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**Avaya Solution & Interoperability Test Lab**

# Application Notes for Configuring recordX from Oak Telecom with Avaya Aura® Communication Manger R6.0.1 using a Passive Tap on ISDN Q.931 Trunk - Issue 1.0

## Abstract

These Application Notes describe the configuration steps for provisioning Oak Telecom's recordX trunk side call recorder to successfully interoperate with Avaya Aura® Communication Manager R6.0.1 using a high impedance tap on an Integrated Services Digital Network (ISDN) Q.931 signalling connection to PSTN.

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

These Application Notes describe the configuration steps required for recordX Call Recording from Oak Telecom to successfully record telephone calls from Avaya Aura® Communication Manager R6.0.1 using ISDN Q.931 signalling. Oak Telecom's recordX Call Recording (recordX) records telephone calls by monitoring ISDN trunk groups. Oak Telecom's recordX uses OptiLogix PCI cards to capture and process voice data. The OptiLogix PCI card is connected to an E1 trunk group by use of a high impedance tap. Integration is achieved using ISDN Q.931 messaging over the D-Channel. Q.931 events are used by Oak Telecom's recordX as triggers to control recordings on the B-Channels. Oak Telecom's recordX has a web interface, through which the system may be configured and maintained and through which users can search for and review recordings.

# 2. General Test Approach and Test Results

The general test approach was to manually place inter-switch calls, inbound trunk, outbound trunk calls, conference calls, transferred calls, and forwarded calls to and from telephones controlled by Communication Manager and verify that recordX records all telephone calls and places these into a specified location on the recordX Server for future playback. For serviceability testing, logical links such as Ethernet connections were disabled/re-enabled.

## 2.1. Compliance Test Cases

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 deployed at a customer's premises. Performance and load testing is outside the scope of the compliance testing. The compliance testing is concerned with verifying that the addition of recordX does not interfere with the operation of Communication Manager in any way.

Compliance testing focused on the response of the recordX to Communication Manager for the following call types:
- **Inbound calls** – Test call recording for inbound calls to Communication Manager from PSTN callers.
- **Outbound calls** – Test call recording for outbound calls from Communication Manager to PSTN callers.
- **Hold/Transferred calls** – Test call recording for calls transferred to PSTN callers.
- **Conference calls -** Test call recording for calls in conference between Communication Manager and PSTN callers.
- **Forwarded calls** – Test call recording for calls made to deskphones that are forwarded to the PSTN.
- **Failover of recordX -** The behaviour of recordX under different failure conditions will also be observed.

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## 2.2. Test Results

All tests passed successfully. No errors were observed on Communication Manager and recordX Server.

## 2.3. Support

Support from Avaya is available at http://support.avaya.com. Technical support for recordX can be obtained as shown below.

      Oak Telecom
      Unit 7 Albany Park,
      Cabot Lane, Poole,
      Dorset BH17 &BX
      United Kingdom
      Tel: +441202607000
      Email: support@oak.co.uk
      Website:  http://www.oak.co.uk

# 3. Reference Configuration

**Figure 1** shows the network topology during compliance testing. Oak Telecom's recordX Server uses a high impedance tap to record telephone calls on the ISDN Q.931 link to the PSTN. These recorded calls are archived on the recordX server and can be accessed and played through a web browser session to the server.
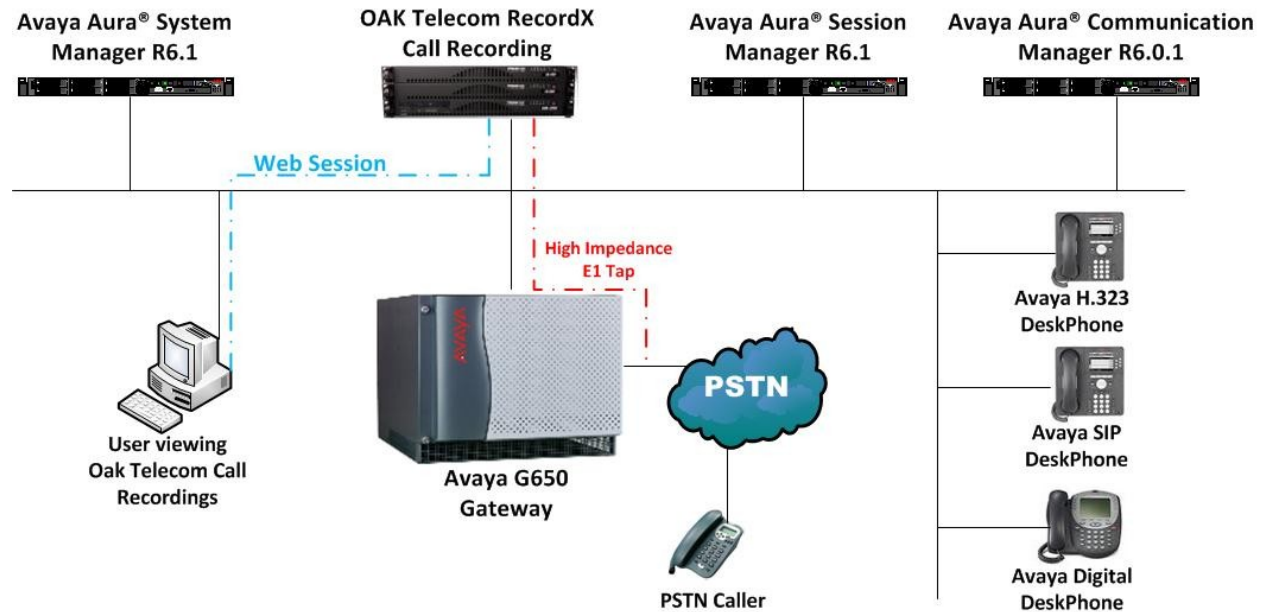


**Figure 1: Connection of Oak Telecom recordX Call Logging and Avaya Aura® Communication Manager R6.0.1.**

# 4. Equipment and Software Validated

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

| Equipment Description | Software Release |
|---|---|
| Avaya S8800 Server | Avaya Aura® Communication Manager R6.0.1 SP3 |
| Avaya S8800 Server | Avaya Aura® System Manager R6.1 SP4 |
| Avaya S8800 Server | Avaya Aura® Session Manager R6.1 SP4 |
| Avaya 96xx Series SIP Telephone | 96xx SIP Release 2.6 SP3 |
| Avaya 96xx Series H.323 Telephone | 96xx H.323 Release 3.1 SP2 |
| Avaya 24xx Series Digital Telephone | N/A |
| Oak Telecom recordX Call Recording | recordX Call Recording release 10.4.2.0 |

# 5. Configuration of Avaya Aura® Communication Manager

Configuration of Communication Manager is performed through Avaya Site Administration supporting System Administration Terminal (SAT). An SSH session to the IP address of the Communication Manager initiates the console connection.

**Note:** The configuration of Communication Manager for call routing is outside the scope of this document, it is assumed that a full working system is already installed. Included in the below screen shots is an example of the setup on Communication Manager used for compliance testing the Oak Telecom recordX. For all other provisioning information, such as administering Communication Manager, refer to product documentation in **Section 10** of these Application Notes.

## 5.1. Verify Avaya Aura® Communication Manager Licenses

Type **display system-parameters customer-options** command to verify that the **ISDN-PRI** customer option is set to **y** on **Page 4**.

```
display system-parameters customer-options                  Page   4 of  11
                           OPTIONAL FEATURES

   Emergency Access to Attendant? y                         IP Stations? y
          Enable 'dadmin' Login? y
         Enhanced Conferencing? y                    ISDN Feature Plus? n
                Enhanced EC500? y    ISDN/SIP Network Call Redirection? y
    Enterprise Survivable Server? n                     ISDN-BRI Trunks? y
       Enterprise Wide Licensing? n                            ISDN-PRI? y
             ESS Administration? y           Local Survivable Processor? n
          Extended Cvg/Fwd Admin? y                  Malicious Call Trace? y
        External Device Alarm Admin? y          Media Encryption Over IP? n
 Five Port Networks Max Per MCC? n    Mode Code for Centralized Voice Mail? n
              Flexible Billing? n
   Forced Entry of Account Codes? y                Multifrequency Signaling? y
      Global Call Classification? y    Multimedia Call Handling (Basic)? y
             Hospitality (Basic)? y    Multimedia Call Handling (Enhanced)? y
 Hospitality (G3V3 Enhancements)? y          Multimedia IP SIP Trunking? y
                     IP Trunks? y


          IP Attendant Consoles? y
        (NOTE: You must logoff & login to effect the permission changes.)
```

## 5.2. Display E1 ISDN setup on Avaya Aura® Communication Manager

**Note:** The following setup of an ISDN Q.931 circuit was used for the compliance testing and is included in these Application Notes only as an example or reference.

Type **display trunk-group x** where x is the trunk group number set up for ISDN trunks.

```
display trunk-group 9                                         Page   1 of  21
                               TRUNK GROUP

Group Number: 9                      Group Type: isdn        CDR Reports: r
  Group Name: recordX                       COR: 1      TN: 1      TAC: *19
   Direction: two-way          Outgoing Display? n    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
```

Type **display signaling-group x** where x is the signalling group number set up for ISDN trunks.

```
display signaling-group 9
                              SIGNALING GROUP

 Group Number: 9                 Group Type: isdn-pri
                  Associated Signaling? y        Max number of NCA TSC: 6
                    Primary D-Channel: 01A0916    Max number of CA TSC: 0
                                                 Trunk Group for NCA TSC: 9
        Trunk Group for Channel Selection: 9    X-Mobility/Wireless Type: NONE
      TSC Supplementary Service Protocol: b        Network Call Transfer?
```

Type **display ds1 <location>**, where **<location>** is the location of the DS1 board, as shown below to show the ISDN protocol information.

```
display ds1 1a09
                            DS1 CIRCUIT PACK

         Location: 01A09                        Name: recordX
         Bit Rate: 2.048                   Line Coding: hdb3

     Signaling Mode: isdn-pri
          Connect: pbx                       Interface: peer-slave
   TN-C7 Long Timers? n                  Peer Protocol: Q-SIG
Interworking Message: PROGress                    Side: b
Interface Companding: alaw                        CRC? y
        Idle Code: 01010100          Channel Numbering: timeslot
                          DCP/Analog Bearer Capability: 3.1kHz

                                     T303 Timer(sec): 4
                                     Disable Restarts? y

    Slip Detection? y               Near-end CSU Type: other

  Echo Cancellation? n
```

# 6. Splitting the PRI (ISDN-30 & E1) feed to install Oak Telecom recordX PCIe Call Recording Card

The High Impedance tap is achieved using an **RJ45 Splitter** in order to split the E1-ISDN cable coming from the PSTN to the DS1 board on the G650 Gateway as illustrated below. The split cables then run into the **Avaya G650 Gateway** to the DS1 board and the **PCIe Call Recording Card** on the recordX Server.

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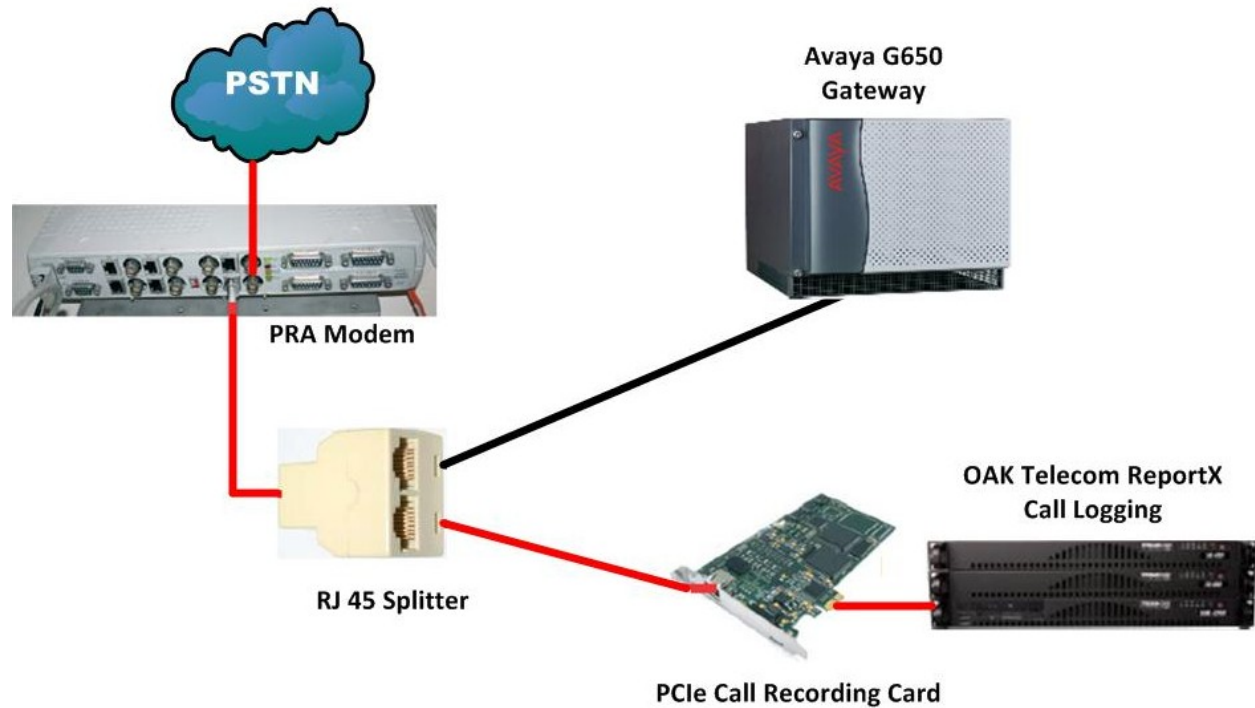
# 7. Configuration of Oak Telecom's recordX Server

The configuration information provided in this section describes the steps required to set up recordX to record telephone calls from Communication Manager using a passive high impedance tap on the ISDN Q.931 connection to the PSTN. For all other provisioning information, such as recordX software installation, refer to Oak Telecom recordX product documentation in **Section 10** of these Application Notes.

## 7.1. Driver installation for Oak Telecom OptiLogix PCI Card

During the installation of recordX, the user is prompted to select the driver type for the hardware installed. Select **Install OptiLogix PCI Card Driver Support** as highlighted below and click **Next** to continue the install.
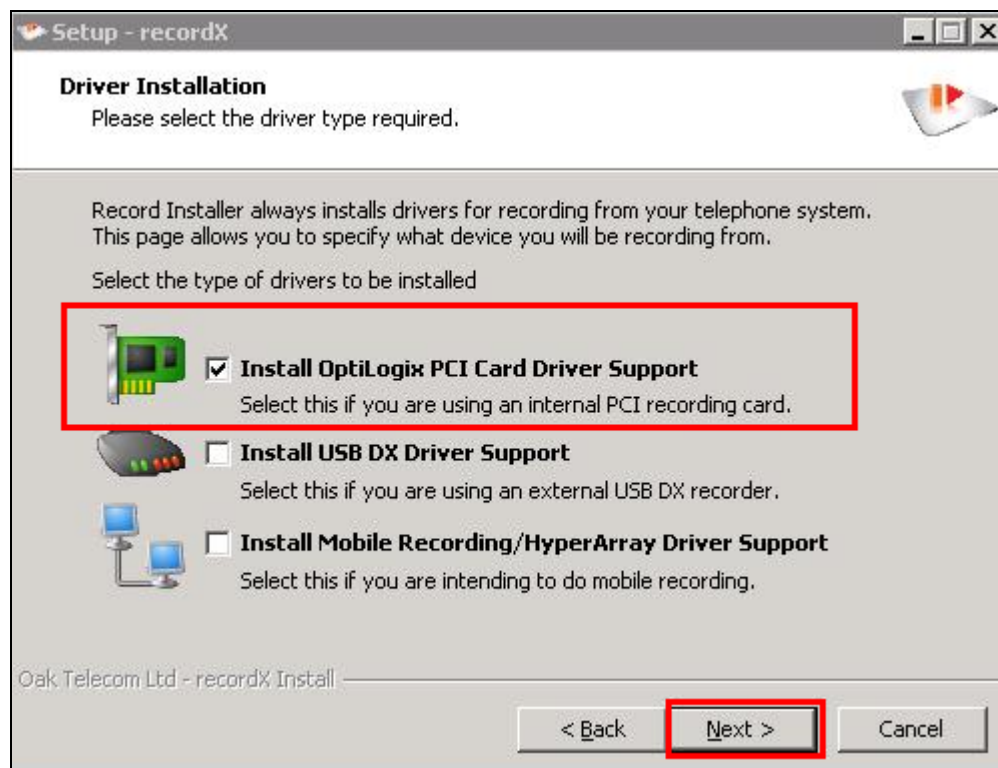
## 7.2. Configuration of Oak Telecom's recordX software to correctly interoperate with Avaya Aura® Communication Manager

Once recordX is fully installed, configure the software by opening **Setup** as shown below by navigating to **Start →Programs → Oak Telecom → report → Setup**.
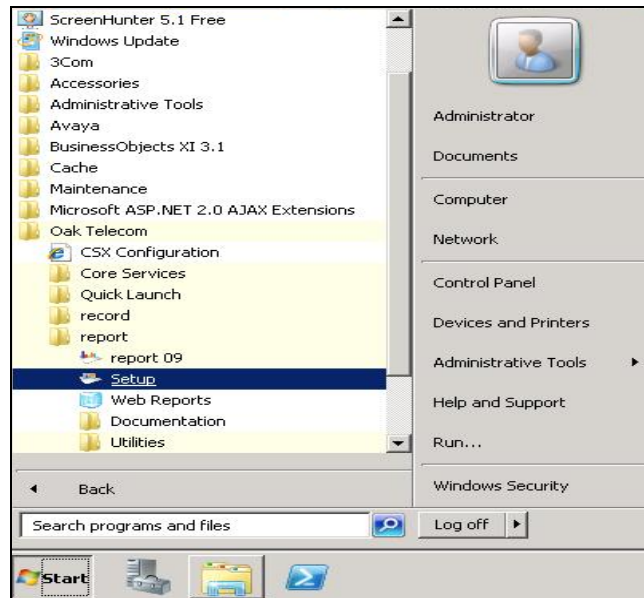


Alternatively this Setup can be launched from the Quick Launcher in task bar as shown below. Click on the blank icon in the **QUICK LAUNCH** and select **Comms Suite Setup**.
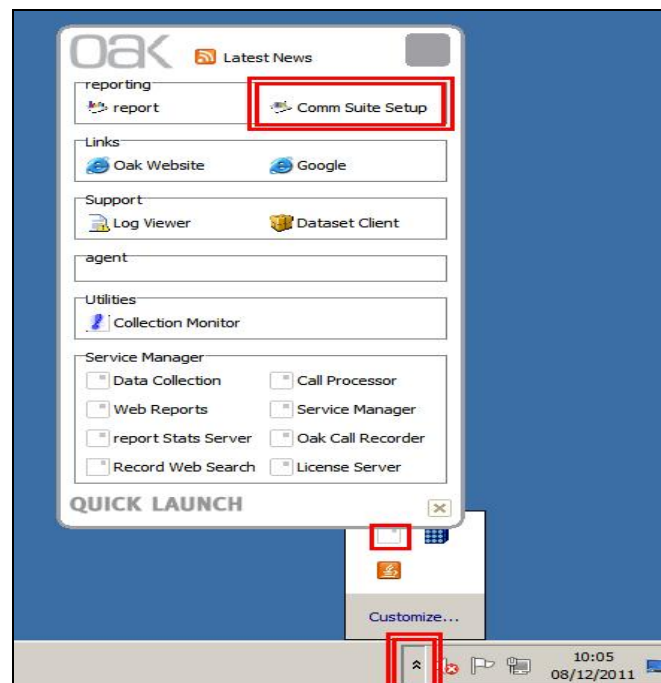
Select **Supervisor** for the **Username** and enter the appropriate **Password**. Click **OK**.
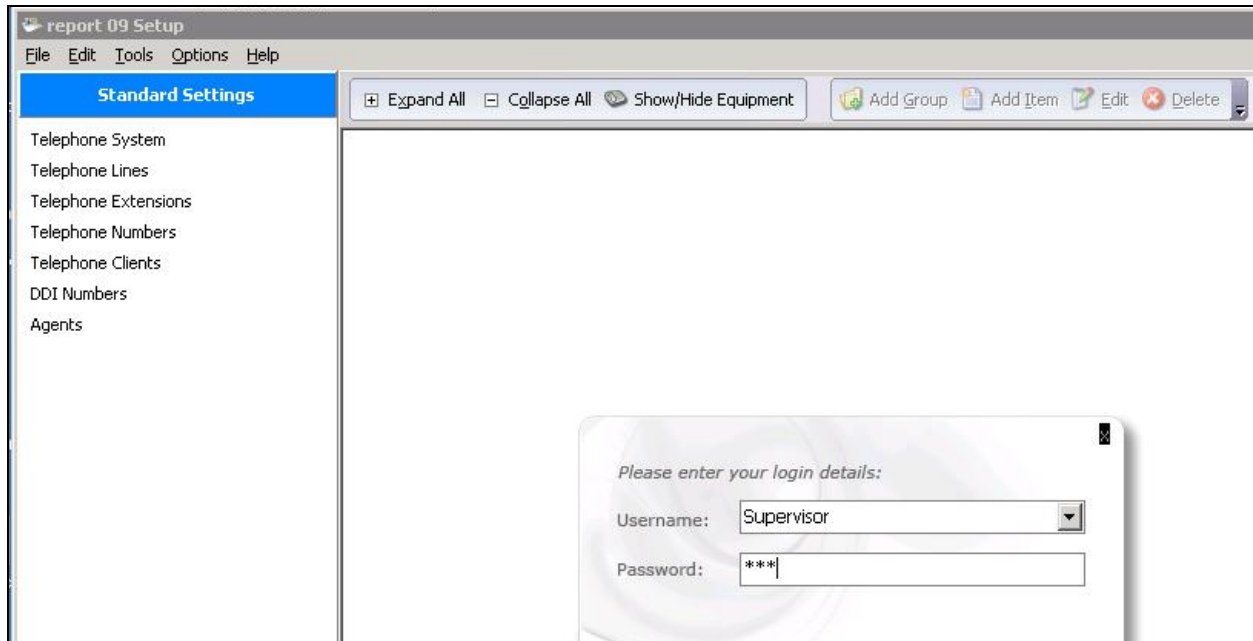


From the **Standard Settings** section in the left pane, select **Telephone System** to bring up the sites configured. All default installations will provide a default site for configuration, Right-click on the default site and **Edit** this site as shown below.
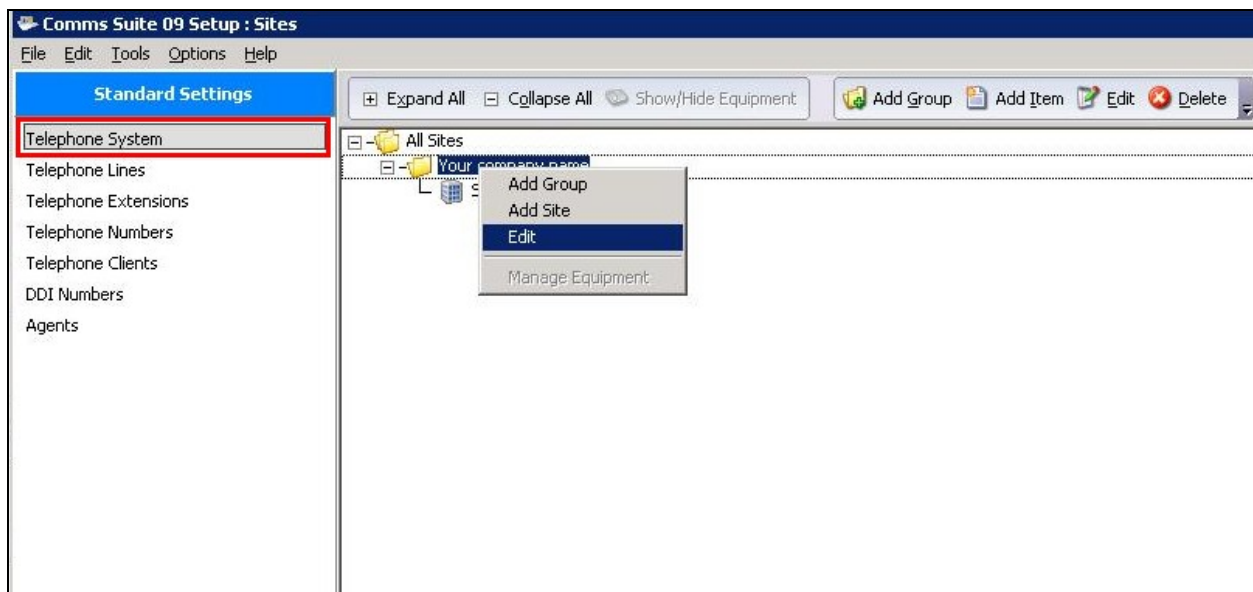
In the **Site Details** window select the **Call Recording** tab to configure the site as shown below. Click on the **General** tab and ensure **Recordings Location** is automatically populated with the location where the recordings are to be stored. However, if this is blank simply click on the icon as highlighted and browse to the Recordings folder as shown and click **OK**.

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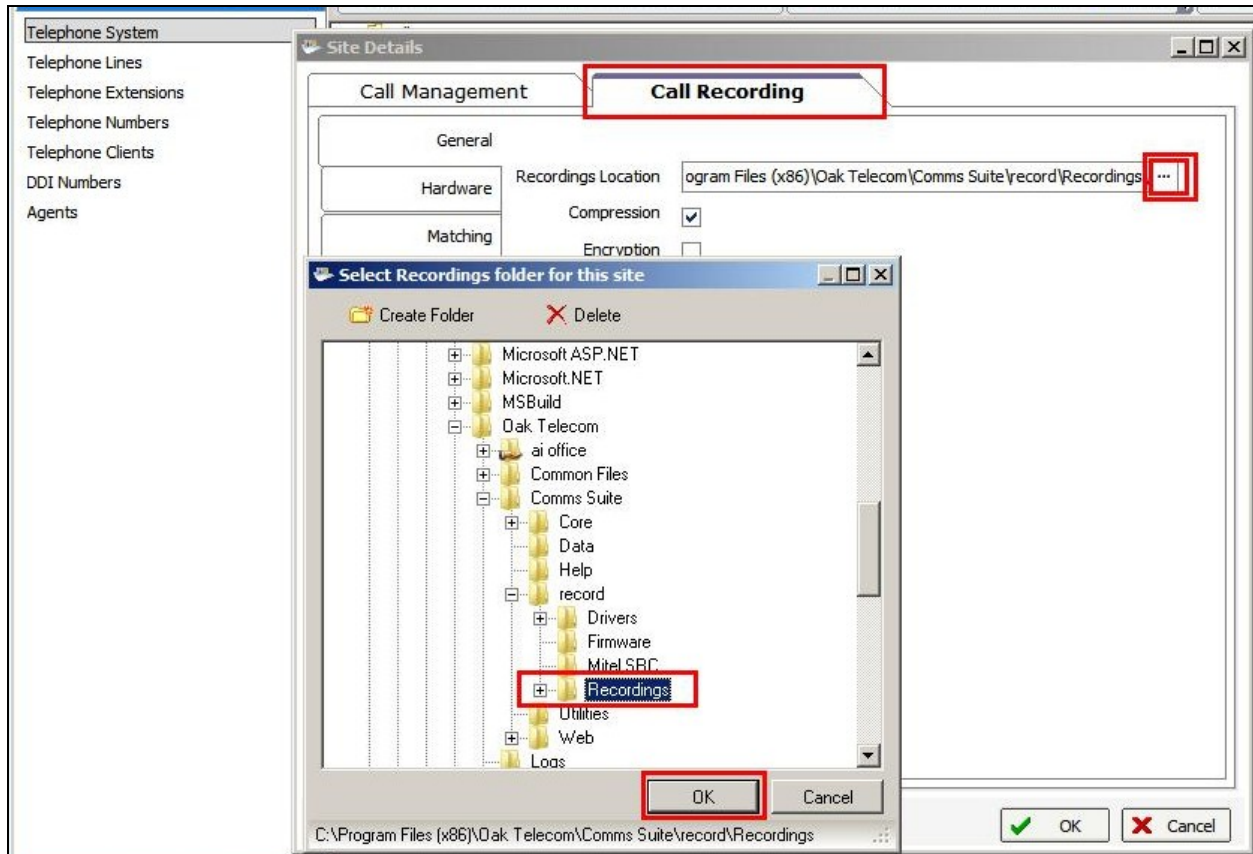
Under the **Hardware Tab** ensure that the information on the x32.PCI card is populated as shown below. This is automatically populated as a result of the driver install in **Section 7.1**. Click **OK**.
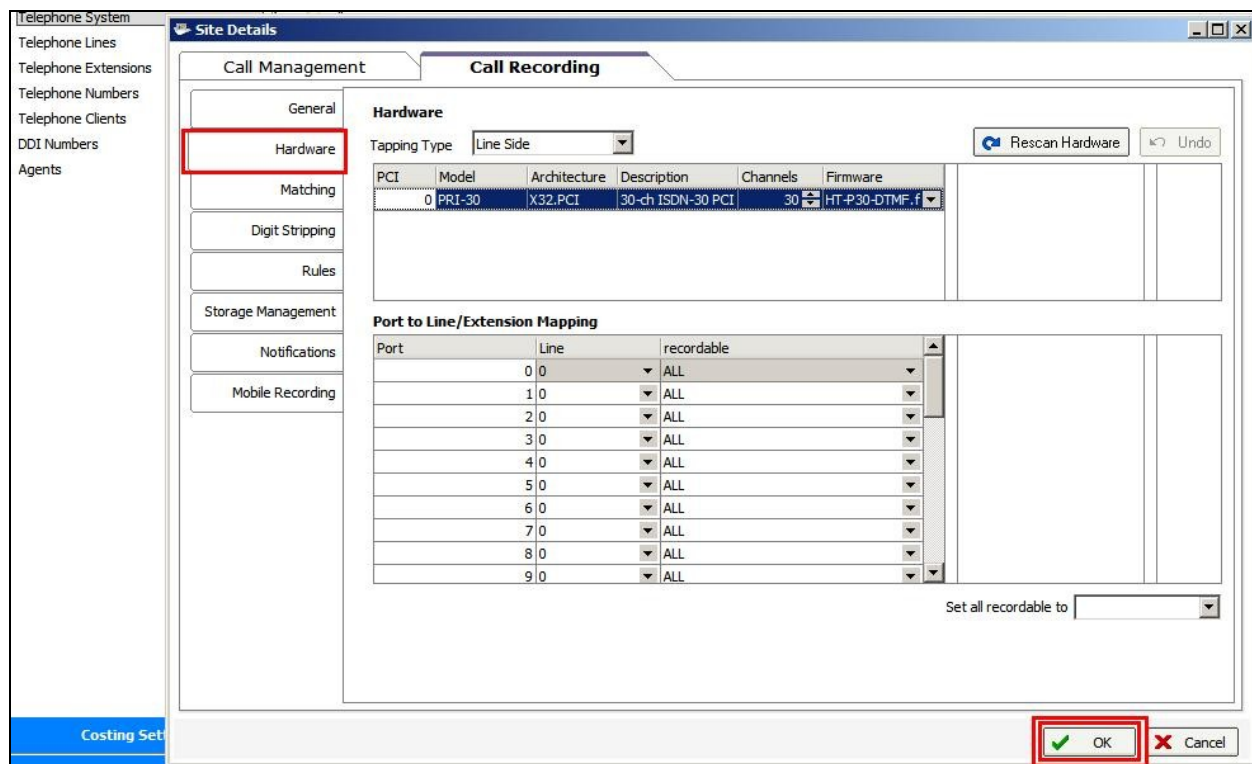


A system window opens prompting the user to save changes. Click **Yes** as highlighted below to save all changes made in this section.

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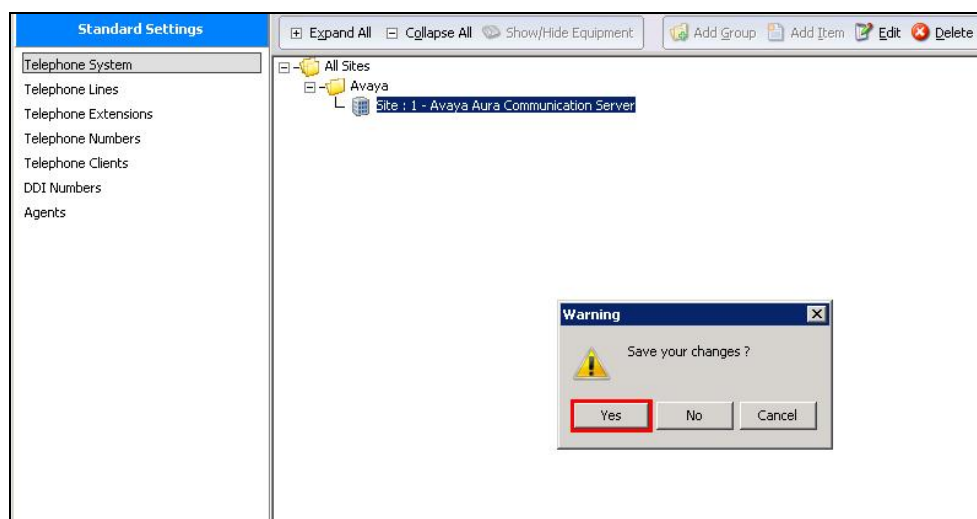
Once the changes are saved, a window automatically opens prompting the restart of all Comms Suite Services. Click on **Restart All** and then **OK** as highlighted below, the services will then restart in the background.
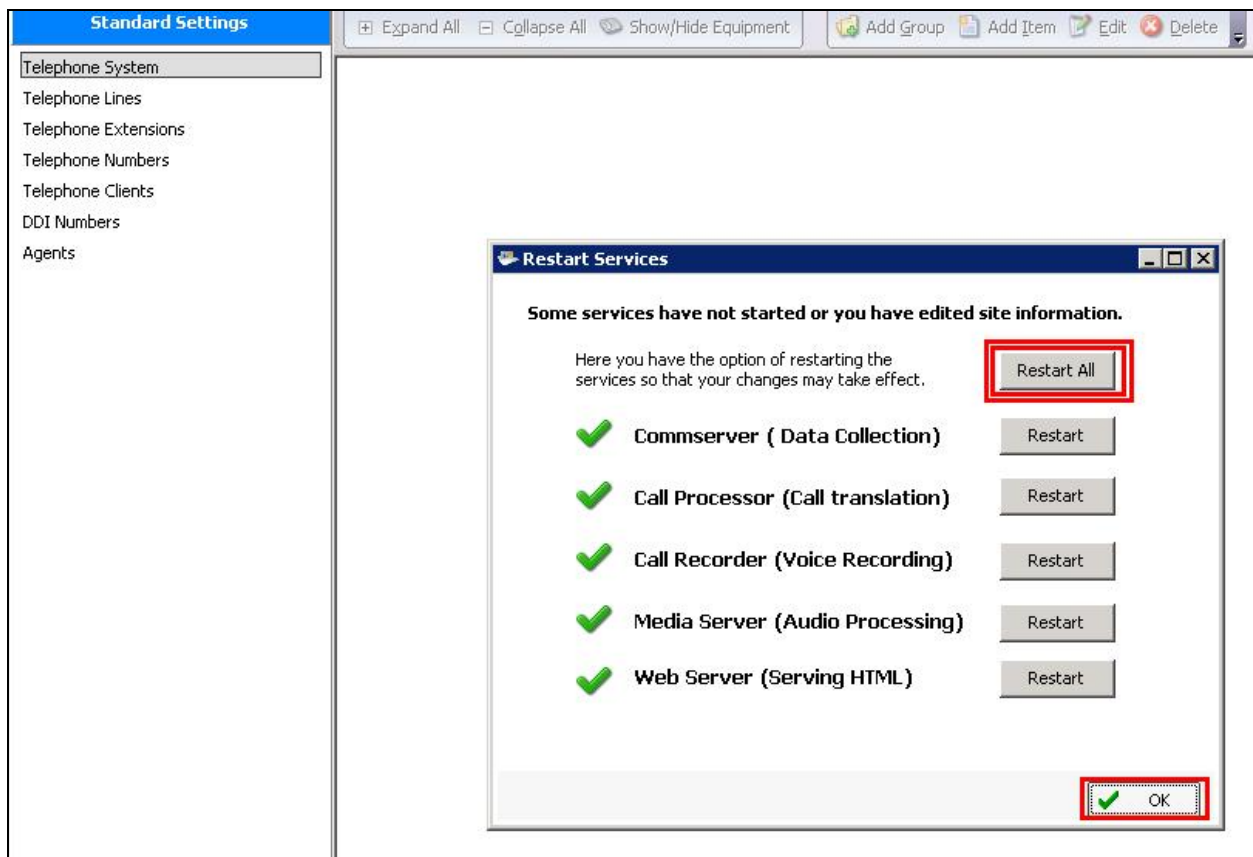
# 8. Verification Steps

The following steps can be used to verify that the recordX system has been configured correctly and that calls can be recorded.

## 8.1. Verify that ISDN trunk is active on Avaya Aura® Communication Manager.

Verify the status of the trunk group by typing **status trunk x** command, where x is the trunk group displayed in **Section 3**. The **Service State** should show **in-service/idle.**

```
status trunk 9

                         TRUNK GROUP STATUS

Member    Port    Service State       Mtce  Connected Ports
                                      Busy

0009/001 01A0901  in-service/idle      no
0009/002 01A0902  in-service/idle      no
0009/003 01A0903  in-service/idle      no
0009/004 01A0904  in-service/idle      no
0009/005 01A0905  in-service/idle      no
0009/006 01A0906  in-service/idle      no
```

## 8.2. Verify Oak Telecom Services are running

Open a web browser session to http://<servername>:9595, where **<servername>** is the IP address or hostname of the recordX Server, in order to view the services as highlighted below. Ensure that all services are running as shown.
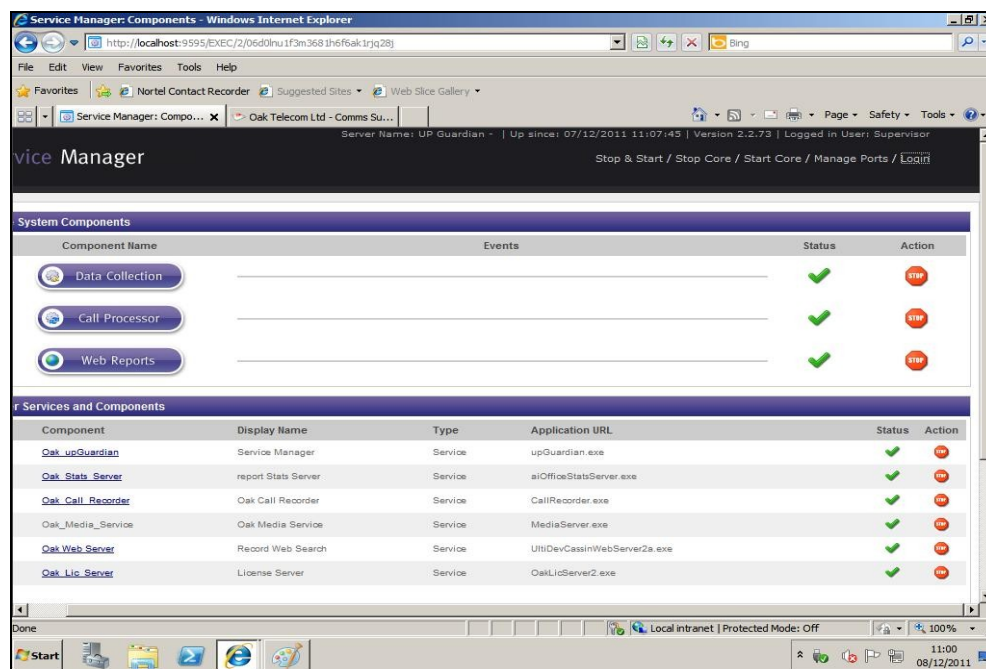
## 8.3. Verify that telephone call recordings are being received by Oak Telecom's recordX Server

Open a web browser session to http://<servername>:9100, where **<servername>** is the IP address or hostname of the recordX Server, in order to view recordings as highlighted below.

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## 8.4. Verify that telephone call recordings can be played back and heard correctly

In order to play saved recordings, **recordX Call Player** must be installed on a client machine that has a sound card. Open a web browser session to **http://<servername>:9100**, where **<servername>** is the IP address or hostname of the recordX Server. Under **help**, click on **Install recordX Call Player** as shown below.
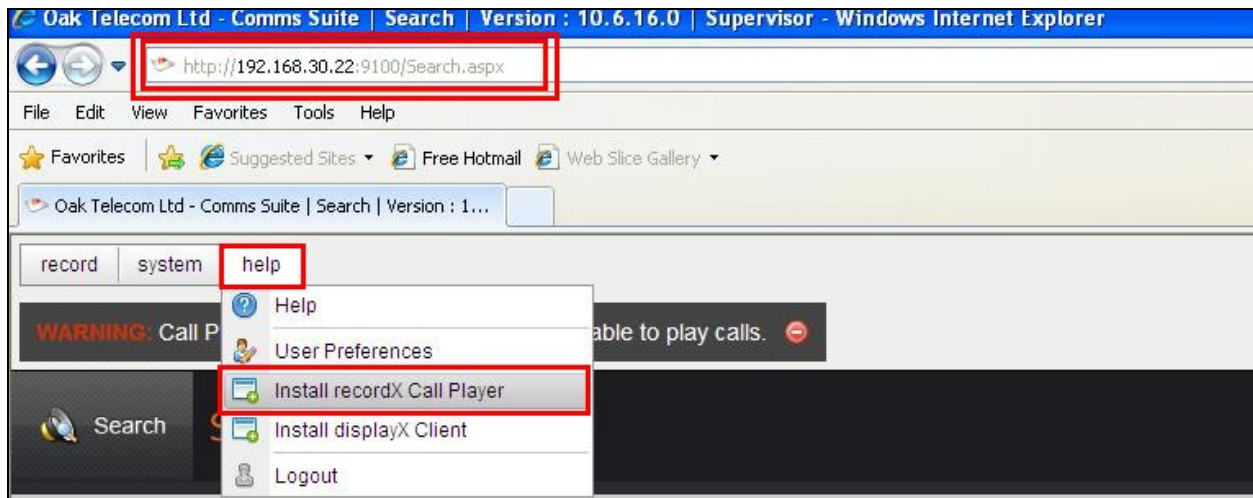


Click on **Run** to install this onto the client machine.
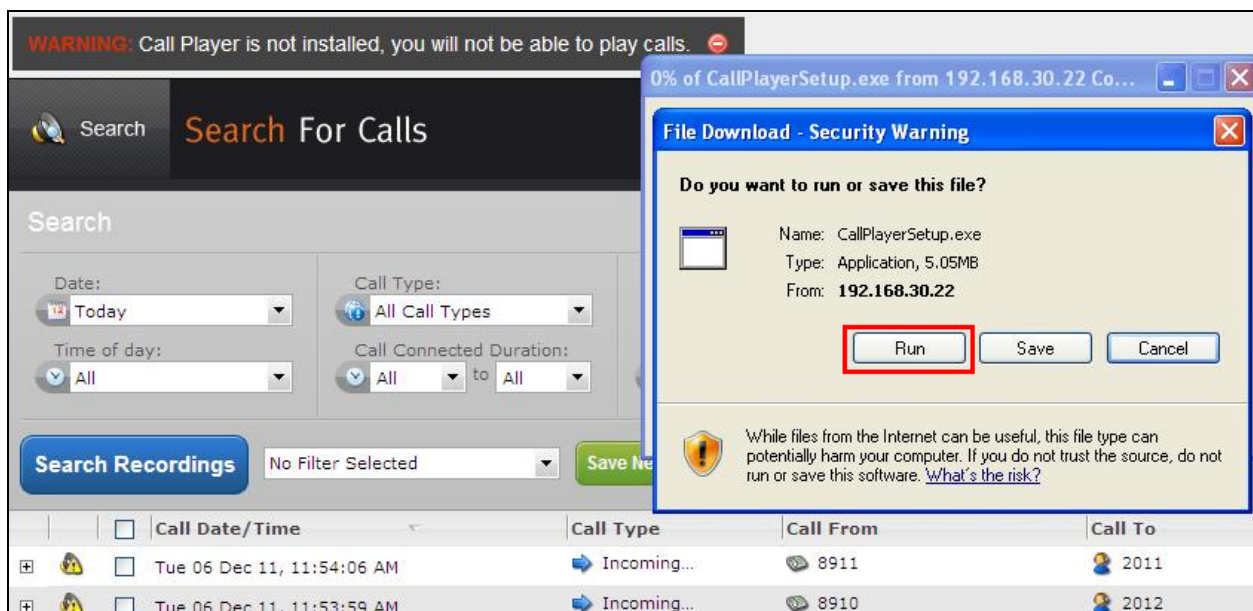
Once the player has been installed, select the recordings that are to be played and click **Add to playlist** as shown below. Alternatively each individual recording can be played by clicking on the individual recording.
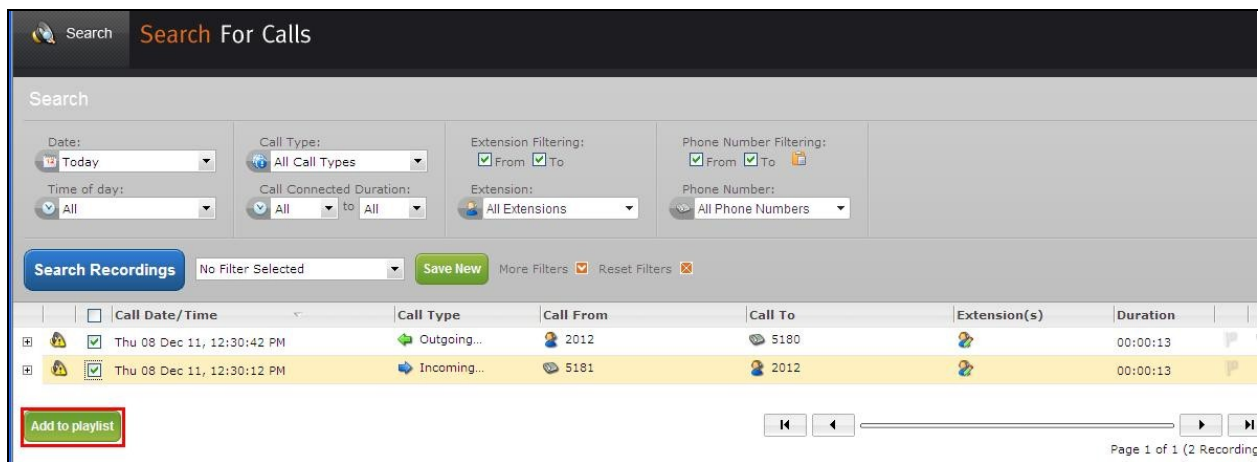


The **Oak Call Player** then plays the recordings over the sound card on the client PC. These recordings can be saved as .**WAV** or .**MP3** files and emailed as highlighted below.
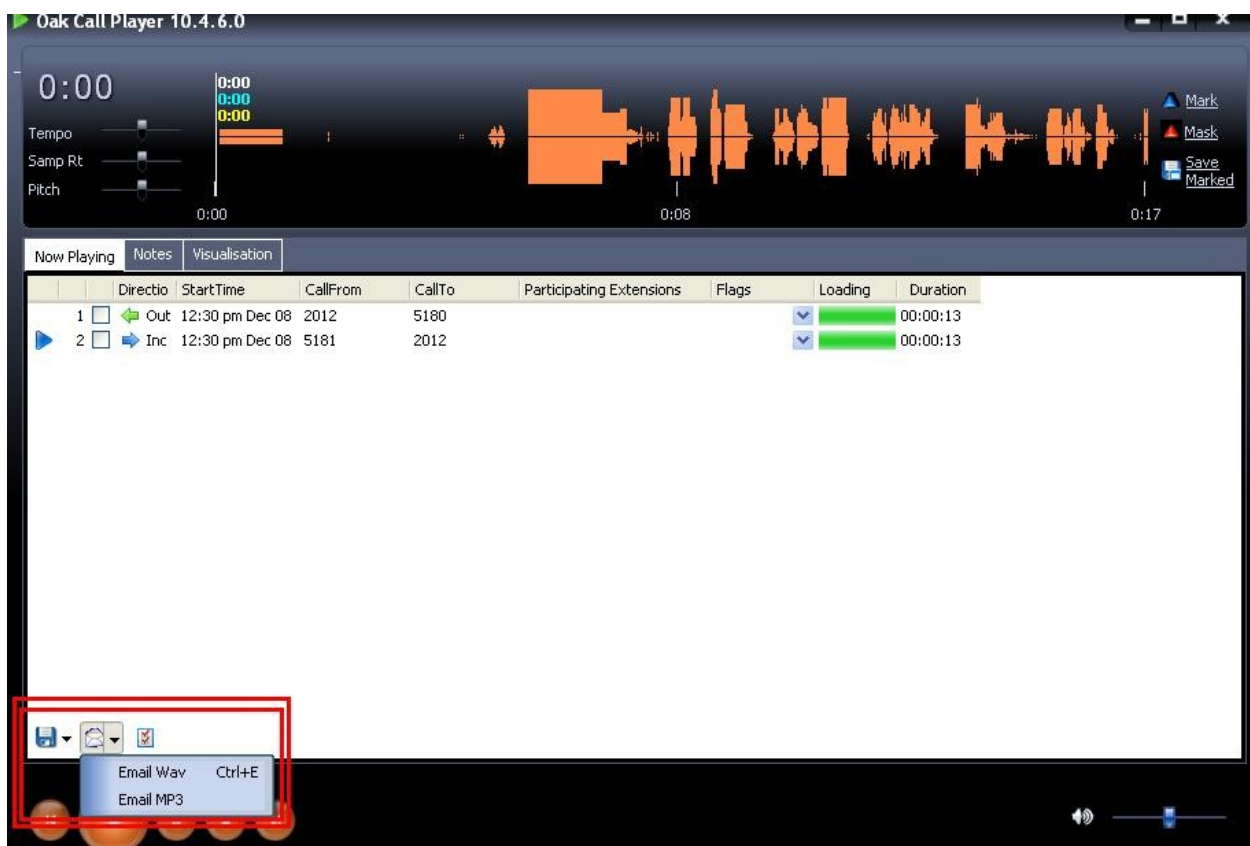
# 9. Conclusion

As illustrated in this Application Notes recordX from Oak Telecom can be configured to successfully interoperate with Avaya Aura® Communication Manager R6.0.1. All call types were recorded successfully and stored for playback on the Oak Telecom recordX server.

# 10. Additional References

This section references documentation relevant to these Application Notes. The Avaya product documentation is available at http://support.avaya.com where the following documents can be obtained.

[1] *Administering Avaya Aura® Communication Manager, Document ID 03-300509, June 2010.*

[2] *Avaya Aura® Communication Manager Feature Description and Implementation, Document ID 555-245-205, June 2010.*

[3] *Maintenance Commands for Avaya Aura® Communication Manager, Branch Gateways and Servers Document ID 03-300431, May 2011.*

All information on the product installation and configuration for Oak Telecom recordX can be found at http://help.oak.co.uk. This online help contains documentation and video guides supporting all Oak Telecoms product range.

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