Avaya Solution & Interoperability Test Lab

Application Notes for configuring Imperium Call Reporter from Protocol Systems FZC with Avaya IP Office Server Edition R9.1 - Issue 1.0

Abstract

These Application Notes describe the configuration steps for Protocol Systems FZC Imperium Call Reporter with Avaya IP Office R9.1. Imperium Call Reporter integrates with Avaya IP Office using the SMDR output on Avaya IP Office to process the Call Detail Records.

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.

1. Introduction

These Application Notes describe the configuration steps for Protocol Systems FZC Imperium Call Reporter with Avaya IP Office Server Edition and IP Office 500 V2 expansion R9.1. Imperium Call Reporter integrates with Avaya IP Office via the Station Message Detail Records (SMDR) port on IP Office in order to report on the Call Records for calls made to and from the IP Office.

Imperium Call Reporter provides traditional call collection, rating, and reporting for any size business. Imperium Call Reporter connects with Avaya IP Office Server Edition to collect and interpret the detailed records of inbound, outbound, tandem, and internal telephone calls. Imperium Call Reporter then calculates the appropriate charge for local, long distance, international & special calls and allocates them to responsible parties.

2. General Test Approach and Test Results

This section describes the compliance testing that was used to verify interoperability of Imperium Call Reporter with Avaya IP Office. The testing covered feature and serviceability test cases.

Calls were made to and from endpoints that were registered to both the IP Office Server Edition server and the IP Office 500 V2 expansion cabinet. Calls were made both internally and to a simulated QSIG ISDN PSTN on the IP Office 500 V2 and a simulated SIP PSTN on the IP Office Server Edition. Using the SMDR ports on IP Office Server Edition and the IP Office 500 V2, Imperium Call Reporter was able to compile a list of call records and present them using a client application.

The serviceability testing focused on the ability of Imperium Call Reporter to recover from adverse conditions such as loss of network connectivity.

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 interoperability compliance test included both feature functionality and serviceability testing, these tests included:

- Internal calls between endpoints on the IP Office Server Edition
- Internal calls between sets on the IP Office 500 V2
- Internal calls between sets on the IP Office Server Edition and IP Office 500 V2
- Incoming calls from ISDN PSTN to IP Office Server Edition
- Incoming calls from SIP PSTN to IP Office Server Edition
- Incoming calls from ISDN PSTN to IP Office 500 V2
- Incoming calls from SIP PSTN to IP Office 500 V2
- Outgoing calls from endpoints on IP Office Server Edition to SIP PSTN
- Outgoing calls from sets on IP Office Server Edition to ISDN PSTN
- Outgoing calls from sets on IP Office 500 V2 to SIP PSTN
- Outgoing calls from sets on IP Office 500 V2 to ISDN PSTN
- Call Transfers/Conference/Call Park/Call Pick Up
- Account Codes
- The behaviour of Imperium Call Reporter during certain failed LAN conditions.

2.2. Test Results

All functionality and serviceability test cases were completed successfully. The following observation was noted.

1. Items that are shown in the raw data are not necessarily shown in the main web report. This web report is fully customizable and it depends upon the individual customer as to what is shown on these reports.
2. On many occasions there were duplicate reports for the same SMDR record, these were all observed with transferred or conferenced calls.
3. When calling from the Server Edition to the forwarded set on the 500 V2 there are two records produced when there should only be one.
4. Transferred/conferenced calls on the main report could show up to 5 or even 6 records for the one call sequence; this can be confusing for someone looking at the report. Duplicate records can be hidden from the report but compliance testing was performed with the reports in this format.
5. For calls that are parked and unparked across the two systems (Server Edition and 500 V2) the IP Office SMDR shows 0 for the parked time and causes the Imperium Call Reporter not to report this as a parked call.

2.3. Support

Technical support can be obtained for Imperium Call Reporter from the website http://imperiumapp.com/contact.aspx or from:

Protocol Systems FZC
Q3-133, SAIF Zone,
Sharjah, UAE.
Tel: +9716 5578383

Email: support@protocolsystems-me.com

3. Reference Configuration

The configuration in **Figure 1** was used to compliance test Imperium Call Reporter with Avaya IP Office Server Edition to collect SMDR records.

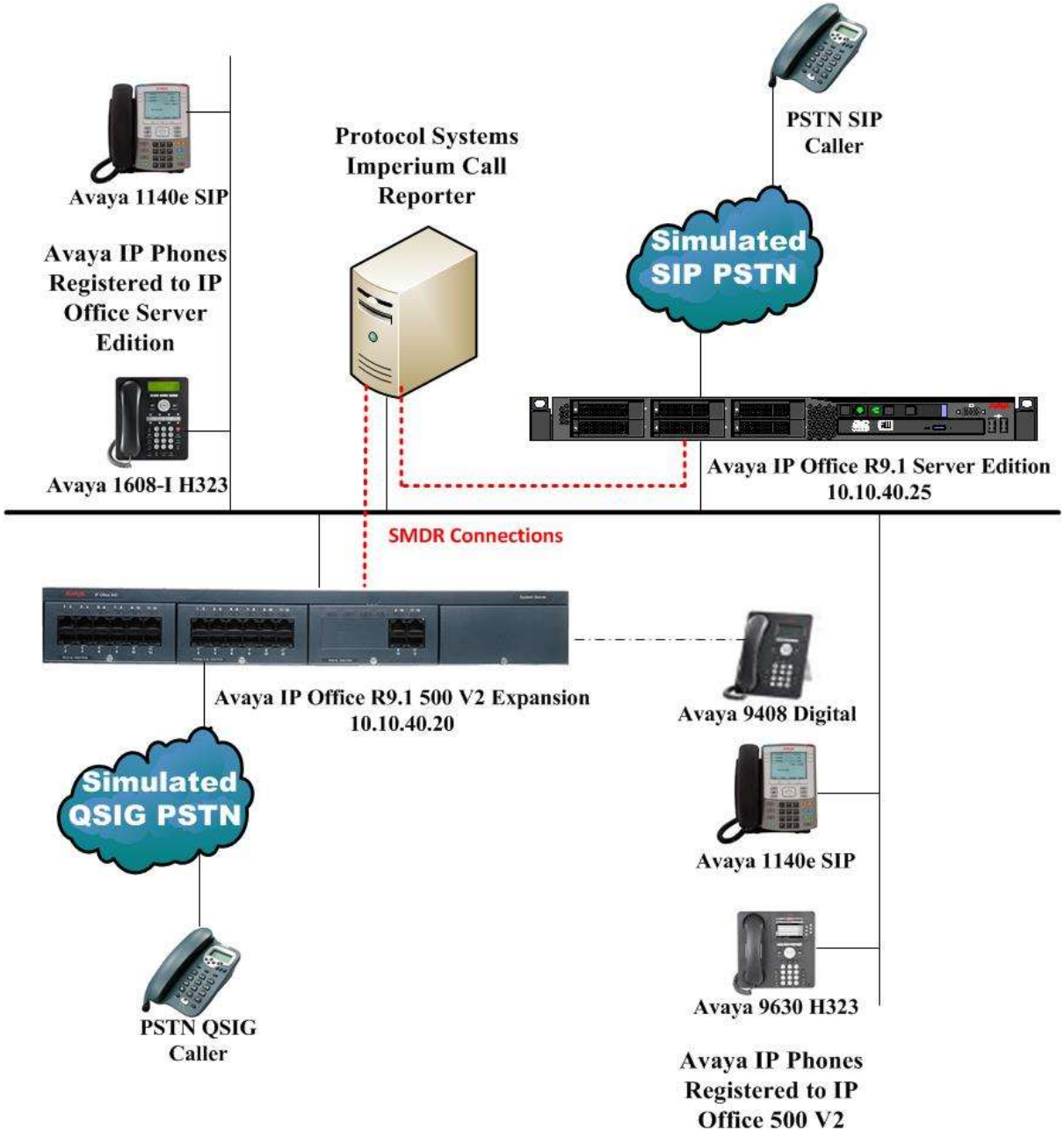


Figure 1: Connection of Imperium Call Reporter from Protocol Systems with Avaya IP Office Server Edition with IP Office 500 V2 Expansion

4. Equipment and Software Validated

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

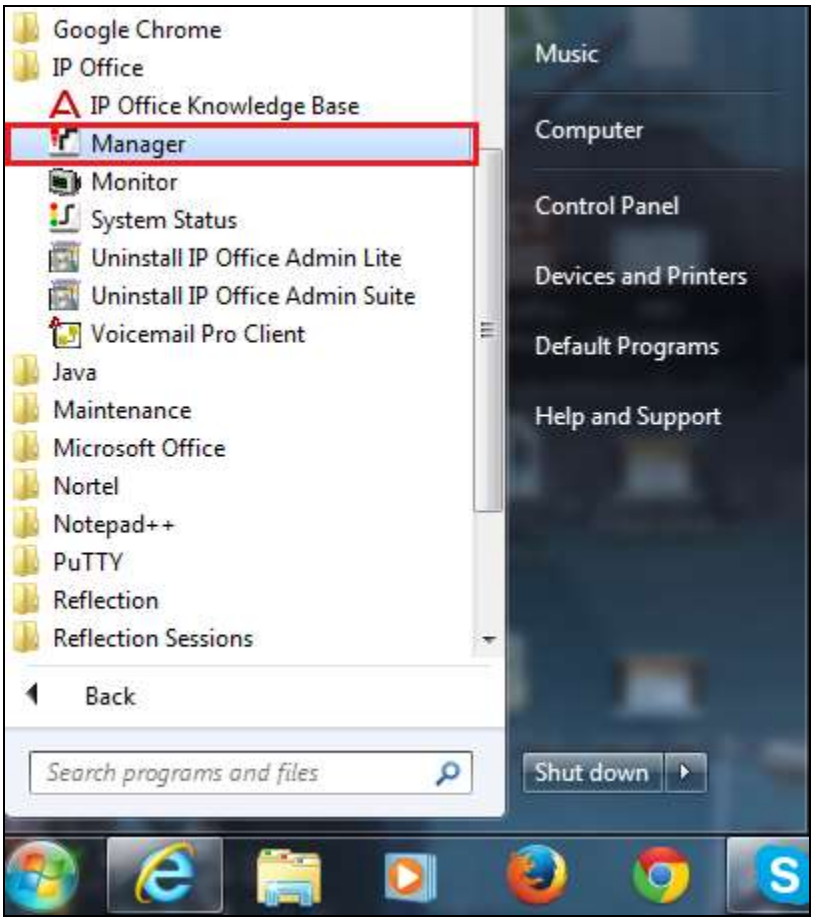
Equipment/Software	Release/Version
Avaya IP Office Server Edition running on a virtual server (Primary Server)	R9.1.3 Build 120
Avaya IP Office 500 V2 (Expansion)	R9.1.3 Build 120
Avaya IP Office Manager running on Windows 7 PC	R9.1.3 Build 120
Avaya 1608 I Deskphone	H323 1608UA1_350B.bin
Avaya 9630 Deskphone	H.323 Release 6.4014U
Avaya 1140e Deskphone	SIP R04.03.12.00
Avaya 1140e Deskphone	SIP R04.03.12.00
Avaya 9408 Digital Deskphone	V 2.0
Protocol Systems Imperium Call Reporter Server running on Windows 2008 R2	V1.0

5. Configure Avaya IP Office

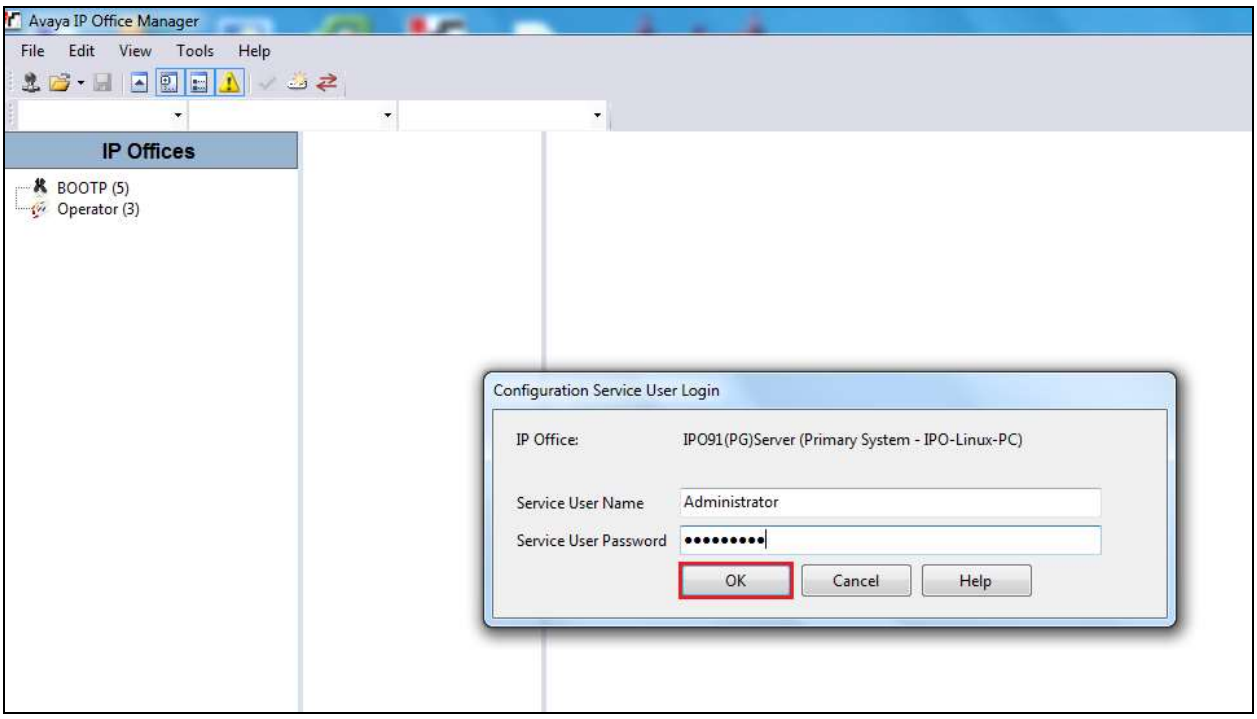
Configuration and verification operations on the Avaya IP Office illustrated in this section were all performed using Avaya IP Office Manager. The information provided in this section describes the configuration of the Avaya IP Office for this solution. It is implied a working system is already in place. 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:

- Configure SMDR on IP Office Server Edition.
- Configure SMDR on IP Office 500 V2.
- Configure Account Codes.

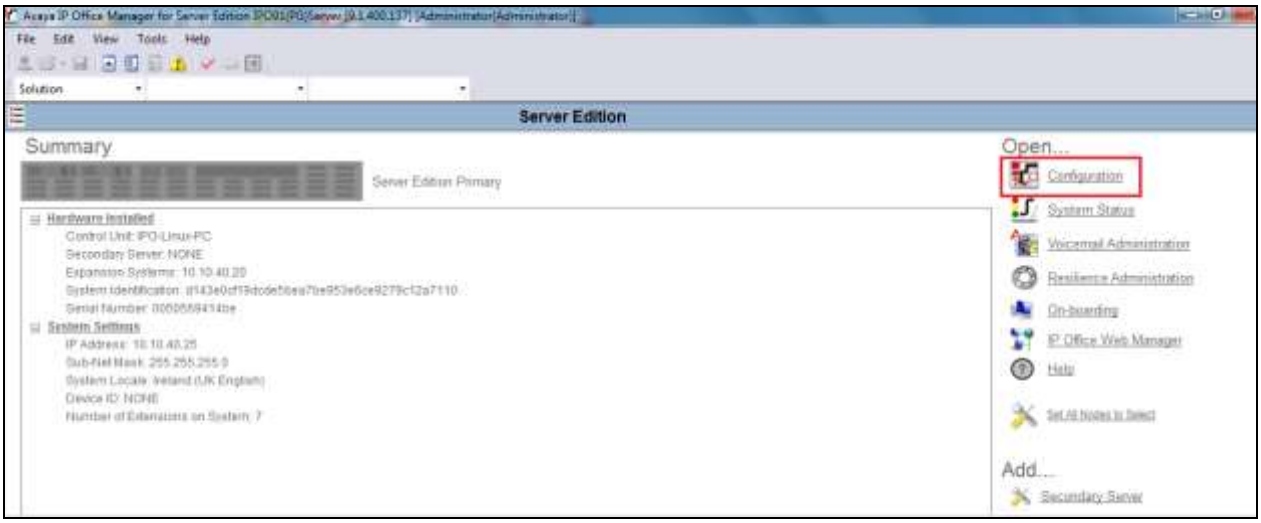
Open **IP Office Manager** from a PC that has it installed.



Enter the appropriate credentials and click on **OK**.



Click on **Configuration** at the top right of the screen.

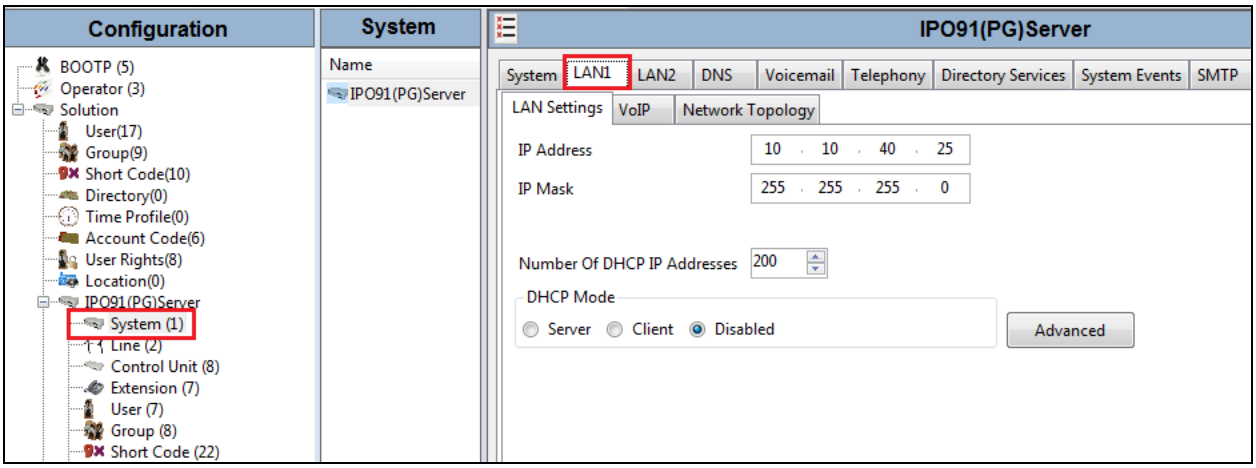


5.1. Configure SMDR

Because the IP Office Server Edition with an IP Office 500 V2 expansion was used there were two separate and unique SMDR feeds from the Avaya solution to the Imperium Call Reporter. The Imperium Call Reporter server has the ability to understand these two feeds and make sense of the calls that were made from one system to the other and present this as a single call when it comes to reporting of the calls. These two SMDR feeds from IP Office need to be configured correctly to report to the Imperium Call Reporter server.

5.1.1. Configure SMDR on IP Office Server Edition

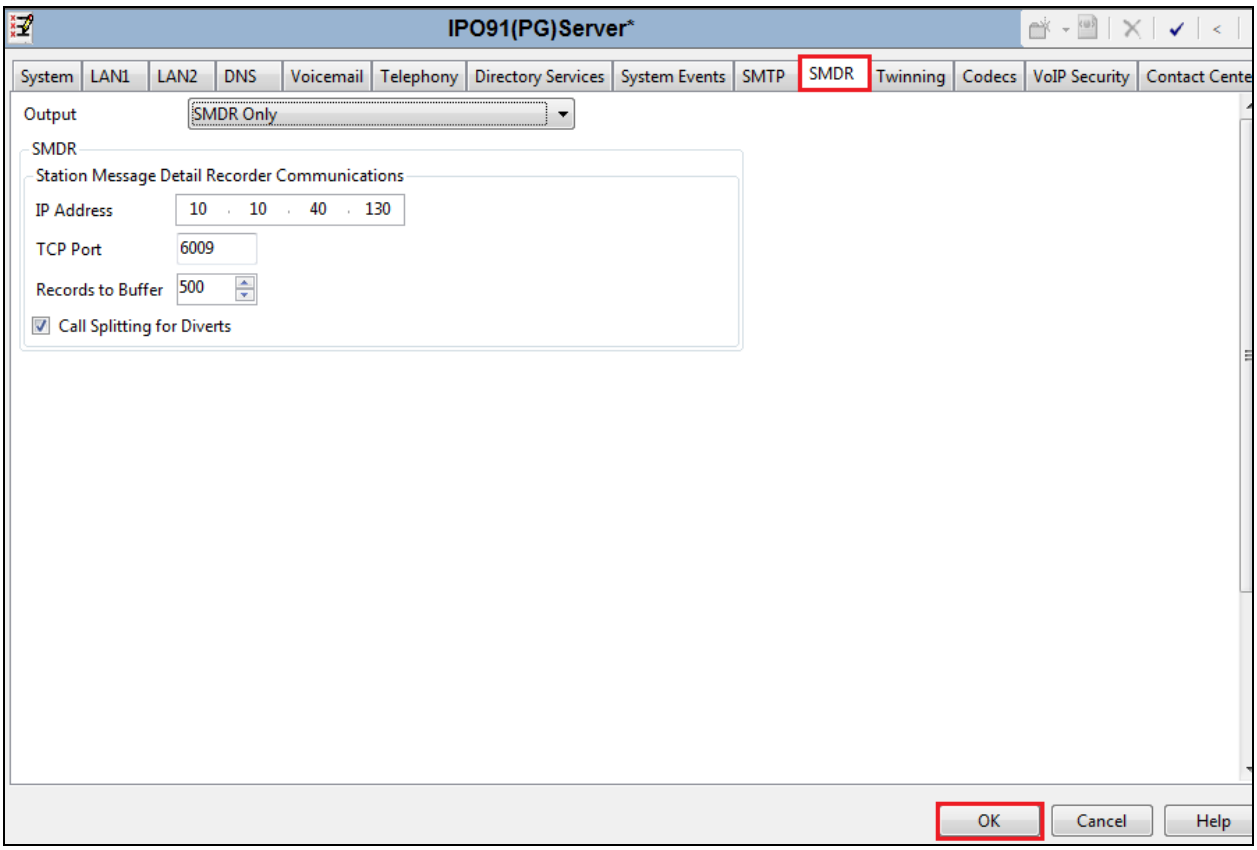
Navigate to the IP Office Server Edition **System** in the left window and in the main window click on the **LAN1** tab, this will display the IP Address of the IP Office Server Edition. This information as well the information on the SMDR port below will be needed later in the configuration of Imperium Call Reporter in **Section 6**.



Staying in the main window, click on the **SMDR** tab and configure as follows:

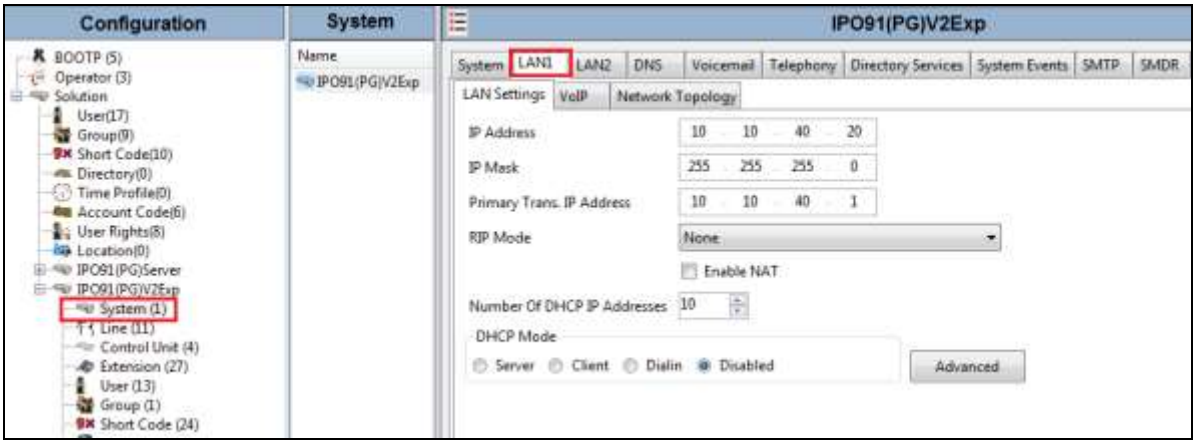
- **Output** – select **SMDR Only** from the drop down list.
- **IP Address** – enter the IP address assigned to Imperium Call Reporter, in this case **10.10.40.130**.
- **TCP Port** – enter the port used by Imperium Call Reporter for the SMDR connection, in this case **6009**.
- **Call Splitting for Diverts** – Ticked.

Click on **OK**, when finished to save the changed configuration.



5.1.2. Configure SMDR on IP Office 500 V2

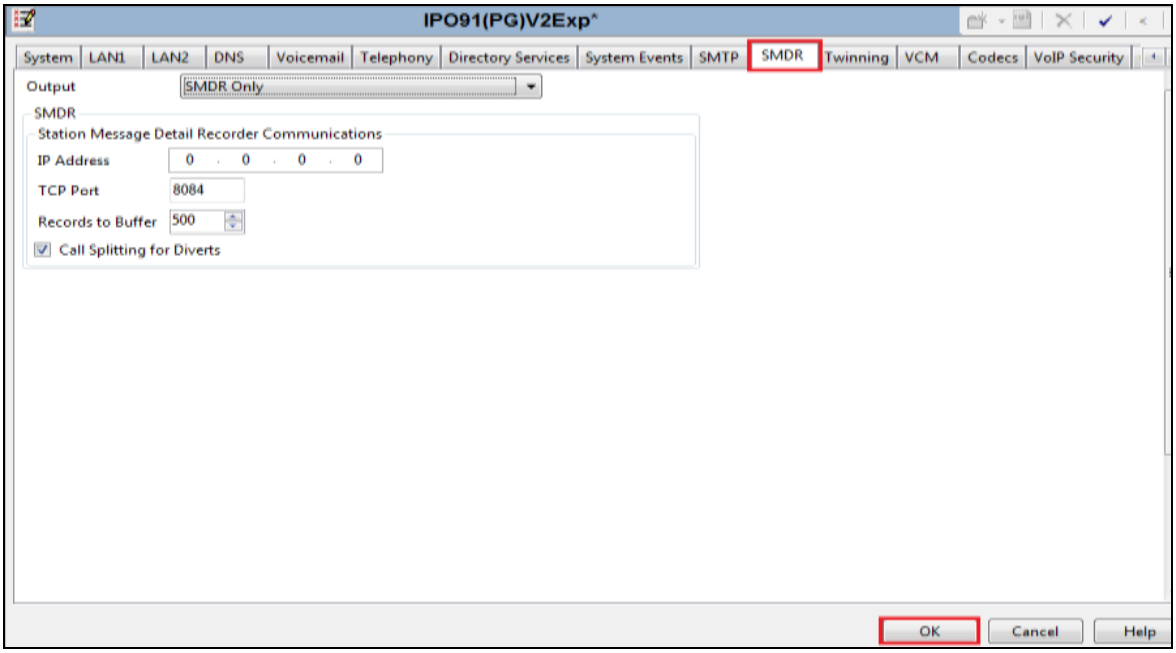
Navigate to the IP Office 500 V2 **System** in the left window and in the main window click on the **LAN1** tab. This will display the IP Address of the IP Office 500 V2 which will be needed later in the configuration of Imperium Call Reporter in **Section 6**.



Staying in the main window, click on the **SMDR** tab and configure as follows:

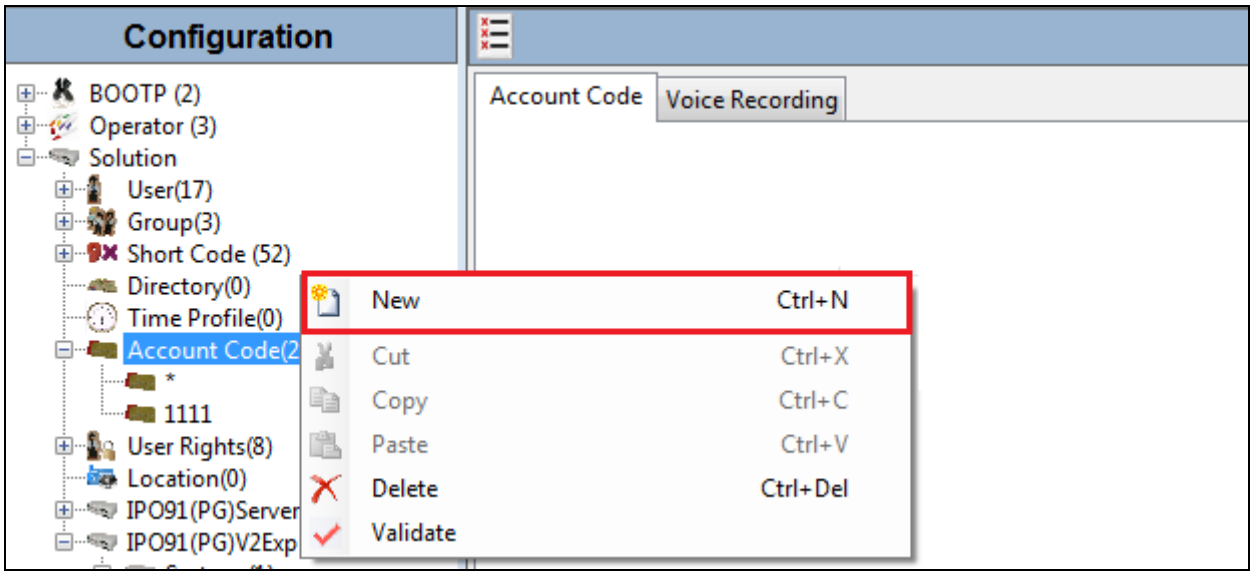
- **Output** – select **SMDR Only** from the drop down list.
- **IP Address** – for the IP Office 500 V2 this is set to **0.0.0.0**.
- **TCP Port** – enter the port used by Imperium Call Reporter for the SMDR connection, in this case **8084**.
- **Call Splitting for Diverts** – Ticked.

Click on **OK**, when finished to save the changed configuration.

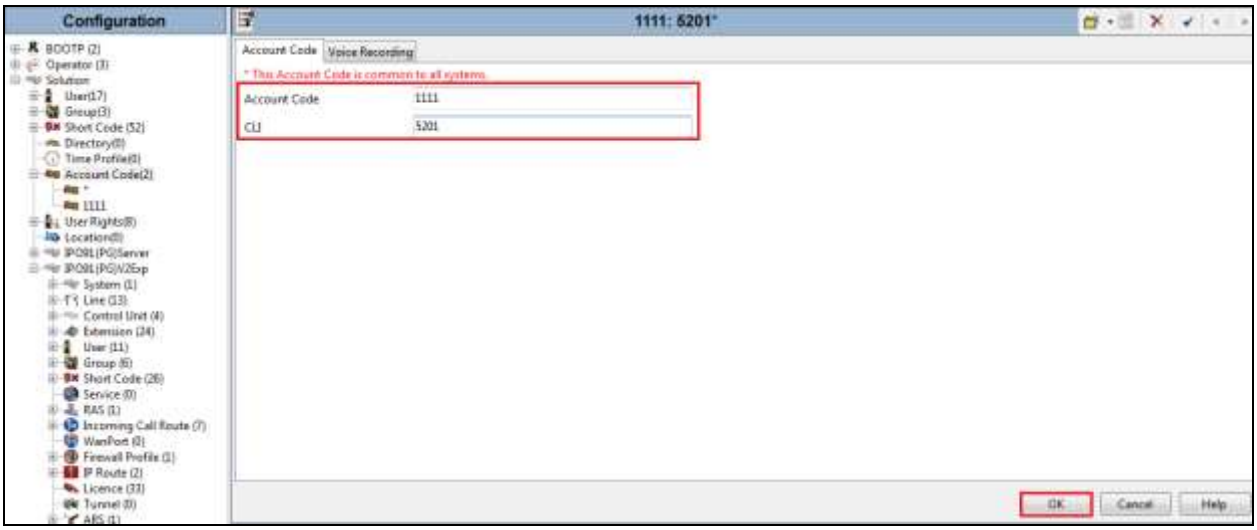


5.2. Configure Account Codes

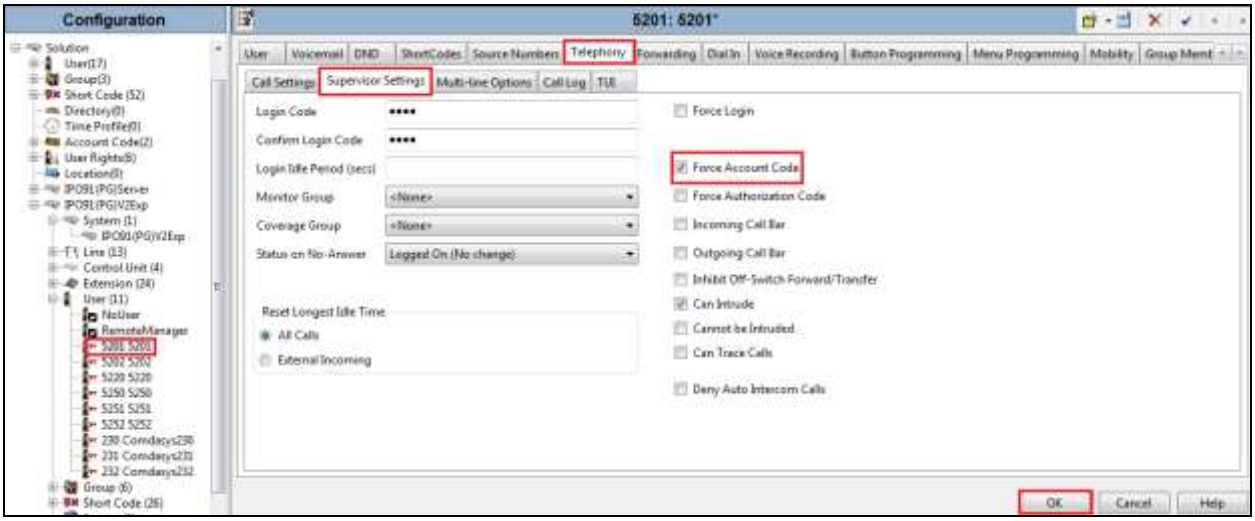
To add a new account code, right click on **Account Code** in the left window and select **New** as shown below.



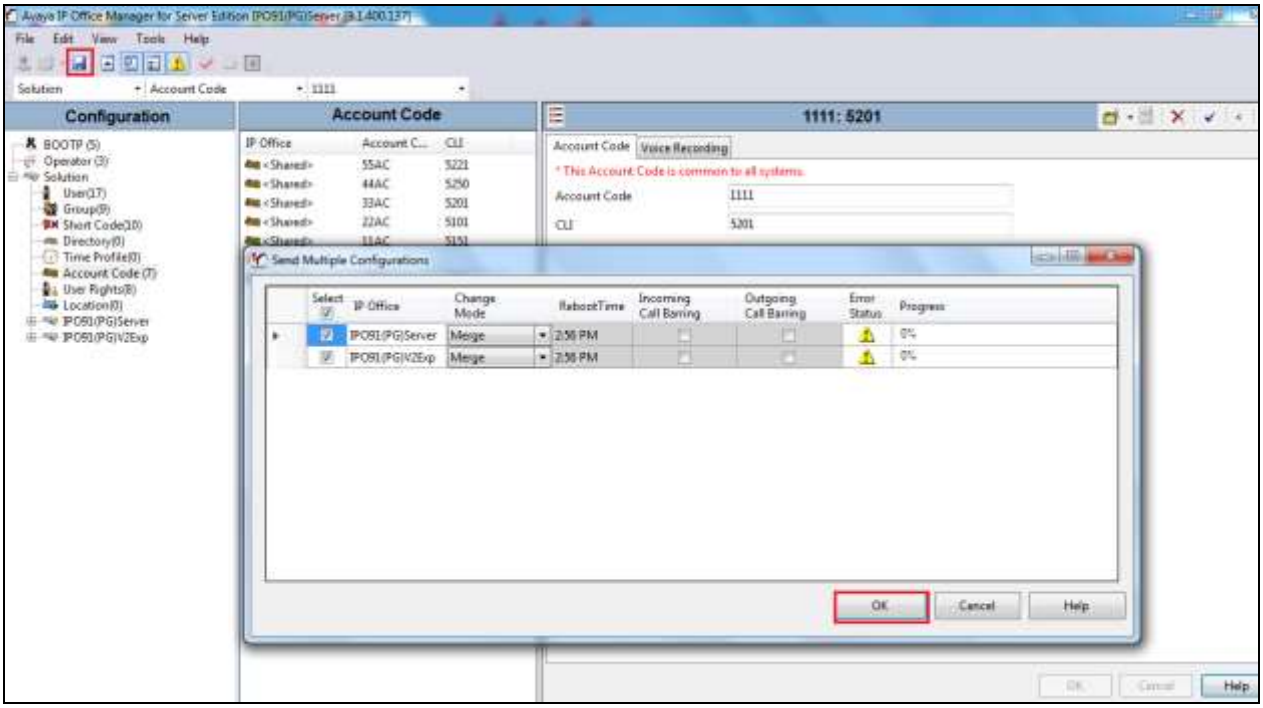
Enter the **Account Code** number and the **CLI** of the deskphone that is it to be applied to. Click on **OK**.



To ensure that the account code is used tick the **Force Account Code** box by selecting the required user in the left window and navigating to **Telephony → Supervisor Settings** in the main window.



Once all the necessary changes are made to the IP Office, click on the **Save** icon, highlighted at the top left of the screen, this will bring up another window where the configurations are saved to both the IP Office Server Edition and the IP Office 500 V2. Click on **OK** on this window to commit these changes.



6. Configuration of Protocol Systems FZC Imperium Call Reporter Server

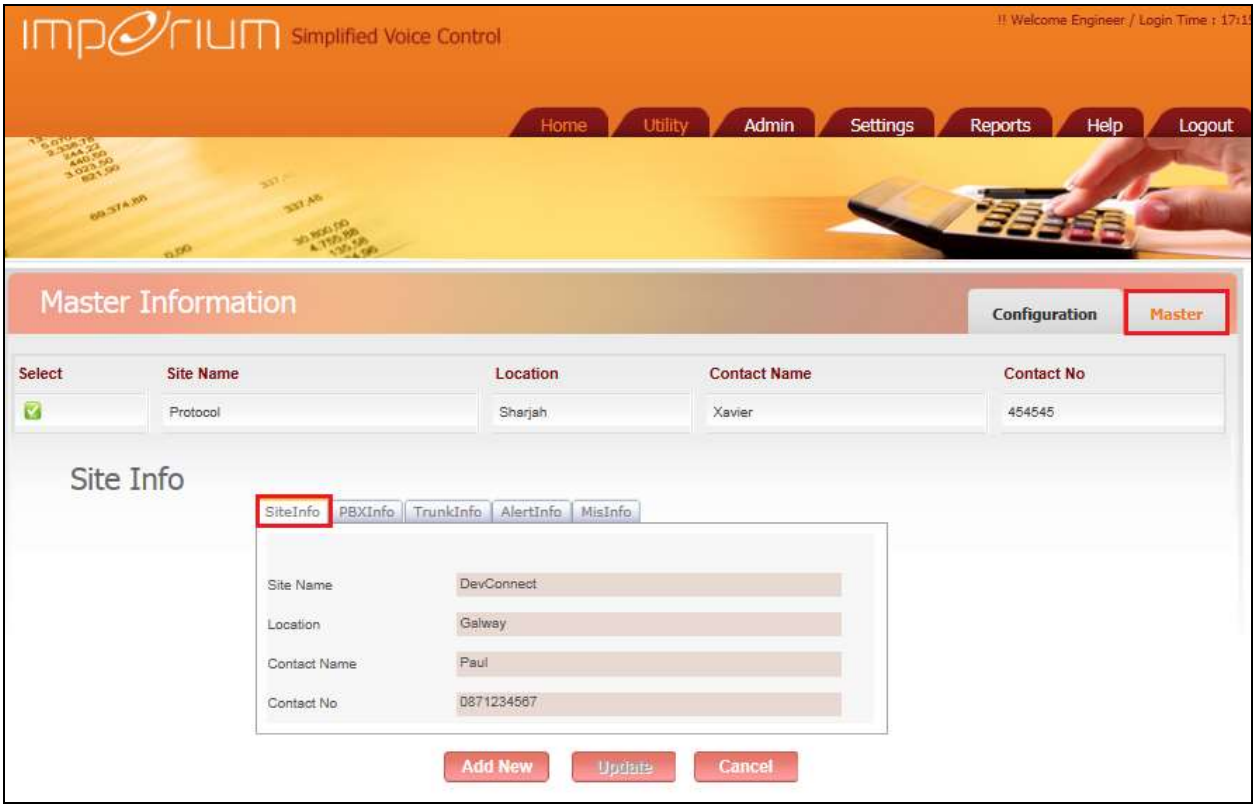
This section outlines the steps necessary to configure the Imperium Call Reporter server to enable the collection of CDR records via the CDR connection on Communication Manager.

6.1. Imperium Call Reporter's PBX connection configuration

Open a web browser and navigate to **http://<ImperiumServerIPAddress>/Imperium/Login.aspx**. Once the **Login** page appears enter the **User Name Engineer** with the suitable **Password**. Click on the **Login** button highlighted below.

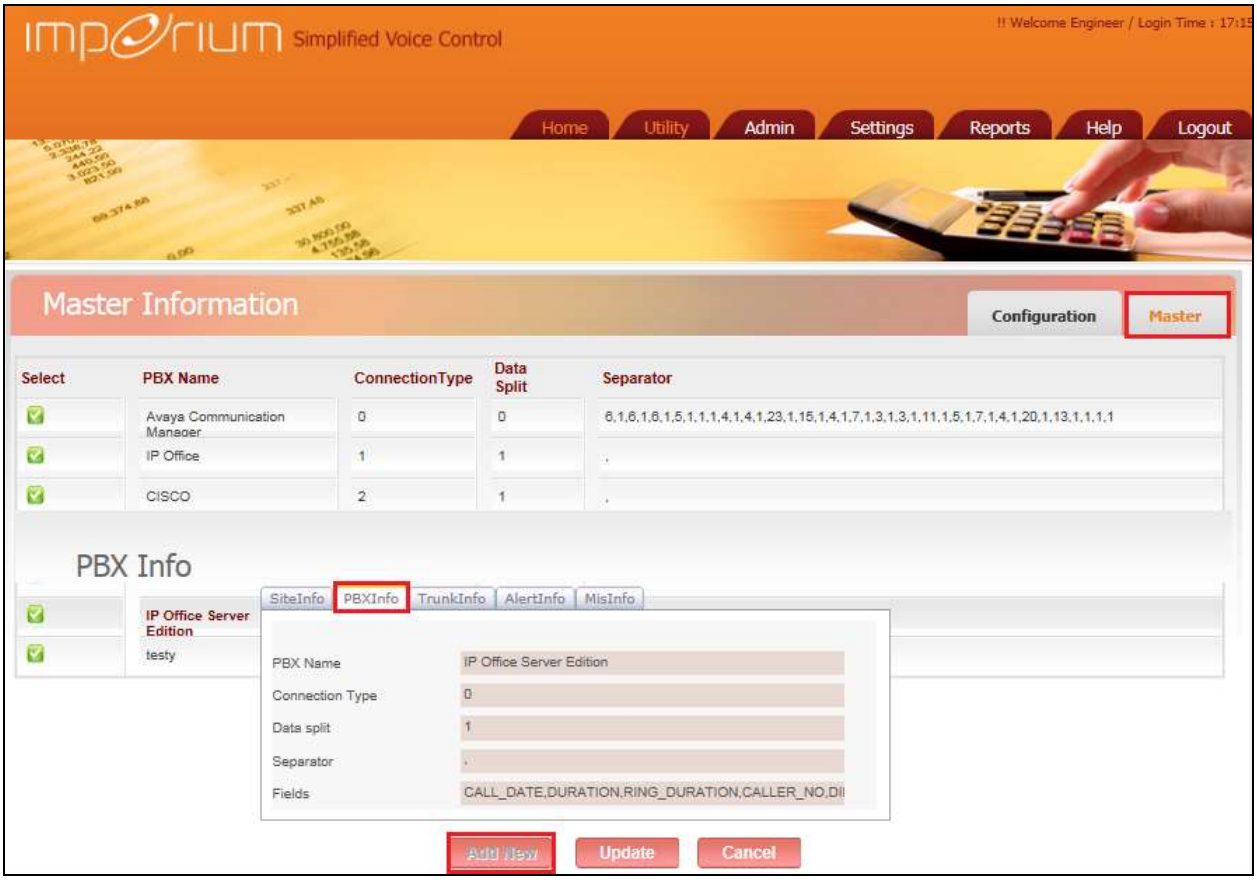
6.1.1. Adding the PBX Name

Once logged in click on the **Utility** tab at the top of the page. Once there click on **Master** and the **SiteInfo** page is shown where the **Site Name**, **Location**, and contact details are added.



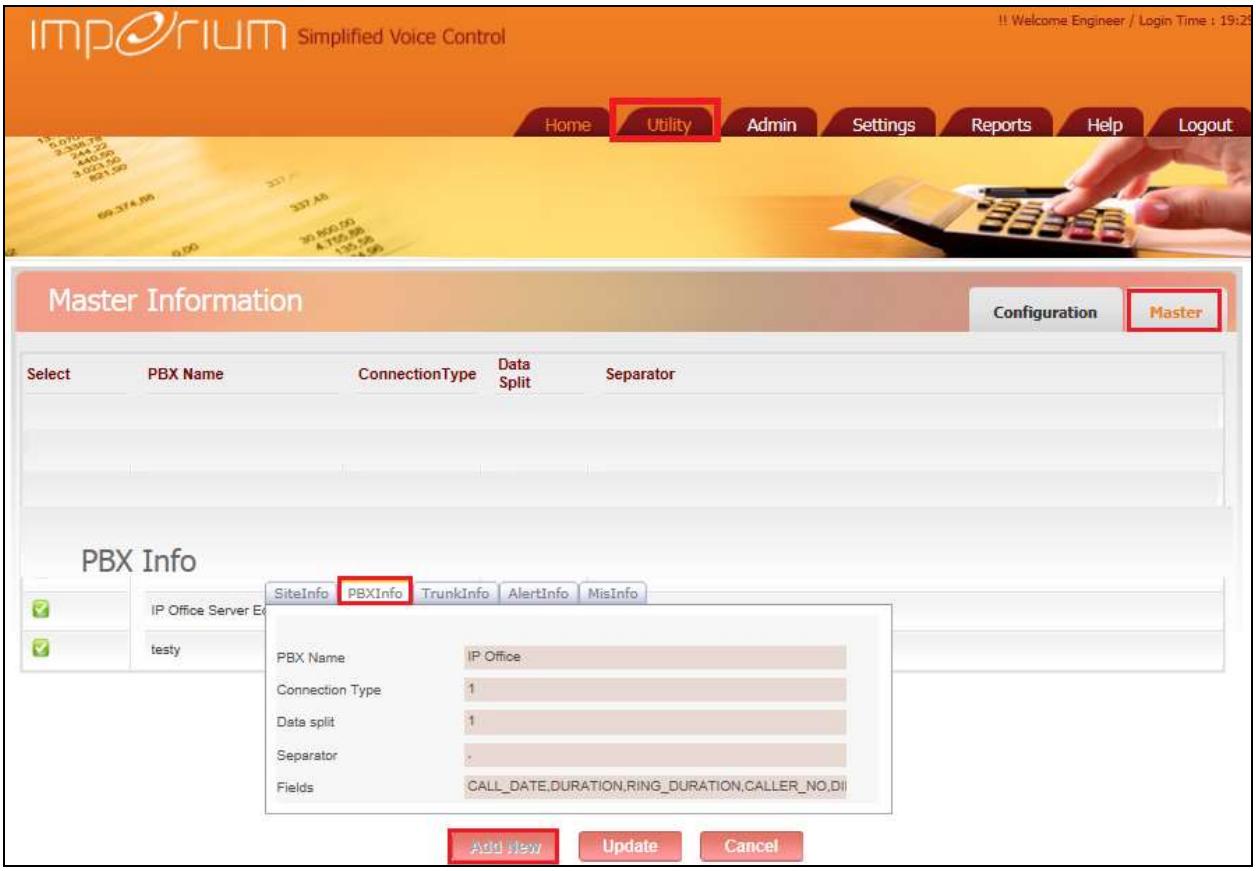
Click on the **PBXInfo** tab once all the details are added correctly. The PBXInfo tab is where the configuration details for the SMDR are added. Give a suitable **PBX Name** and ensure that **Connection Type** is set to 0 and **Data split** is set to **1**. **Separator** should be set as "**.**" and the **Fields** will be entered as follows.
CALL_DATE,DURATION,RING_DURATION,CALLER_NO,DIRECTION,CALLED_NO,DIALED_NO,ACC,FLAG1,CALL_ID,FLAG2,FLAG3,FLAG4,FLAG5,TRUNK_ID,FLAG7,FLAG8,FLAG9,AUTH_CODE,FLAG10,FLAG11,FLAG12,FLAG13,FLAG14,FLAG15,FLAG16,FLAG17,FLAG18,FLAG19,FLAG20.

The remaining tabs can be left as default and with all of these entered correctly click on **Add New**.



A second PBX Name is added for the IP Office 500 V2, again choose the PBXInfo tab and add the following details. Give a suitable **PBX Name** and ensure that both **Connection Type** and **Data split** are set to **1**. **Separator** should be set as "**.**" and the **Fields** will be entered as follows. CALL_DATE,DURATION,RING_DURATION,CALLER_NO,DIRECTION,CALLED_NO,DIALED_NO,ACC,FLAG1,CALL_ID,FLAG2,FLAG3,FLAG4,FLAG5,TRUNK_ID,FLAG7,FLAG8,FLAG9,AUTH_CODE,FLAG10,FLAG11,FLAG12,FLAG13,FLAG14,FLAG15,FLAG16,FLAG17,FLAG18,FLAG19,FLAG20.

The remaining tabs can be left as default and with all of these entered correctly click on **Add New**.

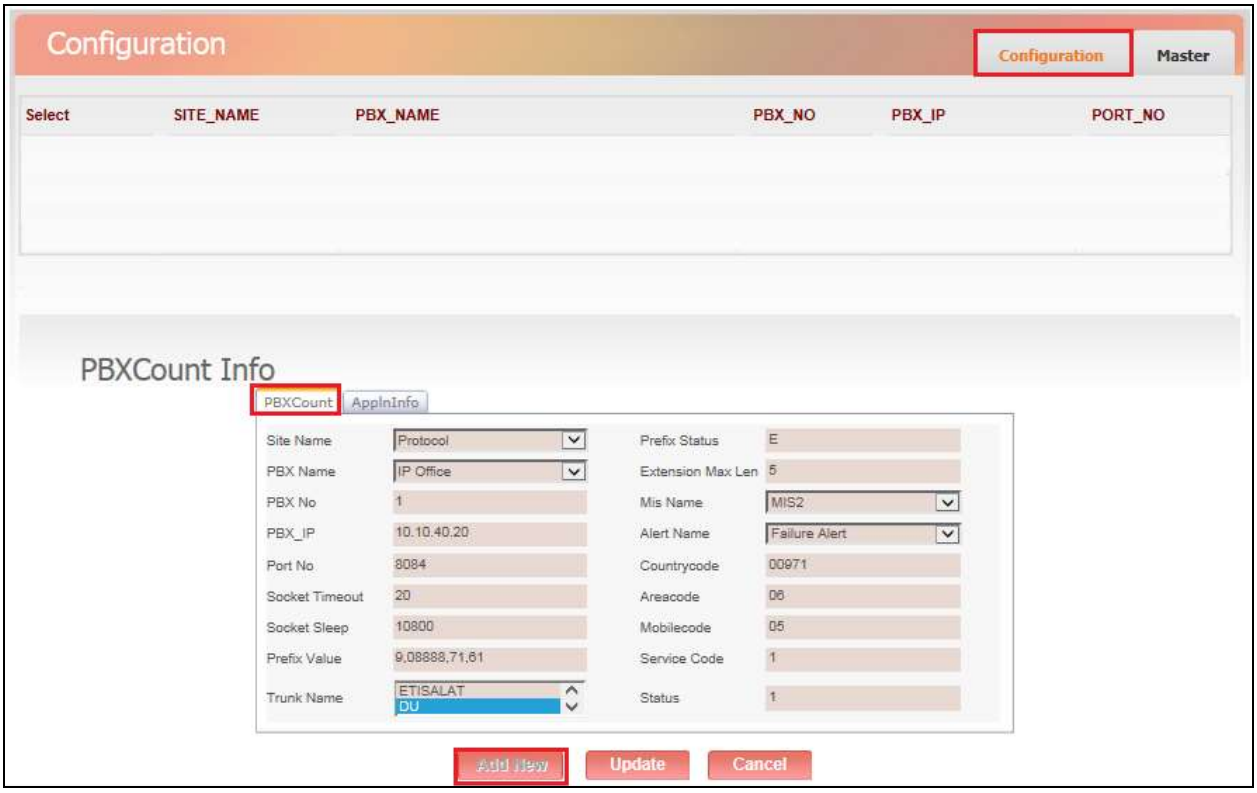


6.1.2. Adding the PBXCount Info

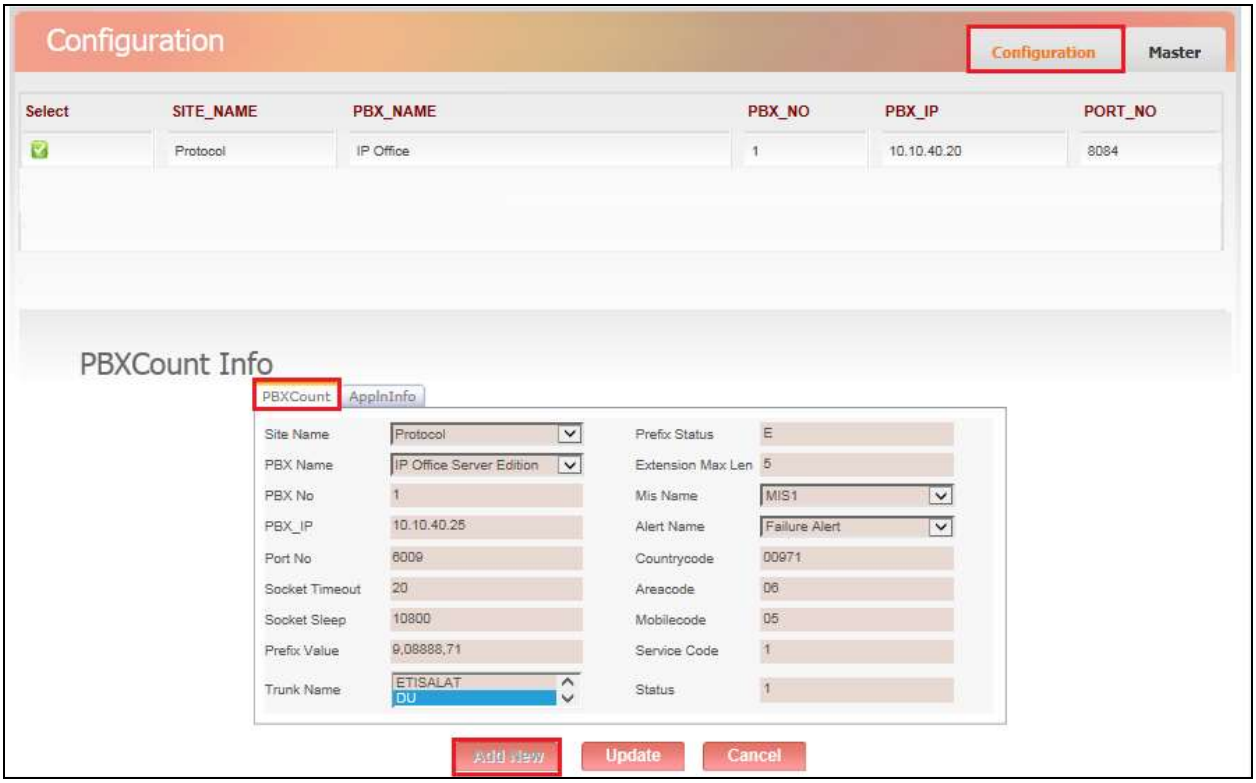
Staying within **Utility**, click on the **Configuration** tab highlighted and the **PBXCount** tab. Here the **Site Name** that was created above is selected along with the **PBX Name**. The IP address for the PBX is entered along with the port number for the CDR output. All other entries can be left as default and click on **Add New** once the information is all entered correctly.

Note: The IP address (**PBX_IP**) and Port Number (**Port No**) can both be obtained following the procedure in **Section 5.1**.

The example below shows the addition of the IP Office 500 V2 with an IP Address of **10.10.40.20** and the SMDR port of **8084**. The **PBXCount Info** will need to be added for both the IP Office Server Edition and the IP Office 500 V2.



The same procedure is followed to add the IP Office Server Edition. The Server Edition's IP Address and port number can be obtained by following the procedure outlined in **Section 5.1**. Click on **Add New** once the information is added correctly.

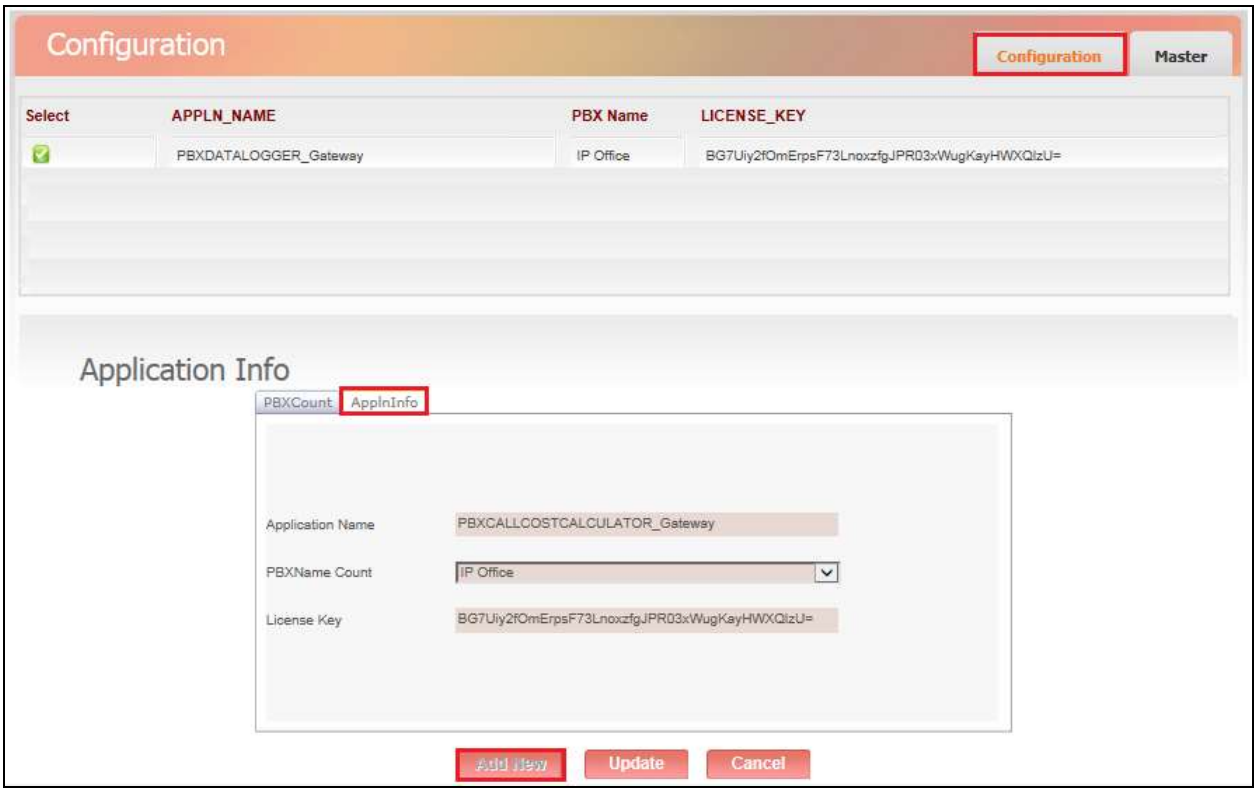


6.1.3. Installing the License Keys

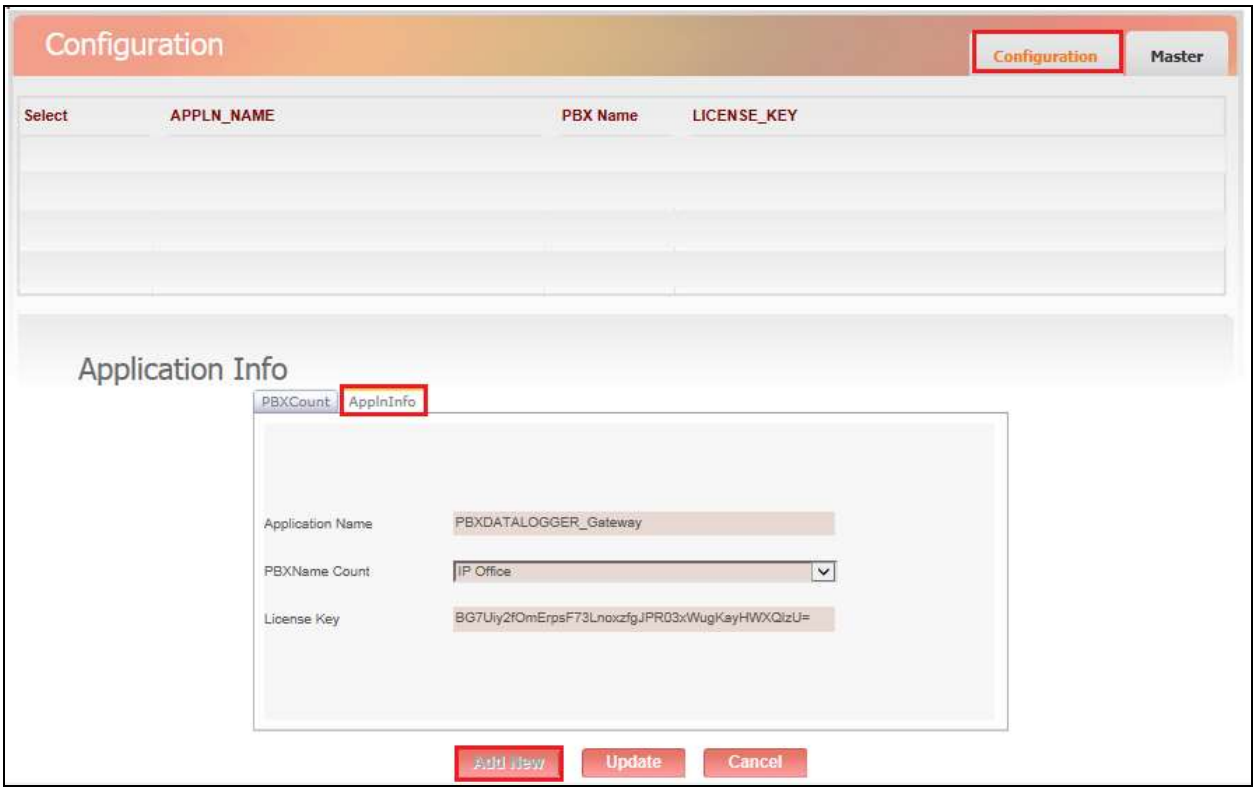
Click on the **AppInInfo** tab highlighted. Three Applications and license keys must be added here.

- PBXCALLCOSTCALCULATOR
- PBXDATALOGGER

Add the **PBXCALLCOSTCALAULATOR** application with the necessary **License Key** available from Protocol Systems FZC. Click **Add New** once added correctly.



Add the **PBXDATALOGGER** application with the necessary **License Key** available from Protocol Systems FZC. Click **Add New** once added correctly.



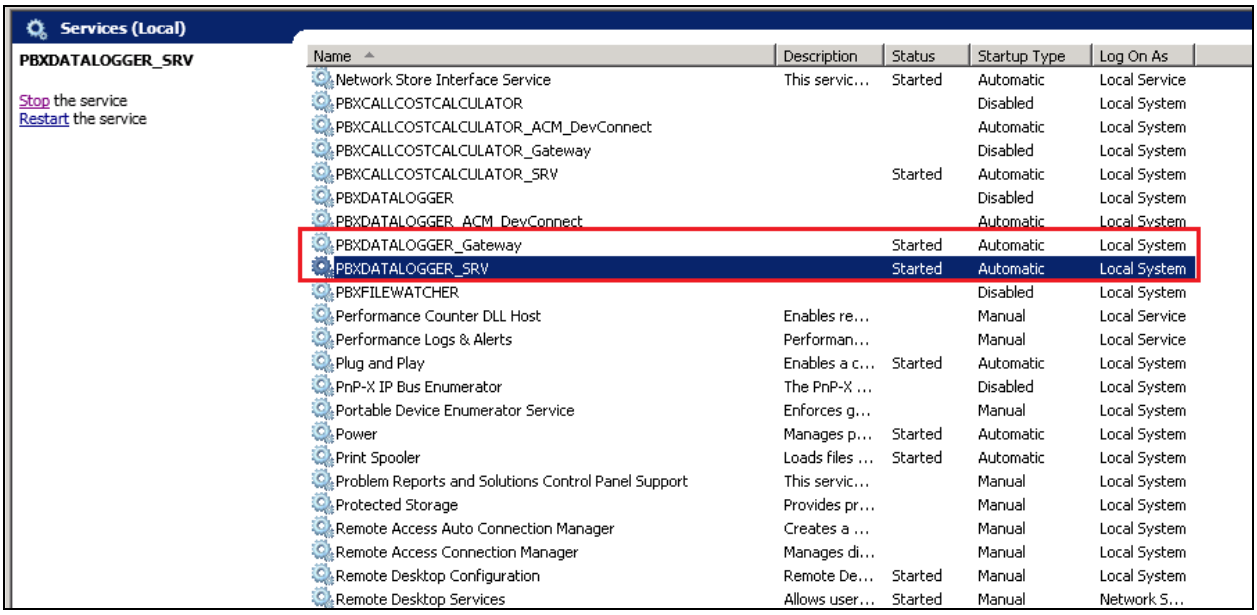
This concludes the setup of Imperium Call Reporter in order to connect to IP Office Server Edition.

7. Verification Steps

This section illustrates the steps necessary to verify that the Imperium Call Reporter is connected to Avaya IP Office correctly in order to obtain SMDR information and report on the various calls made to and from the IP Office.

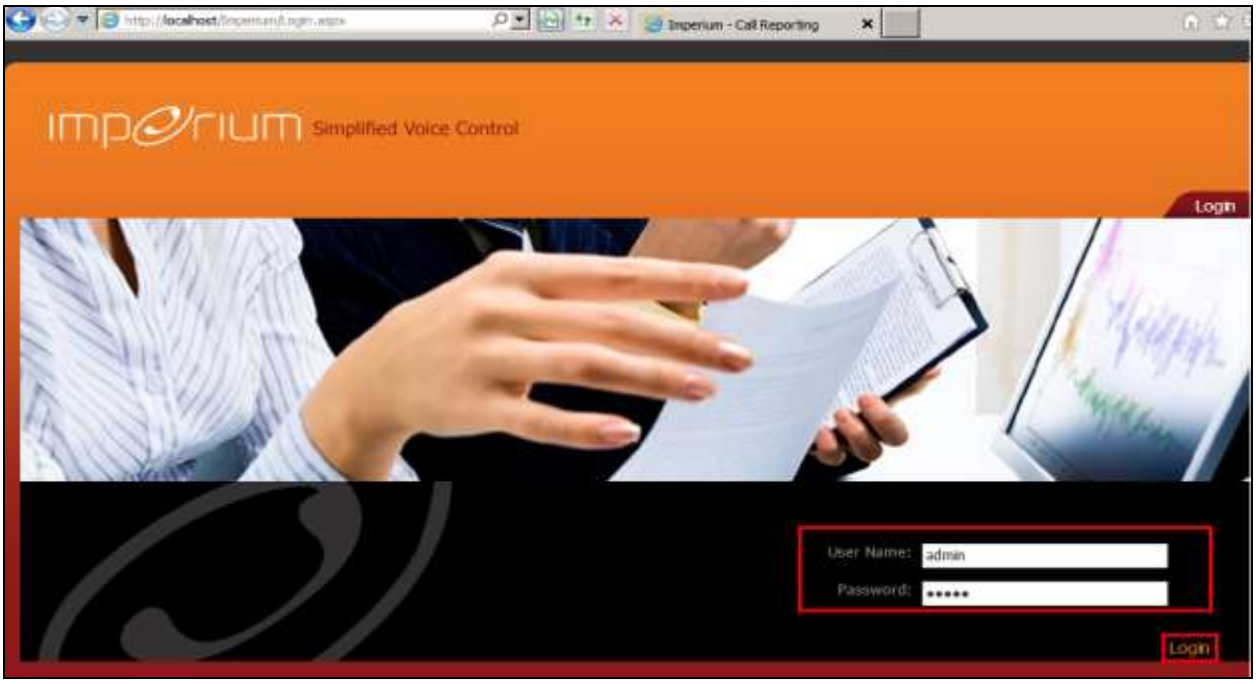
7.1. Verify that Imperium Windows Service is running

From the Imperium Call Reporter Server open **Services**. Navigate to the **PBXDATALOGGER** and ensure that is it started, if not start the service.

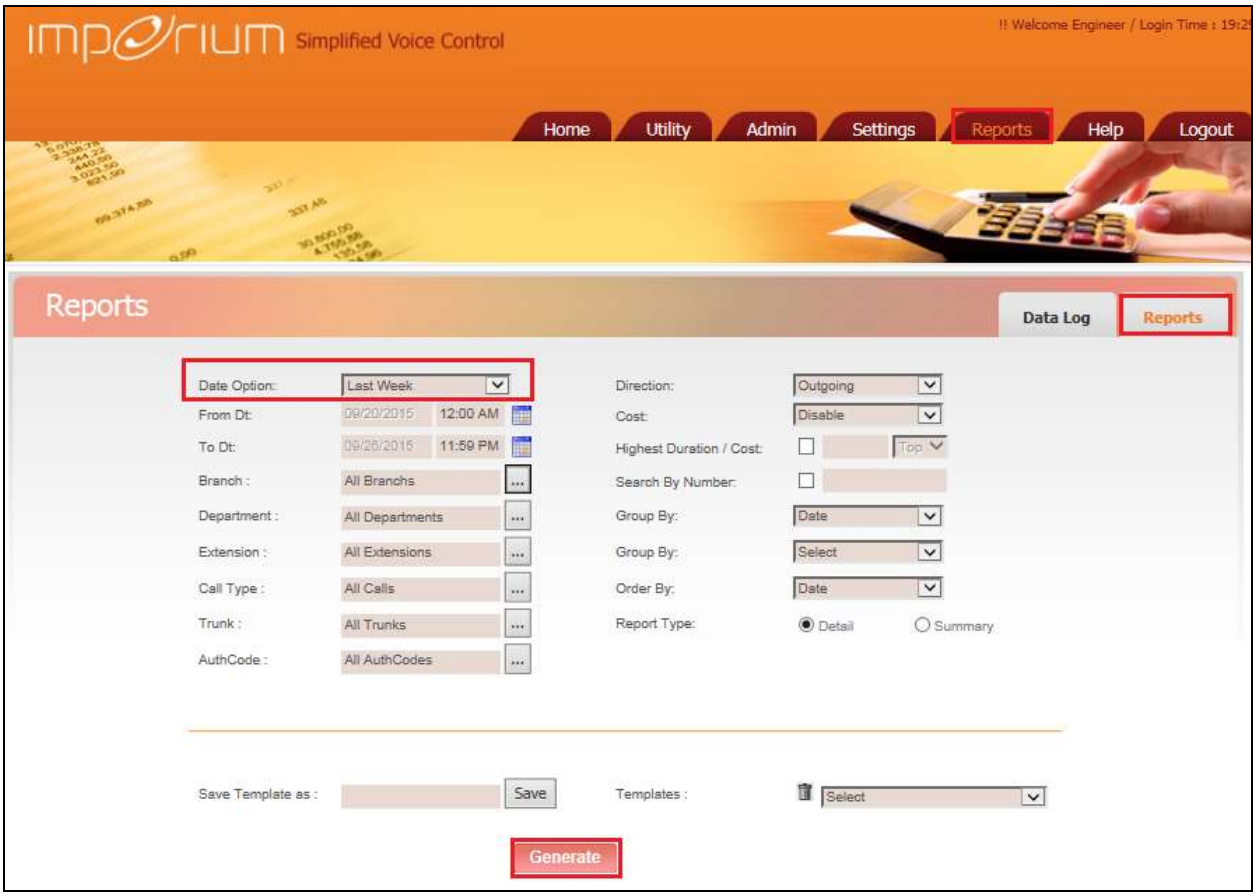


7.2. Verify that Imperium Call Reporter is receiving CDR data

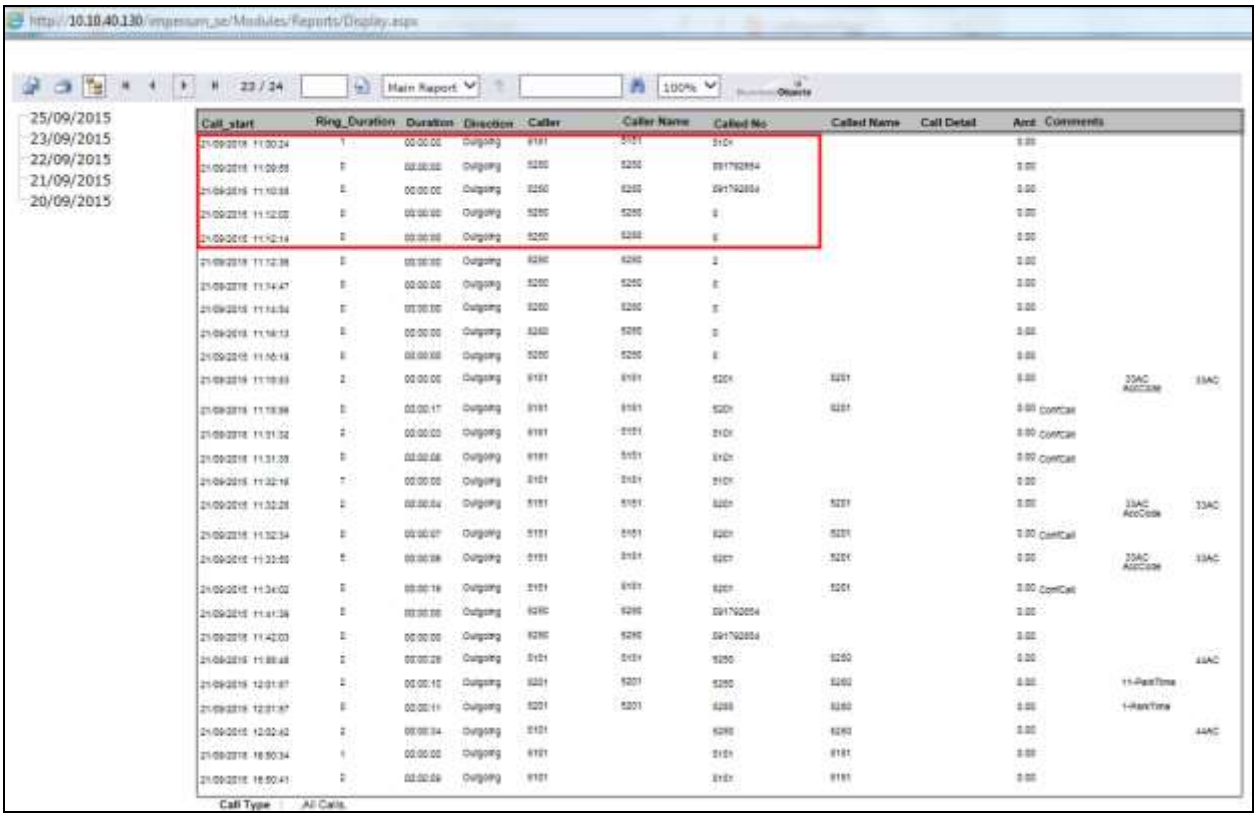
Open a web browser and navigate to the Imperium login page **http://<ImperiumServerIPAddress>/Imperium/Login.aspx**. Once the **Login** page appears, enter the **User Name Admin** with the suitable **Password**. Click on the **Login** button highlighted below.



Click on the **Reports** tab at the top of the page and click on the **Reports** tab in the Reports main window. Select the correct data range from the **Data option** and set **Direction** to either **Incoming**, **Outgoing** or **Both** so that all calls are reported on, once finished click on **Generate** to continue. The example below shows that outgoing calls from the previous week were chosen for all extensions.



The following screenshot of a report shows calls for various extensions such as **5250** and **5151** ringing outbound.



This is a close up of the highlighted section above.

Call_start	Ring_Duration	Duration	Direction	Caller	Caller Name	Called No
21/09/2015 11:00:24	1	00:00:00	Outgoing	5151	5151	5101
21/09/2015 11:09:58	0	00:00:00	Outgoing	5250	5250	091792654
21/09/2015 11:10:55	0	00:00:00	Outgoing	5250	5250	091792654
21/09/2015 11:12:00	0	00:00:00	Outgoing	5250	5250	0
21/09/2015 11:12:14	0	00:00:00	Outgoing	5250	5250	0
21/09/2015 11:12:36	0	00:00:00	Outgoing	5250	5250	2
21/09/2015 11:14:47	0	00:00:00	Outgoing	5250	5250	0

8. Conclusion

These Application Notes describe the procedures for configuring Protocol Systems FZC Imperium Call Reporter to interoperate with Avaya IP Office Server Edition and IP Office 500 V2 expansion using the Station Message Detail Records (SMDR) output on Avaya IP Office to process Call Detail Records. During compliance testing, all test cases were completed successfully. Observations and results are outlined in **Section 2.2**.

9. Additional References

This section references the Avaya and Protocol Systems FZC product documentation that are relevant to these Application Notes.

Product documentation for Avaya products may be found at http://support.avaya.com

[1] *Avaya IP Office R9.1 Manager 10.1*, Document Number 15-601011

[2] *Avaya IP Office R9.1 Doc library*

Technical documentation can be obtained for Imperium Call Reporter from the website http://imperiumapp.com

Support for Imperium Call Reporter can be found at:
Protocol Systems FZC
Tel: +9716 5578383
Fax: +9716 5578384
Email: support@protocolsystems-me.com