



Avaya Solution & Interoperability Test Lab

Application Notes for Tri-Line TIM Plus with Avaya Communication Manager - Issue 1.0

Abstract

These Application Notes describe the configuration steps required for Tri-Line's TIM Plus to interoperate with Avaya Communication Manager.

TIM Plus is a call logging software package that interoperates with Avaya Communication Manager over TCP/IP for the collection of Call Details Record (CDR). TIM Plus listens, collects, and processes the call records generated for various types of calls.

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 objective of this compliance test is to verify that Tri-Line's TIM Plus 3.0.0.50 call logging software can interoperate with Avaya Communication Manager 5.1.2. TIM Plus interoperates with Avaya Communication Manager over TCP/IP for the collection of Call Detail Records (CDR). During compliance testing, the CDR collection was verified for Avaya Communication Manager running on an Avaya S8730 server and an Avaya S8300 server.

1.1. Interoperability Compliance Testing

The interoperability compliance test included feature and serviceability testing. The feature testing evaluated the ability of Tri-Line's TIM Plus to collect and process CDR records for various types of calls: intra-switch calls (calls between phones on the same site), outbound/inbound calls to/from the PSTN and outbound/inbound calls to/from the phones between the two sites via the IP trunk. The serviceability testing introduced failure scenarios to see if TIM Plus can resume CDR collection after failure recovery.

1.2. Support

Technical support from Tri-Line can be obtained through the following:

Phone: +44 20 7265 2626

E-mail: support@tri-line.com.

Web: <http://www.tri-line.com/>

2. Reference Configuration

Figure 1 illustrates a sample configuration that was used to compliance test the interoperability of Tri-Line's TIM Plus and Avaya Communication Manager. The configuration consists of two Avaya Servers running Avaya Communication Manager. Site A is comprised of an Avaya S8730 Media Server with a G650 Media Gateway, and has connections to Avaya 9600 Series IP Phones, Avaya 2400 Series Digital Telephone and an ISDN-PRI trunk to the simulated PSTN. Site B is comprised of an Avaya S8300 Media Server with a G700 Media Gateway, and has connections to Avaya 9600 Series IP telephones, an Avaya 2400 Series Digital Telephone and it is connected to Site A via an H.323 IP trunk. TIM Plus was installed and run on Windows Vista Business and it was connected to both sites for collecting CDR records.

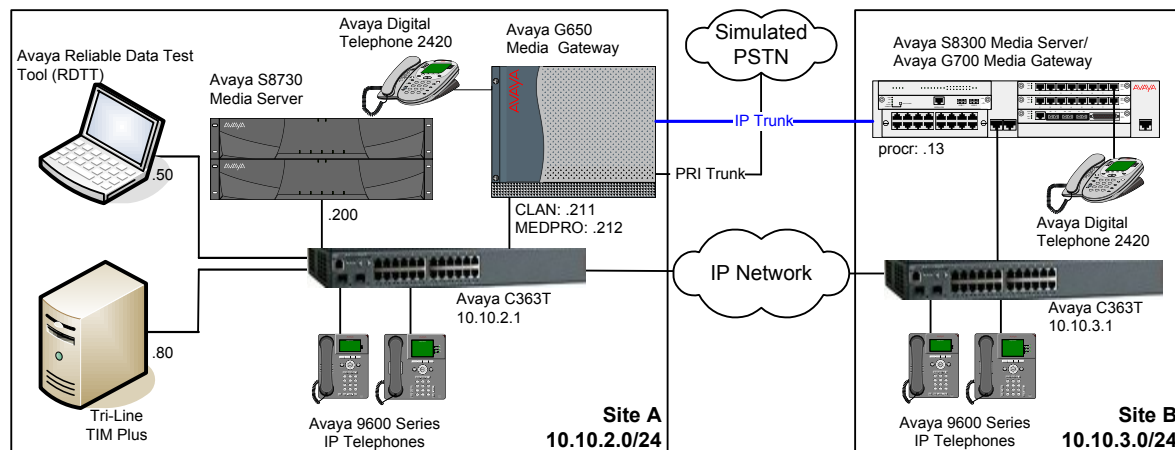


Figure 1: Tri-Line TIM Plus with Avaya Communication Manager

3. Equipment and Software Validated

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

Equipment	Software
Avaya S8730 Server	Avaya Communication Manager 5.1.2 Service Pack: 01.2.416.4-17067
Avaya G650 Media Gateway TN2312BP IP Server Interface TN799DP C-LAN Interface TN2302AP IP Media Processor TN2214CP Digital Line TN2464CP DS1	HW28, FW045 HW16, FW031 HW32, FW118 HW10, FW015 HW02, FW022
Avaya S8300 Server	Avaya Communication Manager 5.1.2 Service Pack: 01.2.416.4-17067
Avaya G700 Media Gateway	28.25.0
Avaya 9600 Series IP Telephones - 9610 - 9620 - 9630	3.0 (H.323)
Avaya 2400 Series Digital Telephone	-
Avaya C363T-PWR Converged Stackable Switch	4.3.12
Tri-Line TIM Plus • Windows Vista Business • Internet Explore 7	3.0.0.50

4. Configure the Avaya Communication Manager

This section provides the procedures for configuring Call Detail Record (CDR) features in Avaya Communication Manager. All the configuration changes in Avaya Communication Manager are performed through the System Access Terminal (SAT). These steps describe the procedure used for the Avaya S8730 Server. All steps are the same for other media servers unless otherwise noted. Avaya Communication Manager was configured to generate CDR records to the IP address of the TIM Plus server over TCP/IP. For the Avaya S8730 Server, the CDR link originates at the IP address of the C-LAN board that connects to the same network where the TIM Plus server is located. For the Avaya S8300 Server, the CDR link originates at the IP address of the local media server (with node-name – “procr”). The highlights in the following screens indicate the values used during the compliance test.

Use the **change node-names ip** command to add a new node name for the TIM Plus server by specifying the **Name** and the **IP Address** of the server.

change node-names ip		Page 1 of 1	
		IP NODE NAMES	
Name	IP Address	Name	IP Address
CLAN	10. 10 .2 .211	.	.
MEDPRO	10. 10 .2 .212	.	.
RDTT	10. 10 .2 .50	.	.
SiteB	10. 10 .3 .13	.	.
TIMPlus	10. 10 .2 .80	.	.
default	0 .0 .0 .0	.	.
procr	10. 10 .2 .201	.	.

Use the **change ip-services** command to define the CDR link 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 S8730 Server, the Local Node is set to the node name of the C-LAN board. If the Avaya S8300 Server was utilized, set the Local Node to **procr**.]
- **Local Port: 0** [The Local Port is fixed to 0.]
- **Remote Node: TIMPlus** [The Remote Node is set to the node name that was created in the previous step for the TIM Plus server.]
- **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 TIM Plus server. During the compliance test, the remote port 9000 was used.]

Note: A different port number must be specified for each S8XXX Server.

change ip-services						Page	1 of	3
IP SERVICES								
Service Type	Enabled	Local Node	Local Port	Remote Node	Remote Port			
CDR1		CLAN	0	TIMPlus	9000			

On **Page 3** of the IP SERVICES form, disable the Reliable Session Protocol (RSP) for the CDR link by setting the **Reliable Protocol** field to **n**.

change ip-services						Page	3 of	3
SESSION LAYER TIMERS								
Service Type	Reliable Protocol	Packet Resp Timer	Session Connect Message Cntr	SPDU Cntr	Connectivity Timer			
CDR1	n	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 Data Format: day/month**
- **Primary Out 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.

- **Use Legacy CDR Formats: y** [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 **inter-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: day/month
  Primary Output Format: customized    Primary Output Endpoint: CDR1
  Secondary Output Format:
    Use ISDN Layouts? n                Enable CDR Storage on Disk? n
    Use Enhanced Formats? n            Condition Code 'T' For Redirected Calls? n
    Use Legacy CDR Formats? y            Remove # From Called Number? n
Modified Circuit ID Display? y            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? y
  Disconnect Information in Place of FRL? n        Interworking Feat-flag? n
Force Entry of Acct Code for Calls Marked on Toll Analysis Form? n
    Calls to Hunt Group - Record: group-ext
Record Called Vector Directory Number Instead of Group or Member? n

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

```

On the **Page 2** of the CDR SYSTEM PARAMETERS form, define the customized CDR format as shown below.

change system-parameters cdr			Page 2 of 2		
CDR SYSTEM PARAMETERS					
Data Item	Length		Data Item	Length	
1: date	- 6		17: dialed-num	- 18	33: auth-code
2: space	- 1		18: space	- 1	34: return
3: time	- 4		19: in-trk-code	- 4	35: line-feed
4: space	- 1		20: space	- 1	36:
5: sec-dur	- 5		21: in-crt-id	- 3	37:
6: space	- 1		22: space	- 1	38:
7: cond-code	- 1		23: calling-num	- 15	39:
8: space	- 1		24: space	- 1	40:
9: attt-console	- 2		25: vdn	- 5	41:
10: space	- 1		26: space	- 1	42:
11: code-used	- 4		27: bcc	- 1	43:
12: space	- 1		28: space	- 1	44:
13: out-crt-id	- 3		29: ppm	- 5	45:
14: space	- 1		30: space	- 1	46:
15: code-dial	- 4		31: acct-code	- 15	47:
16: space	- 1		32: space	- 1	48:

Record length = 126

If the Intra-switch CDR field is set to **y** in the CDR SYSTEM PARAMETERS form, use the **change intra-switch-cdr** command to define the extensions that will be subject to call detail records. In the INTRA-SWITCH CDR form, enter a specific extension whose usage will be tracked with a CDR record. Add an entry for each additional **Extension** of interest.

change intra-switch-cdr		Page 1 of 3	
INTRA-SWITCH CDR			
Extension	Assigned Members:	4	of 5000 administered
Extension	Extension	Extension	Extension
301			
302			
303			
311			

For each trunk group for which CDR records are desired, verify that CDR reporting is configured to generate the ring interval CDR records. Use the **change trunk-group n** command, where **n** is the trunk group number, to verify that the **CDR Reports** field is set to **r**. This is the recommended setting for the solution and applies to all trunk group types.

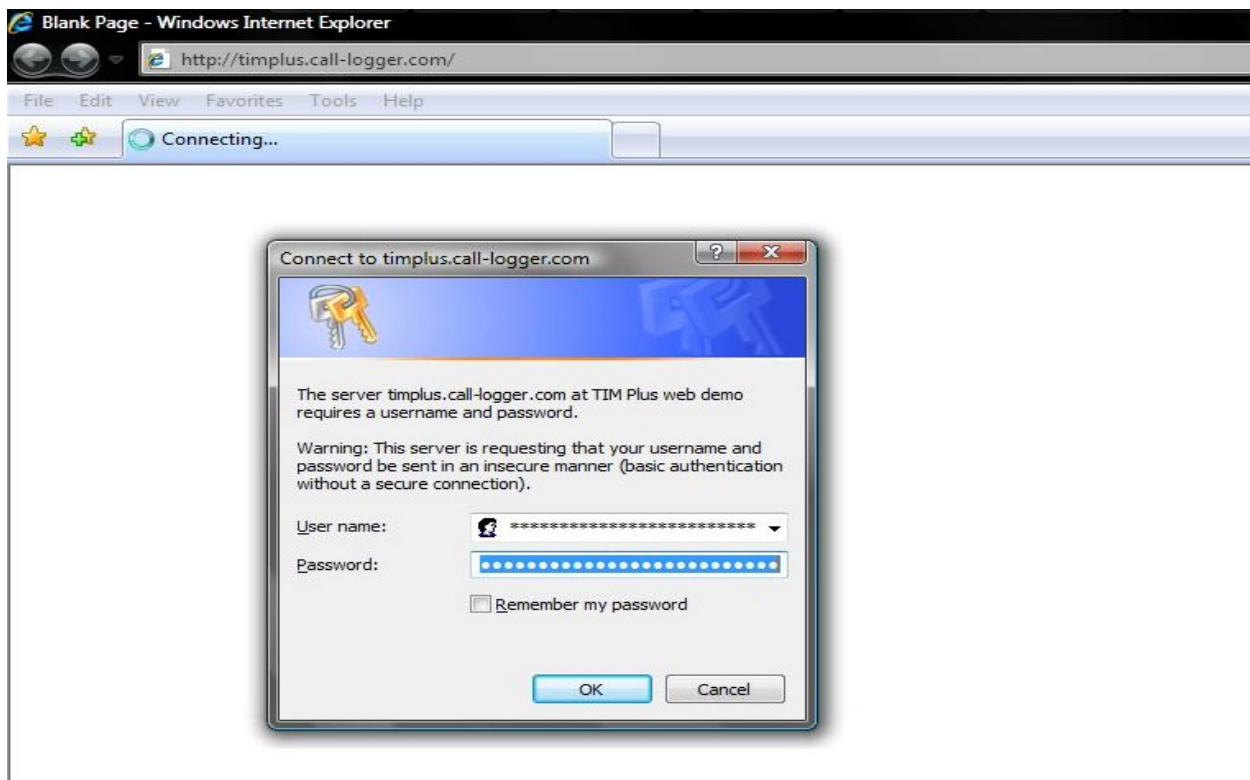
change trunk-group 3		Page 1 of 21
TRUNK GROUP		
Group Number: 3	Group Type: isdn	CDR Reports: r
Group Name: ToSimulatedPSTN	COR: 1	TN: 1 TAC: 113
Direction: two-way	Outgoing Display? y	Carrier Medium: PRI/BRI
Dial Access? y	Busy Threshold: 255	Night Service:
Queue Length: 0		
Service Type: tie	Auth Code? n	TestCall ITC: rest
	Far End Test Line No:	
TestCall BCC: 4		

5. Configure the TIM Plus server

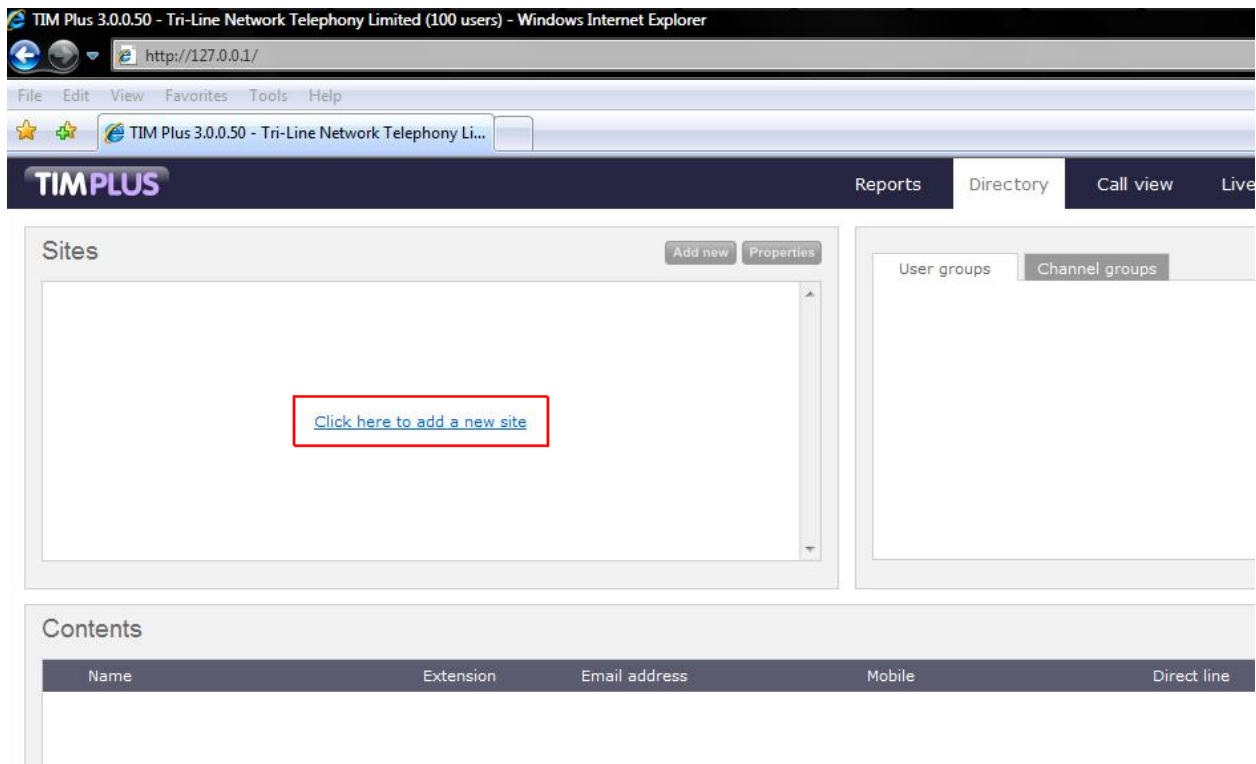
This section provides the procedures for configuring TIM Plus to receive Call Detail Records (CDRs) for various call types output by the Avaya Communication Manager.

To access TIM Plus, open a web browser and enter the IP address of the TIM Plus server, e.g. <http://x.x.x.x/> where x.x.x.x is the IP address of the machine running TIM Plus.

Enter a valid username and a password in the web browser's authentication window and select **OK**.



After successful login, click on the **Directory** tab in the TIM Plus toolbar and Directory content will be displayed as shown below. On the default Directory screen, click on the link **Click here to add a new site** and a new window will open.



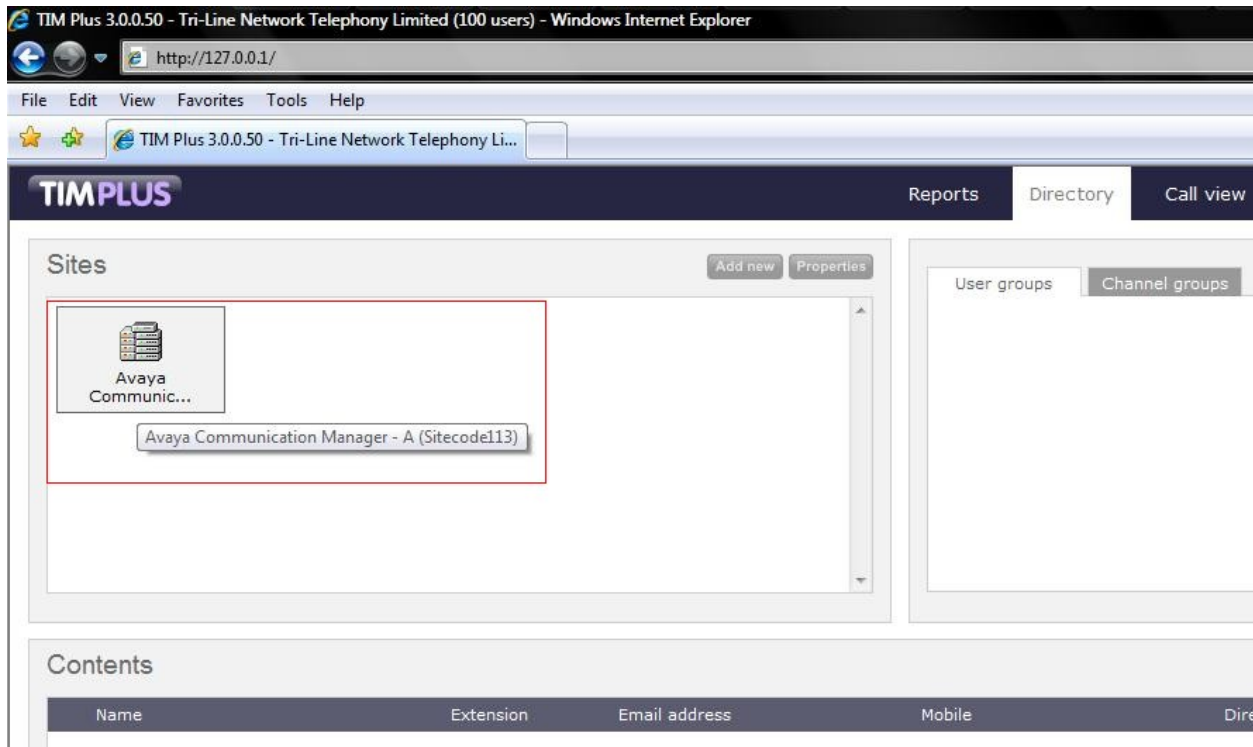
On the new **Site properties** window that appears, the default **PBX** tab is displayed. Enter the **Name** of the site; in this case **Avaya Communication Manager - A** was specified. From the drop down list select **AvayaCommunicationsManager** as the **PBX model** and for the **Connection method** select **Listen for connection from PBX**. Enter the **Port** number as configured on the CDR link in **Section 4**, in this case value **9000** was specified, and click **Options** tab.

The screenshot shows the 'Site properties' window with the 'PBX' tab selected. The 'Options' tab is highlighted with a red box. The 'Name' field contains 'Avaya Communication Manager - A'. The 'PBX model' dropdown is set to 'AvayaCommunicationsManager'. The 'Connection method' dropdown is set to 'Listen for connection from PBX'. The 'Port' field contains '9000'. The 'Host' field is empty. The 'Cancel' and 'Add' buttons are at the bottom right.

On the Options tab, check the **Timestamp received data** checkbox, and then click on the **Add** button as shown below.

The screenshot shows the 'Site properties' window with the 'Options' tab selected. The 'Timestamp received data' checkbox is checked and highlighted with a red box. The 'Add' button is also highlighted with a red box. The 'Cancel' button is at the bottom left. The 'Save a backup of data received from this PBX to the following location:' checkbox is unchecked. The 'Binary data' checkbox is unchecked. The 'Delay processing of received data by' field is empty.

A configured **Avaya Communication Manager** – A site object will appear on the Directory screen as shown below.



Repeat the above steps to add a new directory site object for the second Avaya Communication Manager.

6. General Test Approach and Test Results

The general test approach was to manually place intra-switch calls, inter-switch calls, inbound and outbound PSTN trunk calls to and from telephones attached to the Avaya Servers, and verify that TIM Plus collects the CDR records and properly classifies and reports the attributes of the call. The Avaya Reliable Data Test Tool (RDTT) was connected to compare the records received by RDTT with those of TIM Plus. For serviceability testing, logical links were disabled/re-enabled, and servers were rebooted.

All executed test cases were passed. TIM Plus successfully collected the CDR records from Avaya Communication Manager via CDR link for all types of calls generated including intra-switch calls, inbound / outbound PSTN trunk calls, inbound/outbound inter-switch IP trunk calls, transferred calls, and conference calls. For serviceability testing, TIM Plus was able to resume collecting CDR records after failure recovery including buffered CDR records for calls that were placed during the outages. TIM Plus doesn't support RSP, which may lead to the loss of CDR records if there is a link outage. During a link outage test in the lab, loss of CDR records was not observed.

7. Verification Steps

The following steps may be used to verify the configuration:

- Use the **ping** utility on the TIM Plus server to verify the IP connectivity to the Avaya S8730 and S8300 Servers.
- On the SAT of each Avaya Server, enter the **status cdr-link** command and verify that the **CDR Link State** shows **up**.

status cdr-link	
CDR LINK STATUS	
Primary	Secondary
Link State: up	CDR not administered
Date & Time: 2009/4 /15 10: 21: 15	0 /0 /0 0: 0: 0
Forward Seq. No: 125	0
Backward Seq. No: 315	0
CDR Buffer % Full: 0.00	0.00
Reason Code: OK	

- Place a call and verify that TIM Plus receives the raw 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. Select **Call view** tab on the TIM Plus toolbar and verify accuracy of the call details in the Call view.

TIM Plus 3.0.0.50 - Tri-Line Network Telephony Limited (100 users) - Windows Internet Explorer

http://timplus/

File Edit View Favorites Tools Help

TIM Plus 3.0.0.50 - Tri-Line Network Telephony Li...

TIMPLUS Reports Directory **Call view** Live

Most recent calls

Date	Time	Source	Route	Destination	Response	Duration	Cost	Datasource	Destination
15 April 2009	16:05:11	113 008	UNAVAILABLE	301	0	00:00:08	0.00	Avaya Communication Manager - A	301
15 April 2009	16:04:33	113 007	UNAVAILABLE	302	2	00:00:11	0.00	Avaya Communication Manager - A	302
15 April 2009	16:04:12	301	302	302	0	00:00:10	0.00	Avaya Communication Manager - A	302
15 April 2009	16:03:55	110 001	UNAVAILABLE	202	2	00:00:08	0.00	Avaya Communication Manager - B	202
15 April 2009	16:03:54	302	202#	Local Call	0	00:00:09	0.03	Avaya Communication Manager - A	110 003

- Generate a custom report in TIM Plus for the previously placed calls and verify the report's accuracy.

My custom report - Windows Internet Explorer

2009-04-15 16:13:28

Entire organisation \ About this report

Outbound

Date & Time	Source	CLI	Route	Destination	Duration	Cost
15/04/2009 15:03:54	302	-	202#	Local Call	00:00:09	0.030
1 call					00:00:09	0.030

Answered

Date & Time	Source	CLI	Route	Destination	Duration	Cost
15/04/2009 15:03:55	110 001	-	202		00:00:08	-
15/04/2009 15:04:33	113 007	-	302		00:00:11	-
2 calls					00:00:19	-

Missed

Date & Time	Source	CLI	Route	Destination	Duration	Cost
15/04/2009 15:05:11	113 008	-	301		00:00:08	-
1 call					00:00:08	-

Internal

Date & Time	Source	CLI	Route	Destination	Duration	Cost
15/04/2009 15:04:12	301	-	302	302	00:00:10	-
1 call					00:00:10	-

8. Conclusion

These Application Notes describe the procedures for configuring Tri-Line's TIM Plus to collect call detail records from Avaya Communication Manager running on Avaya Servers. The TIM Plus successfully passed all compliance testing.

9. Additional References

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

- [1] *Feature Description and Implementation For Avaya Communication Manager*, Release 5.0, Issue 6, January 2008, Document Number 555-245-205.
- [2] *Administrator Guide for Avaya Communication Manager*, Release 5.0, Issue 4.0, January 2008, Document Number 03-300509.

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