies the local and the remote nodes for the primary and secondary CDR links. In the following configuration, the CDR links, referred to as **CDR1** and **CDR2**, are established between the S8300 Media Server (local node) and the PhonEX and MEIPS servers (remote nodes), respectively. Both CDR links are established over the Processor Ethernet. The S8300 Media Server sends the call records over the CDR links using port number 9001 or any other valid port number. This port is required when administering PhonEX / MEIPS. The node names specified in the local and remote node fields map to an IP address specified in the *node-names ip* form.

```
change ip-services                                     Page 1 of 4
```

		IP SERVICES			
Service Type	Enabled	Local Node	Local Port	Remote Node	Remote Port
CDR1		procr	0	PhonEX	9001
CDR2		procr	0	MEIPS	9001

Figure 4: IP Services Form (Page 1)

For the CDR service type, the **Enabled** and **Local Port** fields are display-only fields that default to blank and '0', respectively. These fields are not relevant for CDR links.

On Page 3 of the *ip-services* form, enable the Reliable Session Protocol (RSP) for each CDR link by setting the **Reliable Protocol** field to 'y'.

change ip-services		SESSION LAYER TIMERS					Page 3 of 4
Service Type	Reliable Protocol	Packet Resp Timer	Session Connect Message Cntr	SPDU Cntr	Connectivity Timer		
CDR1	y	30	3	3	60		
CDR2	y	30	3	3	60		

Figure 5: IP Services Form (Page 3)

Use the *system-parameters cdr* form to set parameters for the types of calls to record and how to format the information. The following parameters are set:

- **CDR Date Format** selects the format for the date stamp that begins each new day of call records or is included in the int-direct or customized output formats. The date format is set to “month/day”.
- **Primary Output Format** controls the format of the call records sent over the primary CDR link. The “int-direct” standard format was selected.
- **Primary Output Endpoint** specifies where the S8300 Media Server will send the call records. The CDR1 link, defined in the *ip-services* form, was selected for the primary CDR link.
- **Secondary Output Format** controls the format of the call records sent over the secondary CDR link. The customized format was selected. The customized CDR format must be defined on Page 2 of the *Call Detail Recording (CDR) System Parameters* form.
- **Secondary Output Endpoint** specifies where the S8300 Media Server will send the call records. The CDR2 link, defined in the *ip-services* form, was selected for the secondary CDR link.
- **Record Outgoing Calls Only?** was set to ‘n’ so that incoming calls are tracked in CDR.
- **Intra-switch CDR?** was set to ‘y’ so that calls to extensions that are assigned intra-switch CDR are monitored via CDR. The *intra-switch cdr* form needs to be completed when this option is enabled.
- **Suppress CDR for Ineffective Call Attempts?** was set to ‘y’ to ignore ineffective call attempts, calls that are blocked because the user did not have sufficient calling privileges or because all outgoing trunks were busy.

Note: To display the calling number in the CDR record for an incoming trunk call, the CDR format should be set to “customized”. The customized CDR format defined on the second page of the *system-parameters cdr* form must include the Calling Number/Incoming TAC (clg-

num/in-tac) data item. The “**int-direct**” standard format will not display the calling number for incoming trunk calls even if it is available.

```

change system-parameters cdr                               Page 1 of 2
                CDR SYSTEM PARAMETERS

Node Number (Local PBX ID):                               CDR Date Format: month/day
  Primary Output Format: int-direct      Primary Output Endpoint: CDR1
  Secondary Output Format: customized   Secondary Output Endpoint: CDR2
  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? n
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: 15

```

Figure 6: System Parameters CDR Form (Page 1)

On Page 2 of the *system-parameters cdr* form, enter the data items in the order that they should appear in the customized call records sent over the secondary CDR link. For each field in the CDR record, select the data item and length. The length is determined by the data item and is automatically populated.

```

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

  Data Item - Length      Data Item - Length      Data Item - Length
1: date - 6      17: in-crt-id - 3      33: -
2: space - 1      18: space - 1      34: -
3: time - 4      19: out-crt-id - 3      35: -
4: space - 1      20: space - 1      36: -
5: sec-dur - 5      21: return - 1      37: -
6: space - 1      22: line-feed - 1      38: -
7: cond-code - 1      23: -      39: -
8: space - 1      24: -      40: -
9: code-used - 4      25: -      41: -
10: space - 1      26: -      42: -
11: dialed-num - 23      27: -      43: -
12: space - 1      28: -      44: -
13: clg-num/in-tac - 15      29: -      45: -
14: space - 1      30: -      46: -
15: in-trk-code - 4      31: -      47: -
16: space - 1      32: -      48: -

Record length = 80

```

Figure 7: System Parameters CDR Form (Page 2)

To generate CDR records for incoming and outgoing trunk calls, set the **CDR Reports** field in the *trunk group* form to 'y'. CDR reporting was enabled for the ISDN-PRI and H.323 IP trunk groups used in the configuration shown in **Figure 1**. The screen below illustrates the configuration for the H.323 IP trunk group and is similar for the ISDN-PRI trunk group.

```

change trunk-group 60                                     Page 1 of 22
                                     TRUNK GROUP
Group Number: 60           Group Type: isdn           CDR Reports: y
  Group Name: H.323 Calls to S8700           COR: 1           TN: 1           TAC: 160
  Direction: two-way           Outgoing Display? n           Carrier Medium: IP
  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: ascend
                                     Digital Loss Group: 18
Calling Number - Delete:           Insert:           Numbering Format:
  Bit Rate: 1200           Synchronization: async           Duplex: full
Disconnect Supervision - In? y Out? n
Answer Supervision Timeout: 0

```

Figure 8: Trunk Group Form

To generate CDR records for intra-switch calls (i.e., internal switch calls), enter the extensions to be tracked by intra-switch CDR in the following screen. Intra-switch CDR was enabled for all of the IP and DCP phones in the configuration displayed in **Figure 1**.

Note: For ease of implementation, special application (**SA8202**) **Intra-Switch CDR by COS** is an optional feature that allows customers to enable intra-switch CDR for extensions that are assigned a COS with intra-switch CDR activated. The customer does not have to manually add individual extensions in the **intra-switch-cdr** form. The SA8202 feature also removes the 1000 and 5000 extension limit for the S8300 and S8700 Media Servers, respectively, allowing CDR records to be generated for as many extensions as are administered on the switch.

change intra-switch-cdr						Page	1 of	2
INTRA-SWITCH CDR								
Assigned Members:		3	of 1000		administered			
1:	50000	19:	37:	55:	73:	91:		
2:	50001	20:	38:	56:	74:	92:		
3:	50002	21:	39:	57:	75:	93:		
4:		22:	40:	58:	76:	94:		
5:		23:	41:	59:	77:	95:		
6:		24:	42:	60:	78:	96:		
7:		25:	43:	61:	79:	97:		
8:		26:	44:	62:	80:	98:		
9:		27:	45:	63:	81:	99:		
10:		28:	46:	64:	82:	100:		
11:		29:	47:	65:	83:	101:		
12:		30:	48:	66:	84:	102:		
13:		31:	49:	67:	85:	103:		
14:		32:	50:	68:	86:	104:		
15:		33:	51:	69:	87:	105:		
16:		34:	52:	70:	88:	106:		
17:		35:	53:	71:	89:	107:		
18:		36:	54:	72:	90:	108:		

Figure 9: Intra-switch CDR Form

4. Configure the Avaya S8700 Media Server

This section describes the procedure for configuring a primary and secondary CDR link on the S8700 Media Server. The S8700 Media Server is configured to generate CDR records for intra-switch calls and for incoming and outgoing trunk calls using the **int-direct** standard format and the **customized** CDR formats. The primary CDR link is established between C-LAN board in location 2A03 and the PhonEX server and the secondary CDR link is established between C-LAN board in location 1A03 and the MEIPS server, as shown in **Figure 1**. Although a separate C-LAN board was used for each CDR link, CDR1 and CDR2, they could have also been established over a single C-LAN board. The Avaya Reliable Session Protocol (RSP) is enabled on each CDR link for reliable delivery of CDR records. The following configuration was done through the System Access Terminal (SAT) of the Avaya S8700 Media Server.

In the **node-names ip** form shown below, assign node names to the IP addresses of the C-LAN boards and the PhonEX and MEIPS servers. These node names will be used in the **ip-services**

form to specify the local and remote nodes of the primary and secondary CDR links. The C-LAN boards will be the local nodes and the PhonEX / MEIPS servers will be the remote nodes.

```

change node-names ip                                     Page 1 of 1

      Name                IP Address      IP NODE NAMES      Name                IP Address
MEIPS                192.45 .100.105
PhonEX              192.45 .100.102
S8300-procr         10 .1 .1 .1
clan-01a03          192.45 .100.16
clan-02a03          192.45 .100.17
.                  .
.                  .
.                  .
Use 'list node-names' command to see all the administered node-names
Use 'change node-names ip xxx' to change a node-name 'xxx' or add a node-name

```

Figure 10: IP Node Names Form

The following screen provides the configuration for the C-LAN board in location 2a03. This C-LAN will be used as the local node for the primary CDR link.

```

change ip-interface 2a03                               Page 1 of 1

      IP INTERFACES

      Type: C-LAN                                     ETHERNET OPTIONS
      Slot: 02A03                                     Auto? y
      Code/Suffix: TN799 D
      Node Name: clan-02a03
      IP Address: 192.45 .100.17
      Subnet Mask: 255.255.255.0
      Gateway Address: 192.45 .100.254
      Enable Ethernet Port? y
      Network Region: 1
      VLAN: n

      Number of CLAN Sockets Before Warning: 400

```

Figure 11: IP Interfaces Form for C-LAN Board 2a03

The following screen provides the configuration for the C-LAN board in location 1a03. This C-LAN will be used as the local node for the secondary CDR link. As mentioned earlier, it is also possible to use the C-LAN board in location 2a03 for the secondary CDR link as well.

```

change ip-interface 1a03                                     Page 1 of 1

                                IP INTERFACES

                                Type: C-LAN                ETHERNET OPTIONS
                                Slot: 01A03                Auto? y
                                Code/Suffix: TN799 D
                                Node Name: clan-01a03
                                IP Address: 192.45 .100.16
                                Subnet Mask: 255.255.255.0
                                Gateway Address: 192.45 .100.254
                                Enable Ethernet Port? y
                                Network Region: 1
                                VLAN: n

Number of CLAN Sockets Before Warning: 400

```

Figure 12: IP Interfaces Form for C-LAN Board 1a03

The *ip-services* screen specifies the local and remote nodes of the primary and secondary CDR links. In the following configuration, the CDR links, referred to as **CDR1** and **CDR2**, are established between a C-LAN board (local node) and the PhonEX and MEIPS servers (remote nodes), respectively. Communication Manager sends the call records over the CDR links using port number 9000 or any other valid port number. The port number configured here is required to match the configuration of PhonEX / MEIPS. In the example below, each CDR link terminates on a different C-LAN board, but the CDR links could have been configured to terminate on the same C-LAN board. The node names specified for the local and remote nodes map to the IP address specified in the “**node-names ip**” form. For the CDR service type, the **Enabled** and **Local Port** fields are display-only fields that default to blank and ‘0’, respectively. These fields are not relevant for CDR links.

```

change ip-services                                         Page 1 of 3

                                IP SERVICES
Service Type      Enabled   Local Node      Local Port      Remote Node      Remote Port
SAT               y        clan-01a03     5023            any              0
CDR1                       clan-02a03     0               PhonEX          9000
CDR2                       clan-01a03     0               MEIPS           9000

```

Figure 13: IP Services Form (Page 1)

On Page 3 of the “ip-services” form, enable the Reliable Session Protocol (RSP) for each CDR link by setting the **Reliable Protocol** field to ‘y’.

change ip-services						Page 3 of 3
Service Type	Reliable Protocol	SESSION LAYER TIMERS				Connectivity Timer
		Packet Resp Timer	Session Message	Connect Cntr	SPDU Cntr	
CDR1	y	30		3	3	60
CDR2	y	30		3	3	60

Figure 14: IP Services Form (Page 3)

The configuration of the *system-parameters cdr* form and the ISDN or H.323 **trunk group** form on the S8700 Media Server are identical to the configuration on the S8300 Media Server, as shown in Section 3.

To generate CDR records for intra-switch calls (i.e., calls between extensions on the same media server), enter the extensions to be tracked by intra-switch CDR in the following screen. Intra-switch CDR was enabled for all of the IP and DCP phones in the configuration displayed in **Figure 1**. See the note on Page 9 regarding the special application (**SA8202**) **Intra-Switch CDR by COS**.

change intra-switch-cdr						Page 1 of 2
INTRA-SWITCH CDR						
Assigned Members:	4	of 5000	administered			
1: 30000	19:	37:	55:	73:	91:	
2: 30001	20:	38:	56:	74:	92:	
3: 30002	21:	39:	57:	75:	93:	
4: 30003	22:	40:	58:	76:	94:	
5:	23:	41:	59:	77:	95:	
6:	24:	42:	60:	78:	96:	
7:	25:	43:	61:	79:	97:	
8:	26:	44:	62:	80:	98:	
9:	27:	45:	63:	81:	99:	
10:	28:	46:	64:	82:	100:	
11:	29:	47:	65:	83:	101:	
12:	30:	48:	66:	84:	102:	
13:	31:	49:	67:	85:	103:	
14:	32:	50:	68:	86:	104:	
15:	33:	51:	69:	87:	105:	
16:	34:	52:	70:	88:	106:	
17:	35:	53:	71:	89:	107:	
18:	36:	54:	72:	90:	108:	

Figure 15: Intra-switch CDR Form

5. Configure MIND PhonEX / MEIPS Call Accounting Systems

This section describes the configuration required to set up CDR links between the S8300 and S8700 Media Servers and the PhonEX and MEIPS servers. The configuration for PhonEX and MEIPS are identical, except for the server ports used for the CDR connections. The PhonEX application is used to describe the administration procedure; however, the reader should follow the same procedure for configuring the MEIPS application. The screens shown below are identical for PhonEX and MEIPS and all comments made about PhonEX apply equally to MEIPS. For differences between PhonEX and MEIPS, consult the product documentation.

Note: A Dongle (security plug) must be connected to a USB or parallel port on the MIND server for client access to the MIND PhonEX / MEIPS Call Accounting Systems. Also, if the autologin feature is disabled, the application will prompt the user to log in. The user should enter the appropriate login and password credentials.

5.1. PhonEX MultiSite

The **PhonEX MultiSite** application manages multiple PBX sites and provides a central location for collecting call data from all sites. In these Application Notes, two sites were created for the S8700 and S8300 Media Server sites.

The **PhonEX MultiSite** application is used to create new sites, configure CDR links, and view the state of the CDR links to multiple PBXs. It essentially provides the same functionality as the Avaya Reliable Data Transport Tool (RDTT), a sample RSP-enabled application. Upon starting the PhonEX MultiSite application, the **MultiSite Center** main interface is displayed. This screen displays a table of PBX sites that have been previously defined. Initially, there is no data in the system.

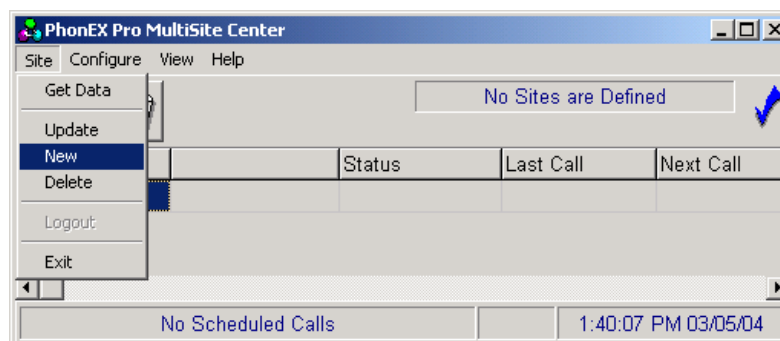


Figure 16: MultiSite Center Screen

From the **MultiSite Center** interface, select **New** from the **Site** menu to define a new site. The **New Site** dialog box is displayed below. First, the S8700 Media Server is added to the system. In the **General** tab, specify the site name and the subdirectory. The site name is used throughout the application to identify the site and the subdirectory stores the CDR records before and after they are processed. The subdirectory is created under the PhonEX application directory. In this configuration, the subdirectory C:\Program Files\PhonEX\S8700 is automatically created. The S8700 subdirectory contains the COM and DF subdirectories. CDR records that have been collected, but not processed, are stored in the COM directory in the *data.dat* file. CDR records that have been processed are stored in the database in the DF directory. Finally, select DEFINITY as the connection method. Repeat these steps to add the S8700 Media Server site to the MEIPS server.

The screenshot shows the 'New Site' dialog box with the following fields and values:

- Name:** S8700 Media Server
- Subdirectory:** S8700
- Code:** (empty)
- Communication Section:**
 - Connection Type:** Automatic
 - Connection Method:** DEFINITY
 - Active:**

Buttons on the right: OK (green checkmark), Cancel (red X), Help (question mark). The bottom of the dialog shows tabs for General, Connection, and Communication, with General selected.

Figure 17: New Site Screen for Avaya S8700 Media Server (General Tab)

In the **Communication** tab of the **New Site** screen, describe the connection settings specific to the S8700 Media Server site. For this site, specify the IP address of the C-LAN board in the G600 Media Gateway that connects to PhonEX. C-LAN board 2A03 connects to PhonEX and has an IP address of 192.45.100.17. C-LAN board 1A03 connects to MEIPS and has an IP address of 192.45.100.16. The **Site Port** field is set to the port number specified in the CDR link configuration in the *ip-services* form of Avaya Communication Manager. For the S8700 Media Server, the **Site Port** field is set to 9000. Repeat these steps on MEIPS to configure the secondary CDR link on the S8700 Media Server. In MEIPS, the IP address should be set to 192.45.100.16 and the port should be 9000. After the **New Site** form has been completed, click the OK button.

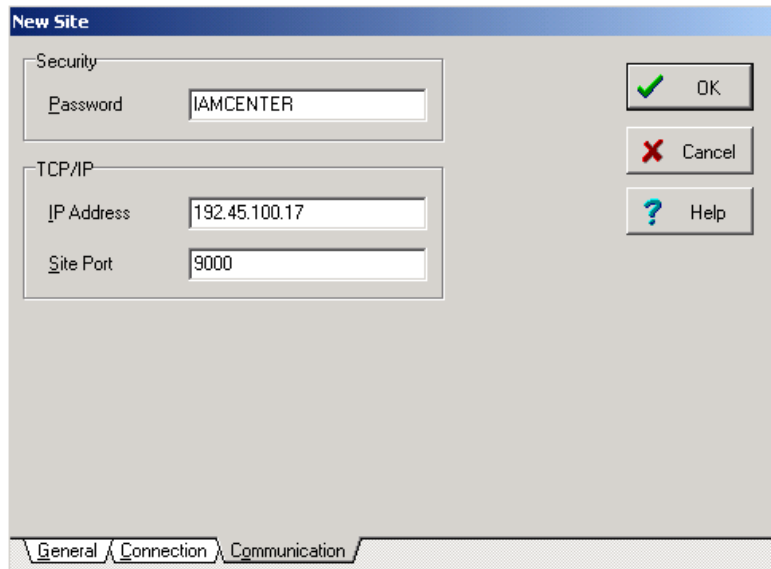


Figure 18: New Site Screen for Avaya S8700 Media Server (Communication Tab)

After the CDR link is configured, the **Network Receiver** is launched automatically and displays the state of the CDR link. When the CDR link is established, the status is set to *Connected*. The **Network Receiver** must be running for PhonEX to collect CDR records.

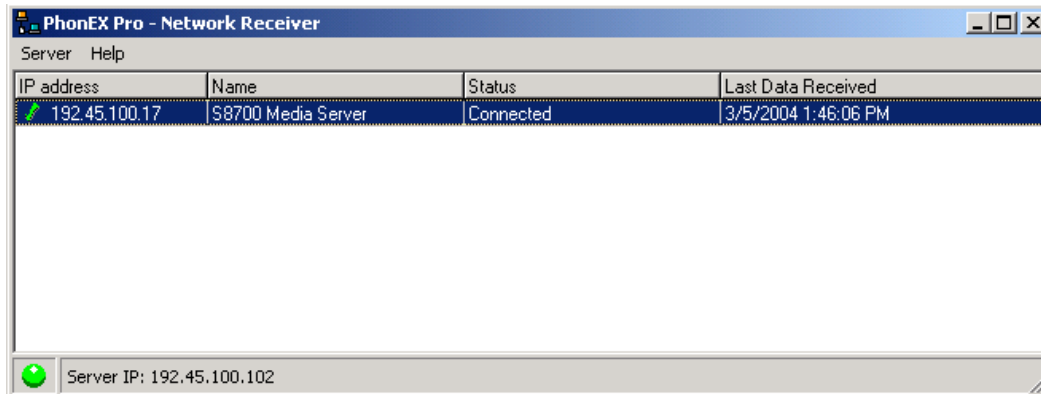


Figure 19: Network Receiver with CDR Link Status for Avaya S8700 Media Server

Now, add the S8300 Media Server to the PhonEX system. In the **General** tab of the **New Site** form, specify the site name and the subdirectory. The site name is used throughout the application to identify the site and the subdirectory stores the CDR records before and after they are processed. The subdirectory is created under the PhonEX application directory. In this configuration, the subdirectory C:\Program Files\PhonEX\S8300 is automatically created. The S8300 subdirectory contains the COM and DF subdirectories. CDR records that have been collected, but not processed, are stored in the COM directory in the *data.dat* file. CDR records that have been processed are stored in the database located in the DF directory. Finally,

select DEFINITY as the connection method. Repeat these steps to add the S8300 Media Server site to the MEIPS server.

The screenshot shows the 'New Site' dialog box with the following fields and values:

- Name: S8300 Media Server
- Subdirectory: S8300
- Code: (empty)
- Communication section:
 - Connection Type: Automatic
 - Connection Method: DEFINITY
 - Active:

Buttons: OK (green checkmark), Cancel (red X), Help (blue question mark). Tab bar at the bottom: General / Connection / Communication.

Figure 20: New Site Screen for Avaya S8300 Media Server (General Tab)

In the **Communication** tab of the **New Site** screen, describe the connection settings specific to the S8300 Media Server site. For this site, specify the IP address of the S8300 Media Server (or Processor Ethernet). The Processor Ethernet connects to PhonEx and MEIPS and has an IP address of 10.1.1.1. The **Site Port** field is set to the port number specified in the CDR link configuration in the *ip-services* form of Avaya Communication Manager. For the S8300 Media Server, the **Site Port** field is set to 9001. Repeat these steps on MEIPS to configure the secondary CDR link on the S8300 Media Server. In MEIPS, the IP address should be set to 10.1.1.1 and the port should be set to 9001. After the **New Site** form has been completed, click the OK button.

The screenshot shows the 'New Site' dialog box with the following fields and values:

- Security section:
 - Password: JAMCENTER
- TCP/IP section:
 - IP Address: 10.1.1.1
 - Site Port: 9001

Buttons: OK (green checkmark), Cancel (red X), Help (blue question mark). Tab bar at the bottom: General / Connection / Communication.

Figure 21: New Site Screen for Avaya S8300 Media Server (Communication Tab)

After the CDR link is configured, the **Network Receiver** is launched automatically and displays the state of the configured CDR links. When a CDR link is established, the status is set to *Connected*. The **Network Receiver** must be running for PhonEX to collect CDR records.

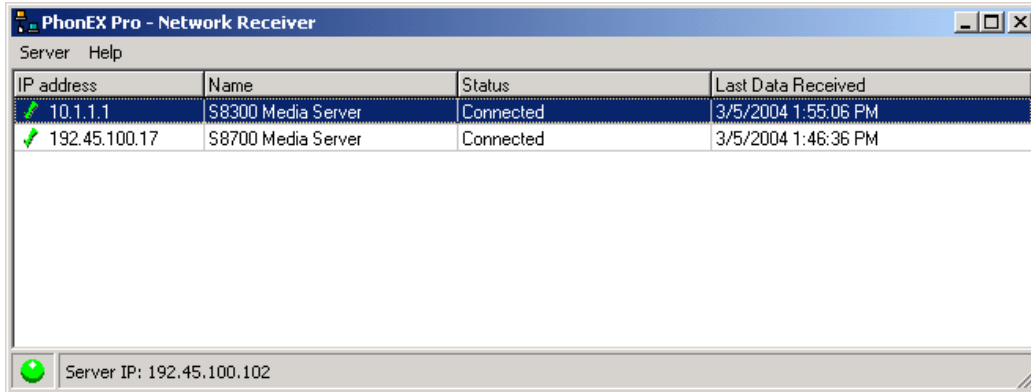


Figure 22: Network Receiver with CDR Link Status for Avaya S8300 and S8700 Media Servers

5.2. PhonEX Setup

The **PhonEX Setup** program is used to configure the system. It allows the user to define the output format used to process CDR records and to set the frequency (in seconds) for processing the collected CDR records. The **Setup** program performs other functions, but they are beyond the scope of these Application Notes. When the **PhonEX Setup** application is started, the following **Sites** dialog box is displayed with a list of configured sites.

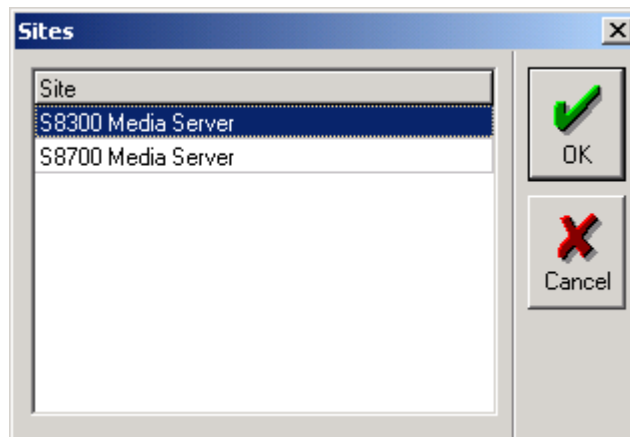


Figure 23: Sites Screen

Select the site to configure by highlighting the entry and clicking the OK button. The following **Setup** window is displayed.

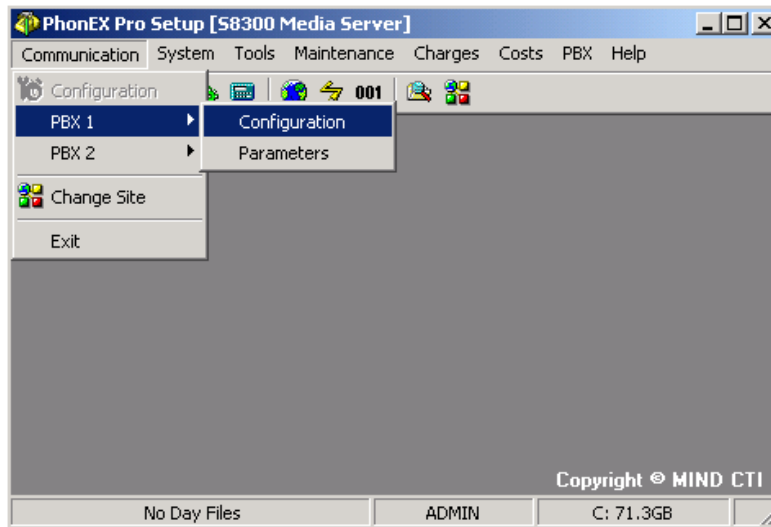


Figure 24: Setup Screen

Select the **PBX 1→Configuration** option from the **Communication** menu to display the PBX Configuration screen. Selecting PBX 1 or PBX 2 configuration allows the system to use the files in the COM or COM_2 subdirectory created under the S8700 or S8300 subdirectories. In this window, set the **PBX type** field to CDR record format to be used by PhonEX when processing the collected CDR records. For the S8300 Media Server, the **PBX type** should be set to the customized output format defined in the *system-parameters cdr* form in Avaya Communication Manager. The customized format was also programmed in PhonEX and called “AVAYA – S8300/S8700 customized”. For the S8700 Media Server, the **PBX type** field should be set to the int-direct standard output. The int-direct format was also programmed in PhonEX and called “AVAYA – S8300/S8700 int-direct”. After setting the **PBX type** field, click on the **Save** button.

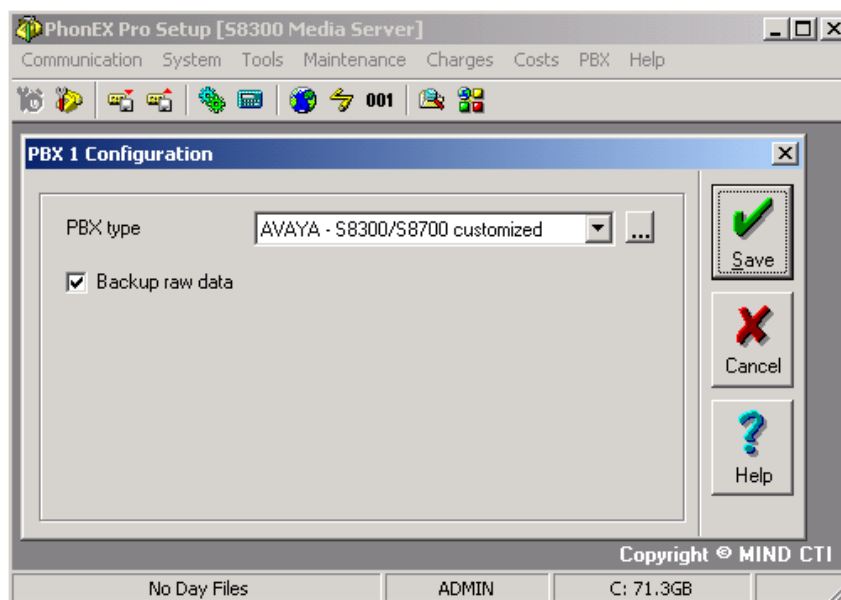
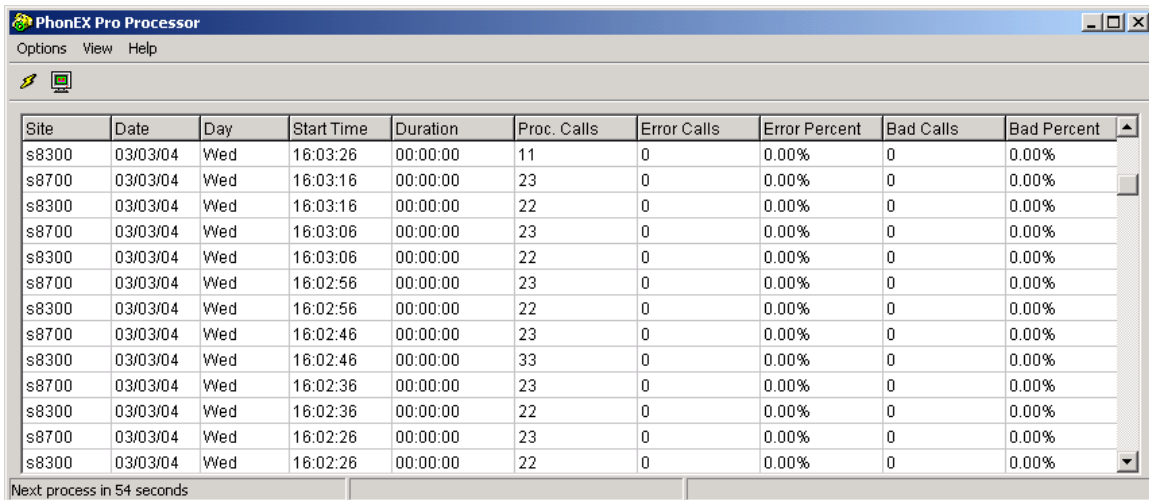


Figure 25: PBX Configuration Screen

5.3. PhonEX Processor

The **PhonEX Processor** application is used to automatically process collected data from the PBX. CDR records are processed periodically according to the frequency specified in the System Configuration. Once the CDR records are processed, they are stored in the PhonEX database and made available to other PhonEX applications for reports and billing. The **Processor** also indicates whether there were errors during processing. Errors may indicate an output format mismatch between Avaya Communication Manager and PhonEX / MEIPS. It is recommended that the **Processor** be kept running. The user should not close the **Processor** application. The **Processor** may be started manually by selecting **Start→Programs→PhonEX Pro→PhonEX Pro Processor** or may be started automatically during Windows startup.



The screenshot shows the 'PhonEX Pro Processor' application window. It has a menu bar with 'Options', 'View', and 'Help'. Below the menu bar is a toolbar with a lightning bolt icon and a monitor icon. The main area contains a table with the following columns: Site, Date, Day, Start Time, Duration, Proc. Calls, Error Calls, Error Percent, Bad Calls, and Bad Percent. The table contains 15 rows of data for various sites (s8300 and s8700) on 03/03/04. At the bottom of the window, it says 'Next process in 54 seconds'.

Site	Date	Day	Start Time	Duration	Proc. Calls	Error Calls	Error Percent	Bad Calls	Bad Percent
s8300	03/03/04	Wed	16:03:26	00:00:00	11	0	0.00%	0	0.00%
s8700	03/03/04	Wed	16:03:16	00:00:00	23	0	0.00%	0	0.00%
s8300	03/03/04	Wed	16:03:16	00:00:00	22	0	0.00%	0	0.00%
s8700	03/03/04	Wed	16:03:06	00:00:00	23	0	0.00%	0	0.00%
s8300	03/03/04	Wed	16:03:06	00:00:00	22	0	0.00%	0	0.00%
s8700	03/03/04	Wed	16:02:56	00:00:00	23	0	0.00%	0	0.00%
s8300	03/03/04	Wed	16:02:56	00:00:00	22	0	0.00%	0	0.00%
s8700	03/03/04	Wed	16:02:46	00:00:00	23	0	0.00%	0	0.00%
s8300	03/03/04	Wed	16:02:46	00:00:00	33	0	0.00%	0	0.00%
s8700	03/03/04	Wed	16:02:36	00:00:00	23	0	0.00%	0	0.00%
s8300	03/03/04	Wed	16:02:36	00:00:00	22	0	0.00%	0	0.00%
s8700	03/03/04	Wed	16:02:26	00:00:00	23	0	0.00%	0	0.00%
s8300	03/03/04	Wed	16:02:26	00:00:00	22	0	0.00%	0	0.00%

Figure 28: Processor Screen

5.4. PhonEX

The heart of the **PhonEX** program is its ability to summarize data and produce reports. The **PhonEX** program provides access to the query and report features, and also allows the **PhonEX Processor** to be started, if it isn't already running. It is recommended that the **Processor** be kept running at all times so that CDR records are processed periodically. When the application is started, the **Sites** window, similar to **Figure 23**, is displayed with the list of configured sites. Select a site and click on the OK button. The **PhonEX Call Accounting System** window is displayed and the **Processor** is started. Reports can then be produced from the call data of the selected site.

Reports can be generated from the **Query** dialog box or the **Summary Reports** window. These screens are illustrated below, but the reader should consult the PhonEX User's Guide for instructions on producing reports.

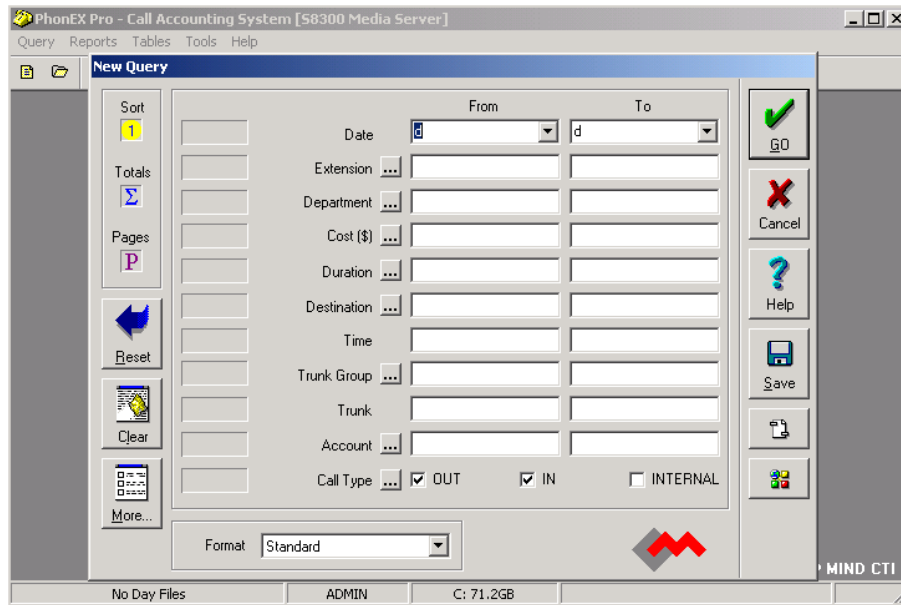


Figure 29: Query Screen

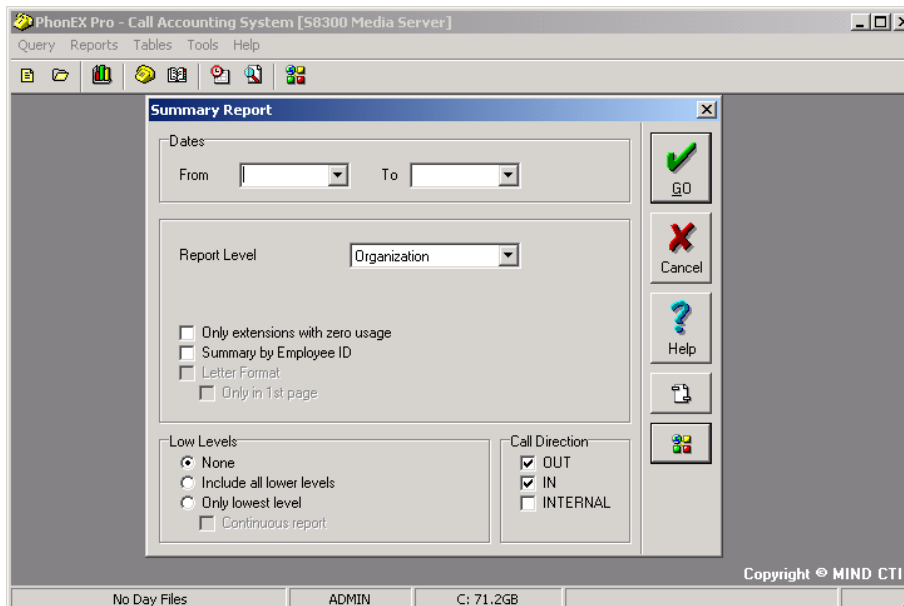


Figure 30: Summary Reports Screen

6. Interoperability Compliance Testing

Interoperability compliance testing covered feature functionality and performance testing. Feature functionality testing focused on verifying the ability of PhonEX / MEIPS to establish CDR links running RSP, collect and process CDR records using compatible output formats with Avaya Communication Manager, and applying queries to produce reports and display the data.

For performance testing, a bulk call generator was used to generate calls at the rate of 16000 calls per hour which resulted in call records being sent to the PhonEX / MEIPS Call Accounting Systems.

6.1. General Test Approach

All feature functionality test cases were performed manually. The general test approach entailed verifying CDR collection for different call types, such as trunk calls, intra-switch calls, conference calls, transferred calls, and forwarded calls. Compliance testing also verified the compatible CDR record formats supported by PhonEX / MEIPS. Performance tests verified CDR collection under a bulk call load. In addition, the following components in the MIND PhonEX and MEIPS Call Accounting Systems were utilized:

- **PhonEX / MEIPS MultiSite** - to configure the CDR links for multiple PBX sites, to view status information about the CDR link, and to run the Network Receiver responsible for CDR collection.
- **PhonEX / MEIPS Setup** - to define the output format used to process CDR records and to set the frequency (in seconds) for processing the collected CDR records.
- **PhonEX / MEIPS Processor** – to process the collected CDR records according to the specified frequency.
- **PhonEX / MEIPS** - to start the Processor and perform queries to produce reports.

6.2. Test Results

All feature functionality and performance tests passed successfully. The MIND CTI PhonEX and MEIPS Call Accounting Systems were able to establish a CDR link with RSP to Avaya Communication Manager, collect CDR records using the *int-direct* and *customized* record formats, and successfully process the call data to produce reports. The customized CDR format should be used to display the calling number in the CDR record for incoming trunk calls, when available.

7. Verification Steps

To verify the CDR solution comprised of the MIND PhonEX / MEIPS Call Accounting Systems and Avaya Media Servers in the field, the following steps may be performed:

- Use ping to verify IP communication between the PhonEX / MEIPS servers, the C-LAN boards in the G600 Media Gateway, and the S8300 Media Server (i.e., Processor Ethernet).

- Verify the state of the CDR link on the Avaya Media Servers and PhonEX / MEIPS. Run the “**status cdr-link**” command on the Avaya Media Servers and check the CDR link status on the **Network Receiver** on PhonEX / MEIPS.
- Verify CDR collection by the **Network Receiver** in PhonEX / MEIPS. Place a trunk call or intra-switch call and verify that the raw call record was stored in the *data.dat* file in the appropriate subdirectory in the MIND server.
- Run the **Processor** on PhonEX / MEIPS and verify that the call records were successfully processed without errors, as indicated in the **Processor** window.
- Query the database and produce a report using the PhonEX / MEIPS programs.

8. Support

US customers requiring technical support on the MIND PhonEX and MEIPS Call Accounting Systems should contact MIND Customer Support via telephone at (866) MIND-CTI or send email to support@usmind.com. For EMEA support, send email to support@mindcti.com.

9. Conclusion

These Application Notes illustrate the configuration steps required to enable the MIND CTI PhonEX and MEIPS Call Accounting Systems to collect CDR records from Avaya Communication Manager. PhonEX / MEIPS was compliance-tested with the Avaya S8300 and S8700 Media Servers. The Avaya Media Servers were configured with primary and secondary CDR links running Avaya’s Reliable Session Protocol and using the *int-direct* and *customized* CDR formats. Once the call data was retrieved, PhonEX / MEIPS successfully processed the call records and stored them in a database.

10. Additional References

This section references the Avaya and MIND product documentation that are relevant to these Application Notes.

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

[1] Administrator’s Guide for Avaya Communication Manager, Release 2.0, Issue 7, December 2003; Document Number 555-233-506.

The following MIND product documentation can be found at <http://enterprise.usmind.com>.

[2] PhonEX Pro Version 8.0 Installation Guide.

[3] PhonEX Pro Version 8.0 User’s Guide.

[4] PhonEX-MultiSite User Manual.

[5] MEIPS Version 3.0 Installation Guide.

[6] MEIPS Version 3.0 User’s Guide.

[7] MEIPS-MultiSite User Manual.

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