



Avaya Solution & Interoperability Test Lab

Application Notes for the Metropolis ProfitWatch Hotel Call Accounting System Integrating with Avaya Communication Manager - Issue 1.0

Abstract

These Application Notes describe the configuration steps required for the Metropolis ProfitWatch to successfully interoperate with Avaya Communication Manager.

The ProfitWatch Hotel Call Accounting System 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 Metropolis ProfitWatch collects and processes the call records, and then sends the records to the hotel's property management system for the billing purposes. 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 Metropolis ProfitWatch (Version 2006.10.05) can interoperate with Avaya Communication Manager (Version 3.1.2). The Metropolis ProfitWatch receives raw CDR data from Avaya Communication Managers to provide customers management information reports. Once the call records are generated, the Metropolis ProfitWatch forwards those call records to the hotel's property management system (PMS) for billing. The interface to Avaya Communication Manager is through the Reliable Session Protocol (RSP) over the TCP/IP protocol.

Figure 1 illustrates the network configuration used to verify the Metropolis ProfitWatch with Avaya Communication Manager. The figure shows two separate sites each running Avaya Communication Manager on separate media servers. Site A is comprised of Avaya S8700 Media Servers and an Avaya G650 Media Gateway, and has connections to Avaya 4600 Series IP Telephones, Avaya Digital Telephones, and a PRI trunk to the PSTN. Site B is comprised of an Avaya S8300 Media Server with an Avaya G350 Media Gateway, and has connections to Avaya 4600 Series IP Telephones and an Avaya Digital Telephone. Site C is comprised of an Avaya S8300 Media Server with an Avaya G250 Media Gateway, which has connections to an Avaya 4600 Series IP Telephone and Avaya Analog Telephone. Site C is setup as Local Survivable Processor (LSP) to Site A. An IP trunk connects the two Avaya Communication Manager systems between Site A and Site B.

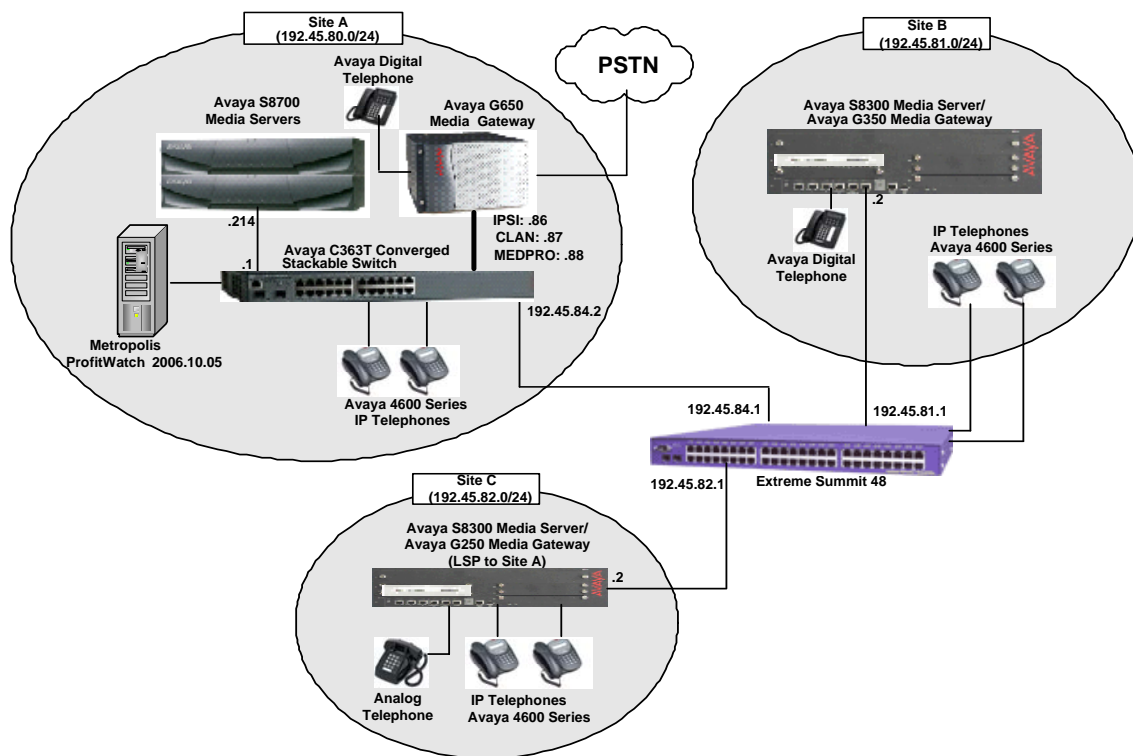


Figure 1. Test configuration of ProfitWatch with Avaya Communication Manager

2 Equipment and Software Validated

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

Equipment		Software
Avaya S8700 Media Server		Communication Manager 3.1.2 (R013x.01.2.632.1)
Avaya G650 Media Gateway		
	TN2312BP IP Server Interface	HW11 FW030
	TN799DP C-LAN Interface	HW20 FW017
	TN2302AP IP Media Processor	HW01 FW108
	TN2602AP IP Media Processor	HW02 FW007
Avaya S8300 Media Server with Avaya G350 Media Gateway		Communication Manager 3.1.2 (R013x.01.2.632.1)
Avaya S8300 Media Server with Avaya G250 Media Gateway (LSP Mode)		Communication Manager 3.1.2 (R013x.01.2.632.1)
Avaya 4600 Series IP Telephones		
	4620	2.6
	4621	2.6
	4625	2.5
Avaya 6400 Series Digital Telephones		-
Analog Telephones		-
Avaya C363T-PWR Converged Stackable Switch		4.5.14
Extreme Summit 48		4.1.21
Metropolis ProfitWatch call accounting software OS – Windows Server 2003		2006.10.05

3 Configure Avaya Communication Manager

This section provides the procedures for configuring Call Detail Recording (CDR) 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. An Avaya Communication Manager is configured to generate CDR records and sends CDR records to the IP address of ProfitWatch, using the 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 ProfitWatch. 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 the ProfitWatch.

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, **CDR-Metropolis**. This node name is associated with the IP Address of the Metropolis ProfitWatch. 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
CDR-Metropolis	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 the 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: **CDR-Metropolis** [The Remote Node is set to the node name previously defined.]
- 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 Metropolis ProfitWatch.]

change ip-services		Page 1 of 4	
		IP SERVICES	
Service Type	Enabled	Local Node	Remote Node
CDR1		CLAN	CDR-Metropolis
		0	9000

On Page 3 of the IP SERVICES form, 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 Type	Reliable Protocol	Packet Resp Timer	Session Connect Message Cntr
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: **unformatted**
- 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. 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 1
                                CDR SYSTEM PARAMETERS

Node Number (Local PBX ID): 1                                CDR Date Format: month/day
Primary Output Format: unformatted                            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
```

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. To simplify the process of adding multiple extensions in the Assigned Members 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 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:

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.

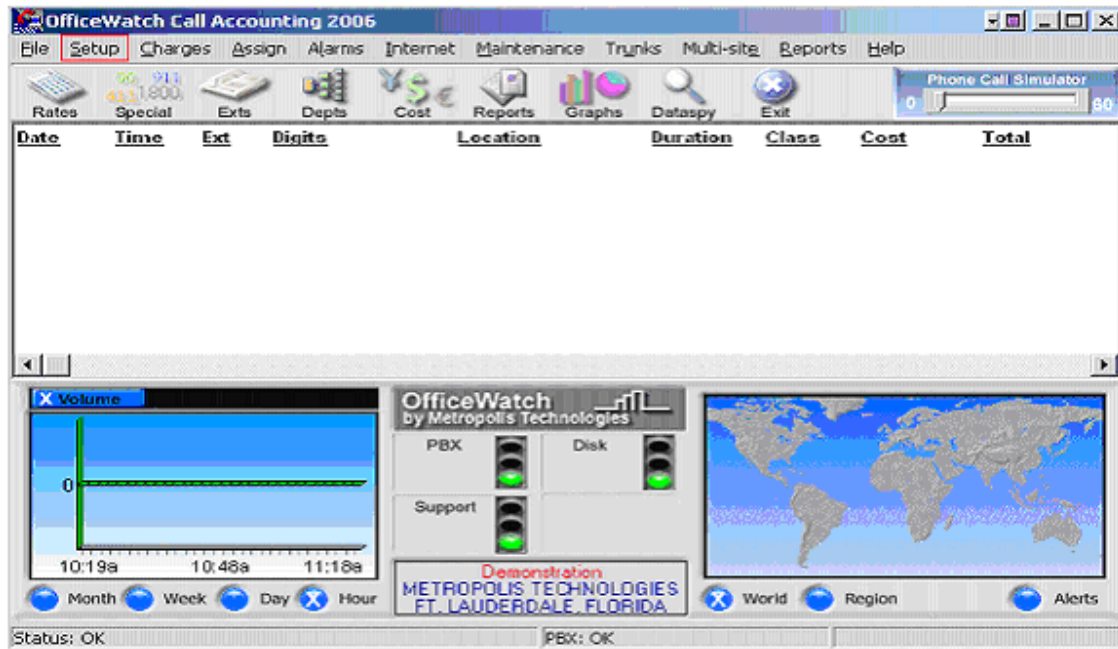
change trunk-group 80			Page 1 of 20	
TRUNK GROUP				
Group Number: 80		Group Type: isdn		CDR Reports: y
Group Name: OUTSIDE CALL		COR: 1	TN: 1	TAC: 103
Direction: two-way		Outgoing Display? y	Carrier Medium: PRI/BRI	
Dial Access? y		Busy Threshold: 255	Night Service:	
Queue Length: 0				
Service Type: 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 the Metropolis ProfitWatch

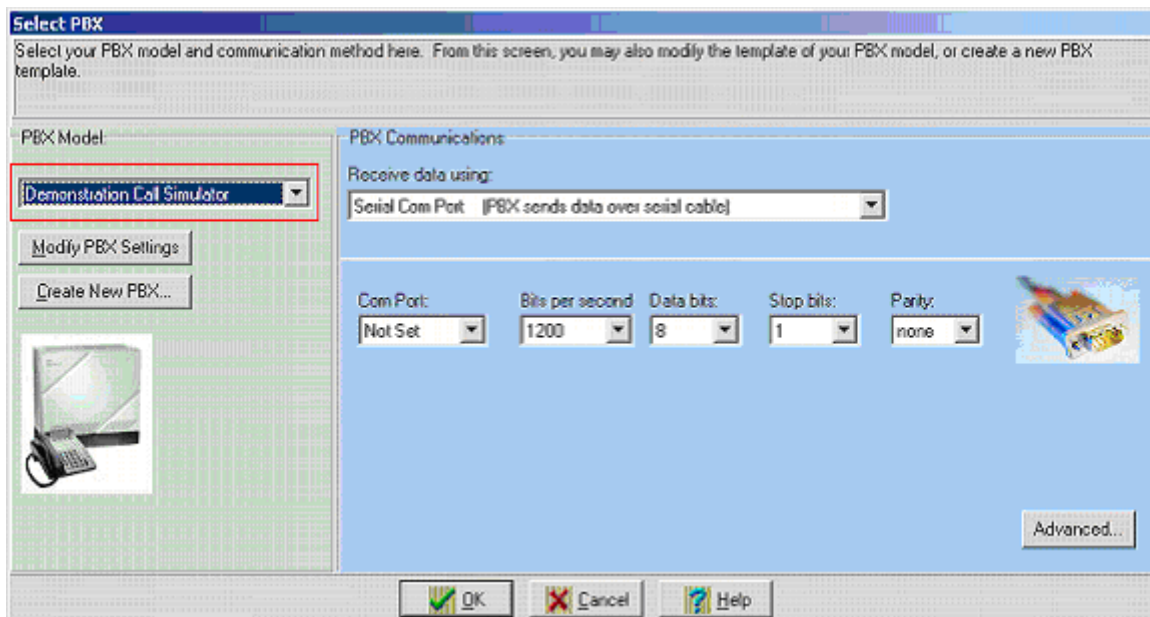
ProfitWatch connects to Avaya Communication Manager via the RSP over the TCP/IP port. CDR data is sent from Avaya Communication Manager to ProfitWatch, where the raw data is transformed into the call records, which are then immediately available for reporting. This section only covers the basic configuration to interoperate with Avaya Communication Manager. For additional information on configuring the Metropolis ProfitWatch, refer to [3].

4.1 RSP Port Configuration

This section describes steps to configure a listening port for RSP. From the Metropolis ProfitWatch server, navigate to **Start → All Programs → ProfitWatch Call Accounting**, and the ProfitWatch Call Accounting system will start, as shown below. To configure the listening port, navigate to **Setup → PBX...** from the top menu.



In the following Select PBX screen, select a **PBX type** using the drop down menu. For the test configuration, the PBX model, Avaya S8500 Media Server, had previously been created with appropriate fields.



After the PBX type is selected, provide the following information:

- Receive Data Using field – Select **I.P. As Client** using the drop down menu.
- PBX IP Address field – **IP address of the CLAN** [If the Avaya S8300 Media Server was utilized, set the PBX IP Address field to “procr”.]
- Listening Port field – **9000** [This listening port number must match with the Remote Port number configured on Page 1 of the IP SERVICE form in Avaya Communication Manager.]
- Optional Protocol field – Select **Avaya RSP** using the drop down menu.

After the information is provided, select the **Modify PBX Settings** button.

Select PBX

Select your PBX model and communication method here. From this screen, you may also modify the template of your PBX model, or create a new PBX template.

PBX Model

Avaya S8500 Media Server

Modify PBX Settings

Create New PBX...

PBX Communications

Receive data using:

I.P. As Client [PBX holds data until application pulls data via IP]

PBX IP Address: 192.45.80.87

Listen Port: 9000

Optional protocol

Avaya RSP

OK Cancel Help

[illegible]

The screenshot shows the "Modify PBX - Avaya S8500 Media Server" window. The title bar indicates the server name. Below the title bar, there's a status bar that says "Data Received from PBX Position = 66".

The main area displays a list of calls received from the PBX. The first call is highlighted in blue:

Time	Date	Duration
11:14	09/20	
11:23	09/20	
10:16	09/20	

Below the list, there are several tabs: "Outgoing Calls", "Incoming Calls" (which is selected), "Internal Calls", "Model", "Filters", "Translations", "T-1", and "Misc.". The "Incoming Calls" tab contains two tables.

The first table lists incoming call identifiers:

Pos	Format
1	3) hmmm
1	26) Use Today'
5	14) hhmm/tenths

The second table lists incoming call details:

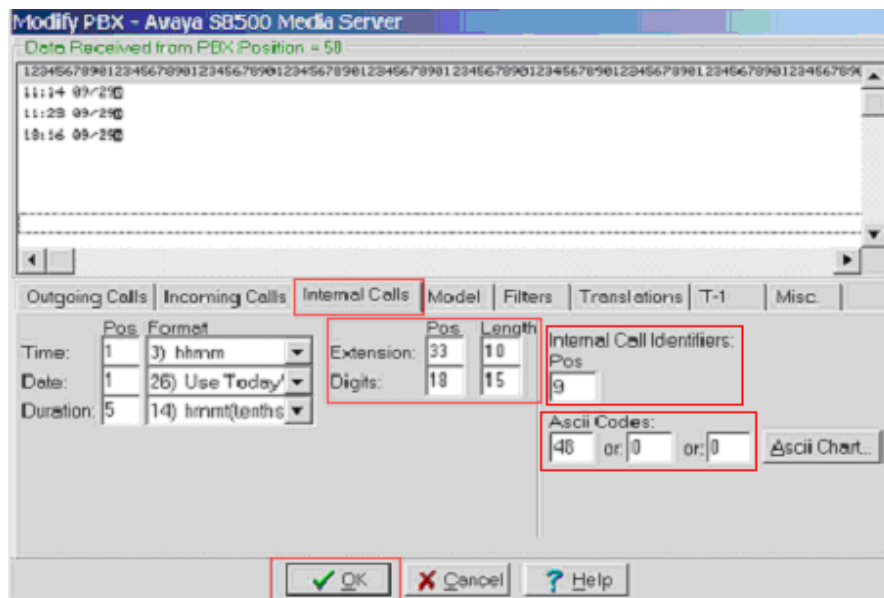
Pos	Length
Extension:	28
Digits:	33
Trunk:	77
Account:	43
PIN Code:	0
Call ID Num:	0

To the right of these tables, there are input fields for "Incoming Call Identifiers":

- Pos: []
- Ascii Codes: [57] or [67] or [0]
- A button labeled "Ascii Chart..."

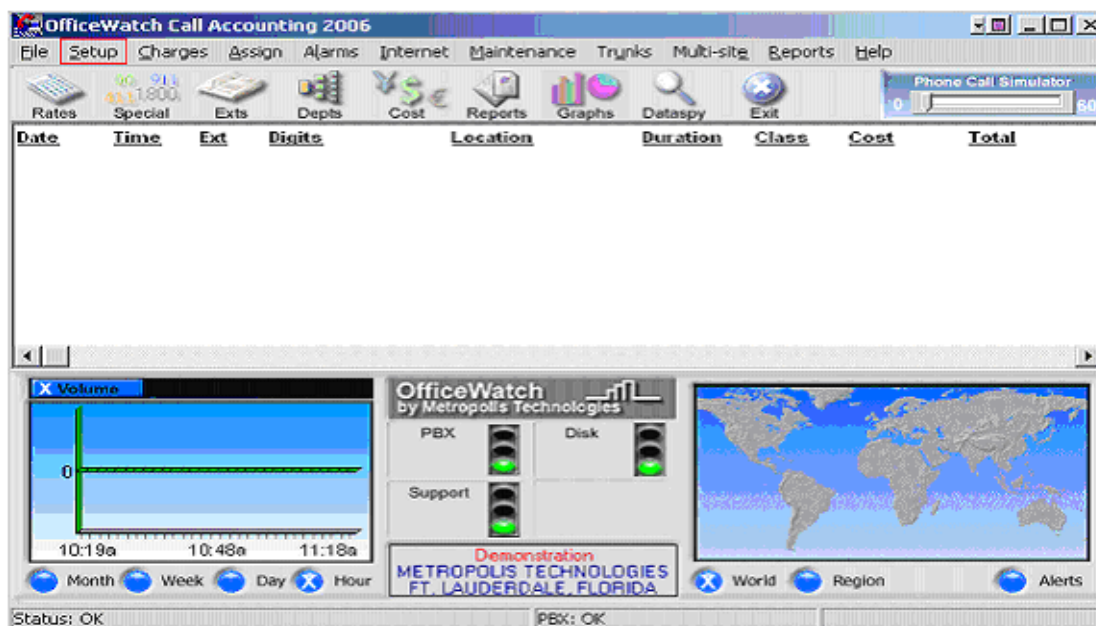
At the bottom of the window, there are three buttons: "OK", "Cancel", and "Help".

Select the **Internal Calls** tab to provision the internal (Intra-Switch) calls report data. The Internal Call Identifiers indicates the condition code. The Pos field, 9, indicates the 9th position of the raw CDR records. The Ascii Codes indicates the type of condition codes. The Ascii code, 48, is translated into 0 in the ProfitWatch Ascii table. In the “unformatted” format in Avaya Communication Manager, the condition code 0 indicates an internal call.

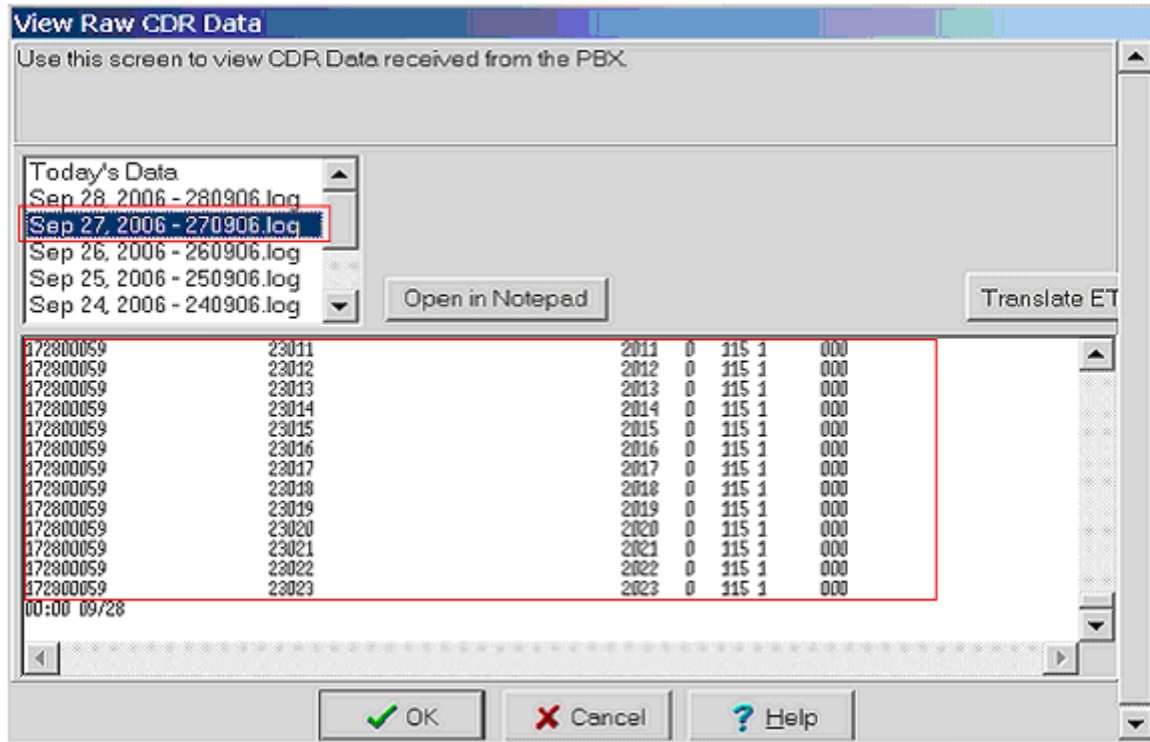


4.2 Raw Data Collection Configuration

This section describes how to retrieve the raw data. Navigate to **Start → All Programs → ProfitWatch Call Accounting**, and the ProfitWatch Call Accounting system will start, as shown below. Navigate to **Setup → Display PBX Data...** from the top menu.



From the “View Raw CDR Data” window, select a log file to view the raw CDR data.



4.3 Generating a Report

This section describes steps for generating a CDR report. Navigate to **Start → All Programs → ProfitWatch Call Accounting**, and the ProfitWatch Call Accounting system will start, as shown below. Navigate to **Reports → Report Generator ...** from the top menu.



From the “Report Generator” window, provide the **Date and Time Range** (Starting Date and Time) and **To** (Ending Date and time) field. Click the **Report** button at the bottom.

The screenshot shows the 'Reports Generator' window with the 'Extension Details Report' selected. The 'Date and Time Range' is set from '27-Sep-06 00:00' to '27-Sep-06 23:59'. The 'Extension Range' is '0' to '999999'. The 'Sort entries by' is 'Extension'. The 'Departments' list includes 'Default Staff', 'Reception', 'Sales Dept', 'Customer Service', 'Accounting', 'Marketing', 'Shipping', and 'GeoGlobal Inc. Offices'. The 'Include Calls of Type' is set to 'Outgoing + Incoming'. The 'Send output to' options are 'Screen', 'Printer', and 'File'. The 'Report' button is highlighted with a red box.

The following screen displays a sample CDR report.

The screenshot shows the 'OfficeWatch - Extension Details Report - Microsoft Internet Explorer' window. The report is for 'DEYONNECT FT. LAUDERDALE, FLORIDA' and 'Report Date: 29-Sep-06 13:20:00'. The report details are as follows:

Date	Time	Number Dialed	Location	Account	Duration	Charge	Tax	Total
09/27/06	17:27		INC-Incoming_Call		00:00:30	0.00	0.00	0.00
09/27/06	17:28		INC-Incoming_Call		00:00:30	0.00	0.00	0.00
Total Calls: 2					00:01:00	0.00	0.00	0.00

Date	Time	Number Dialed	Location	Account	Duration	Charge	Tax	Total
09/27/06	17:27		INC-Incoming_Call		00:00:30	0.00	0.00	0.00
09/27/06	17:28		INC-Incoming_Call		00:00:30	0.00	0.00	0.00
Total Calls: 2					00:01:00	0.00	0.00	0.00

Date	Time	Number Dialed	Location	Account	Duration	Charge	Tax	Total
09/27/06	17:27		INC-Incoming_Call		00:00:30	0.00	0.00	0.00
09/27/06	17:28		INC-Incoming_Call		00:00:30	0.00	0.00	0.00
Total Calls: 2					00:01:00	0.00	0.00	0.00

4.4 Configure the Property Management System (PMS) interface

This section describes steps to configure the Metropolis ProfitWatch to interface with the PMS. Once a guest at the hotel completes a call, Avaya Communication Manager sends the CDR records to the Profit Watch Call Accounting system using the RSP over the TCP/IP port. ProfitWatch then transforms the raw data into the call records. Those call records will be sent to the Property Management System for billing.

The configuration of the PMS is not the scope of this test. Therefore, the PMS setup is not covered in these Application Notes.

From the Metropolis ProfitWatch server, navigate to **Start → All Programs → ProfitWatch Call Accounting**, and the ProfitWatch Call Accounting system will start, as shown below. To configure the PMS interface, select **Setup → Property Management System...** from the top menu.



The following screen displays the Property Management System parameters. Select the **Communications** submenu, and provide the following information:

- Send To: - Using the drop down menu, select **I.P.Port**. By selecting **I.P.Port**, ProfitWatch utilizes the IP address of the PMS to send call records.
- PMS IP Port: - The communication between ProfitWatch and the PMS should be accomplished using this port setting. Thus, the port setting has to match in ProfitWatch and the PMS. The default value the PMS IP Port is **3000**.
- PMS IP Address: - IP Address of the PMS, which call records will be sent to.
- Post Format: - Using the drop down menu, select **HOBIC 2001 (supports 10-digit local calls)** which is the default value for most hotels.

After the completion of the “Communications” submenu, select the **Transmit Calls** submenu.

Property Management System

To transmit calls to the PMS, enable the PMS interface and select the department(s) that you want calls transmitted for. Use the Communications menu to select the PMS record format.

Communications | Transmit Calls | PMS Call Buffer | Translate Extensions | PMS Codes | Misc

PMS Communications Settings

Send To: **I.P. Port** PMS IP Port: **3000** PMS IP Address: **128.128.128.128**

Post Format: **HOBIC 2001 (supports 10-digit local calls)** Block Check: **Yes**

OK Cancel Help

In the “Transmit Calls” page, check the **Enable PMS Interface** checkbox. Under the “Post calls from these departments to PMS” section, select the departments which the billing parameters will apply.

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

The screenshot shows the 'Property Management System' window with the 'Transmit Calls' tab selected. The 'Enable PMS Interface' checkbox is checked. In the 'Post calls from these departments to PMS' section, the 'Guest' checkbox is checked, while 'Back Office', 'Computer Room', 'Front Office', and 'Operators' are unchecked. The 'Transmit zero-cost calls' checkbox is also checked. The 'OK' button is highlighted at the bottom.

Department	Selected
Guest	Yes
Back Office	No
Computer Room	No
Front Office	No
Operators	No

5 Interoperability Compliance Testing

Interoperability compliance testing included feature, serviceability, and performance. The feature test evaluated the ability of the Metropolis ProfitWatch to collect and process CDR records for various types of calls. The serviceability test introduced failure scenarios to verify if ProfitWatch could resume CDR collection after failure 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 verify that ProfitWatch collected the CDR records and reported the correct attributes of the call. For serviceability testing, logical links were disabled/re-enabled in different sections of the network, and media servers were reset. For performance testing, a call generator was used to place calls over 2 hours.

5.2 Test Results

All feature, serviceability and performance tests passed. The Metropolis ProfitWatch successfully captured and processed call records from Avaya Communication Manager. ProfitWatch also successfully processed the CDR data, and produced call accounting reports. The types of calls generated during the compliance test include: intra-switch calls, inbound/outbound PSTN trunk calls, inbound/outbound inter-switch IP trunk calls, transferred calls, bridged calls, and conferenced calls. Performance tests verified that ProfitWatch 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 Communication Manager, enter the **status cdr-link** command and verify that the CDR link state is up.
- Place a call and verify that ProfitWatch receives the CDR record for the call. Compare the values of data fields in the CDR record with the expected values and verify that they match.
- Place internal, inbound trunk, and outbound trunk calls to and from various telephones, generate an appropriate report in ProfitWatch, and verify the report's accuracy.

7 Support

Technical support for ProfitWatch can be obtained by contacting Metropolis Support at 954-941-1010 or by sending e-mail to support@Metropolis.com.

8 Conclusion

These Application Notes describe the procedures for configuring the Metropolis ProfitWatch to collect and processes call detail records from Avaya Communication Manager. ProfitWatch successfully passed all compliance testing.

9 References

This section references the Avaya and Metropolis documentation that are relevant to these Application Notes. The Avaya product documentation can be found at <http://support.avaya.com>, and the ProfitWatch documentation can be obtained at <http://www.metropolis.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.

[3] *ProfitWatch Users Guide*, Version 2006.10.05.

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