Avaya Solution & Interoperability Test Lab

Application Notes for Configuring Avaya Aura® Communication Manager R6.0.1 with Tri-Line TIM Enterprise 3.0.0.78 using TCP - Issue 1.0

Abstract

These Application Notes describe the configuration steps for provisioning Avaya Aura® Communication Manager R6.0.1 with Tri-Line TIM Enterprise 3.0.0.78. The Tri-Line TIM Enterprise will collect Call Detailed Records by listening to a TCP port configured on to the Avaya Aura® Communication Manager.

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.

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1. Introduction

Tri-Line TIM Enterprise is a call logger which runs as a Windows Service and all of its functions, configuration, and call reports are accessible through a standard web browser. Tri-Line TIM Enterprise collects CDR data from the Avaya Aura® Communication Manager by listening for connections on a specific TCP port and it uses a Microsoft SQL or MySQL database for storing and processing data. Tri-Line TIM Enterprise provides a web interface which can be used for configuration with Avaya Aura® Communication Manager. This web interface also allows the system to be updated for additional Avaya Aura® Communication Managers and for general maintenance. Users can use this web interface for reporting purposes and access can be restricted by username and password and directory position.

2. General Test Approach and Test Results

The interoperability compliance test included both feature and functionality testing. The feature and functionality testing focused on verifying that Call Detailed Records are collected by TIM Enterprise and received in the format as generated by the Communication Manager. The TIM Enterprise Call Logger collects CDR data by listening on a TCP port configured on the Communication Manager.

DevConnect Compliance Testing is conducted jointly by Avaya and DevConnect members. The jointly-defined test plan focuses on exercising APIs and/or standards-based interfaces pertinent to the interoperability of the tested products and their functionalities. DevConnect Compliance Testing is not intended to substitute full product performance or feature testing performed by DevConnect members, nor is it to be construed as an endorsement by Avaya of the suitability or completeness of a DevConnect member's solution.

2.1. Interoperability Compliance Testing

The testing included:

- Verification of connectivity between the TIM Enterprise and Communication Manager using a TCP connection.
- Verification that Call Detailed Records (CDR) was collected as output by the Communication Manager.
- Link Failure\Recovery was also tested to ensure successful reconnection on link failure.

2.2. Test Results

Tests were performed to insure full interoperability between the Tri-Line TIM Enterprise and the Avaya Aura® Communication Manager. The tests were all functional in nature and performance testing was not included. All the test cases passed successfully.

2.3. Support

Technical support can be obtained for TRI-Line products as follows:

- Web Portal *http://www.tri-line.com/en/support/*
- E-mail: *support@tri-line.com*
- Telephone +44 (0)20 7265 2626

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3. Reference Configuration

Figure 1 illustrates the network diagram of the configuration used during compliance testing. The Avaya Aura® Communication Manager is configured to output CDR data using a **non-Reliable Session Protocol (RSP)** CDR link. The CDR data is sent via IP to the Tri-Line TIM Enterprise server on a designated TCP port. The CDR format is **customized**. The Tri-Line TIM Enterprise Call Logger is connected on the same LAN as the Avaya Aura® Communication Manager and will collect CDR records.

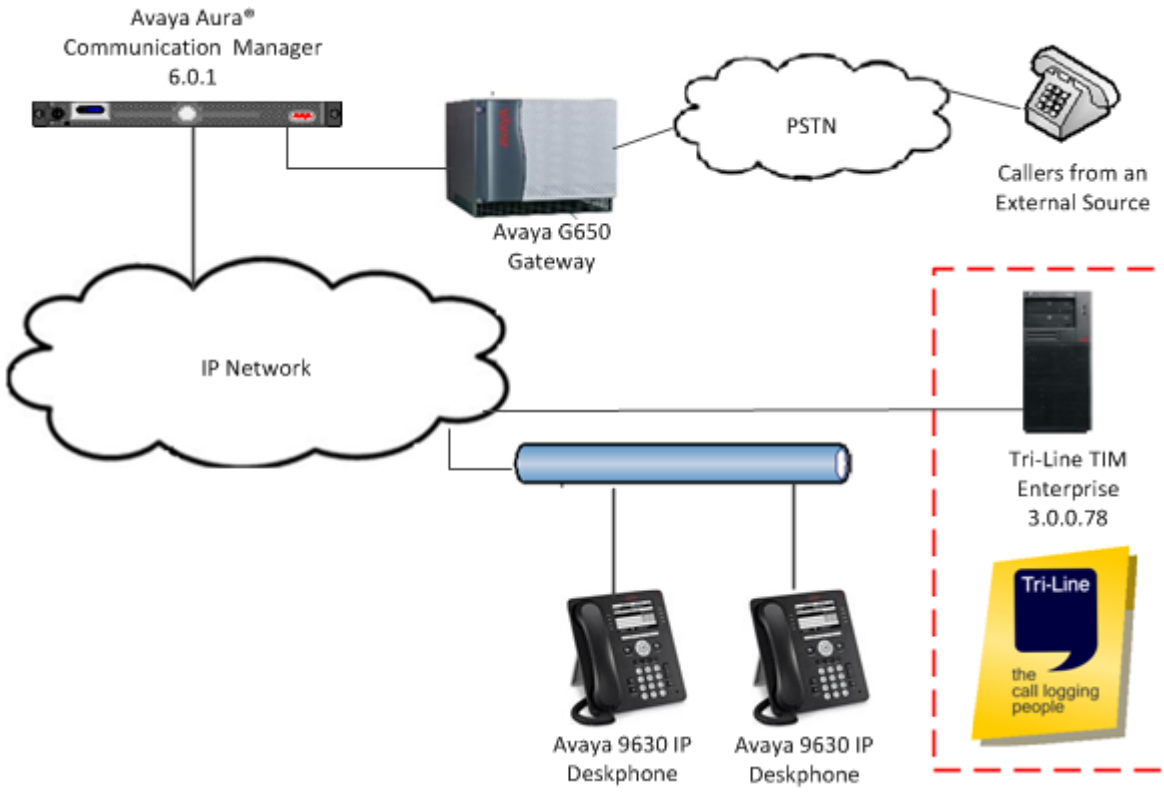

Figure 1: Avaya Aura® Communication Manager R6.0.1 with Tri-Line TIM Enterprise Reference Configuration

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4. Equipment and Software Validated

The hardware and associated software used in the compliance testing is listed below.

Equipment	Software Version
Avaya S8800 Server	Avaya Aura® Communication Manager R6.1 SP3
Avaya 9620 H.323 Sets	96xx H.323 Release 3.1 SP2
Avaya 9630 H.323 Sets	96xx H.323 Release 3.1 SP2
Tri-Line TIM Enterprise	TIM Enterprise Version 3.0 .0.78

5. Avaya Aura® Communication Manager Configuration

Configuration and verification operations on the Communication Manager illustrated in this section were all performed using Avaya Site Administrator Emulation Mode. The information provided in this section describes the configuration of the Communication Manager for this solution. It is implied a working system is already in place. For all other provisioning information such as initial installation and configuration, please refer to the product documentation in **Section 9**. The configuration operations described in this section can be summarized as follows:

- Create Node Name for TIM Enterprise Call Logger
- Define the CDR link
- Change system-parameters cdr
- Change Trunk Group
- Change Intra- Switch-CDR

Note: Any settings not in **Bold** in the following screen shots may be left as Default.

5.1. Create Node Name for Tri-Line TIM Enterprise Call Logger

A Node Name needs to be created to associate the TIM Enterprise Call Logger with the Communication Manager. Use the **change node-names ip** command to configure the following:

- **Name** Enter an informative name i.e. **TIMPro**
- **IP address** Enter the IP address of the **TIM Enterprise Call Logger**

Press **F3** button to save the new settings.

```
change node-names ip                                    Page   1 of   2
                                IP NODE NAMES
    Name                 IP Address
TIMPro                  192.168.30.175
CLAN                    192.168.30.80
procr                   192.168.30.92
```


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5.2. Define the CDR link

A CDR link needs to be defined between the Communication Manager and TIM Enterprise. Use the **change ip-services** command to configure the following:

- **Service Type** Enter **CDR1**
- **Local Node** Enter **CLAN**
- **Remote Node** Enter **TIMPro**
- **Remote Port** Enter **9000**

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

Navigate to **Page 3** and set the **Reliable Protocol** field to **n**. This will disable Reliable Session Protocol (RSP) for CDR transmission. In this case, the CDR link will use TCP without RSP.

- **Reliable Protocol** Enter **n**

Press **F3** button to save the new settings.

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


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5.3. Change system-parameters cdr

Certain parameters changes are required for Communication Manager to interoperate with TIM Enterprise. The screen shots below show the settings used during compliance testing. Use the **change system-parameters cdr** command to configure the following:

- **CDR Date Format** Enter **day/month**
- **Primary Output Format** Enter **customized**
- **Primary Output Endpoint** Enter **CDR1**
- **Record Outgoing Calls Only** Enter **n**
- **Intra-Switch CDR** Enter **y**
- **Outg Trk Call Splitting** Enter **y**
- **Inc Trk Call Splitting** Enter **y**

```
change system-parameters cdr                                    Page   1 of   2
                            CDR SYSTEM PARAMETERS
 Node Number (Local PBX ID):                          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? 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? 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: member-ext
Record Called Vector Directory Number Instead of Group or Member? n
Record Agent ID on Incoming? n       Record Agent ID on Outgoing? y
     Inc Trk Call Splitting? y                  Inc Attd Call Record? 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: 4
```


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Navigate to **Page 2** and enter the following information.

- Enter **Data Item** and **Length** as shown in the screen below

Press **F3** button to save the new settings.

```
change system-parameters cdr                          Page   2 of   2
                            CDR SYSTEM PARAMETERS
    Data Item - Length    Data Item - Length       Data Item - Length
 1: date           - 6   17: dialed-num    - 18   33: auth-code    - 13
 2: space          - 1   18: space         - 1    34: return       - 1
 3: time           - 4   19: in-trk-code   - 4    35: line-feed    - 1
 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-numbe- 15    39:               -
 8: space          - 1   24: space         - 1    40:               -
 9: attd-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
```

5.4. Change Trunk Group

To collect call data on Trunks, CDR Reports need to be set. During compliance Trunk Group **9** was used. Use the **change trunk-group 9** command to configure the following:

- **CDR Reports** Enter **r**

Press **F3** button to save the new settings

```
change trunk-group 9                                          Page   1 of  21
                                  TRUNK GROUP
Group Number: 7                    Group Type: isdn          CDR Reports: r
 Group Name: ISDN to CS1K                 COR: 1       TN: 1         TAC: *19
  Direction: two-way       Outgoing Display? n          Carrier Medium: PRI/BRI
Dial Access? n               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
```


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5.5. Change Intra-Switch-CDR

Internal CDR is activated on a per set basis. When the **Intra-switch CDR** field is set to **y** in the CDR **System Parameters** then the extensions that will be subject to CDR need to be defined. During compliance testing extensions **2010**, **2011**, **2012** and **2022** were used. Use the **change intra-switch-cdr** command to define the extensions that will be subject to call detail records. Configure the following:

- Extension Enter the extensions that will be subject to CDR.

Press **F3** button to save the new settings

```
change intra-switch-cdr                                    Page   1 of   3
                          INTRA-SWITCH CDR
                        Assigned Members:   4    of 5000   administered
   Extension          Extension          Extension          Extension
   2010
   2011
   2012
   2022
```

6. Configuring Tri-Line TIM Enterprise

A number of steps are required to configure TIM Enterprise to interoperate with Communication Manager. The TIM Enterprise Call Logger uses a TCP port to collect CDR data from the Communication Manager. The TIM Enterprise application is downloaded from the Tri-Line Web Site once the end customer has a registered account. The end customer will also download a template file which matches the PBX type which is required during configuration.
It is implied that TIM Enterprise software is already installed. The configuration operations described in this section can be summarized as follows:

- Downloading Communication Manager template.
- Accessing TIM Enterprise
- Add new object
- Configuring Properties

6.1. Downloading Avaya Aura® Communication Manager Template

As part of configuration a Communication Manager template is required. This template is used as the **Data format** in **Section 6.4**. Once the end customer has a registered account with Tri-Line the template is available for download as a ZIP file. Download the Communication Manager template ZIP file. During compliance testing the template used was called **Avaya Communication Manager.tdt**. Unzip the template file to the directory **C:\Program Files\Tri-Line\TIM Enterprise\config**

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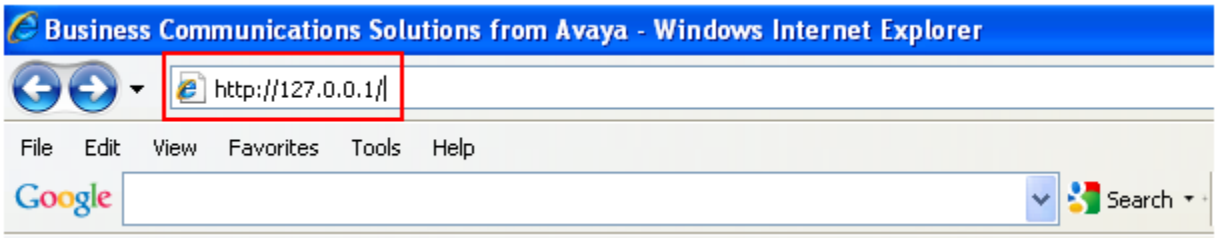
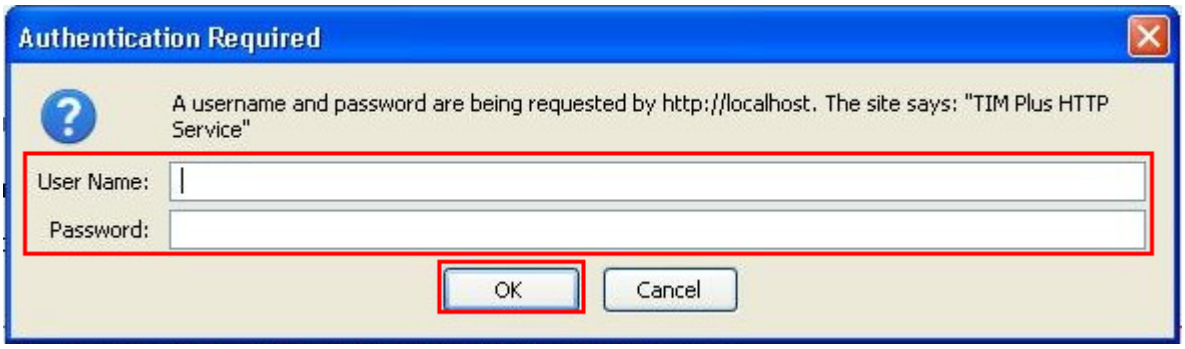
6.2. Accessing Tri-Line TIM Enterprise

During compliance testing access to TIM Enterprise was via a web browser on the same PC as the TIM Enterprise service was installed. The loopback address **http://127.0.0.1** was used.

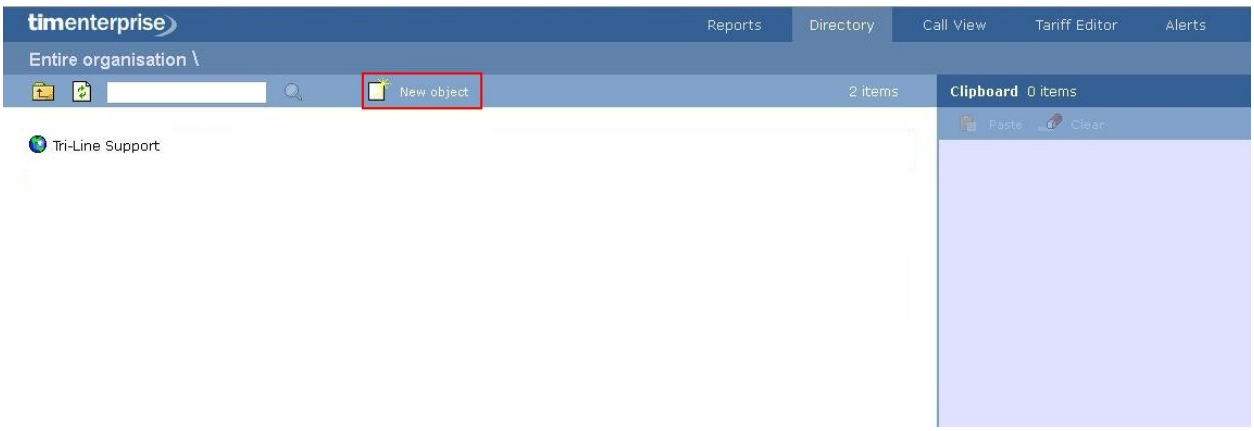


Authentication is required to log into TIM Enterprise. Enter **User name** and **Password** followed by clicking the **OK** button.



6.3. Add New Object

The first time after logging into TIM Enterprise the default window will appear. A new object needs to be added. Click on the **New object** Icon



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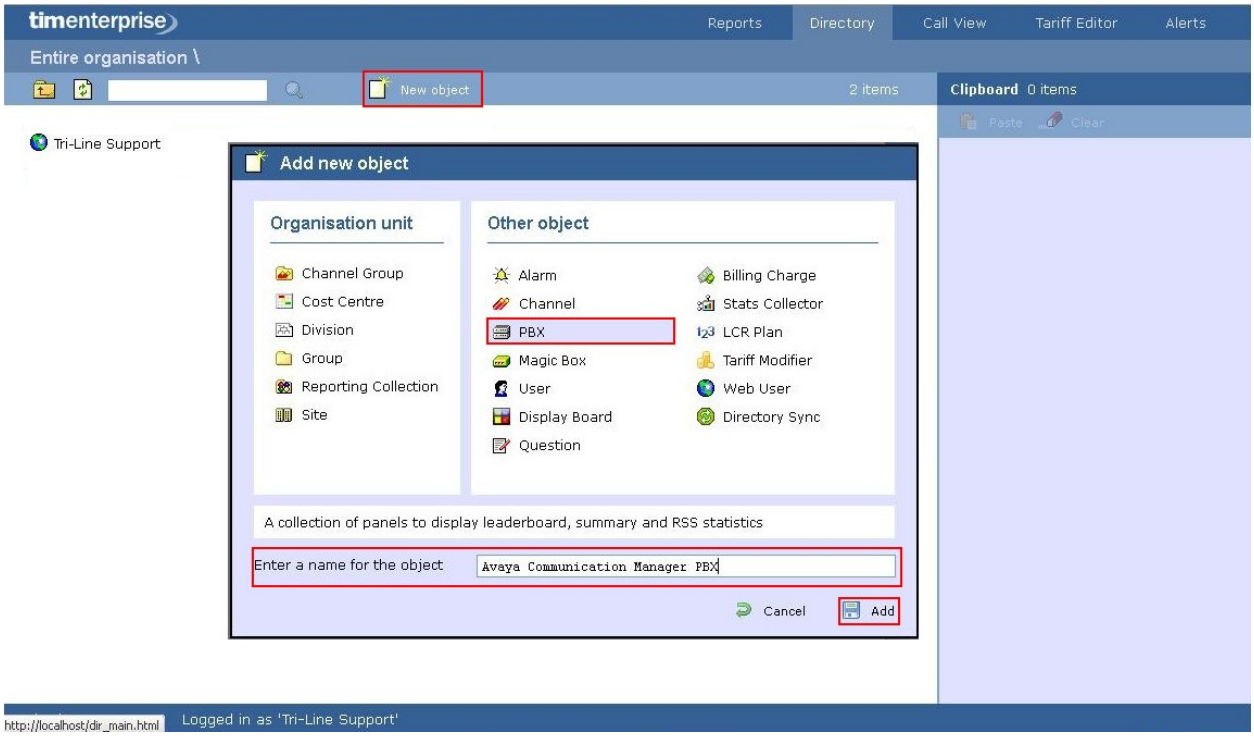
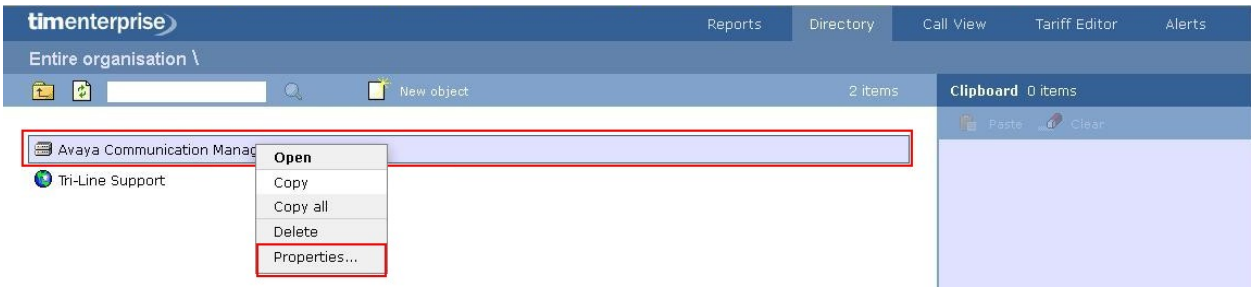
On the **Add new object** window that appears, select **PBX**. In the **Enter a name for the object** field, enter an informative name. During compliance testing **Avaya Communications Manager PBX** was used. Click the **Add** icon as shown below.



6.4. Configuring Properties

Once the new object is added **Avaya Communication Manager PBX** appears in the directory. To configure TIM Enterprise to receive information from Avaya Communication Manager, click on the **Avaya Communication Manager PBX** object and select **Properties** as shown below.



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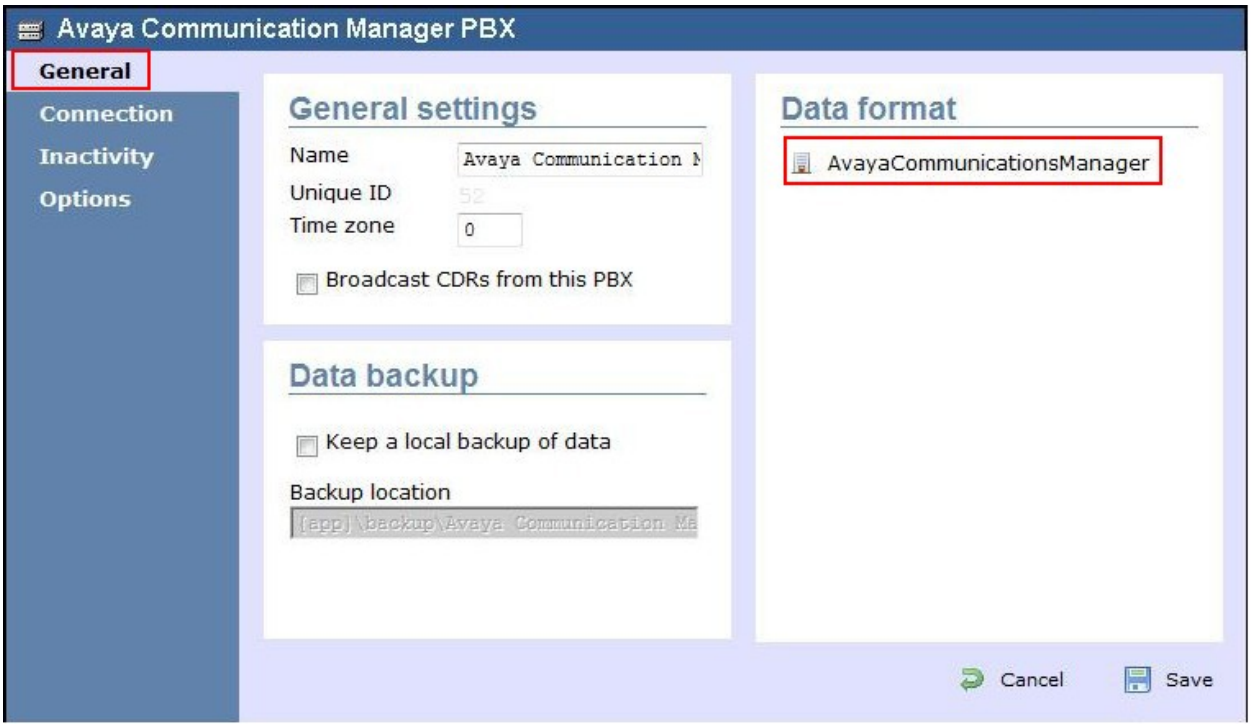
Once the Properties window opens select the **General** tab and select **AvayaCommunicationsManager** in the **Data format** window.



Select the **Connection** tab, and select **Listen for connections from PBX** and enter the **Port** number **9000** as configured for the CDR link in **Section 5.2**. Click the **Save** icon as shown below.

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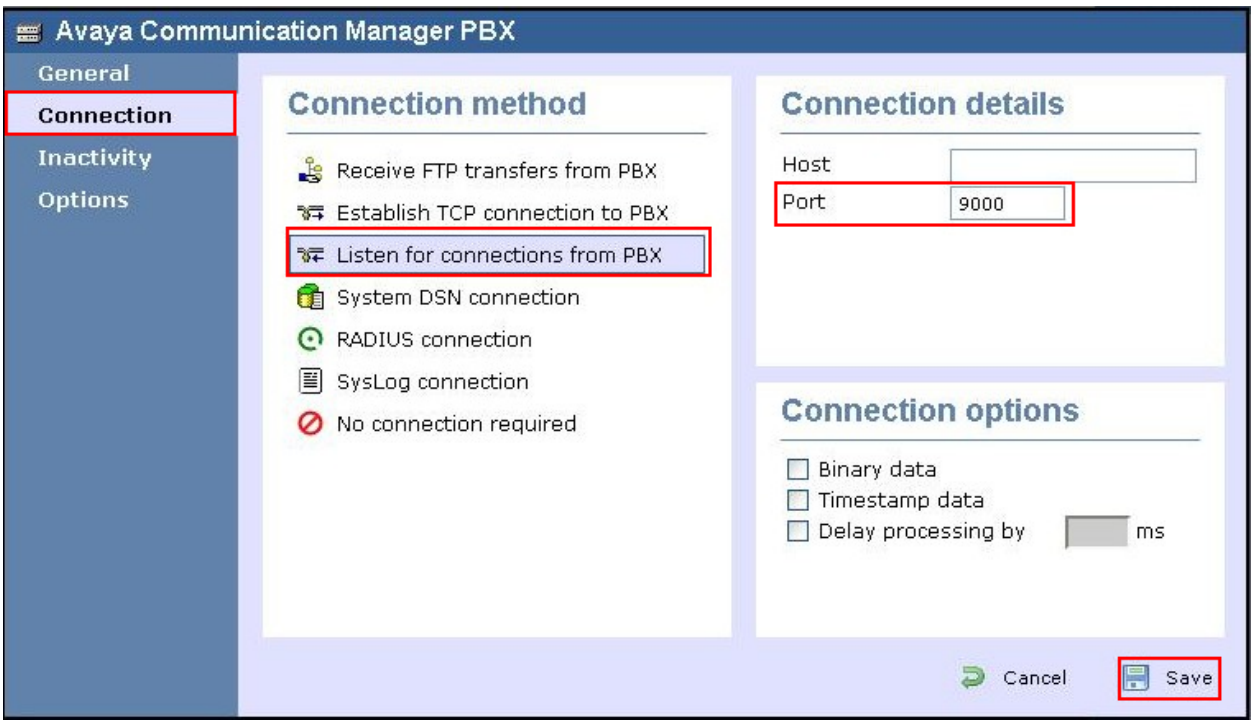

7. Verification Steps

This section provides the tests that can be performed to verify correct configuration of the Communication Manager and TIM Enterprise.

7.1. Verify the Avaya Aura® Communication Manager CDR Link

Use the **status cdr-link** command to verify that the **Link State** is **up** and the **Reason Code** is **OK**.

```
status cdr-link
                              CDR LINK STATUS
                  Primary                       Secondary
       Link State: up                        CDR administered
Number of Retries: 999
      Date & Time: 2011/12/15 17:32:12          0000/00/00 00:00:00
  Forward Seq. No: 0                            0
 Backward Seq. No: 0                            0
CDR Buffer % Full: 0.03                         0.00
      Reason Code: OK
```

7.2. Verify that Tri-Line TIM Enterprise Call Logger retrieves CDR data

To ensure that TIM Enterprise Call Logger is retrieving CDR data make some calls on the Communication Manager. Verify that something similar to the following is presented.

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Date	Time	Source	Route	Destination	Response	Duration	Cost
13 December 2011	16:52:49	Extn89011	89103	89103	0	00:00:09	0.00
13 December 2011	16:52:44	89103	89103	89103	0	00:00:00	0.00
13 December 2011	16:52:44	Extn89011	89103	89103	2	00:00:02	0.00
13 December 2011	16:52:37	Extn89013	89011	Extn89011	0	00:00:12	0.00
13 December 2011	16:52:37	Extn89013	89011	Extn89011	2	00:00:09	0.00
13 December 2011	16:50:58	Extn89011	89103	89103	0	00:00:15	0.00
13 December 2011	16:50:49	89103	89103	89103	0	00:00:00	0.00
13 December 2011	16:50:49	Extn89011	89103	89103	3	00:00:03	0.00
13 December 2011	16:50:32	Extn89013	89011	Extn89011	0	00:00:17	0.00
13 December 2011	16:50:32	Extn89013	89011	Extn89011	3	00:00:20	0.00
13 December 2011	16:47:37	89103	89011	Extn89011	5	00:00:01	0.00
13 December 2011	16:38:55	89103	02085551000	London	4	00:00:08	0.03
13 December 2011	16:36:57	Extn89013	89103	89103	6	00:00:17	0.00
13 December 2011	16:36:57	Extn89013	89011	Extn89011	5	00:00:16	0.00
13 December 2011	16:35:45	Extn89011	89103	89103	2	00:00:04	0.00
13 December 2011	16:35:40	Extn89013	89103	89103	0	00:00:10	0.00
13 December 2011	16:35:40	Extn89013	89011	Extn89011	2	00:00:12	0.00
13 December 2011	16:33:56	Extn89013	89103	89103	3	00:00:09	0.00
13 December 2011	16:33:56	Extn89013	89011	Extn89011	3	00:00:16	0.00
13 December 2011	16:32:36	Extn89011	89013	Extn89013	2	00:00:07	0.00
13 December 2011	16:32:30	Unknown	1601	Extn89013	0	00:00:10	0.00
13 December 2011	16:32:30	Unknown	1601	Extn89011	3	00:00:16	0.00

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8. Conclusion

These Application Notes describe the configuration steps required for Avaya Aura® Communication Manager R6.0.1 to successfully interoperate with Tri-Line TIM Enterprise 3.0.0.78 using a TCP connection. Tri-line TIM Enterprise 3.0.0.78 is considered compliant with the Avaya Aura® Communication Manager R6.0.1. All of the executed test cases have passed and met the objectives outlined in **Section 2.1**.

9. Additional References

This section references the Avaya and Tri-Line documentation that is relevant to these Application Notes.

Product documentation for Avaya products is available at *http://support.avaya.com*

[1] Administering Avaya Aura® Communication Manager 03-300509 Release 6.0 Issue 6.0 System Management Reference

[2] Administering Avaya Aura® Communication Manager Server Options 03-603479 Release 6.0.1, Issue 2.2

Product Documentation for Tri-Line can be obtained at *http://gateway.tri-line.com/*. Login required.

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