Avaya Solution & Interoperability Test Lab

Application Notes for Configuring Avaya Aura® Communication Manager R6.0.1 with Tri-Line TIM Plus 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 Plus 3.0.0.78. The Tri-Line TIM Plus will collect Call Detailed Records by listening to a TCP port configured on 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.

1. Introduction

Tri-Line TIM Plus is a call logger which runs as a Windows Service and all of its functions, configuration, and call reports are accessible through any standard web browser. Tri-Line TIM Plus collects Call Detailed Record (CDR) data from Avaya Aura® Communication Manager by listening for connections on a specific TCP port and it uses a native SQL database for storing and processing data. Tri-Line TIM Plus 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 Plus and received in the format as generated by Communication Manager. The TIM Plus Call Logger collects CDR data by listening on a TCP port configured on Communication Manager.

2.1. Interoperability Compliance Testing

The testing included:

- Verification of connectivity between TIM Plus and Communication Manager using a TCP connection.
- Verification that Call Detailed Records (CDR) was collected as output by 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 TIM Plus and Communication Manager. The tests were all functional in nature and performance testing was not included. All 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. CDR data is sent via IP to the Tri-Line TIM Plus server on a designated TCP port. The CDR format is **customized**. The Tri-Line TIM Plus Call Logger is connected on the same LAN as Communication Manager and will collect CDR records.

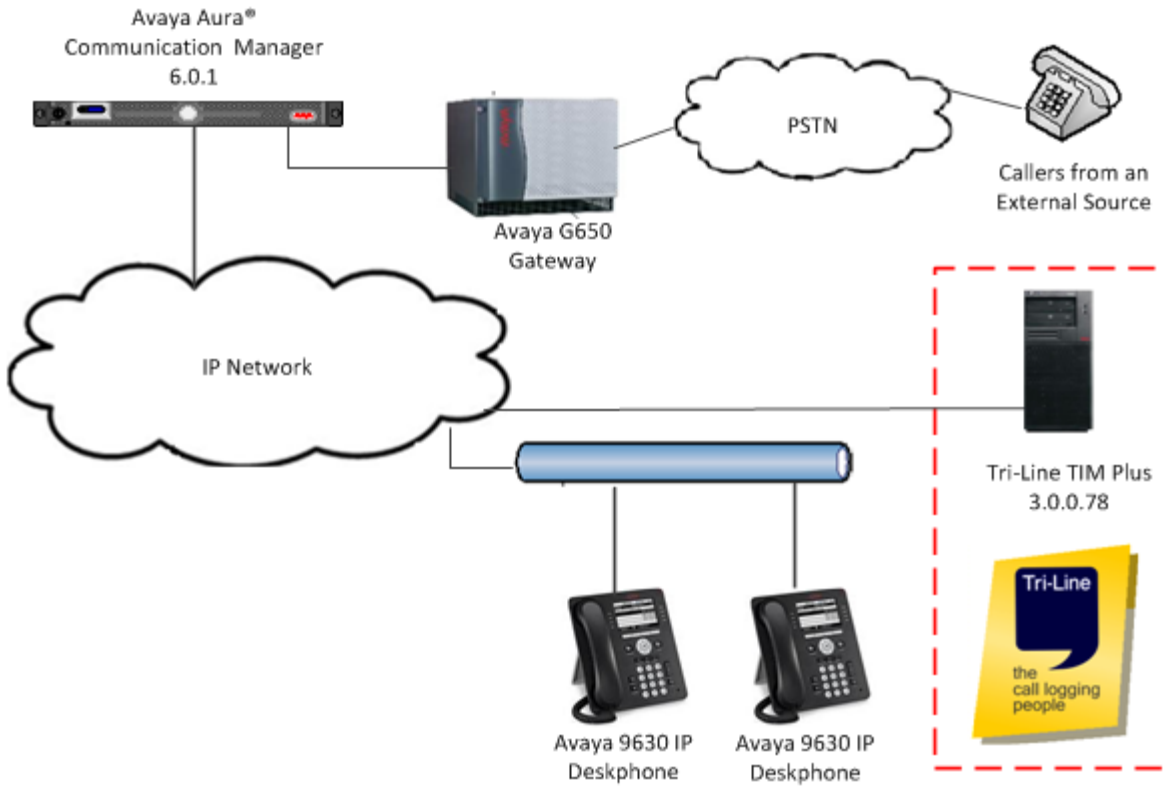


Figure 1: Avaya Aura® Communication Manager R6.0.1 with Tri-Line TIM Plus Reference Configuration

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 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 Plus	TIM Plus Version 3.0 .0.78

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 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 described in this section can be summarized as follows:

- Create Node Name for TIM Plus 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 Plus Call Logger

A Node Name needs to be created to associate the TIM Plus Call Logger with 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 Plus 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 Communication Manager and TIM Plus. 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 system-parameters cdr

Certain parameter changes are required for Communication Manager to interoperate with TIM Plus. 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 be set. Trunk Group **9** was used for the compliance test. 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** form, 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 Plus

A number of steps are required to configure TIM Plus to interoperate with Communication Manager. The TIM Plus Call Logger uses a TCP port to collect CDR data from Communication Manager. The TIM Plus application requires a template file which matches the PBX type during configuration. Both TIM Plus application and template file can be downloaded from the Tri-Line Web Site once the end customer has a registered account.

The configuration of the TIM Plus Call Logger is achieved during the initial installation. An installation wizard is used whereby certain steps require specific information relating to the TIM Plus configuration. The configuration described in this section can be summarized as follows:

- Downloading Communication Manager template.
- Configure Site information
- Create an administrator account
- Logging into TIM Plus Call logger
- Access to TIM Plus

6.1. Downloading Avaya Aura® Communication Manager template

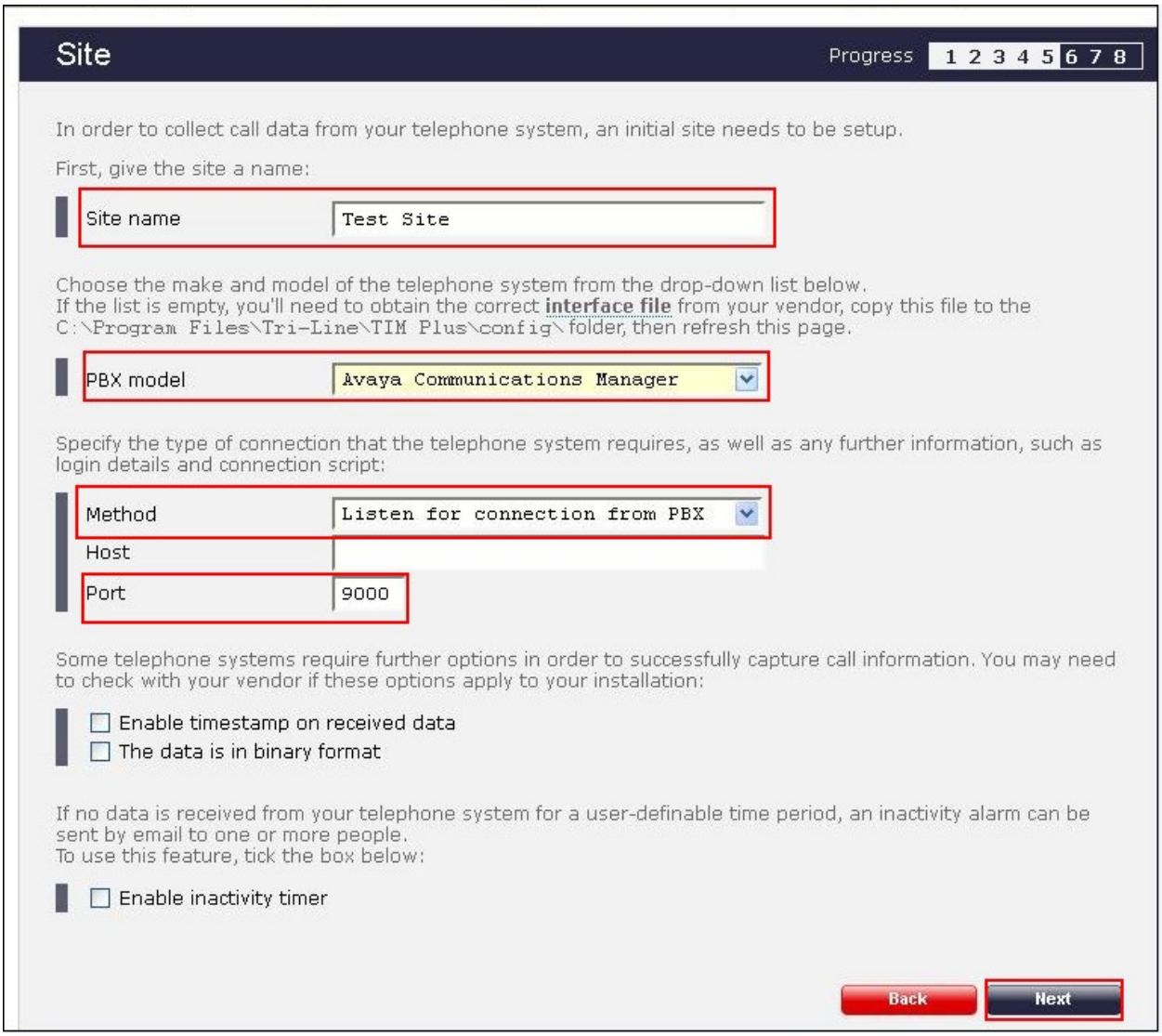
As part of configuring Communication Manager, a template is required. This template is used as the **PBX model** in **Section 6.2**. Once the end customer has a registered account with Tri-Line, the template is available for download as a ZIP file. Download the Communication Manager template ZIP file. During compliance testing, the template **Avaya Communication Manager.tdt** was used. Unzip the template file to the directory **C:\Program Files\Tri-Line\TIM Plus\config**.

6.2. Configure Site information

Start the installation wizard after the TIM Plus application has been downloaded. Follow the wizard steps until step 5. The **PBX model** used is a template which was downloaded as described in **Section 6.1**. The following information is required for the initial site setup:

- **Site name** Enter an informative name, i.e. **Test Site**
- **PBX model** Choose **Avaya Communication Manager** from the dropdown box.
- **Method** Choose **Listen for connection from PBX** from the dropdown box.
- **Port** Enter **9000**
  Note this is the Remote Port as configured in **Section 5.2**

Click on the **Next** button to continue



6.3. Create an administrator account

Once the wizard has progressed to step 8, an administrator account must be created. This account allows web users to log into the TIM Plus Call Logger. The following information is required to create the administrator account:

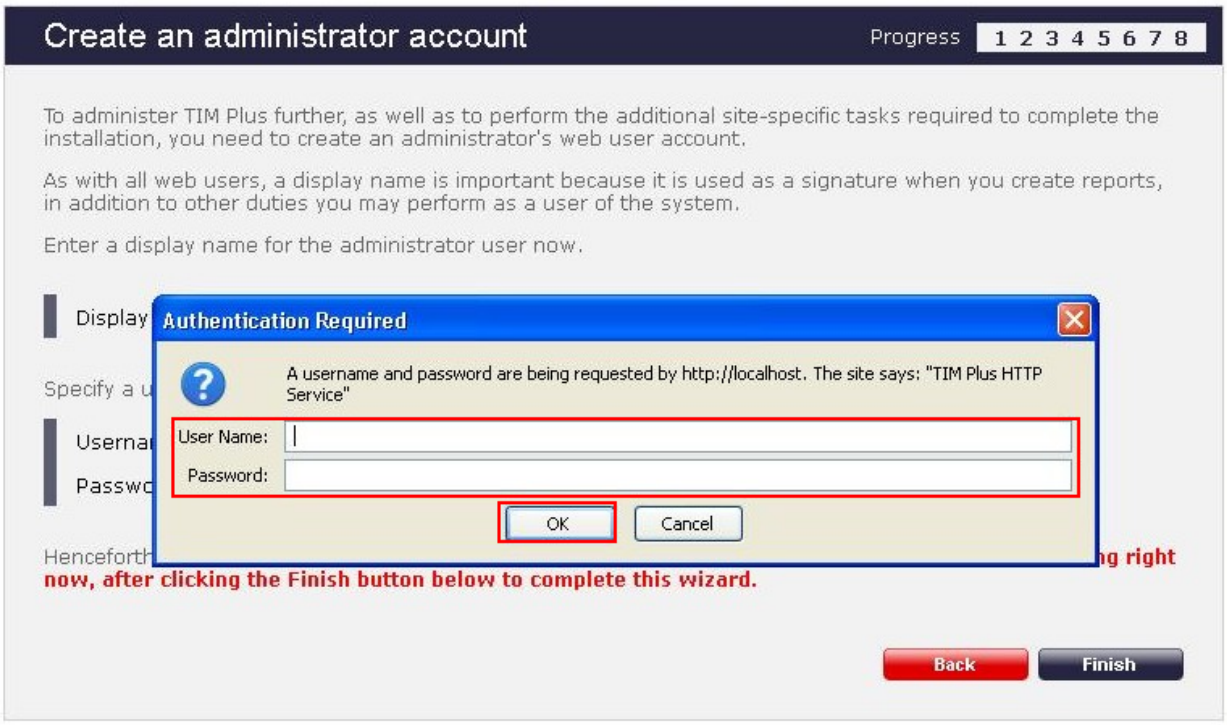
- **Display name** Enter an informative name, i.e. **Tri-Line support**
- **User Name** Enter a User name, i.e. **admin**
- **Password** Enter a password.

Click on the **Finish** button to continue.

6.4. Logging into the Tri-Line TIM Plus Call Logger

Once the administrator account is created, the user is prompted to log in. Log into the TIM Plus Call logger by entering the **User name** and **Password** as created in **Section 6.3**.

Click the **OK** button to log in.



6.5. Access to Tri-Line TIM Plus

A web browser is required to view the call record. During compliance testing, web browser and TIM Plus service were installed on the same PC. The loopback address **http://127.0.0.1** was used.

Note: The **User name** and **Password** as created in **Section 6.4** is required for log in.

7. Verification Steps

This section provides a set of tests that can be performed to verify correct configuration of Communication Manager and TIM Plus.

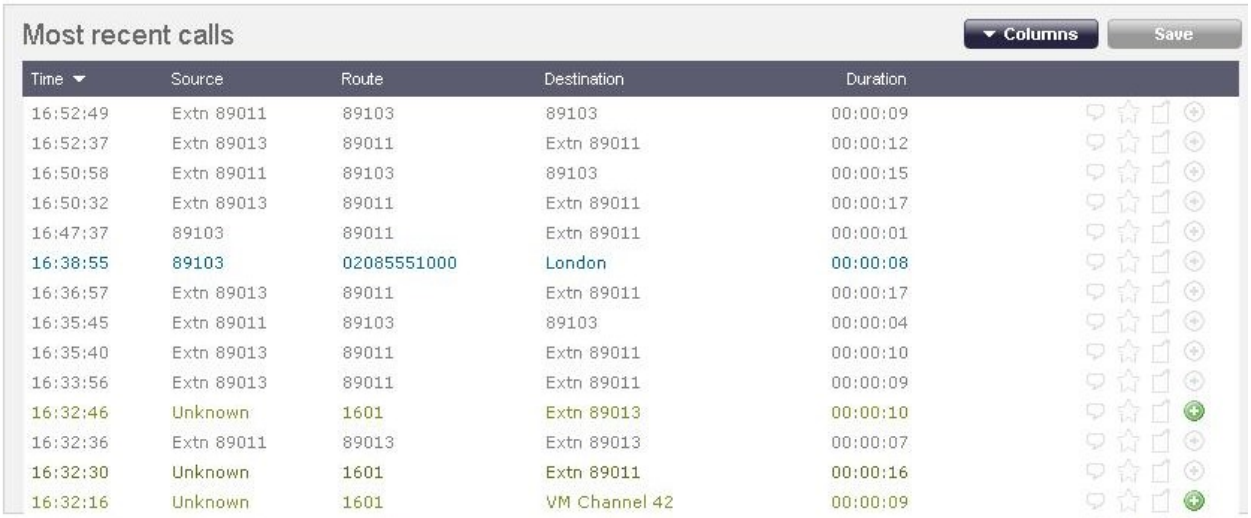
7.1. Verify the Avaya Aura® Communication Manager CDR Link

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 Plus Call Logger retrieves CDR data

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



Most recent calls

Columns | Save

Time	Source	Route	Destination	Duration
16:52:49	Extn 89011	89103	89103	00:00:09
16:52:37	Extn 89013	89011	Extn 89011	00:00:12
16:50:58	Extn 89011	89103	89103	00:00:15
16:50:32	Extn 89013	89011	Extn 89011	00:00:17
16:47:37	89103	89011	Extn 89011	00:00:01
16:38:55	89103	02085551000	London	00:00:08
16:36:57	Extn 89013	89011	Extn 89011	00:00:17
16:35:45	Extn 89011	89103	89103	00:00:04
16:35:40	Extn 89013	89011	Extn 89011	00:00:10
16:33:56	Extn 89013	89011	Extn 89011	00:00:09
16:32:46	Unknown	1601	Extn 89013	00:00:10
16:32:36	Extn 89011	89013	Extn 89013	00:00:07
16:32:30	Unknown	1601	Extn 89011	00:00:16
16:32:16	Unknown	1601	VM Channel 42	00:00:09

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 Plus 3.0.0.78 using a TCP connection. Tri-Line TIM Plus 3.0.0.78 is considered compliant with Avaya Aura® Communication Manager R6.0.1. All test cases have passed and met the objectives outlined in **Section 2.2**.

9. Additional References

This section references 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

[3] Administering Avaya Aura® Session Manager 03-603324 Release 6.1 Issue 1.0

[4] Maintaining and Troubleshooting Avaya Aura® Session Manager 03-603325 Release 6.1 Issue 4.1

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