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Avaya Solution & Interoperability Test Lab

Application Notes for Configuring Avaya Aura® Communication Manager R6.0.1 with Tri-Line TIM Professional 2.181 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 Professional 2.181. The Tri-Line TIM Professional will collect Call Detailed Records by listening to a TCP/IP port configured on 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.

Solution & Interoperability Test Lab Application Notes

1. Introduction

Tri-Line TIM Professional is a Windows-based application call logger that uses data output from the Avaya Aura® Communication Manager. Tri-Line TIM Professional checks the data, costs it and stores it automatically in its database. Tri-Line TIM Professional can produce a whole range of management reports with graphs, charts and tables, custom-defined if required. All of its functions can be performed from using a standard web browser, no client software is required.

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 Professional and received in the format as generated by the Communication Manager. The TIM Professional 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 Professional 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 TIM Professional and the 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

3. Reference Configuration

Figure 1 illustrates the network diagram of the configuration used during compliance testing. 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 TIM Professional Call Logger on a designated TCP port. The CDR format is **customized**. TIM Professional Logger module is connected on the same LAN as the Communication Manager and will collect CDR records.
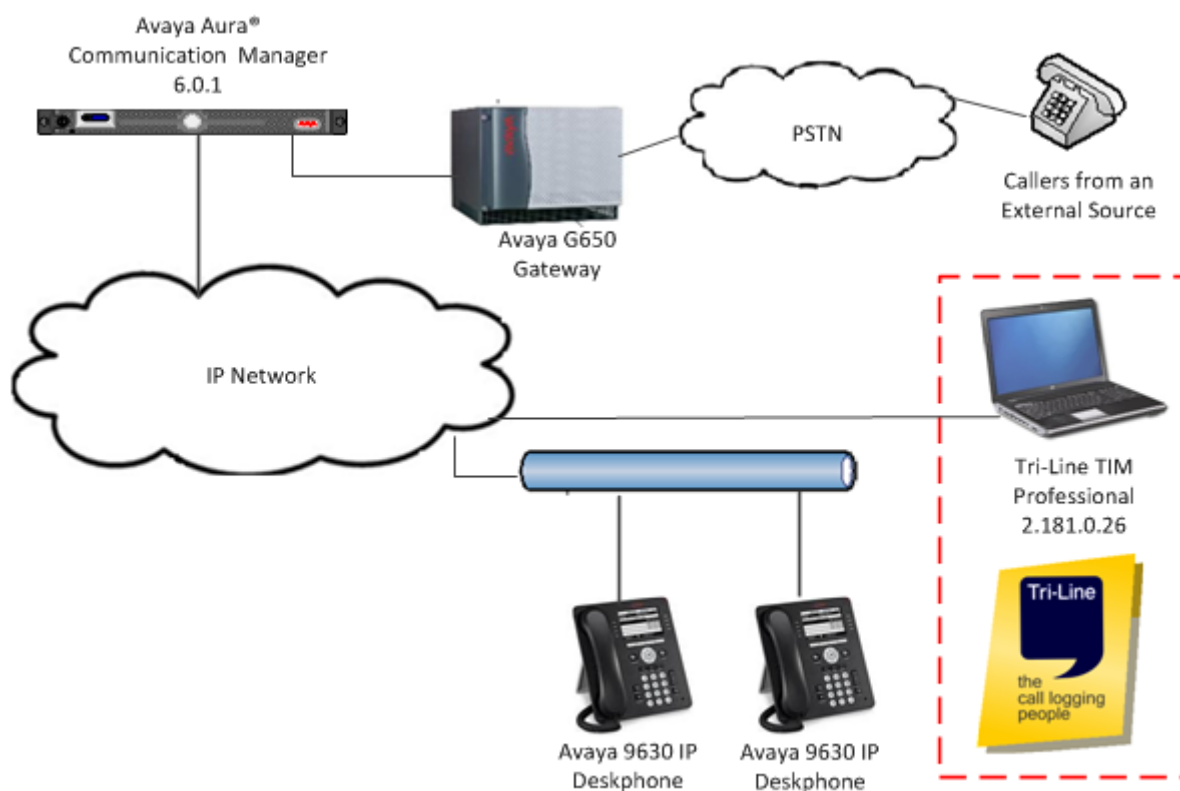

Figure 1: Avaya Aura® Communication Manager R6.0.1 with Tri-Line TIM Professional Reference Configuration

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 G650 Gateway	N/A
CLAN TN799DP	H/W 01, F/W 040
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 Professional	TIM Professional Version 2.181.0.26

5. Avaya Aura® Communication Manager Configuration

Configuration and verification operations on 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 Professional 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- LineTIM Professional Call Logger

A Node Name needs to be created to associate the TIM Professional Logger module 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 Professional 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
```

5.2. Define the CDR Link

A CDR link needs to be defined between the Communication Manager and TIM Professional. 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
```

5.3. Change SystemParametersCDR

Certain parameters changes are required for Communication Manager to interoperate with TIM Professional. 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
```

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 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
```

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 needs 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 Professional

A number of steps are required to Configure TIM Professional to interoperate with Communication Manager. The TIM Professional Call Logger uses a TCP port to collect CDR data from the Communication Manager. The TIM Professional 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 Professional software is already installed. The configuration operations described in this section can be summarized as follows:
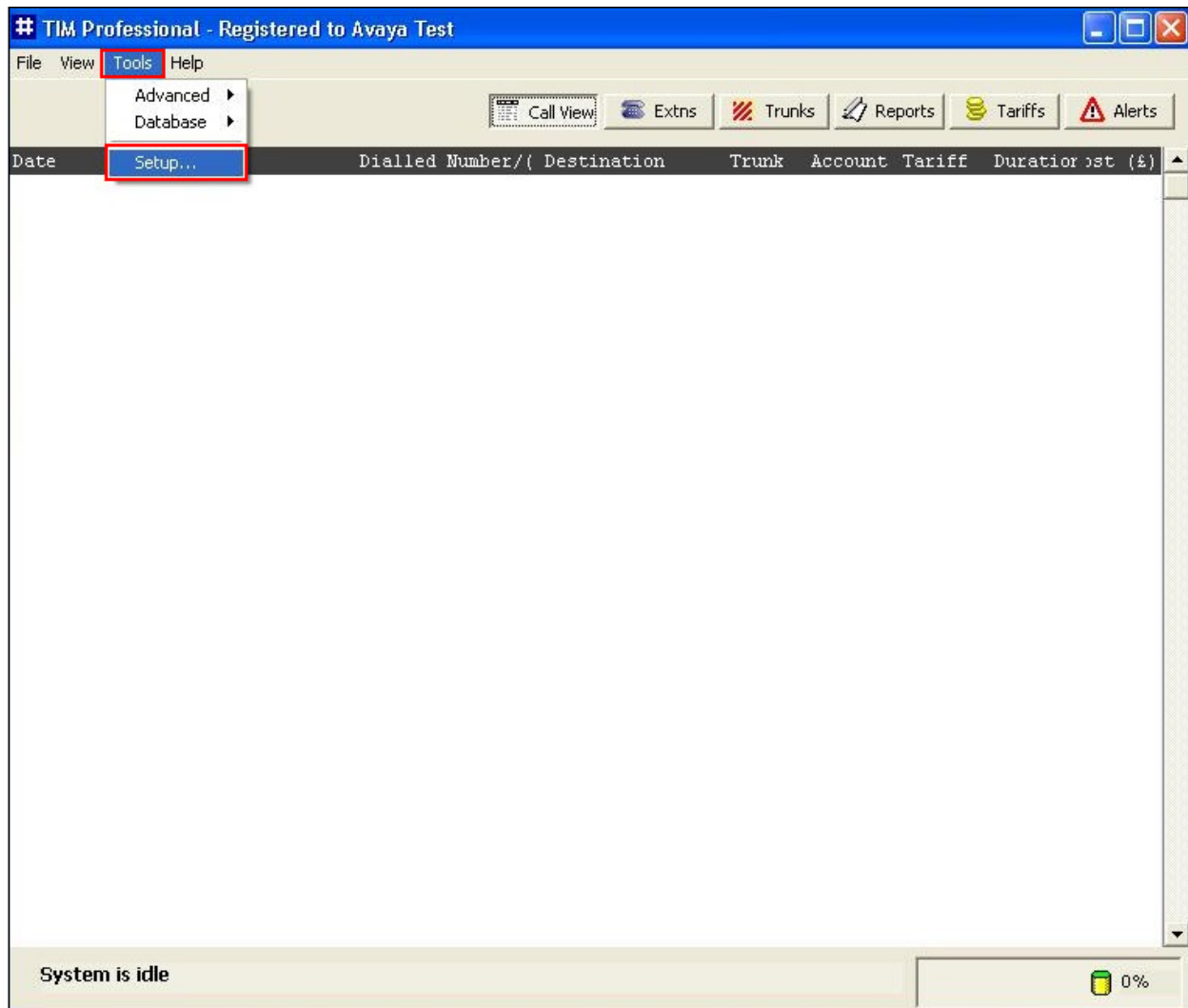
- Downloading Communication Manager template.
- Configuring the TIM Professional Call Logger to collect CDR data from Communication Manager.

## 6.1. Downloading Avaya Aura® Communication Manager Template

As part of configuration a Communication Manager template is required. This template is used as the **PBX Data Format** in **Section 6.2**. 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 template.tdt**. Unzip the template file to the directory **C:\tim\config**.

6.2. Configuring TIM Professional Call Logger to Collect CDR Data from Communication Manager

To configure the **TIM Professional Call Logger** to collect CDR data from the Communication Manager, launch the **TIM Professional** application by navigating to **Start → All Programs → Call Logger → TIM Professional**. When the TIM Professional Window opens choose **Tools** from the main menu and select **Setup**.

Once the Setup window opens choose the **PBX** tab. Click on the **Change** button and browse to
C:\tim\config and select **Avaya Communication Manager template.tdt**.
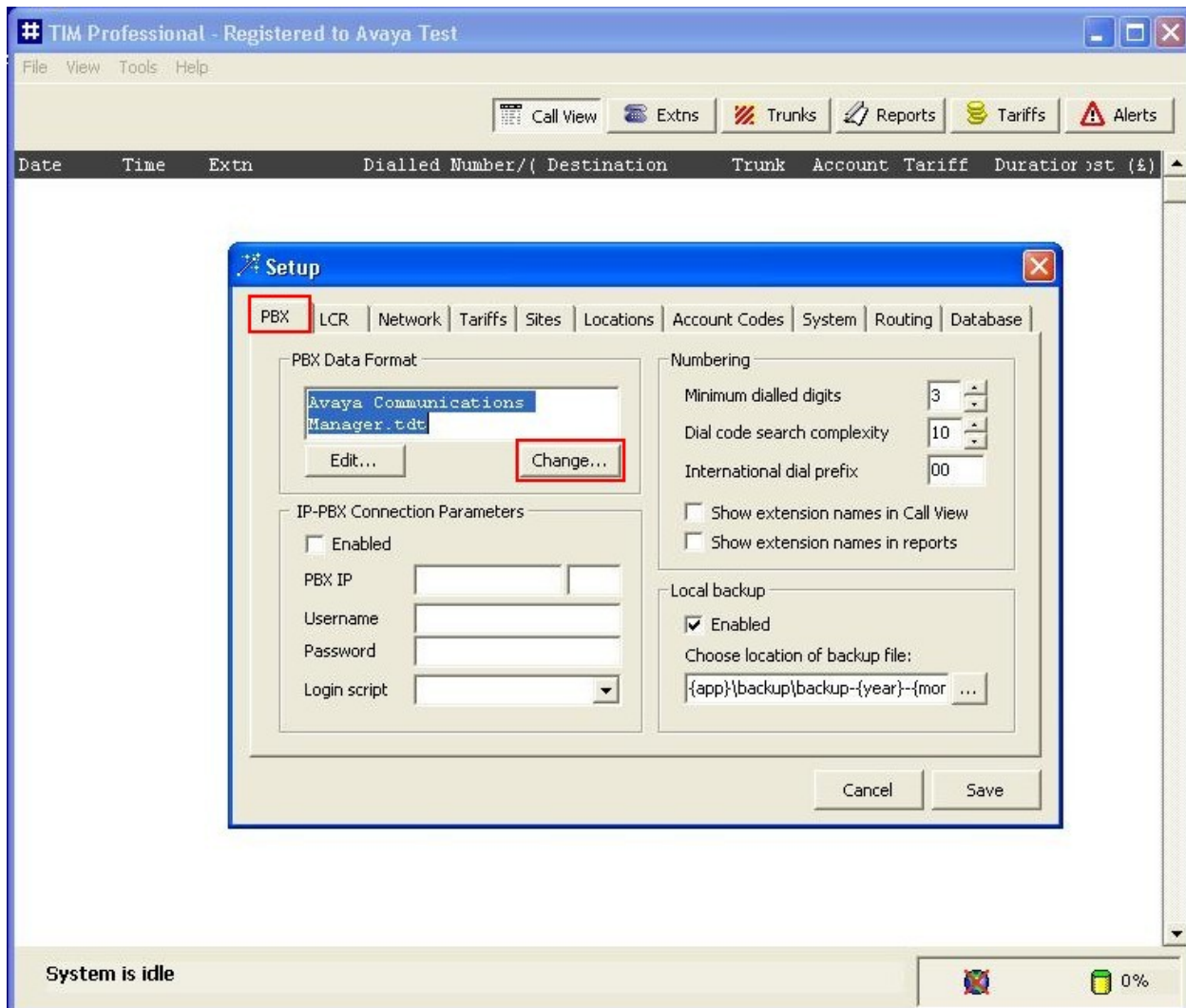
Choose the **Network** tab. The screen shot below shows the settings used during compliance testing. Fill in the following:

- **Integrated Web Server**   As the Integrated Web Server is located on the same PC as TIM Professional select the Loop back Address **127.0.0.1** from the **Local Host Address** drop down box, and enter **80** as the **Port number**
- **Telnet Server**   Click the **Enable** check box
- **Port Number**   Enter **9000**
  Note this is the Remote Port as configured in **Section 5.2**.

Click the **Save** button to save the new settings.
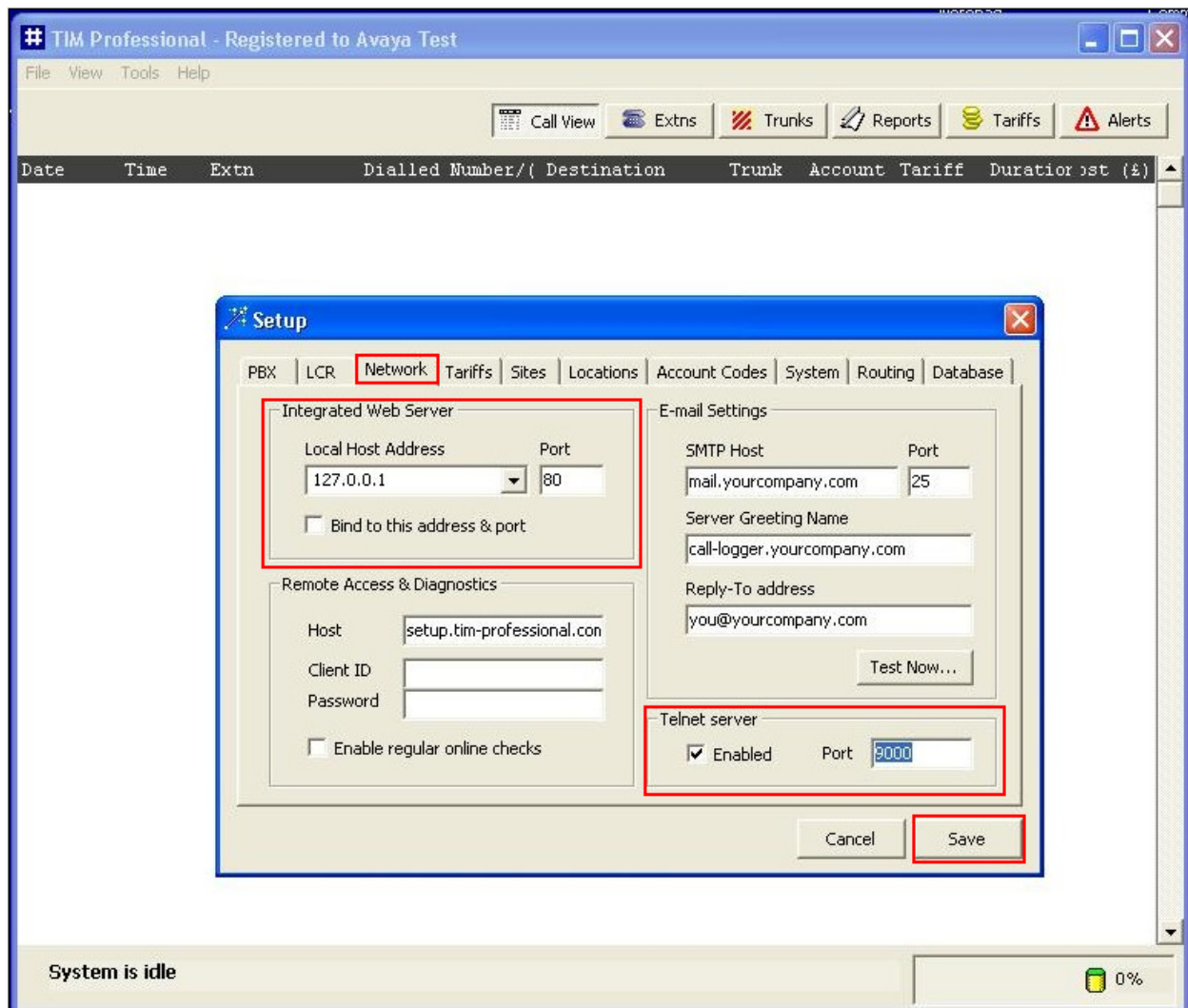
Once the Save button is clicked Tim Professional needs to be restarted. Click the **OK** button and restart.

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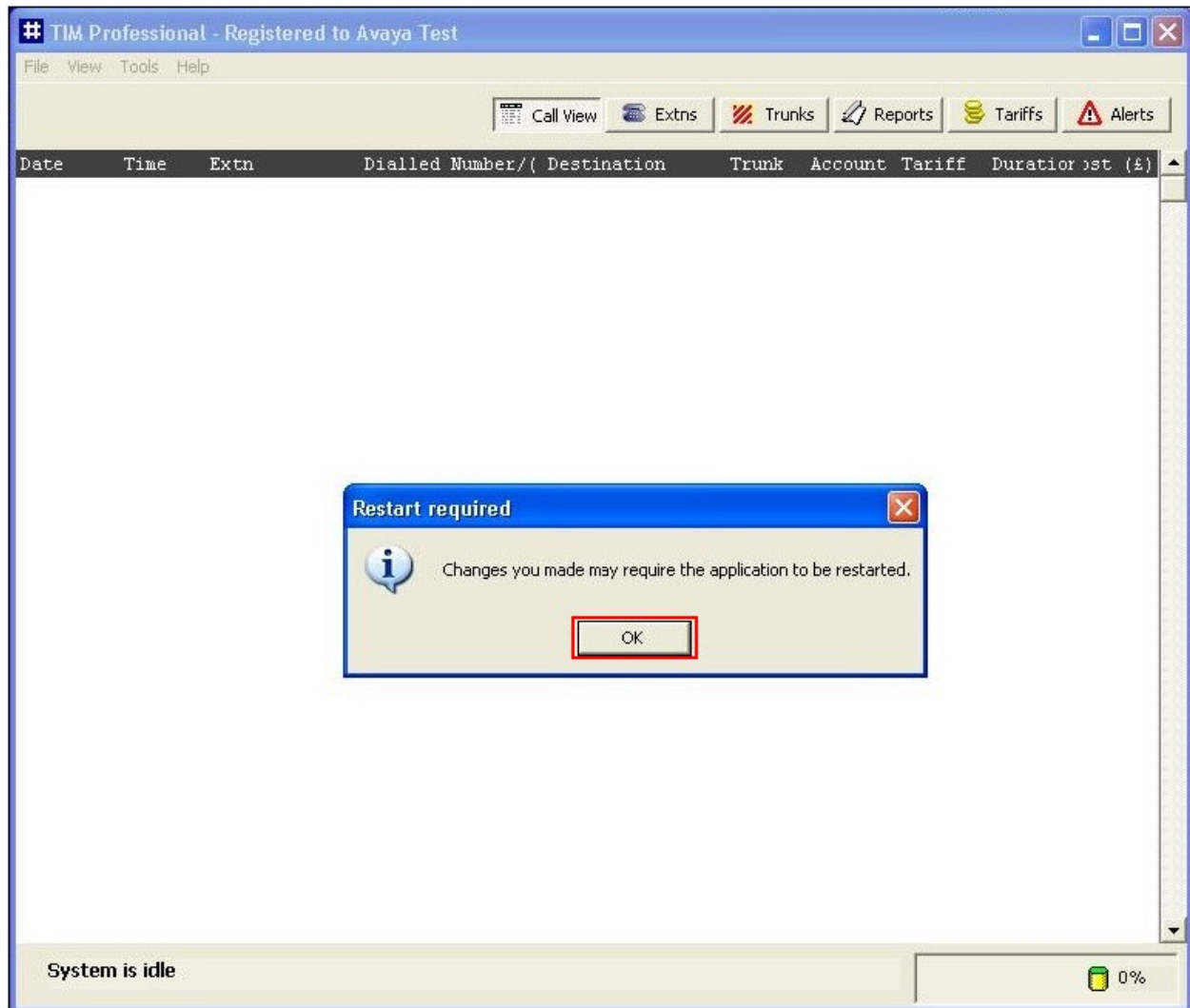
7. Verification Steps

This section provides the tests that can be performed to verify correct configuration of the Communication Manager and TIM Professional.
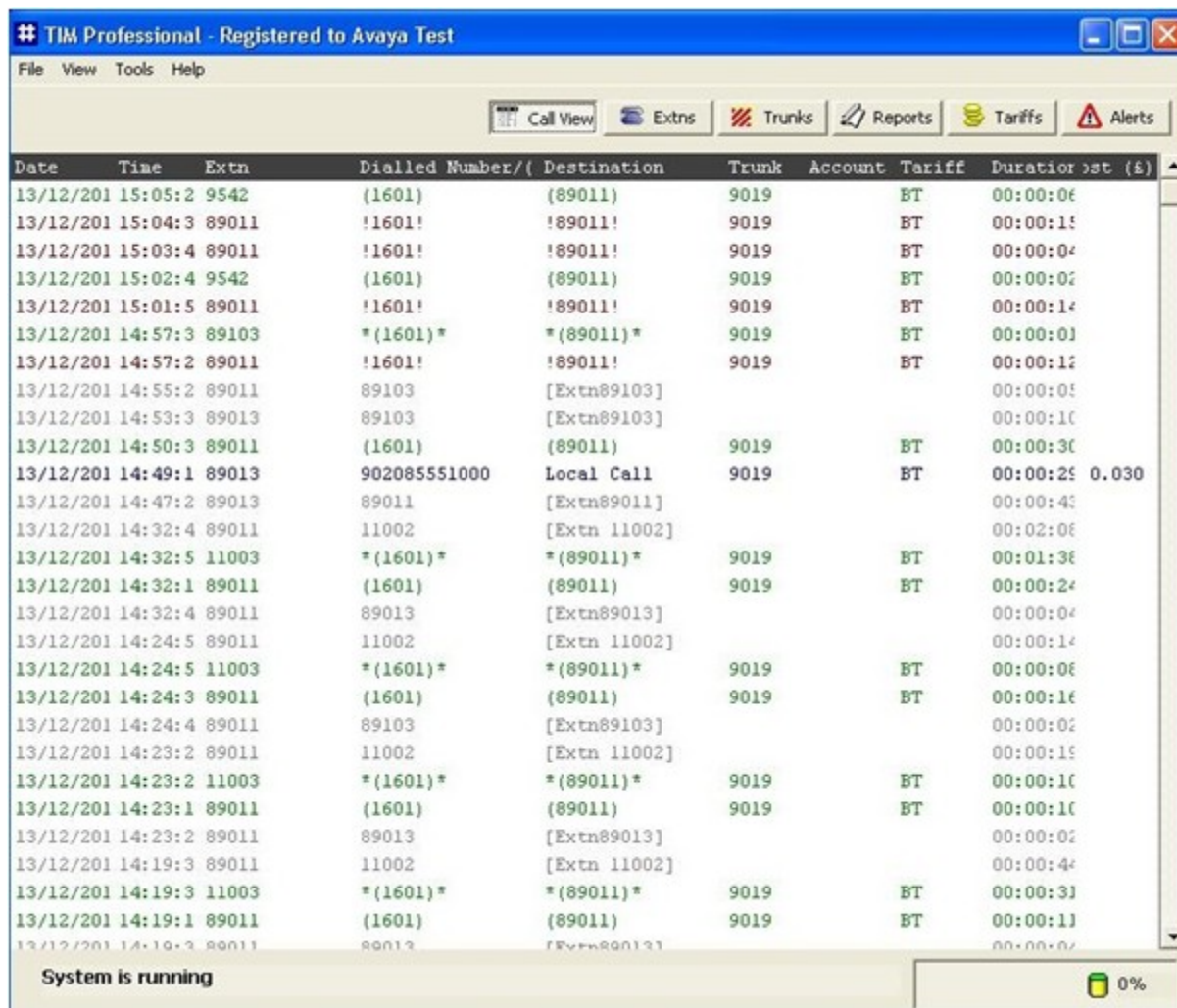
7.1. Verify Avaya Aura® Communication Manager CDR Link

Use the **status cdr-link** command to verify that the **Link State** is **up** and the **CDR 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: 0.04                      0.00
      Reason Code: OK
```

7.2. Verify Tri-Line TIM Professional Logger Retrieves CDR Data

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

Date	Time	Extn	Dialled Number/(	Destination	Trunk	Account	Tariff	Duration	ost (£)
13/12/201	15:05:2	9542	(1601)	(89011)	9019		BT	00:00:06	
13/12/201	15:04:3	89011	!1601!	!89011!	9019		BT	00:00:15	
13/12/201	15:03:4	89011	!1601!	!89011!	9019		BT	00:00:04	
13/12/201	15:02:4	9542	(1601)	(89011)	9019		BT	00:00:02	
13/12/201	15:01:5	89011	!1601!	!89011!	9019		BT	00:00:14	
13/12/201	14:57:3	89103	*(1601)*	*(89011)*	9019		BT	00:00:01	
13/12/201	14:57:2	89011	!1601!	!89011!	9019		BT	00:00:12	
13/12/201	14:55:2	89011	89103	[Extn89103]				00:00:05	
13/12/201	14:53:3	89013	89103	[Extn89103]				00:00:10	
13/12/201	14:50:3	89011	(1601)	(89011)	9019		BT	00:00:30	
13/12/201	14:49:1	89013	902085551000	Local Call	9019		BT	00:00:29	0.030
13/12/201	14:47:2	89013	89011	[Extn89011]				00:00:43	
13/12/201	14:32:4	89011	11002	[Extn 11002]				00:02:06	
13/12/201	14:32:5	11003	*(1601)*	*(89011)*	9019		BT	00:01:38	
13/12/201	14:32:1	89011	(1601)	(89011)	9019		BT	00:00:24	
13/12/201	14:32:4	89011	89013	[Extn89013]				00:00:04	
13/12/201	14:24:5	89011	11002	[Extn 11002]				00:00:14	
13/12/201	14:24:5	11003	*(1601)*	*(89011)*	9019		BT	00:00:08	
13/12/201	14:24:3	89011	(1601)	(89011)	9019		BT	00:00:16	
13/12/201	14:24:4	89011	89103	[Extn89103]				00:00:02	
13/12/201	14:23:2	89011	11002	[Extn 11002]				00:00:19	
13/12/201	14:23:2	11003	*(1601)*	*(89011)*	9019		BT	00:00:10	
13/12/201	14:23:1	89011	(1601)	(89011)	9019		BT	00:00:10	
13/12/201	14:23:2	89011	89013	[Extn89013]				00:00:02	
13/12/201	14:19:3	89011	11002	[Extn 11002]				00:00:44	
13/12/201	14:19:3	11003	*(1601)*	*(89011)*	9019		BT	00:00:31	
13/12/201	14:19:1	89011	(1601)	(89011)	9019		BT	00:00:11	
13/12/201	14:19:3	89011	89013	[Extn89013]				00:00:02	

System is running   0%

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 Professional 2.181 using a TCP connection. Tri-line TIM Professional 2.181 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 2.2**.

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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