Avaya Solution & Interoperability Test Lab

Application Notes for configuring Imperium Budget Control Application from Protocol Systems FZC with Avaya IP Office R9.1 - Issue 1.0

Abstract

These Application Notes describe the configuration steps for Protocol Systems FZC Imperium Budget Control Application with Avaya IP Office. Imperium Budget Control Application integrates with the Avaya IP Office 500 V2 using TAPI to block outgoing calls once a threshold has been reached.

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

These Application Notes describe the configuration steps for Imperium Budget Control Application from Protocol Systems to integrate with Avaya IP Office 500 V2 in order to block outgoing calls once a threshold has been reached. Imperium Budget Control Application can examine the call data from a specific IP Office extension in order to determine whether this extension has exceeded its allotted call cost or call duration and then take steps to block any further calls being made to the PSTN from this extension. Imperium Budget Control Application integrates with IP Office using TAPI to make changes to the user using a short code to block them from making further outbound calls to specific locations. The application is also configured to "unblock" these sets after a specific time period, e.g., one day.

The Budget Control Application will sit on top of the Imperium Call Reporter which obtains Call Detail Records (CDR) from IP Office. For further information on this product please see **Section 9** *Application Notes for configuring Imperium Call Reporter from Protocol Systems FZC with Avaya IP Office Server Edition R9.1*. Imperium Call Reporter provides traditional call collection, rating, and reporting for any size business and connects with IP Office 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. If a specific user/extension on IP Office exceeds a pre-defined duration or cost threshold the Budget Control Application then automatically will make a change to that user/extension to block any outbound calls from being made. In summary Imperium Call Reporter must be installed in order for the Budget Control Application to work.

2. General Test Approach and Test Results

This section describes the compliance testing used to verify interoperability of Imperium Budget Control Application with IP Office and covers the general test approach and the test results. The testing covered feature and serviceability test cases. The feature testing covered the ability of Imperium Budget Control Application to analyse captured and processed call records from Imperium Call Reporter to determine whether an extension has exceeded its allotted call cost or call duration and then take steps to block any further calls being made to the PSTN from this extension. The serviceability testing focused on the ability of Imperium Budget Control Application 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.

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2.1. Interoperability Compliance Testing

During compliance testing, a threshold was set on the Imperium Budget Control Application for a specific extension on IP Office. This threshold can be either duration for outbound PSTN calls or the cost of these calls. Calls were then made from this extension and the threshold was monitored. Once the threshold was exceeded, calls were made to ensure that this extension was blocked from calling out.
The tests included:

- Blocking of calls from an extension that exceeds its call duration threshold.
- Blocking of calls from an extension that exceeds its call cost threshold.
- Reinstating or unblocking of extensions that get an extension on their call duration or cost.
- Reinstating or unblocking of extensions after some elapsed time.
- Showing various call scenarios to exceed the thresholds.
- Defense Tests to ensure recovery following LAN interrupts.

2.2. Test Results

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

1. There were no issues with the Imperium Budget Control Application; every time a threshold was exceeded the user was blocked from making outbound calls. However for some test cases that involves trying to exceed the threshold using transfer/conference and forwarding, the CDR was not updated correctly and therefore the Budget Application could not block the outgoing call. This is not a fault of the Budget Control Application but it demonstrates how this application is completely dependent on the CDR application that is installed and on its operation to successfully produce the correct CDR report.

2.3. Support

Technical support can be obtained for Imperium Budget Control Application from the website http://imperiumapp.com/contact.aspx

Protocol Systems FZC
Q3-133, SAIF Zone,
Sharjah, UAE.
Tel: +9716 5578383
Fax: +9716 5578384
Email: support@protocolsystems-me.com

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3. Reference Configuration

The configuration in **Figure 1** is used to compliance test Imperium Budget Controller with Avaya IP Office to block certain phone sets from making outgoing calls with the option to "unblock" the phone sets again after a configured time period.

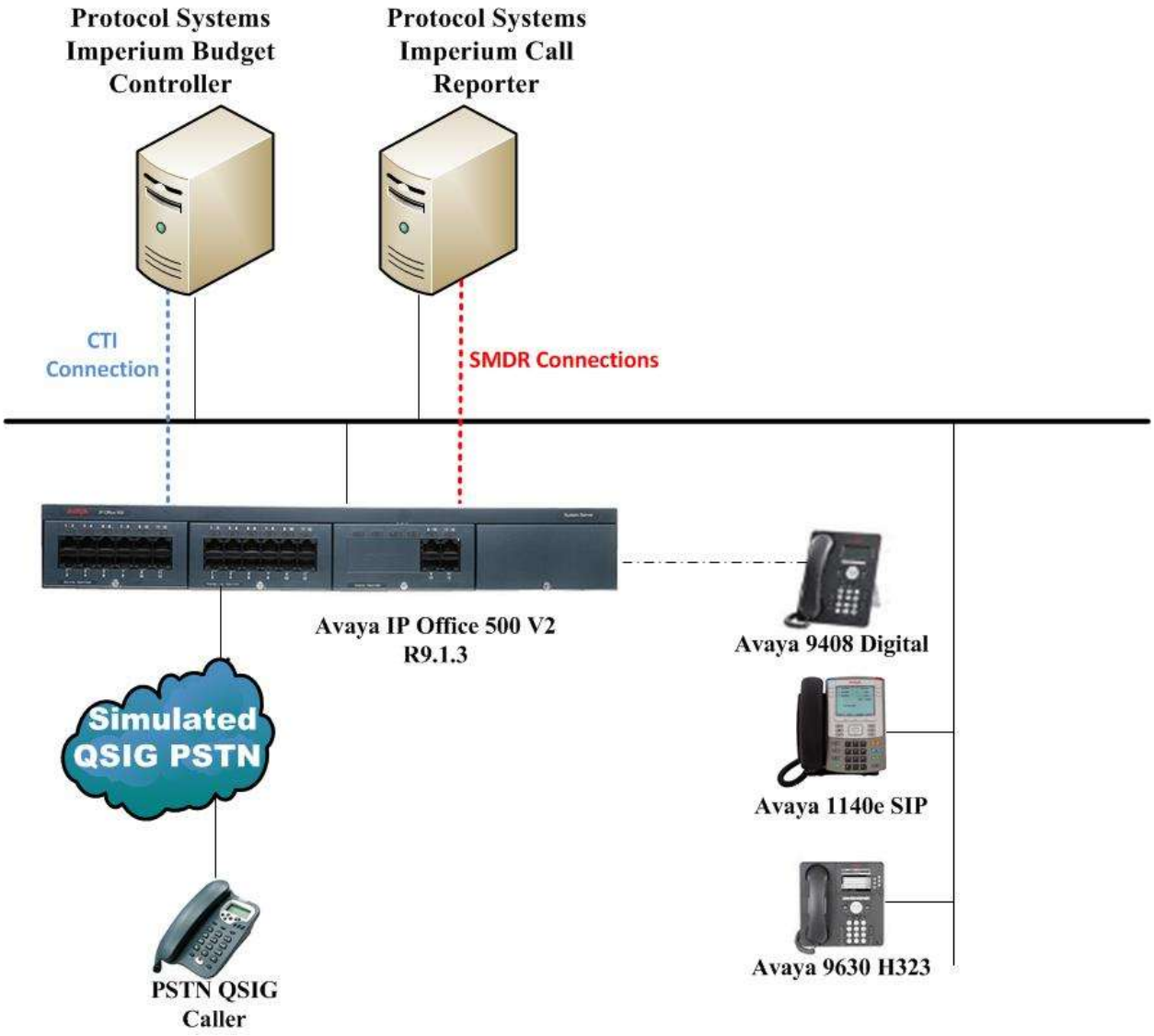

Figure 1: Connection of Imperium Budget Controller from Protocol Systems with Avaya IP Office 500 V2 R9.1.

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4. Equipment and Software Validated

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

Equipment/Software	Release/Version
Avaya IP Office 500 V2	R9.1.3.0 Build 120
Avaya IP Office Manager running on Windows 7 PC	R9.1.3.0 Build 120
Avaya 9630 Deskphone	96xx H.323 Release 6.4014U
Avaya 1140e Deskphone	SIP R04.03.12.00
Avaya 9408 Digital Deskphone	V2.0
Protocol Systems Imperium Server running on Windows 2008 R2 -Imperium Call Reporter -Imperium Budget Control	V1.0

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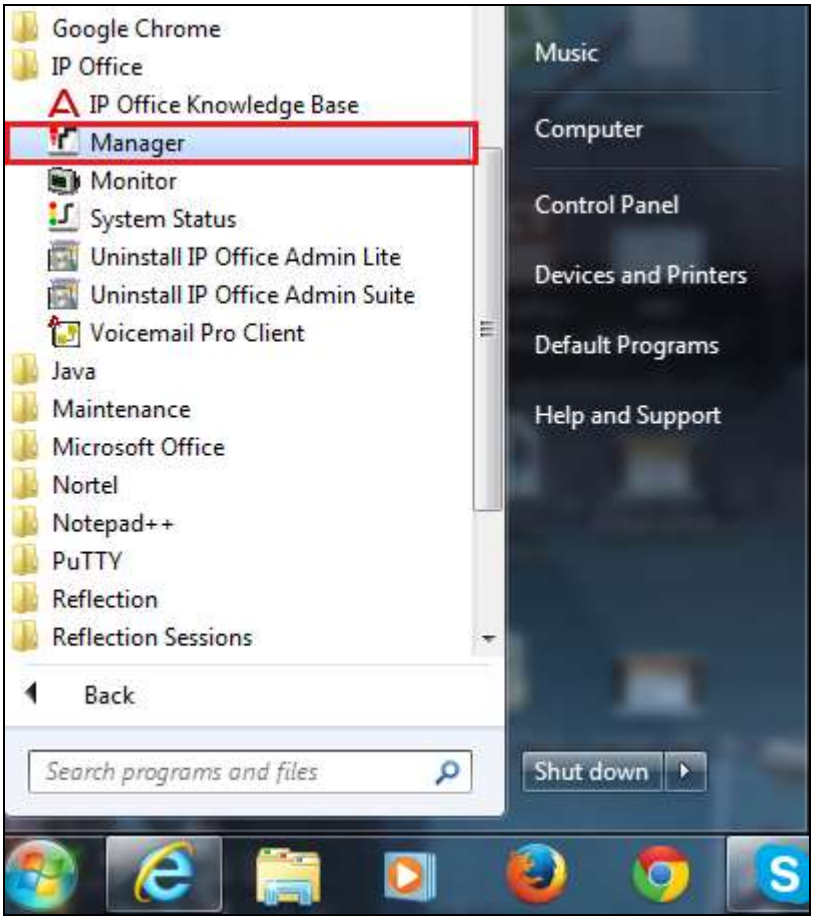
5. Configure Avaya IP Office

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 the Avaya IP Office for SMDR output to Imperium Budget Control Application.
- Configure Short Code for Blocking Outgoing Calls.
- Configure Short Code for Un-blocking Outgoing Calls.

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



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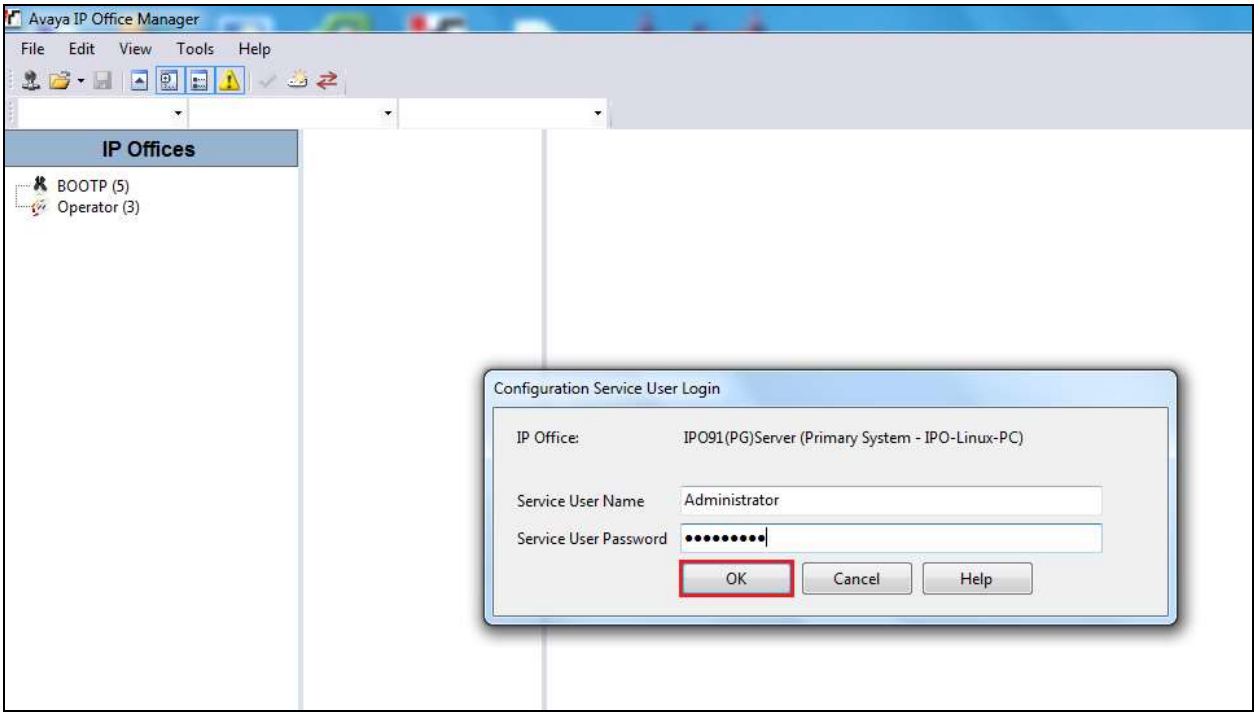
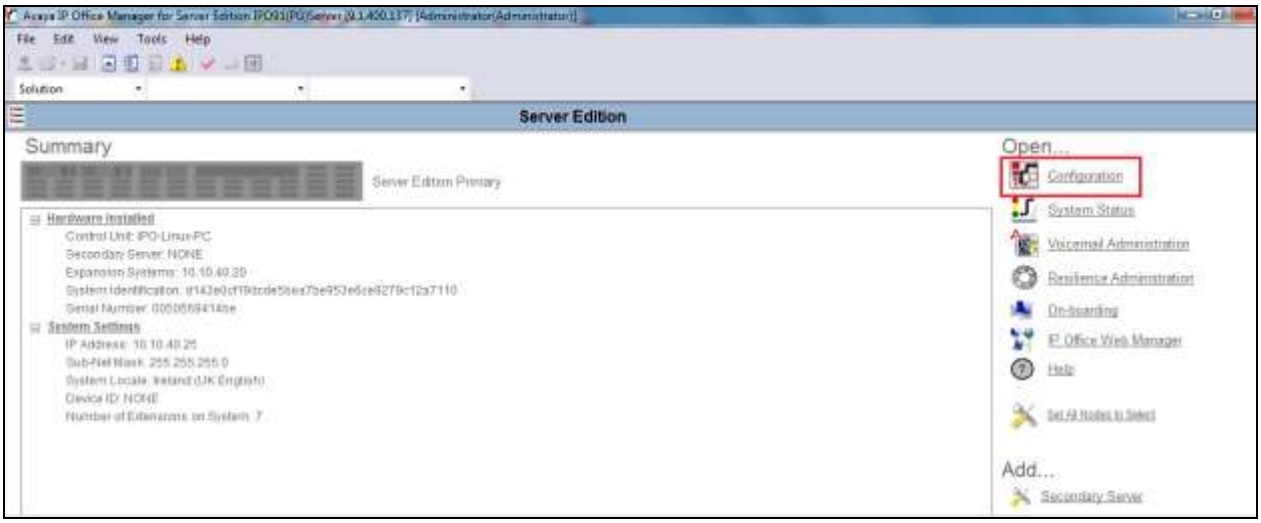
Enter the appropriate credentials and click on **OK**.



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



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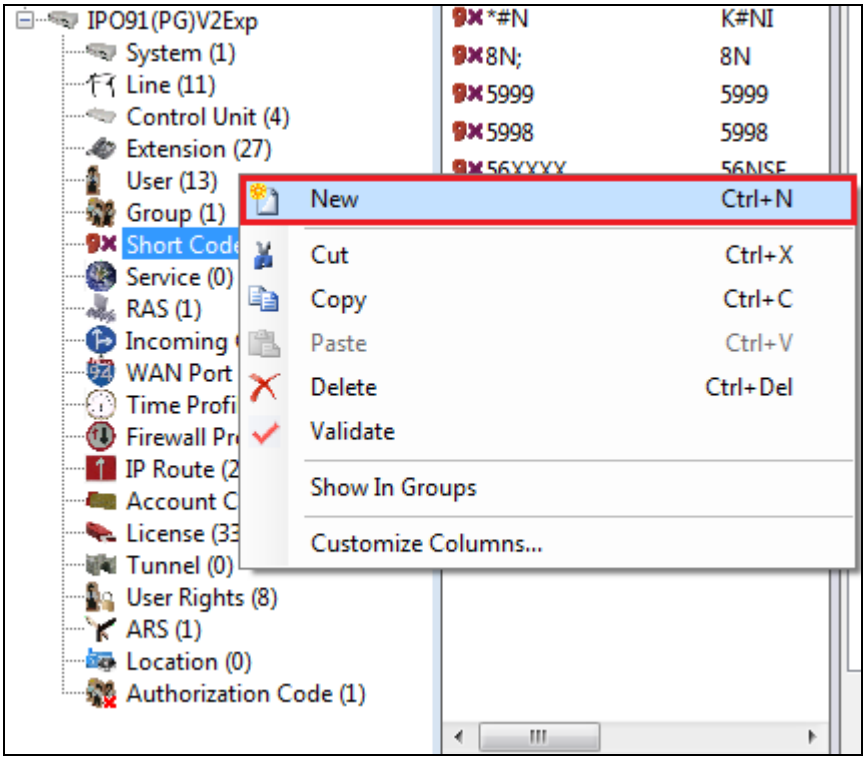
5.1. Configure the Avaya IP Office for SMDR output to Imperium Budget Control Application

It is implied that the SMDR output is already fully configured, for further information on this product please see **Section 9** *Application Notes for configuring Imperium Call Reporter from Protocol Systems FZC with Avaya IP Office Server Edition R9.1*.

5.2. Configure Short Code for Blocking Outgoing Calls

Two short codes must be created, one for blocking outbound calls and another to unblock them. The Imperium Budget Controller Application will use these short codes via TAPI to bar certain users/extensions from making outbound calls when they reach or surpass a threshold that has been set by the administrator.

From the left window right-click on **Short Codes** and click on **New**.



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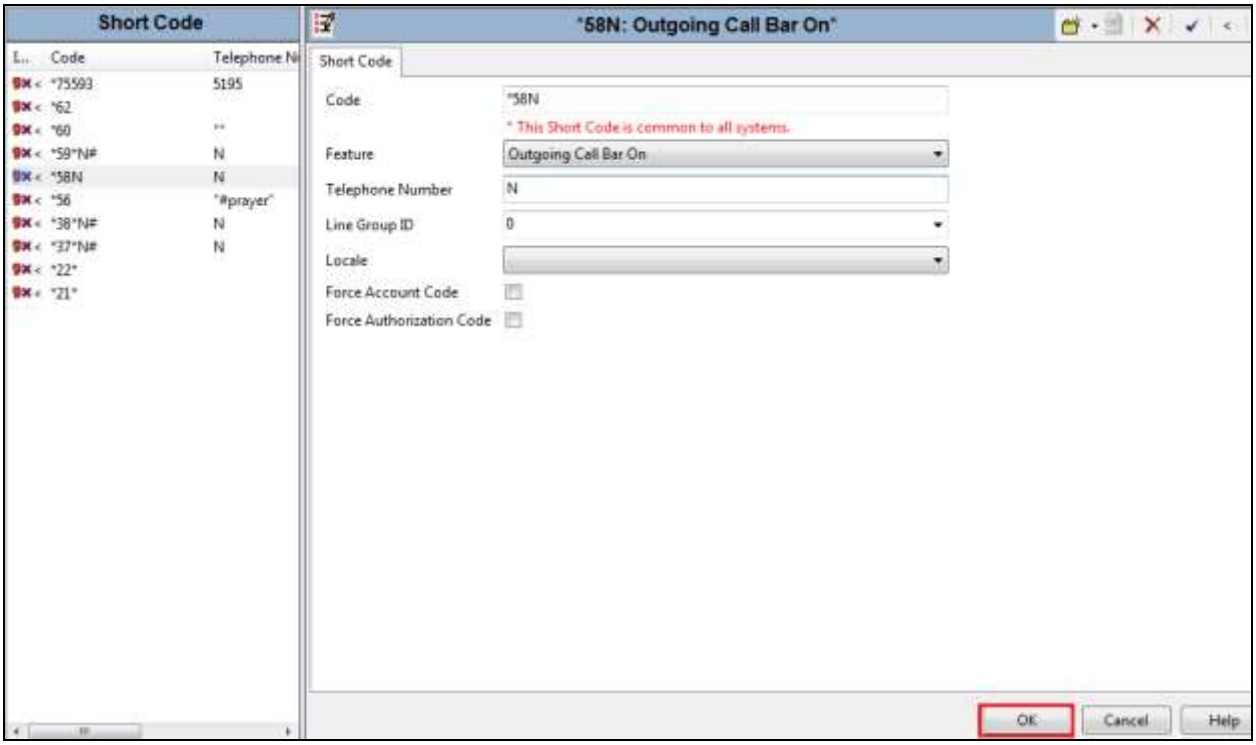
Enter the following details.

- **Code** – This can be any code that will be referenced by the Imperium Budget Controller Application.
- **Feature** – This is set to **Outgoing Call Bar On**.
- **Telephone Number** – This is set to **N** for the extension number that will be barred.
- **Line Group ID** – This can be set to **0** or left as default.

Click on OK to save this configuration change.



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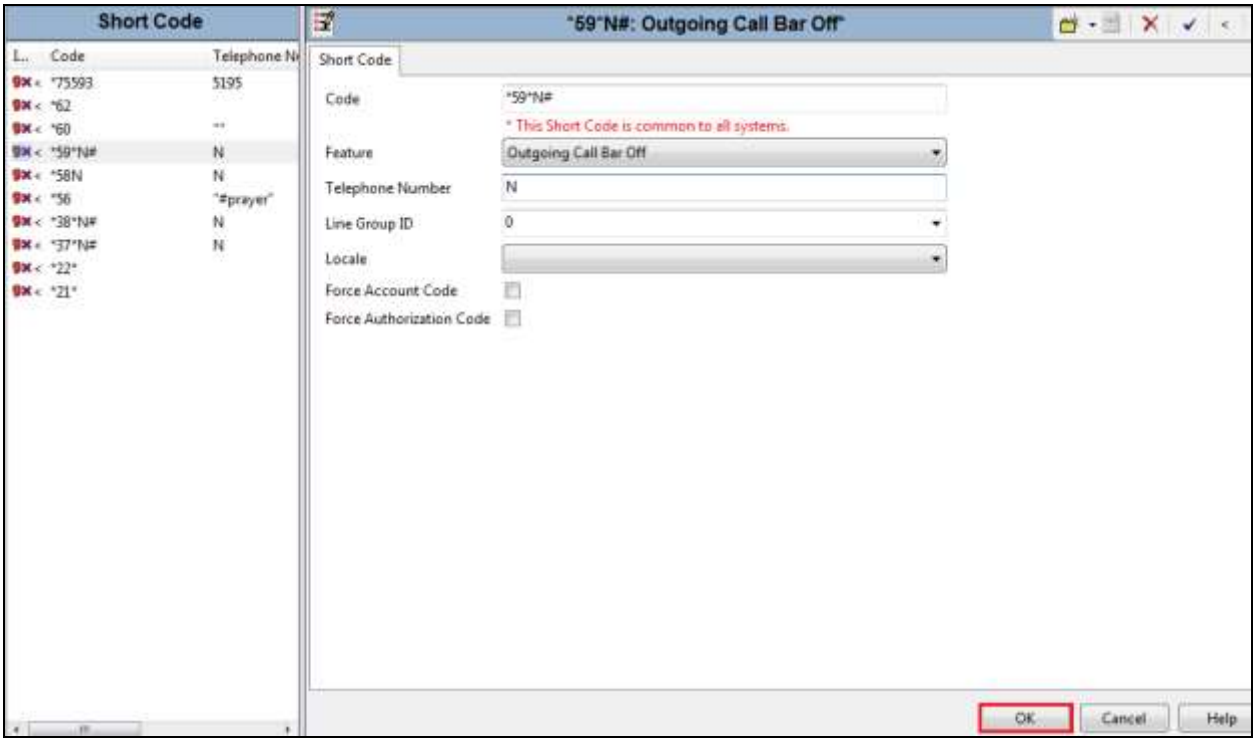
5.3. Configure Short Code for Blocking Outgoing Calls

A second code must be entered to allow an administrator to unblock the user/extension. Enter the following details.

- **Code** – This can be any code that will be referenced by the Imperium Budget Controller Application.
- **Feature** – This is set to **Outgoing Call Bar Off**.
- **Telephone Number** – This is set to **N** for the extension number that will be barred.
- **Line Group ID** – This can be set to **0** or left as default.

Click on **OK** to save this configuration change.



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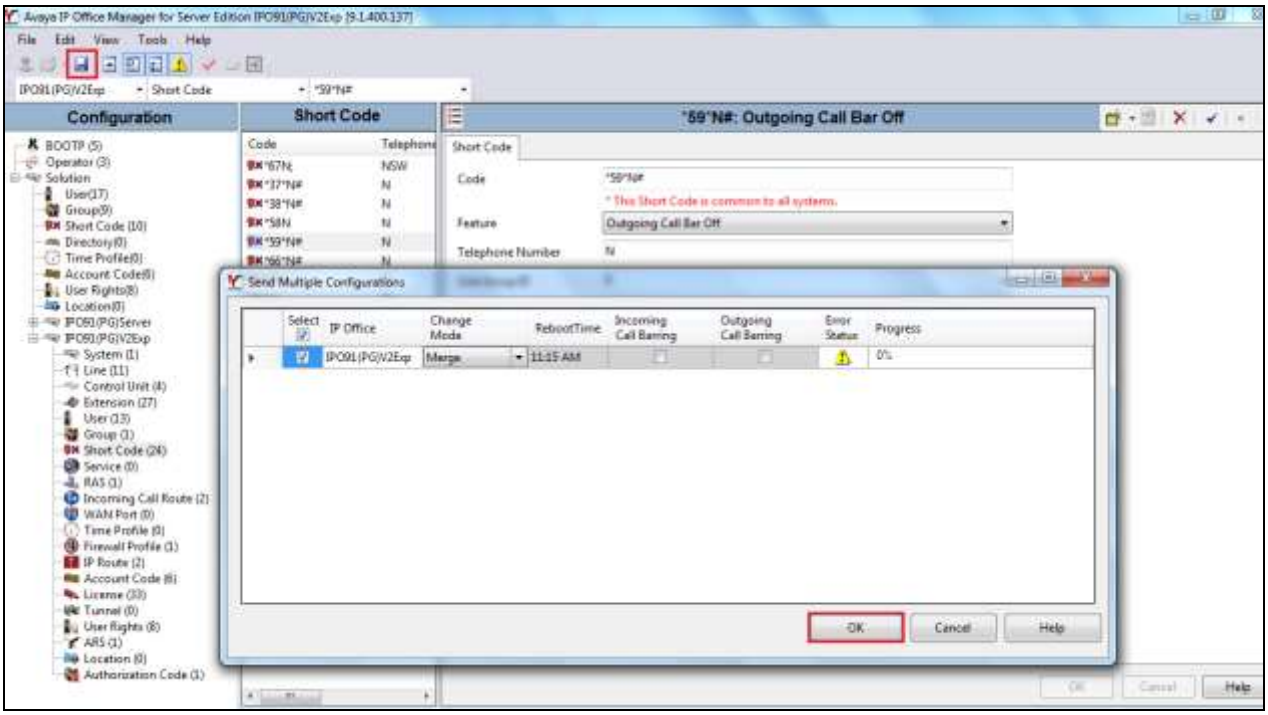
Once the short codes are setup, click on the **Save** icon at the top left of the screen as shown below. This brings up a new window, click on **OK** on this window to save the configuration.



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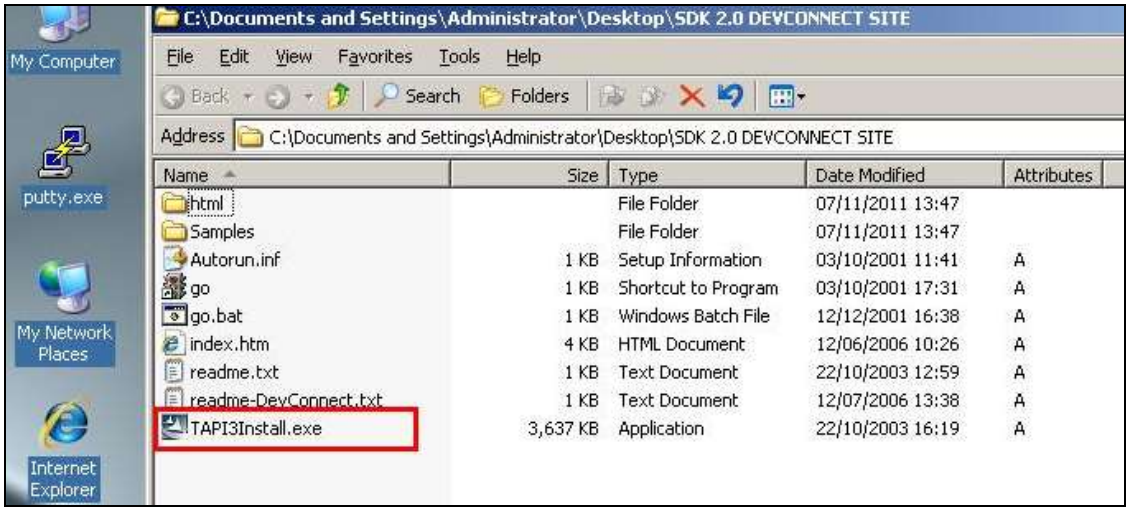
6. Configuration of Protocol Systems FZC Imperium Budget Control Application Server

This section outlines the steps necessary to configure the Imperium Budget Control Application server to enable the Application to make the necessary changes to IP Office in order to block certain extensions from making outbound calls. These extensions then become unblocked after a certain configured time period.

6.1. Configure TAPI connection on Imperium Budget Control Application Server

The Avaya IP Office TAPI driver should already be installed on the Imperium Budget Control Application Server. If this is not installed then it can be downloaded from the Avaya DevConnect website. The TAPI3 Service Provider is included in the IP Office CTI Link Software Development Kit (SDK) located on the DevConnect website (https://www.devconnectprogram.com/site/global/home/p_home.gsp) under the product name IP Office. Once downloaded the installation is initiated by running **TAPI3Install.exe** as shown below.



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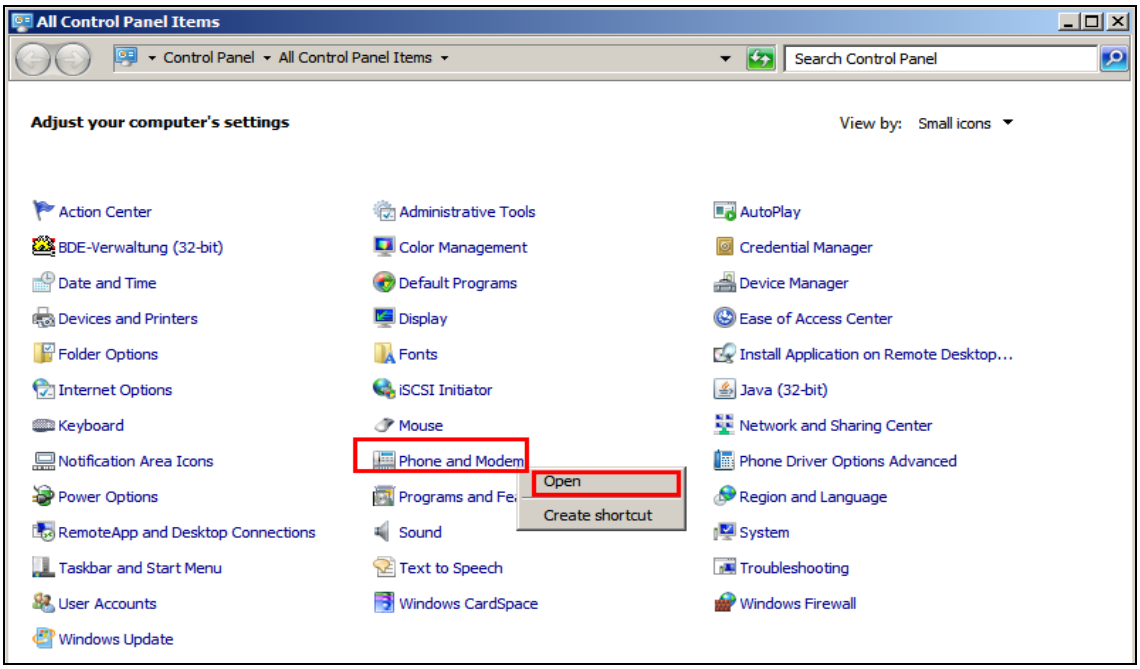
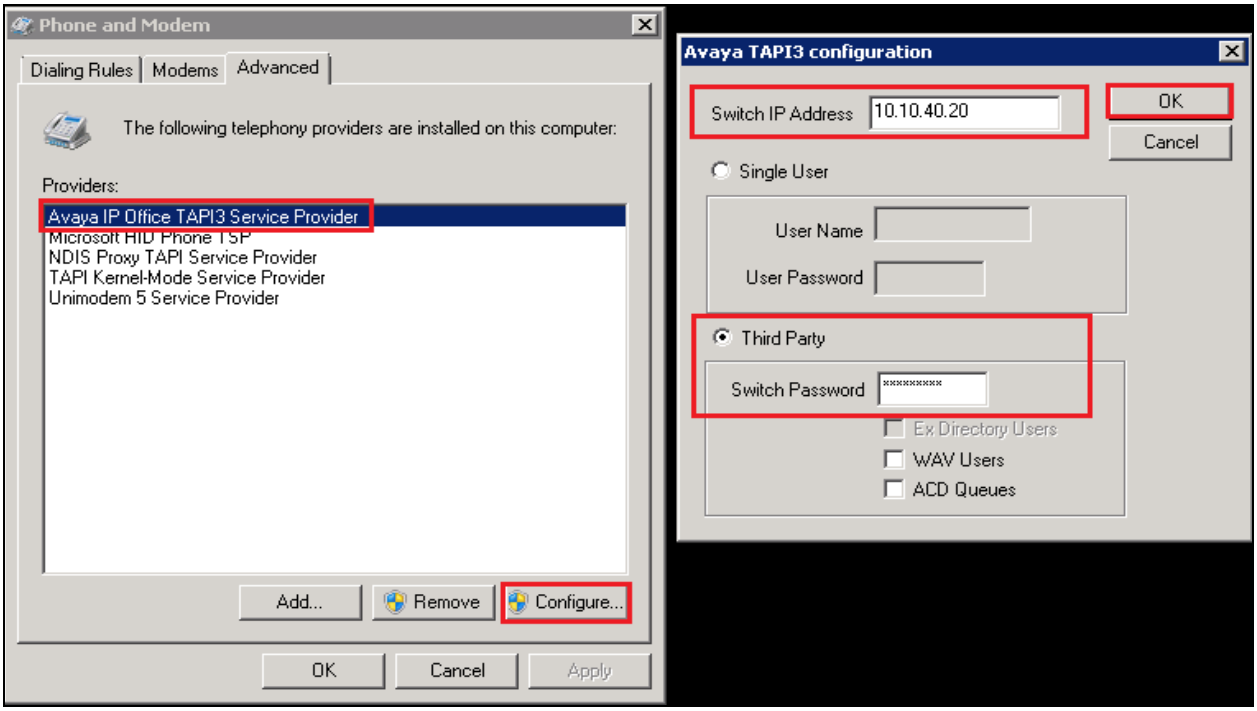
To configure the TAPI Service Provider, navigate to **Control Panel** and right click on **Phone and Modem Options** and **Open** as highlighted below.



Click on the **Advanced** tab and highlight **Avaya IP Office TAPI3 Service Provider** and click **Configure**. Enter the IP address of the IP Office for the **Switch IP Address** and ensure that **Third Party** is checked. The IP Office System user password is then entered for **Switch Password** and **OK** is clicked to save the changes.



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6.2. Configure Imperium Budget Control Application Server

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.

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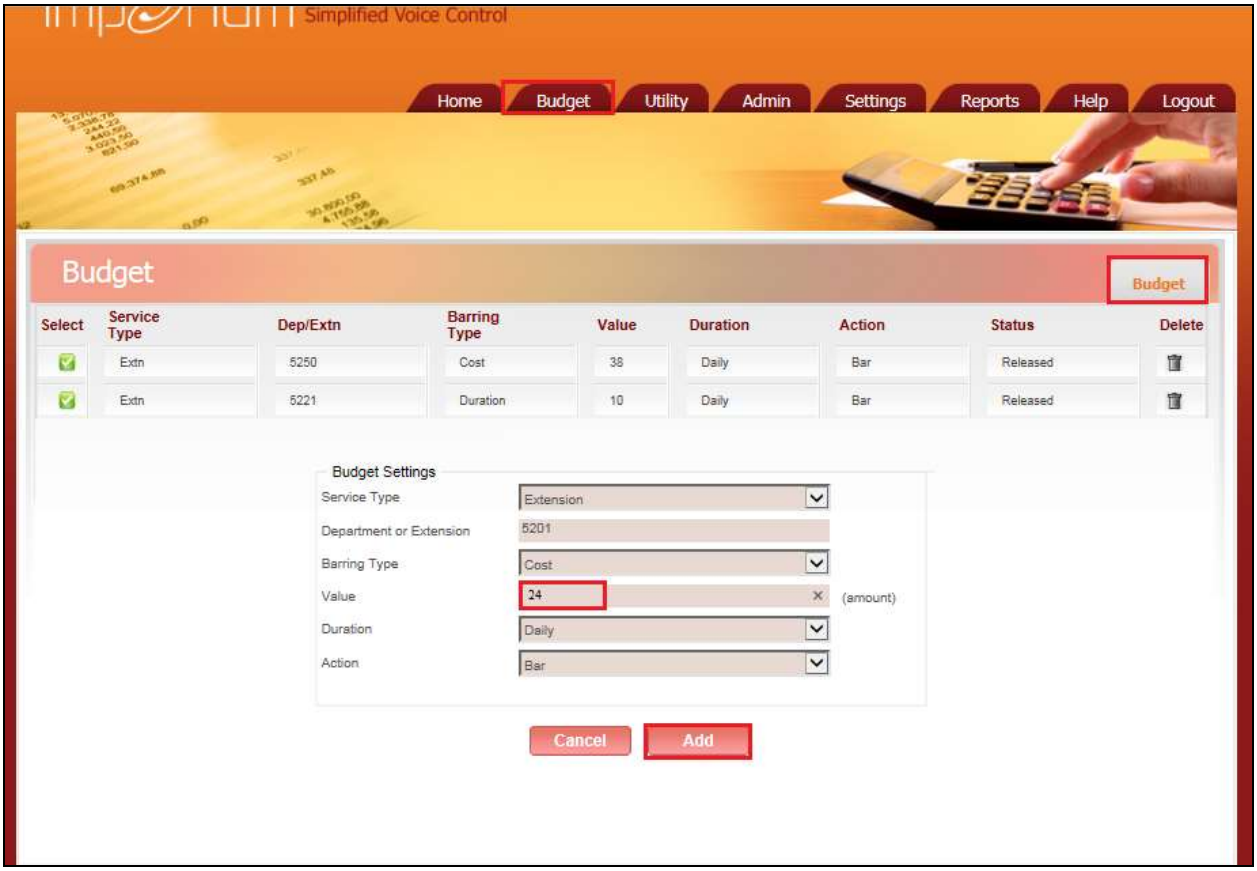
Once logged in click on the **Budget** tab, these tabs are located along the top of the screen. Enter the extension number opposite **Department or Extension**. The **Barring Type** can be either **Cost** or **Duration**. The **Value** can be set at any number; this is the threshold that this extension can reach before being barred from making any further outbound calls. The **Duration** is set to Daily, Weekly or Monthly; this value determines how long this user is automatically barred for. The **Action** is set to **Bar**, so as this will bar the extension once a **Cost** of **24** is reached.



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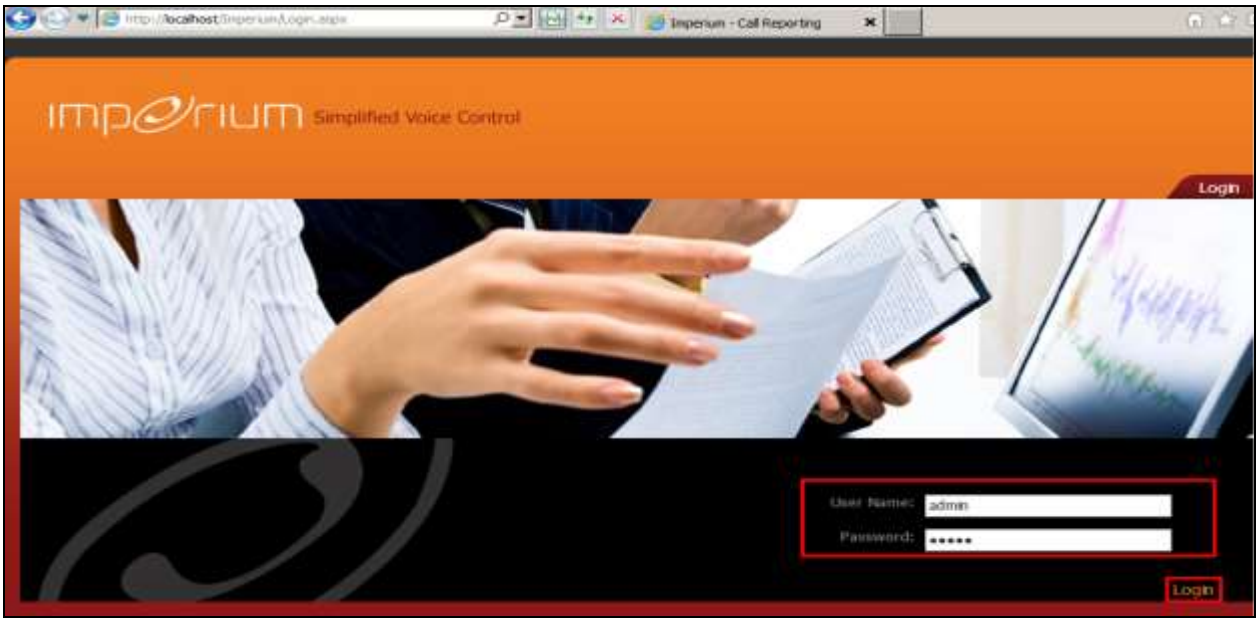
7. Verification Steps

This section illustrates the steps necessary to verify that the Imperium Budget Control Application Server is connected to IP Office correctly in order to be able to block or bar certain extensions from making any outbound PSTN calls once a pre-defined threshold has been exceeded.

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.



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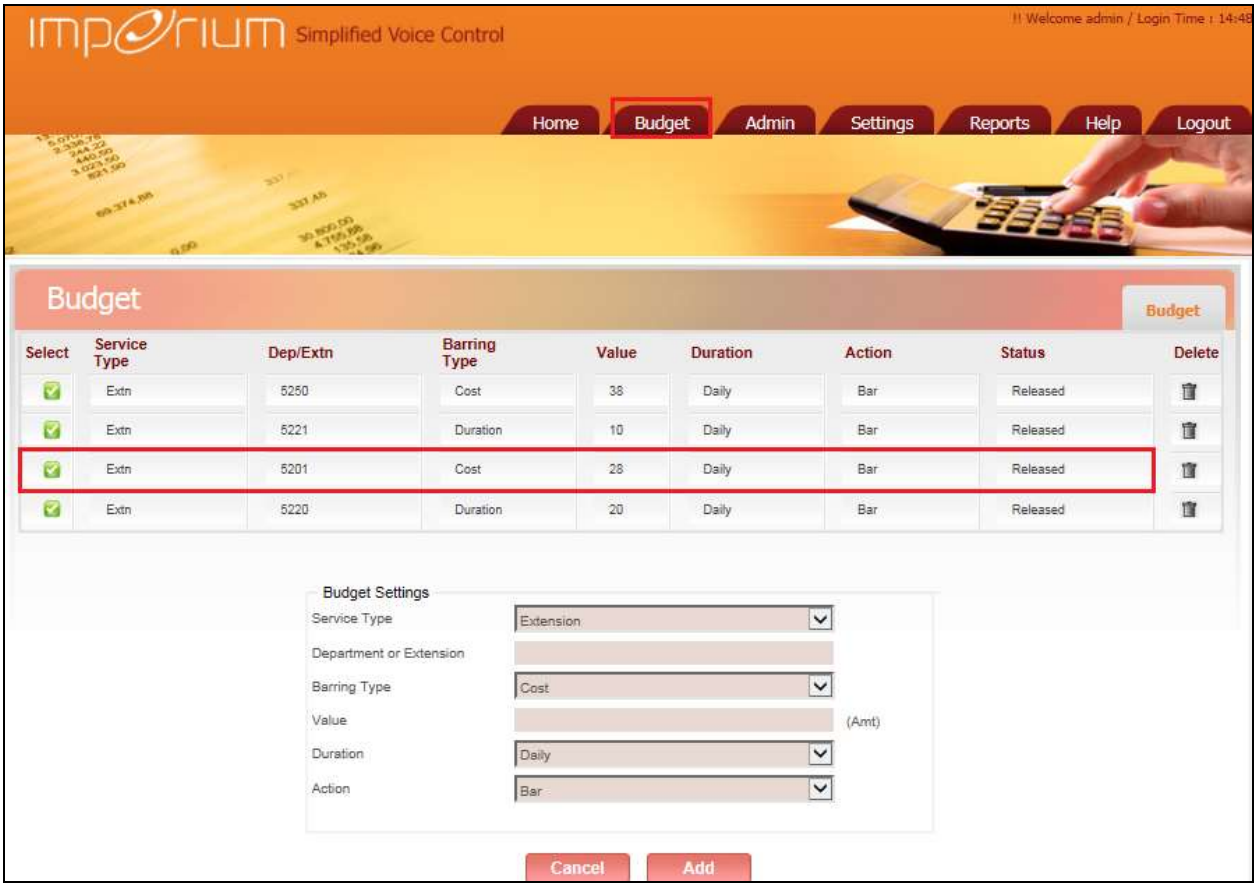
7.1. Verify IP Office Extension

Choose an extension on the IP Office and make sure an outbound call can be successfully achieved. On the imperium Budget Control Application, navigate to **Budget** and show that the extension (**5201** in the example below) is showing **Released** or no state and that it is not barred.



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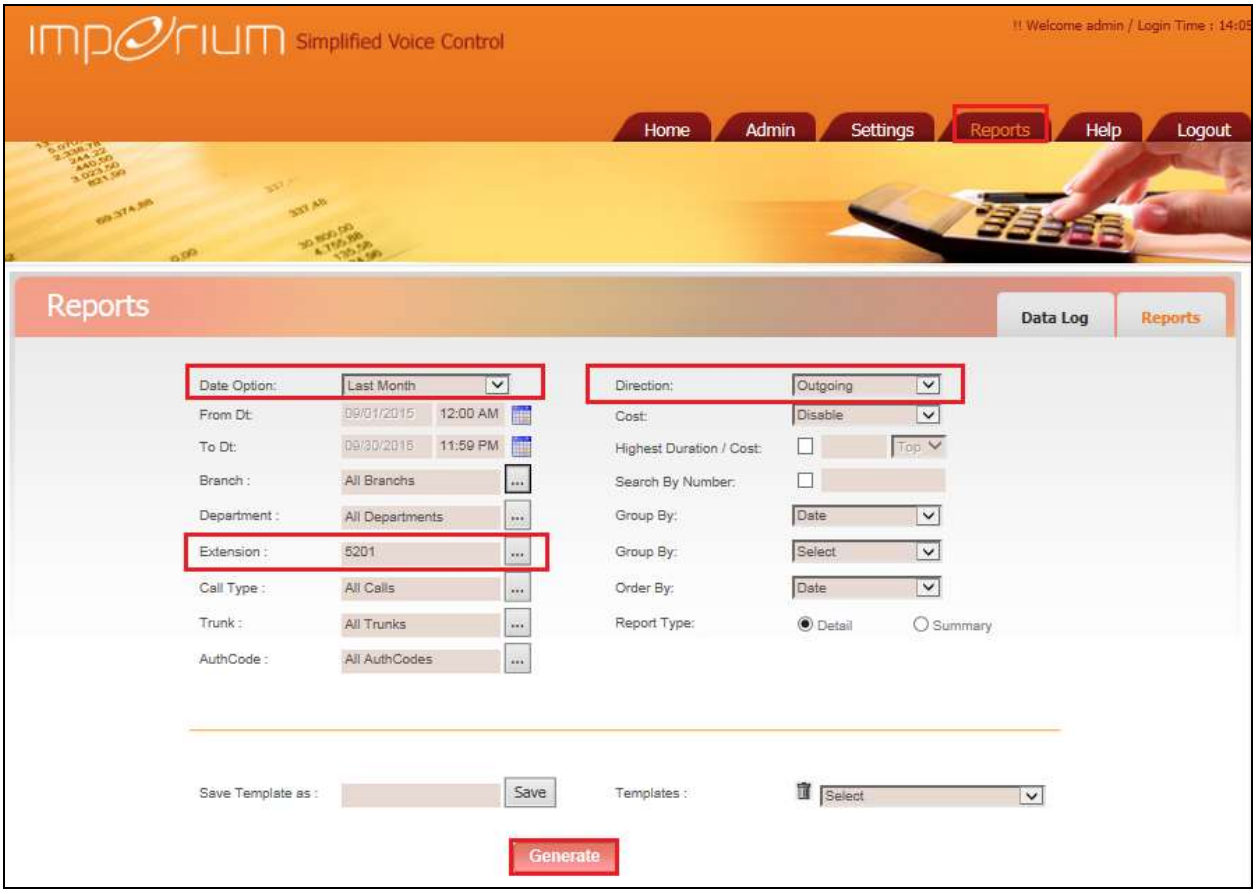
7.2. Verify that Imperium Budget Control Application is receiving CDR data

Make some outbound calls on the chosen extension to exceed the threshold set in **Section 6**. 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 the extension to **5201** (or of that to be scrutinised). Set **Direction** to **Outgoing** so that all the outgoing or "cost" calls are reported on, once finished click on **Generate** to continue.



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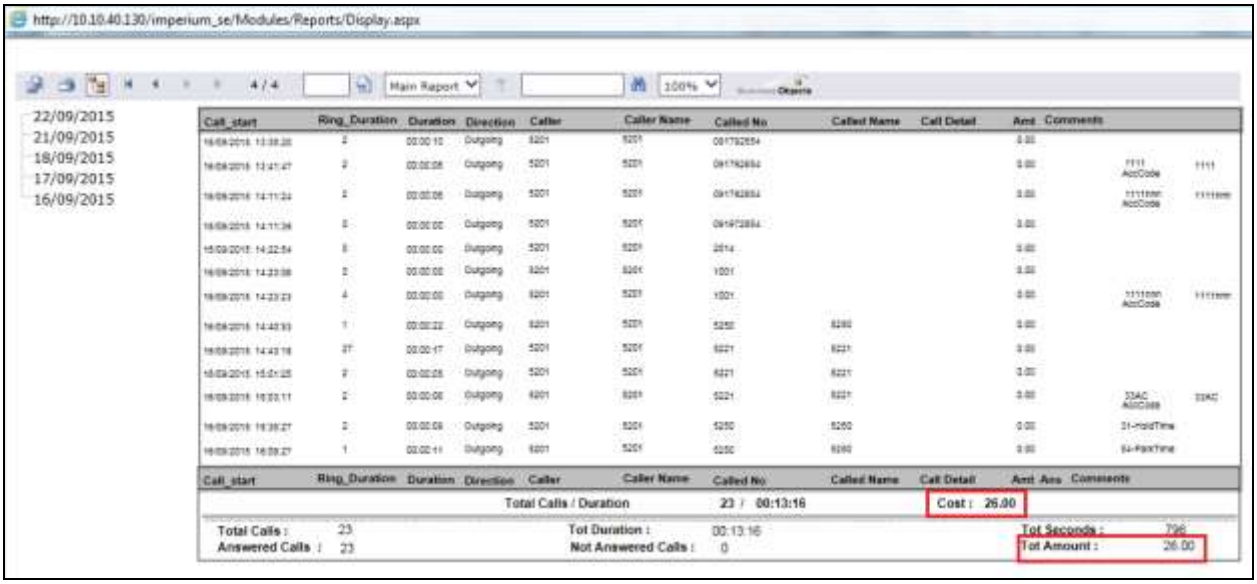
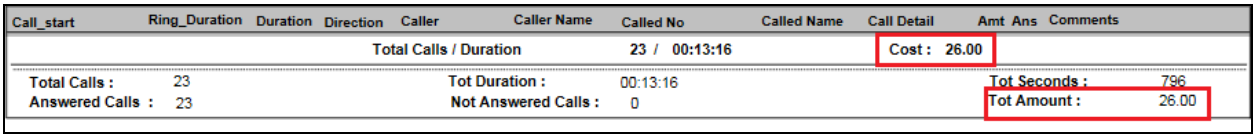
The following screenshot of a report shows outbound calls for extension **5201,** move to the final page to see the total cost for all outbound calls. With this cost now reaching **26**, the threshold set above of 24 has now been reached and surpassed.



The total cost of the calls is shown to be **26**, and with the threshold of 24 exceeded, the extension should be set to block any further PSTN calls.



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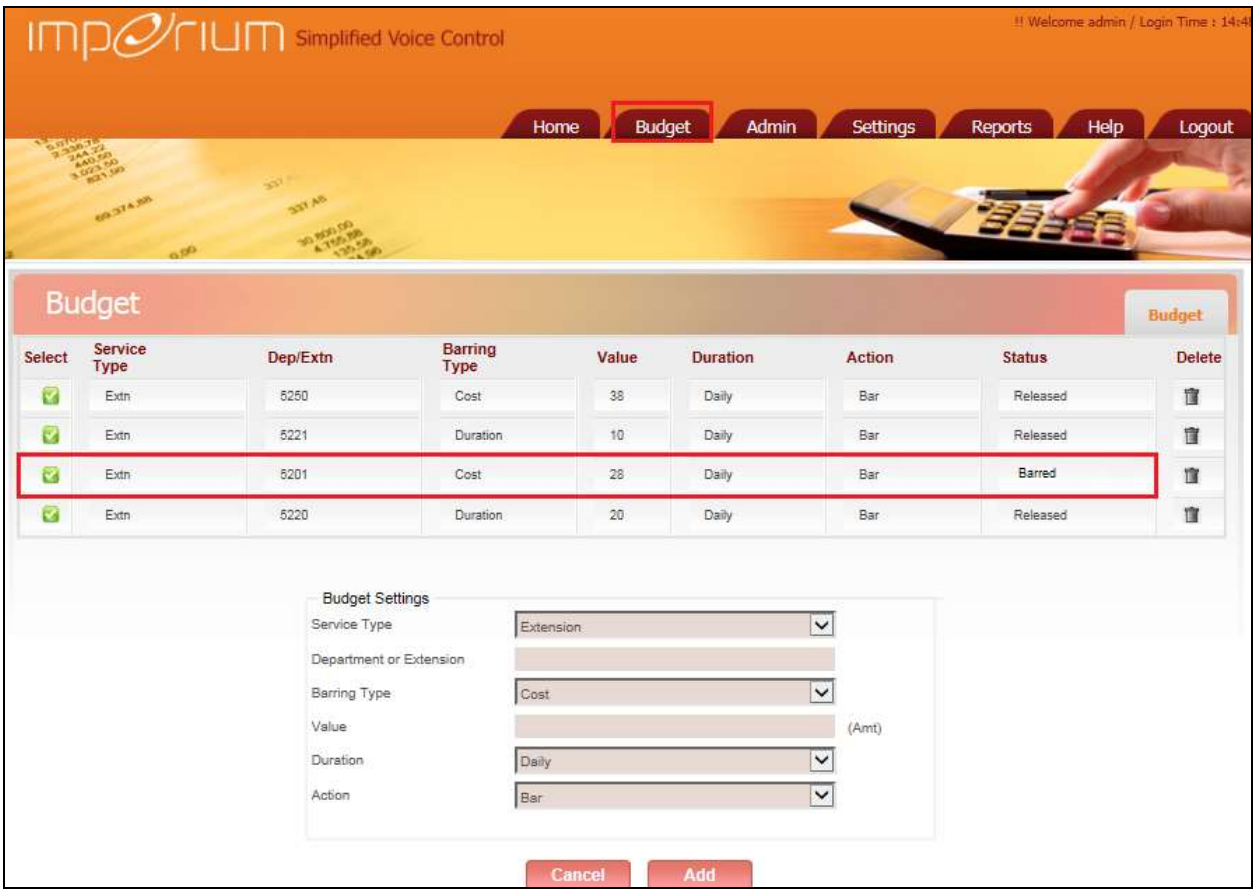
7.3. Verify an IP Office extension is now blocked

These are the steps that can be taken to verify that the IP Office extension can be barred from making any outbound calls. Log in to the Imperium Budget Controller Application as per **Section 7**. Click on the **Budget** tab at the top of the window and note that the extension **5201** now has a status of **Barred**. Also from this extension try to make and outbound PSTN call and the number should be "unobtainable".



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8. Conclusion

These Application Notes describe the procedures for configuring Imperium Budget Control Application from Protocol Systems to integrate with Avaya IP Office in order to block outgoing calls once a threshold has been reached. In the configuration described in these Application Notes, outbound calls were made to exceed a threshold set and that extension was then blocked from making further outbound calls. 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
[3] *Application Notes for configuring Imperium Call Reporter from Protocol Systems FZC with Avaya IP Office Server Edition R9.1*

Technical documentation can be obtained for Imperium Budget Control Application from the website http://imperiumapp.com

Support for Imperium Budget Control Application can be found at:
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