Avaya Solution & Interoperability Test Lab

Application Notes for Configuring Avaya Aura® Communication Manager 7.0 with Soft-ex Optimiser/RingMaster 5.6b to collect CDR - Issue 1.1

Abstract

These Application Notes describe the configuration steps necessary for provisioning Soft-ex's product Optimiser/RingMaster to successfully interoperate with. Avaya Aura® Communication Manager.

Readers should pay attention to section 2, in particular the scope of testing as outlined in Section 2.1 as well as the observations noted in Section 2.2, to ensure that their own use cases are adequately covered by this scope and results.

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

Optimiser/RingMaster from Soft-ex is a telephone call accounting system that uses Call Detail Records (CDR) information from the Avaya Aura® Communication Manager and produces management reports. RingMaster was the original product supplied by Soft-ex to process CDR and Optimiser is an additional product/service built onto RingMaster which is an alerting system for calls that meet specific requirements, for instance those that may indicate telephone fraud.

2. General Test Approach and Test Results

The compatibility testing is concerned with verifying that the addition of Soft-ex's Optimiser/RingMaster does not interfere with the operation of the Communication Manager. CDR information is transferred via TCP/IP stream, so RingMaster is listening on a port awaiting CDR output. RingMaster also operates in multisite environments, where CDR data from more than one site is collected and forwarded to a central site. In these cases the data is collected by buffering devices supplied by Soft-ex and transferred by a variety of methods such as via TCP/IP, FTP or email. Essentially however for each PBX the interface has the same characteristics: one way data flow from the PBX. During compliance the CDR was output to a Scannex IP Buffer were it was collected by RingMaster. See **Figure 1** for a network diagram. The interoperability compliance test included feature functionality and defence tests.

There are some differences in Communication Manager in the call records generated by SIP endpoints compared to Analog, Digital, and H.323 endpoints. As a result in certain scenarios involving SIP endpoints (e.g., two-party call, transfer, or conference), a CDR application may see more or less records, or records with condition codes/calling party other than expected. Avaya is investigating the differences and code changes may be made available in a future release pending the outcome of that investigation.

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.

Note: In some Soft-ex literature the Optimiser/RingMaster product is referred to as Call Management Software or just Optimiser, to avoid confusion the product name in this document will be referred to as Optimiser/RingMaster.

2.1. Interoperability Compliance Testing

The principle objective of Interoperability Compliance testing is to provide assurance to the potential customers that the tested products operate as specified and can interoperate in an environment similar to the one that will be encountered at a customer's premises. The interoperability compliance testing includes the following connection types.

- Real-Time TCP/IP connection listening on a port awaiting CDR data from Communication Manager.
- Real-Time TCP/IP connection using an IP Buffer which is listening on a port awaiting CDR data from Communication Manager.

2.2. Test Results

Tests were performed to insure full interoperability of Communication Manager 7.0 with Soft-ex Optimiser/RingMaster 5.6b. Performance and load testing is outside the scope of the compliance testing. All the test cases passed successfully.

2.3. Support

Information on Soft-ex and product support can be obtained through the following:

Phone: +353 1 241 6600
Fax: +353 1 295 6290
E-mail: sales@soft-ex.net
Web: http://www.soft-ex.net

3. Reference Configuration

Figure 1 illustrates the network topology used during compliance testing. The Avaya solution consists of a Communication Manager, System Manager, Session Manager and a G430 Gateway. The Communication Manager is configured to output CDR over a TCP/IP port. A Node is configured on the Communication Manager to point to the Scannex IP buffer. CDR are sent in customized format, stored in the buffer and retrieved by RingMaster. A variety of Avaya Deskphones were used to generate intra-switch calls (calls between phones on the same system), and outbound/inbound calls to/from the PSTN. The Session and System Manager are shown in the diagram as they are required for the SIP telephones.

Note: RingMaster can also connect directly to Communication Manager using a direct TCP/IP connection.
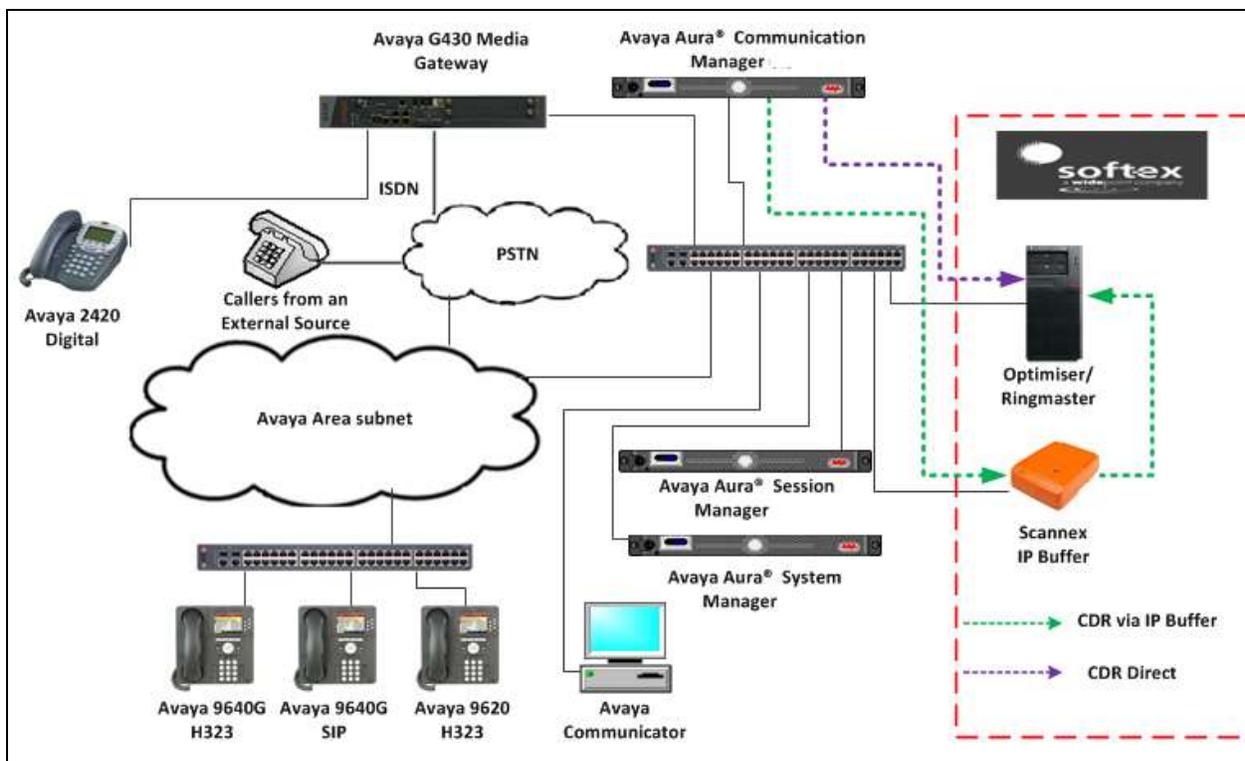
Figure 1: Avaya Aura® Communication Manager and Soft-ex Reference Configuration

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4. Equipment and Software Validated

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

Avaya Equipment	Software / Firmware Version
Avaya Aura® Communication Manager running on Vmware Virtual Machine	R7 SP1 R017.00.0.441.22438
Avaya Aura® Session Manager	R7.0 7.0.0.0.700007
Avaya Aura® System Manager	R7.0 7.0.0.0.1626-7.0.9.912
Avaya Media Server	R7.7 7.7.0.226 A11
Avaya G430 Media Gateway	FW 37.19.0
Avaya 96x1 Series IP Deskphones H.323	6.6.0.29
Avaya 96x1 Series IP Deskphones SIP	6.5.0
Soft-ex Equipment	**Software / Firmware Version**
Optimiser/RingMaster running on a PC Windows 7	R5.6b
Scannex IP Buffer	Revision 2.92.295

5. Configure Avaya Aura® Communication Manager

Configuration and verification operations on the Communication Manager illustrated in this section were all performed using Avaya Site Administrator Emulation Mode. The information provided describes the configuration of the Communication Manager for this solution. It is implied that 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 10**. The configuration operations described in this section can be summarized as follows:

- Create Node Name for IP buffer
- Define the CDR Link
- Change system-parameters cdr
- Set Intra-Switch Extensions
- Configure Trunks for CDR Reporting

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5.1. Create Node Name for IP buffer

A Node Name needs to be created to associate the IP buffer with the Communication Manager Use the **change node-names ip** command to configure the following:
Page **1**

- **Name**   Enter an informative name i.e. **Ringmaster**
- **IP address**   Enter the IP address of the **IP buffer** (if connecting direct to the
                    RingMaster directly enter the IP address of the RingMaster PC/Server)

```
change node-names ip                                            Page   1 of
2
                              IP NODE NAMES
   Name                IP Address
Ringmaster           10.10.16.6
```

5.2. Define the CDR Link

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

- **Service Type**   Enter **CDR1**
- **Local Node**   Enter **procr**
- **Remote Node**   Enter **Ringmaster**
- **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                     Procr         0           Ringmaster  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**

```
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 CDR System Parameters

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

```
change system-parameters cdr                                   Page   1 of   2
                            CDR SYSTEM PARAMETERS

 Node Number (Local PBX ID):                        CDR Date Format: month/day
      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? n       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: 15
```

Navigate to **Page 2** and enter the following information.
- Enter **Data Item** and **Length** as shown in the screen below

```
change system-parameters cdr                                   Page    2 of    2
                           CDR SYSTEM PARAMETERS


     Data Item - Length           Data Item - Length           Data Item - Length
 1: date             - 6    17: in-trk-code    - 4    33: return           - 1
 2: space            - 1    18: space          - 1    34: line-feed          1
 3: time             - 4    19: auth-code      - 7    35:                  -
 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: in-crt-id      - 3    39:                  -
 8: space            - 1    24: space          - 1    40:                  -
 9: code-dial        - 4    25: isdn-cc        - 11   41:                  -
10: space            - 1    26: space          - 1    42:                  -
11: code-used        - 4    27: ppm            - 5    43:                  -
12: space            - 1    28: space          - 1    44:                  -
13: dialed-num       - 18   29: acct-code      - 15   45:                  -
14: space            - 1    30: space          - 1    46:                  -
15: clg-num/in-tac   - 10   31: attd-console   - 2    47:                  -
16: space            - 1    32: space          - 1    48:                  -

                             Record length = 130
```

5.4. Set Intra-Switch Extensions

If the Intra-switch CDR field is set to **y** in the CDR SYSTEM PARAMETERS form in **Section 5.3**, use the **change intra-switch-cdr** command to define the extensions that will be subject to CDR. On **Page 1** of the **INTRA-SWITCH CDR** form, enter a specific extension whose usage will be tracked with a CDR. Add an entry for each additional **Extension**

```
change intra-switch-cdr                                        Page    1 of    3
                        INTRA-SWITCH CDR

                             Assigned Members:   0    of 5000   administered
  Extension          Extension              Extension            Extension

  8270001
  8270002
  8270003
  8270004
  8270005
  8275000
  8275010
  8275020
  8275021
```

5.5. Configure Trunks for CDR Reporting

For each trunk group for which CDRs are desired, verify that CDR reporting is configured to generate CDRs. 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 10                                          Page   1 of  21
                              TRUNK GROUP

Group Number: 10                   Group Type: isdn        CDR Reports: y
  Group Name: OUTSIDE CALL              COR: 1       TN: 1        TAC: 710
   Direction: two-way      Outgoing Display? y        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
```

6. Configuration of Scannex IP buffer

This section provides the procedures to configure the Scannex IP buffer. It is implied that the Scannex IP buffer is already in place and configured with an IP address on the same subnet as the Communication Manager. For all other provisioning information, such as initial installation and configuration, please refer to the product documentation in **Section 10**.

Note: The procedures described below are normally carried out by a Soft-ex or partner engineer during installation and subsequent re-configuration.

6.1. Setup Scannex IP Buffer

After logging in, the **Status** page is displayed Select **SETUP** followed by **Channel 1** (Not shown)**.**

Once the **Channel 1** page is opened, select **TCP** from the **Source** dropdown box, then select **show**.

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Once the next page opens, enter the following:
- **Connect**   Select **Device to** ipbuffer from the drop down box
- **TCP Port**   Enter **9000**. The port number used should match the **Remote Port**
                  configured on the Communication Manager in **Section 5.2**.
- **Protocol**   Enter **ASCII** Lines from the drop down box,

Use the scroll bar on the right side of the page and scroll down to Destination (not shown).

From the **Destination** dropdown box, select **TCP Server** and enter **5001** in the TCP port field.
Click on the **Save** button on the bottom of the page (not shown), when the configuration is
complete.

7. Configuration of Soft-ex Optimiser/RingMaster

This section outlines the steps to configure the RingMaster/Optimiser from Soft-ex in order to correctly collect CDR data. RingMaster/Optimiser is installed on a server or PC from a program on CD/DVD. Installation instructions are outside the scope of this document but information on installation of Optimiser/ RingMaster can be found in **Section 10** of this document. Once the software is correctly installed it automatically prompts for some configuration details to complete the installation. This includes information on the PBX that it is connecting to.

When the Wizard opens, click on the **Provide information about the telephone system** radio button. Click the **Next** button to continue.

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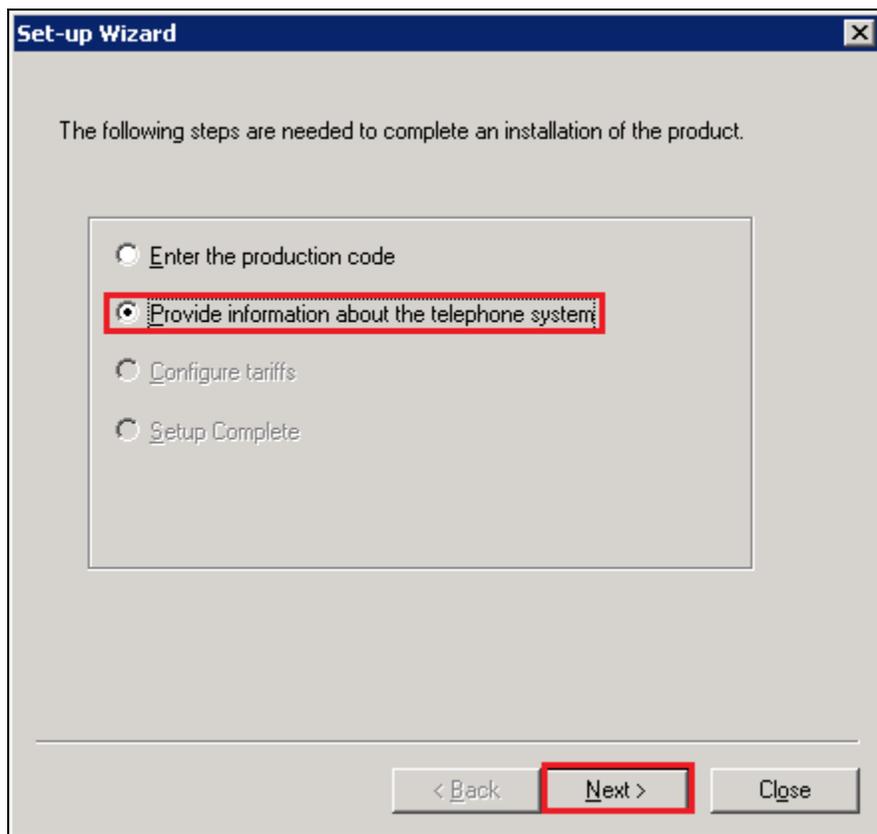
Select the PBX that is being connected to from the **PBX Group** as shown below. For a connection to Communication Manager choose **Nortel** from the list for PBX's (not shown below, scroll down to Nortel).
Click the **Next** button to continue.

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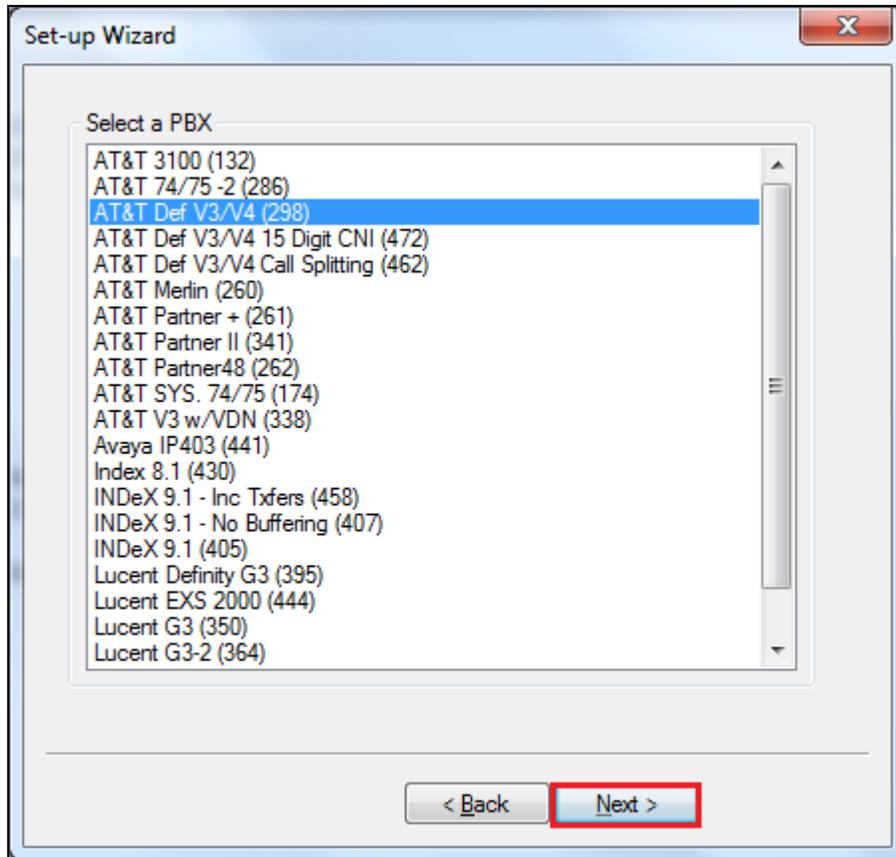
7.1. Configuration of Soft-ex Optimiser/RingMaster connection to Avaya Aura® Communication Manager

Once the application is successfully installed a connection must be setup to collect CDR data. This section shows the setup of a Real-time TCPIP connection to the Communication Manager. This uses a port to listen for CDR data being sent from the Communication Manager.

Open the Communication Server configuration in order to configure the new Real-time connection by clicking on **Communications Server** as shown below.

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Select the **Real-time Connections** folder in the left hand pane and double click on **Add Connection** as highlighted below.
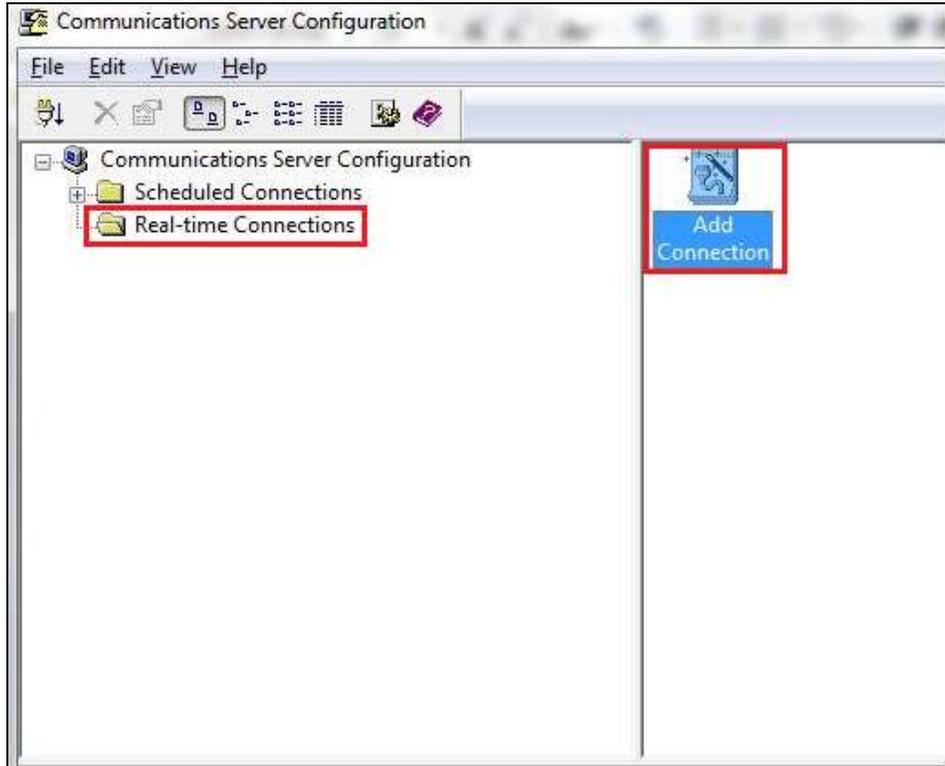
When the **Add Real-time Connection Wizard** opens, click the **Next** button to continue.
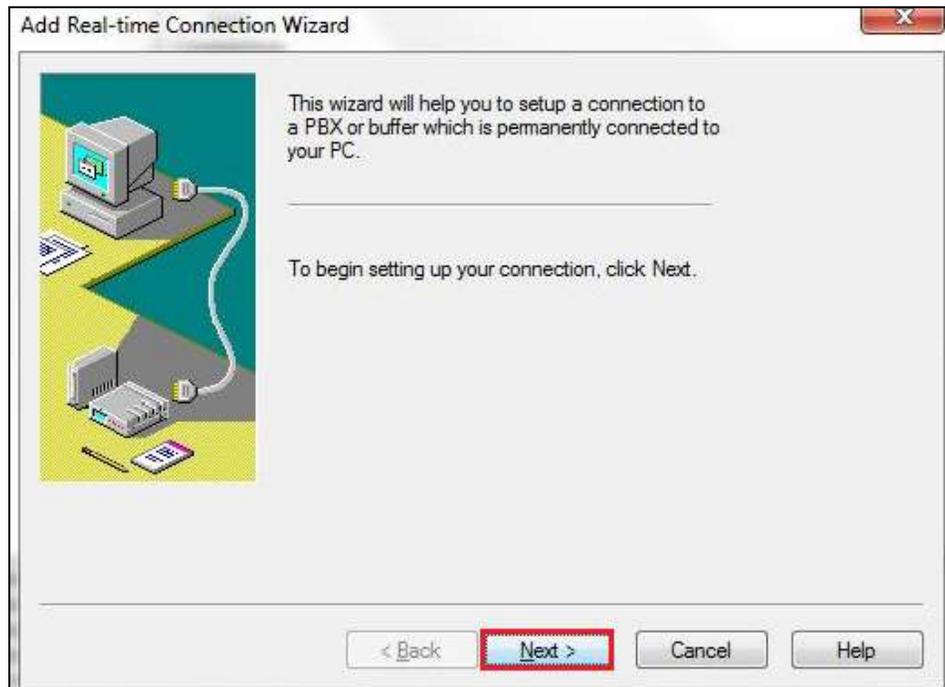
On the subsequent screen select **The Exchange is a TCP/IP Client** radio button, followed by the **Next** button.

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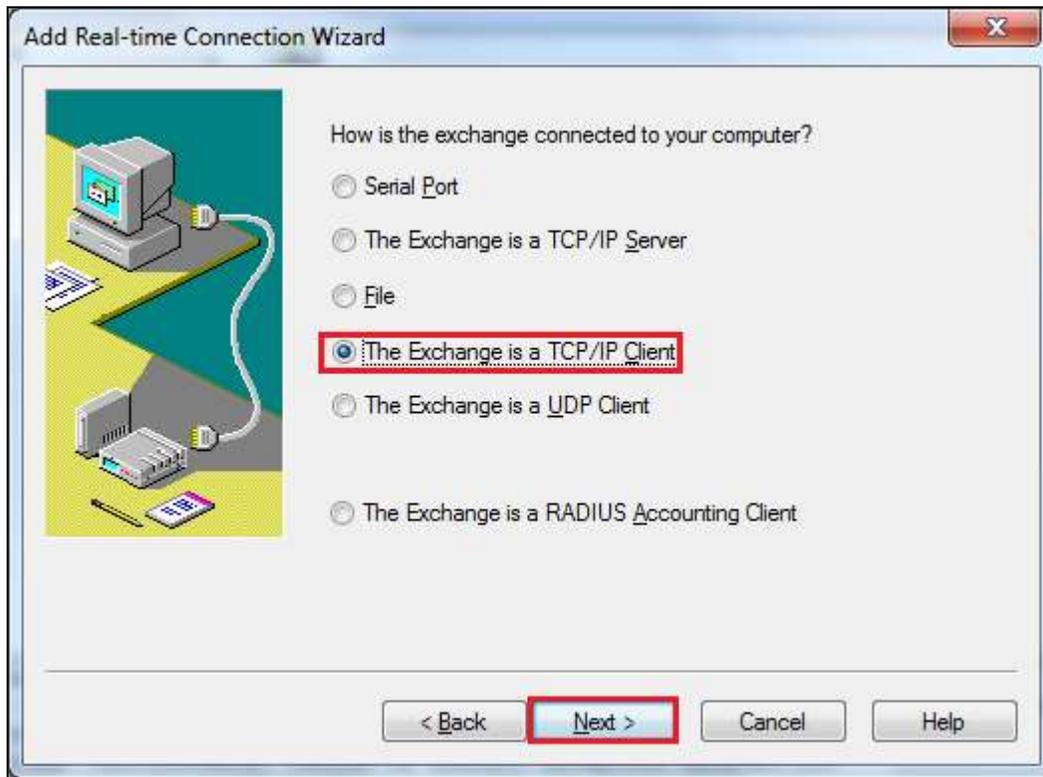
On the subsequent screen enter the following:

- **Site Number**   Select the site number (When there is only one site the site number will always be **0**)
- **Port Number**   Enter the port number to listen on (this is the port number as configured in **Section 5.2**)

Click the **Next** button to continue.
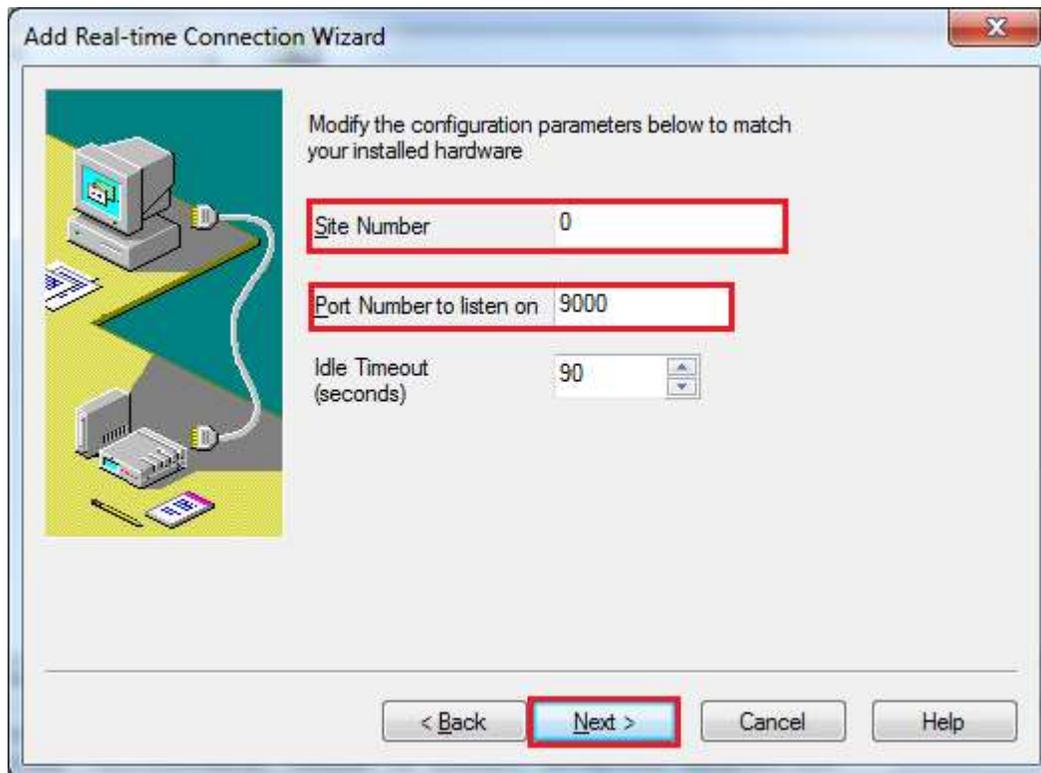
On the subsequent screen choose a **Connection name** for the new connection and click on the **Finish** button.

This new connection is shown under **Real-time Connections**.

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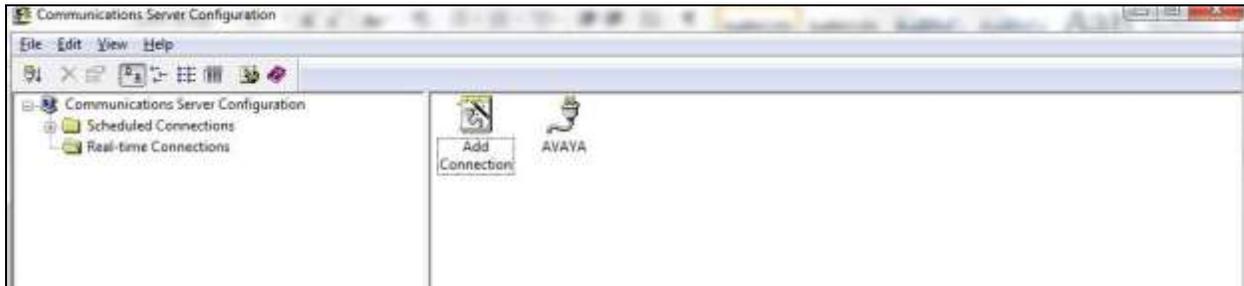
7.2. Configuration of Soft-ex Optimiser/RingMaster connection to the IP Buffer

Open the Communications Server Configuration as in **Section 7.1** and select the **Real-time Connections** folder in the left hand pane and double click on **Add Connection** as highlighted below.
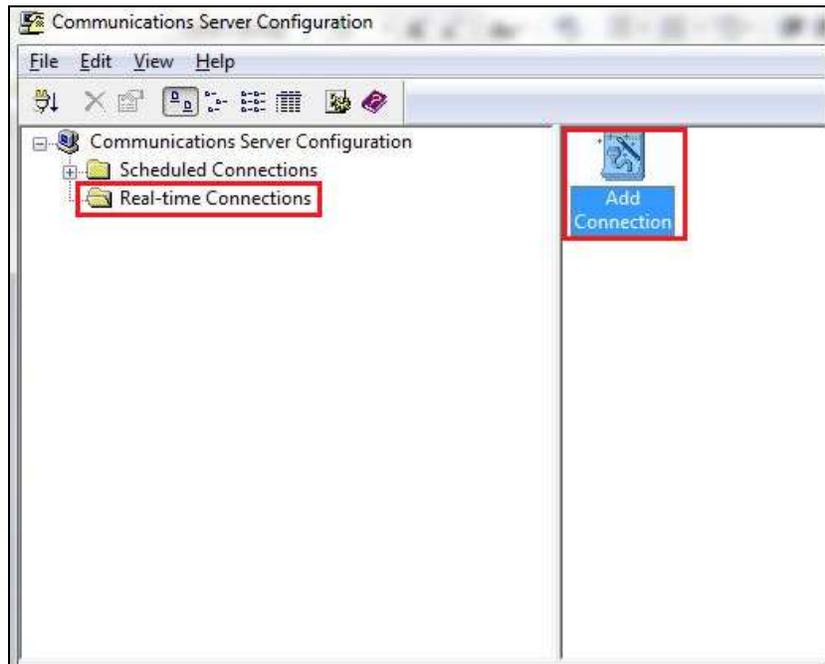
On the subsequent screen choose the **Add Real-time Connection Wizard** and, click the **Next** button to continue.

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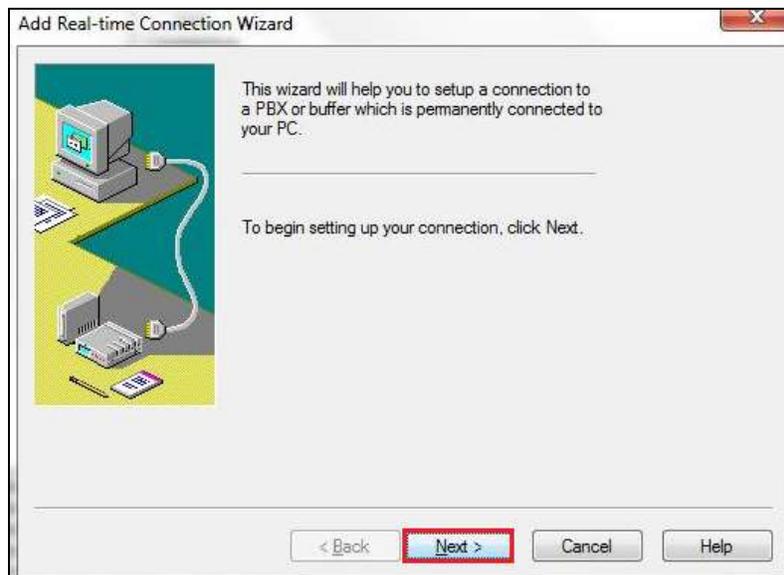
On the subsequent screen select **The Exchange is a TCP/IP Server** radio button, followed by the **Next** button.
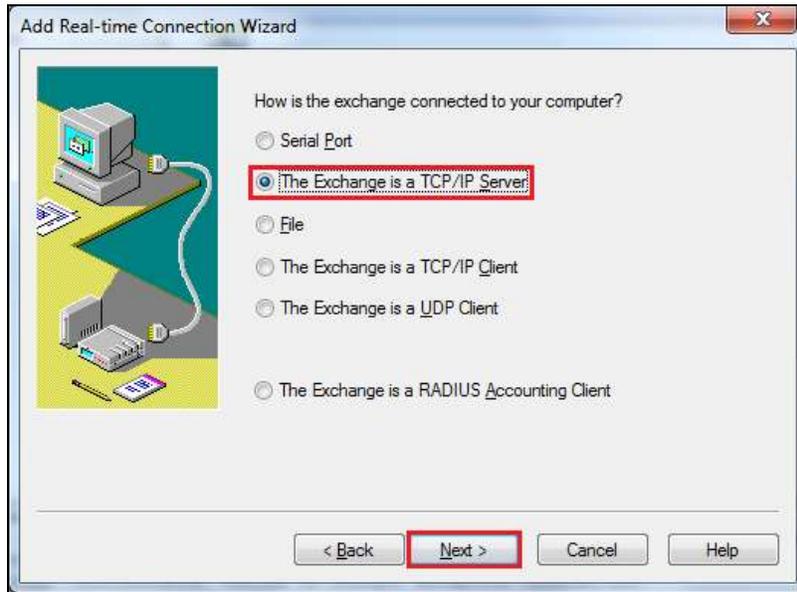
On the subsequent screen enter the following:

- **Server IP Address**   Enter the IP address of the IP Buffer
- **Port Number**   Enter the port number to listen on (this is the Destination TCT port number as configured in **Section 6.1**)
- **Site Number**   Select the site number (When there is only one site the site number will always be **0**)

Click the **Next** button to continue.
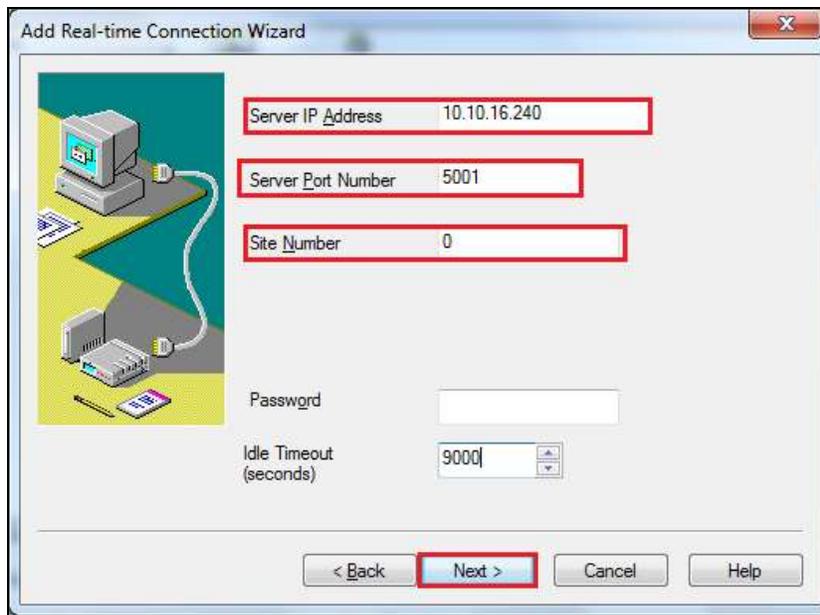
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On the subsequent screen choose a **Connection name** for the new connection and click on the **Finish** button.
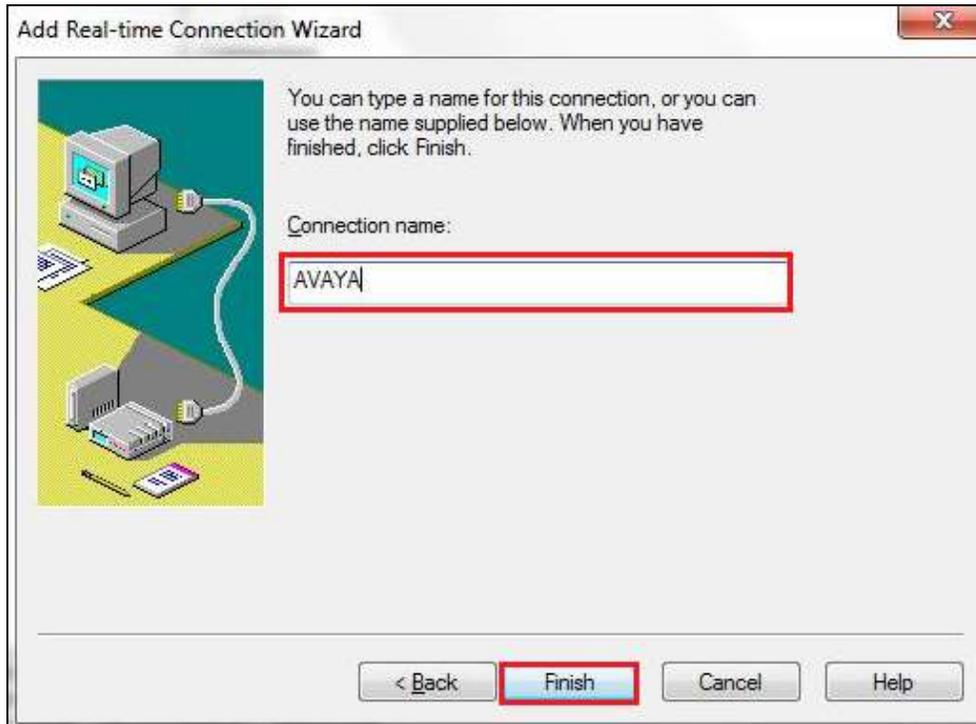
8. Verification Steps

This section provides tests that can be performed to verify correct configuration of the Avaya and Soft-ex solution.

8.1. Verify the Avaya Aura® Communication Manager CDR Link

Use the **status cdr-link** command to verify that the link between the Communication Manager and the IP buffer is in service. **Link State: up** and **Reason Code: OK** confirms successful connection.

```
status cdr-link
                           CDR LINK STATUS
                 Primary                        Secondary
       Link State: up                    CDR administered
Number of Retries: 999
      Date & Time: 2015/01/28 18:01:12        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
```

8.2. Verify the connection between Scannex IP buffer and Avaya Aura® Communication Manager

On the IP Buffer select **Status**, the completed **Status** screen is displayed. The **TCP Source** displays in green indicating that the IP Buffer has successfully connected to the Avaya solution.

8.3. Verify CDR data is being sent from Avaya Aura® Communication Manager

Setup a port listening tool on a PC and set it to listen on port 9000. Once connected make an incoming and outgoing call and on completion of the calls CDR data should be visible on the port listening tool. An example is shown below.

8.4. Verify CDR data is being received by the Optimiser/RingMaster

Check that the Soft-ex Communications Server service is running as shown below.

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Check to see that a CDR file is created in the location **C\:RM2000\<Sitename>** as shown below.
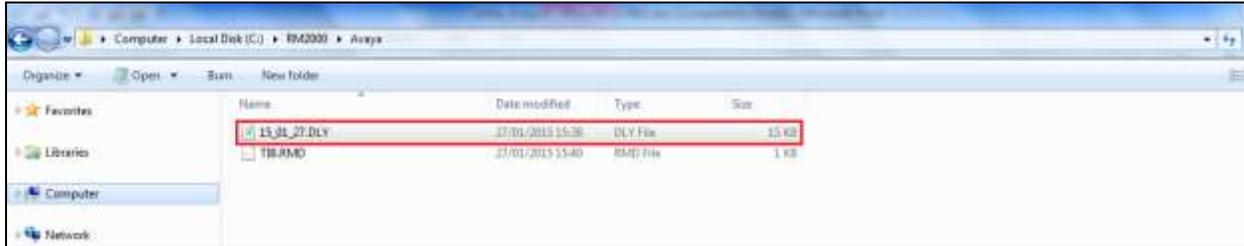
Check using the Soft-ex Call Charging Configuration tool, that CDR data is being processed correctly.

This will show the CDR data as it was sent from the Communication Manager.

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An example is shown below.

9. Conclusion

A full and comprehensive set of feature functional test cases were preformed during Compliance testing. Soft-ex Optimiser/Ringmaster 5.6b is considered compliant with Avaya Aura® Communication Manager 7.0. All test cases have passed and met the objectives outlined in **Section 2.2**.

10. Additional References

These documents form part of the Avaya official technical reference documentation suite. Further information may be had from *http://support.avaya.com* or from your Avaya representative.

[1] *Administering Avaya Aura® Communication Manager, Release 7.0, August 2015, Document Number 03-300509, Issue 9.0.*
[2] *Avaya Aura® Communication Manager Feature Description and Implementation, Release 7.0, August 2015 , Document Number 555-245-205, Issue 1.0.*
[3] *Administering Avaya Aura® Session Manager, Release 7.0, Issue 1 August 2015*
[4] *Administering Avaya Aura® System Manager, Release 7.0, Issue 1, October, 2015*
[5] *Administration for the Avaya G430, 03-603228, Issue 1, May, 2009*

Information on the installation and configuration of Optimiser/RingMaster can be found at *http://www.soft-ex.net* website. Information on the install and configuration of the IP Buffer from Scannex can be found at http://www.scannex.co.uk.

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