



## **Avaya Solution & Interoperability Test Lab**

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# **Application Notes for Revolabs FLX UC 1000 with Avaya IP Office - Issue 1.0**

### **Abstract**

These Application Notes describe the configuration steps required to integrate the Revolabs FLX UC 1000 with Avaya IP Office. Revolabs FLX UC 1000 is a SIP conference phone that registers with Avaya IP office as a SIP endpoint in support of voice communications and enterprise conferencing.

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 required to integrate the Revolabs FLX UC 1000 with Avaya IP Office. Revolabs FLX UC 1000 is a SIP conference phone that registers with Avaya IP Office as a SIP endpoint in support of voice communications and enterprise conferencing. In the compliance test, Revolabs FLX UC 1000 successfully registered with Avaya IP Office, established calls with other Avaya SIP and H.323 telephones, and exercised telephony features, such as hold, call transfer, 3-way conference, and call forwarding.

## 2. General Test Approach and Test Results

The interoperability compliance test included feature and serviceability testing. The feature testing focused on establishing calls between Revolabs FLX UC 1000 and Avaya SIP and H.323 telephone and exercising basic telephony features, such as hold, mute, transfer and conference. Additional telephony features, such as call forward, follow me, call park/unpark, and call pickup were also verified using Avaya IP Office Shortcodes.

The serviceability testing focused on verifying that Revolabs FLX UC 1000 came back into service after re-connecting the Ethernet connect or rebooting the phone.

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

Interoperability compliance testing covered the following features and functionality:

- SIP registration of Revolabs FLX UC 1000 with Avaya IP Office.
- Calls between Revolabs FLX UC 1000 and Avaya SIP and H.323 telephones with Direct IP Media (Shuffling) enabled and disabled.
- Calls between the Revolabs FLX UC 1000 and the PSTN.
- Support of G.711 and G.729 codecs.
- Proper recognition of DTMF tones.
- Basic telephony features, including hold, mute, redial, multiple calls, attended transfer and attended 3-way conference.
- Extended telephony features using Avaya IP Office Shortcodes for Call Forward, Follow Me, Call Park/Unpark, and Call Pickup.
- Voicemail coverage, MWI support, and logging into voicemail system to retrieve messages.
- Proper system recovery after a restart of Revolabs FLX UC 1000 and loss of IP connectivity.

## 2.2. Test Results

All test cases passed with the following observations noted:

- Revolabs FLX UC 1000 does not support blind transfer or blind conference. It supports attended transfer and attended conference.
- The G.729 codec was not always displayed as an option under the audio codecs supported by Revolabs FLX UC 1000.

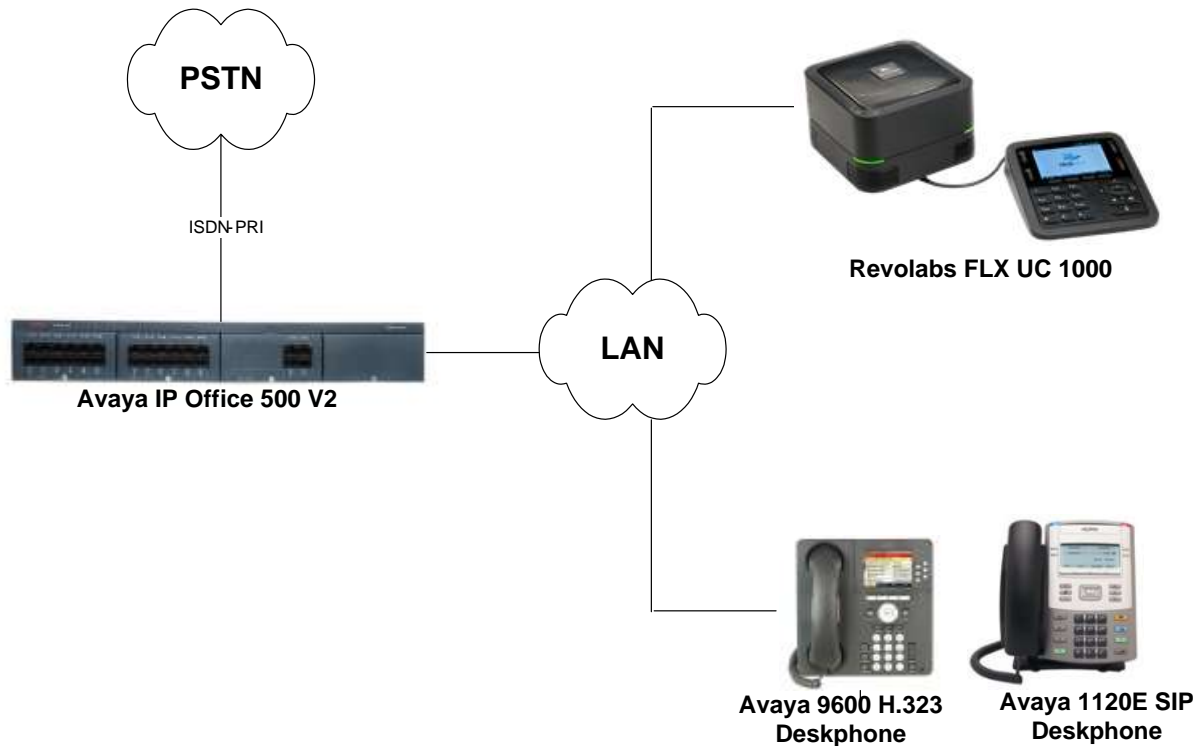
## 2.3. Support

For technical support on the Revolabs FLX UC 1000, contact Revolabs Customer Support via phone, email, or website.

- **Phone:** (800) 326-1088
- **Web:** <http://www.revolabs.com/support/product-line/uc-1000>
- **Email:** [support@revolabs.com](mailto:support@revolabs.com)

### 3. Reference Configuration

**Figure 1** illustrates a sample configuration consisting of Revolabs FLX UC 1000 with Avaya IP Office. Revolabs FLX UC 1000 registered with Avaya IP Office via SIP. Avaya Embedded Voicemail served as the voicemail system. Avaya 9600 Series H.323 Deskphones and an Avaya 1120E SIP Deskphone were used for placing and receiving calls.



**Figure 1: Revolabs FLX UC 1000 with Avaya IP Office**

## 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	9.1.100.10
Avaya 9600 Series IP Deskphone	6.4014 (H.323)
Avaya 1120E IP Deskphone	04.04.18 (SIP)
Revolabs FLX UC 1000	1.1.0.163

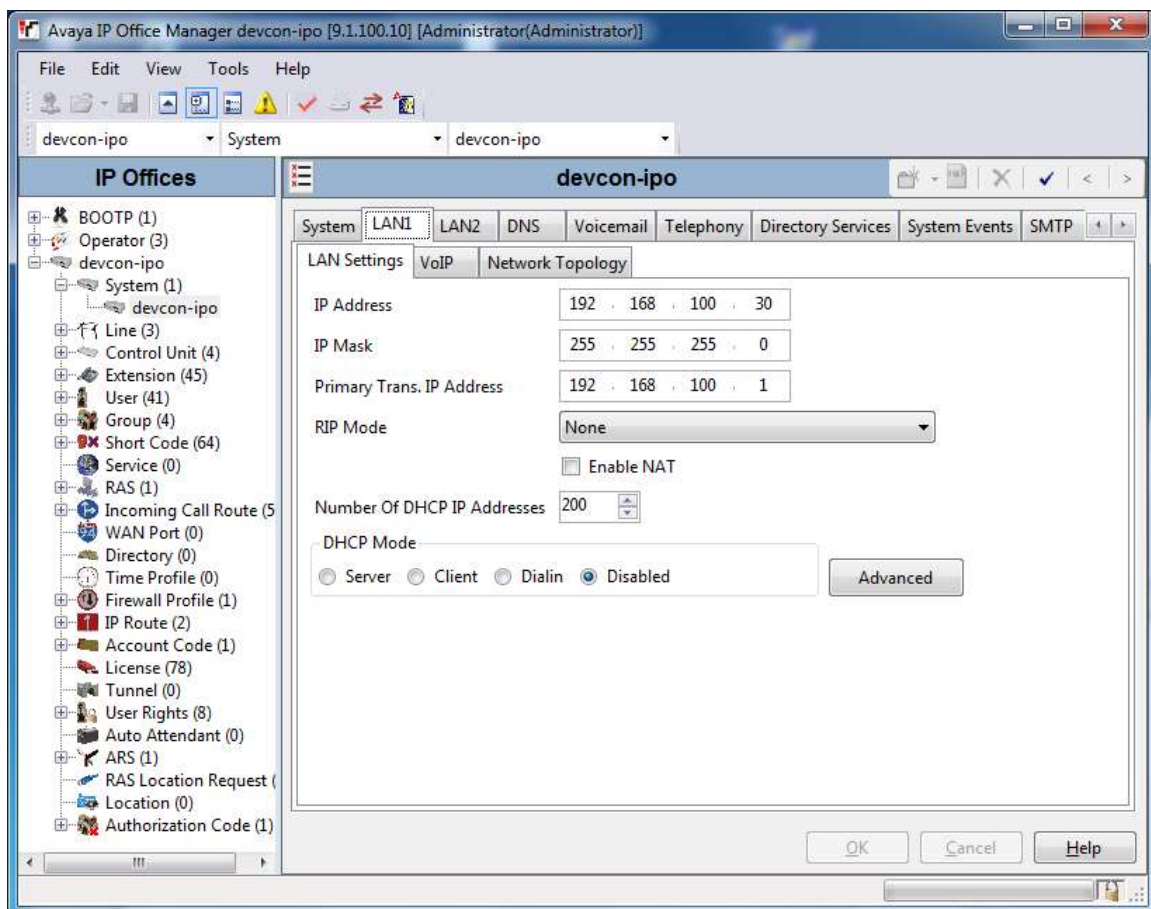
## 5. Configure Avaya IP Office

This section provides the procedures for configuring Avaya IP Office. The procedures include the following areas:

- Obtain LAN IP address
- Administer SIP registrar
- Administer SIP extension for Revolabs FLX UC 1000
- Administer SIP user for Revolabs FLX UC 1000

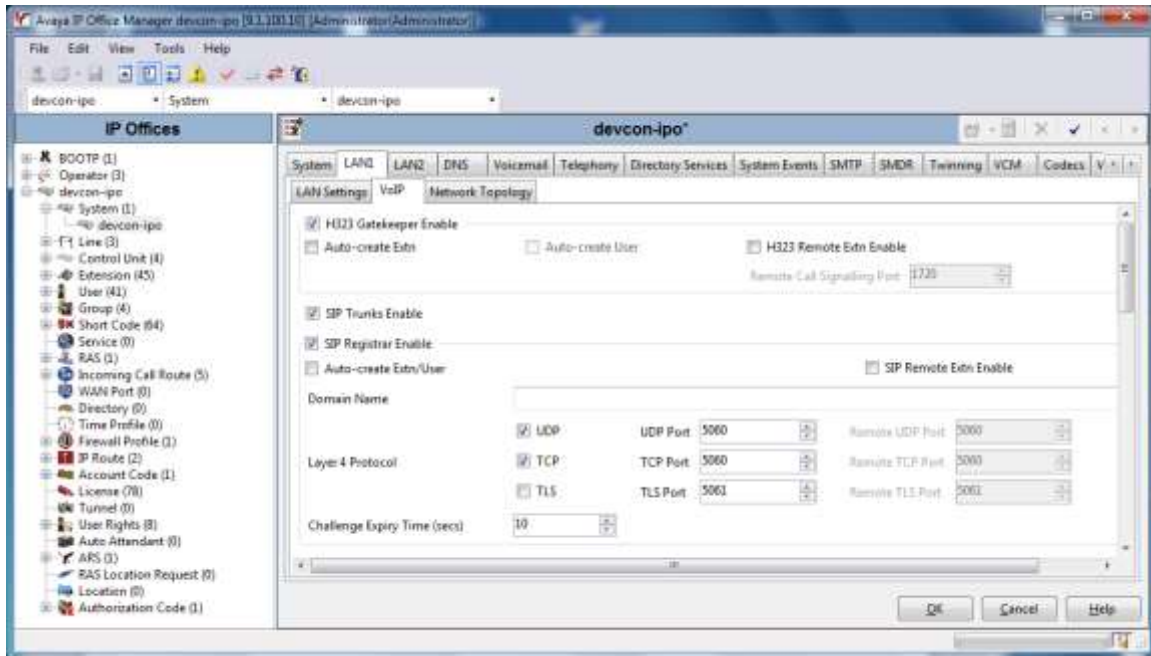
### 5.1. Obtain LAN IP Address

From the configuration tree in the left pane, select **System** to display the **System** screen for the IP Office 500 V2 in the right pane. Select the **LAN1** tab, followed by the **LAN Settings** sub-tab in the right pane. Make a note of the **IP Address**, which will be used later to configure Revolabs FLX UC 1000.



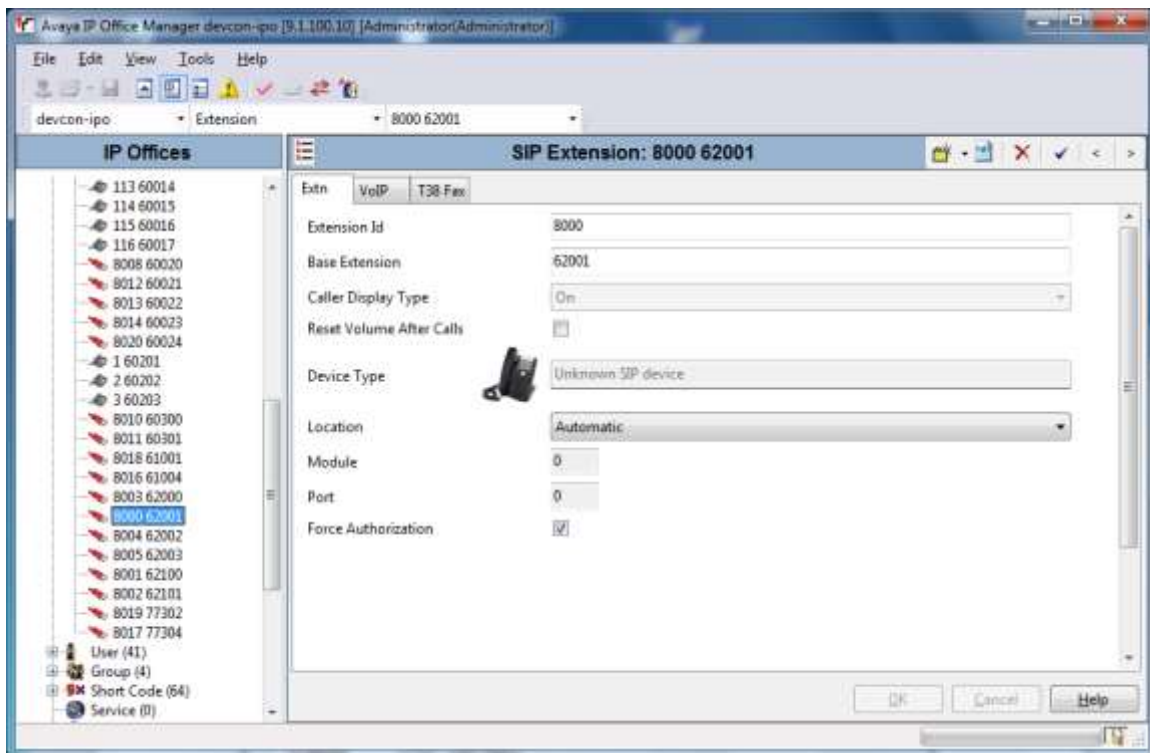
## 5.2. Administer SIP Registrar

Select the **VoIP** sub-tab. Ensure that **SIP Registrar Enable** is checked and enter a valid **Domain Name**. In the compliance testing, the **Domain Name** field was left blank so the LAN IP address was used.



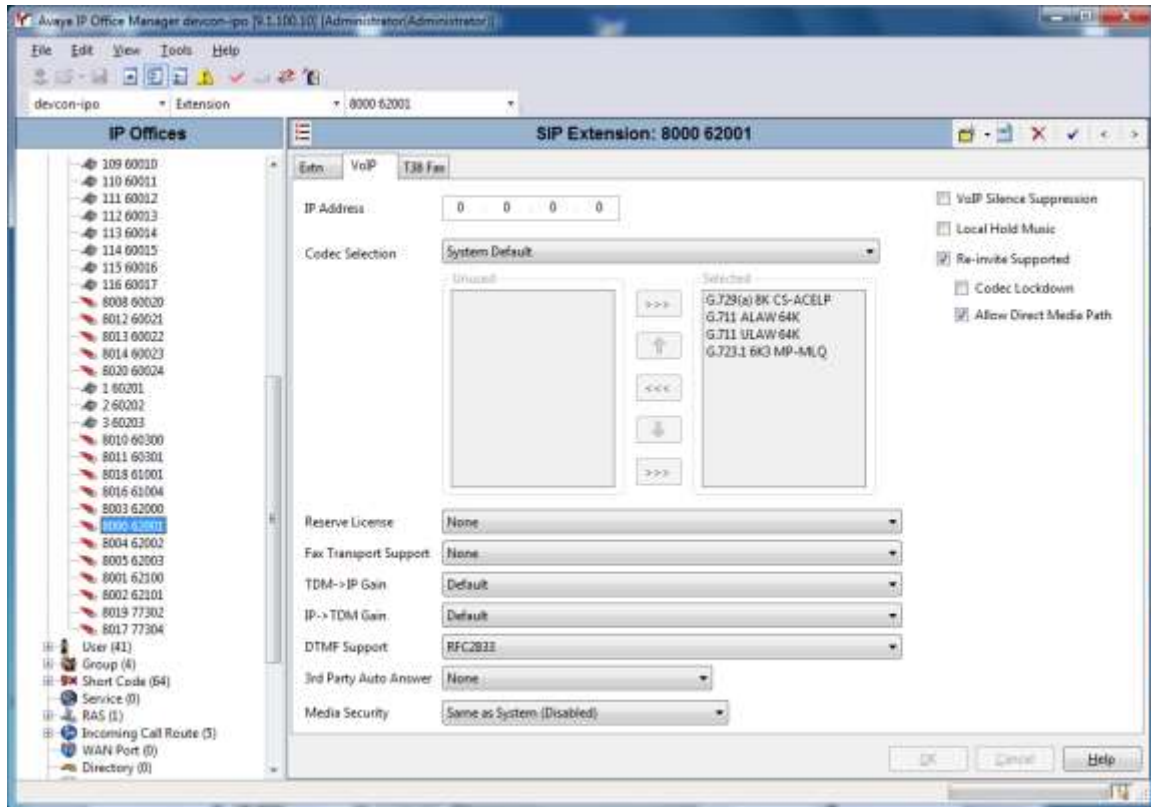
### 5.3. Administer SIP Extension for Revolabs FLX UC 1000

From the configuration tree in the left pane, right-click on **Extension** and select **New → SIP** from the pop-up list to add a new SIP extension. Enter the desired extension for the **Base Extension** field as shown below. In this example, Revolabs FLX UC 1000 was assigned extension **62001**. This is the extension that Revolabs FLX UC 1000 will use to register with IP Office.



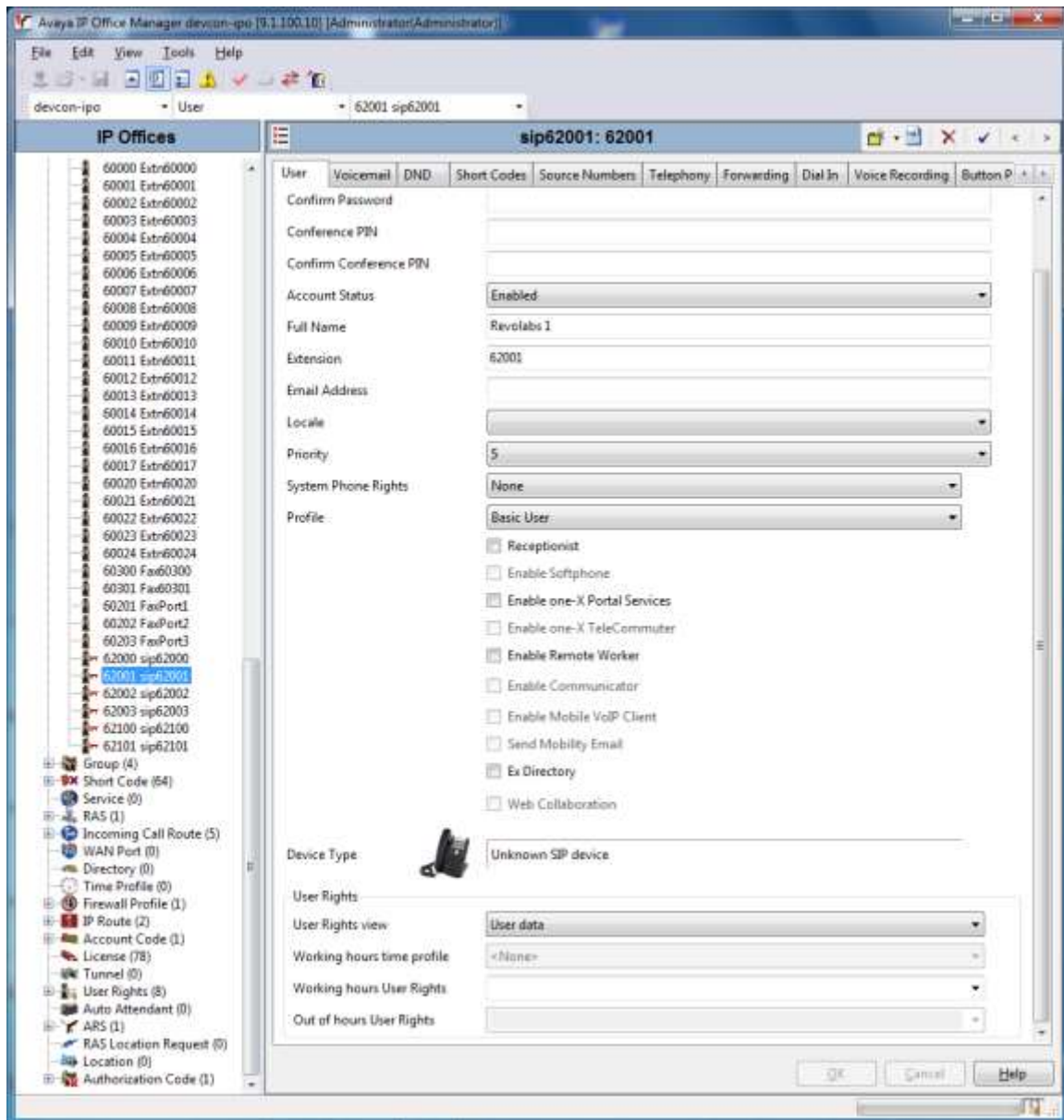


Select the **VoIP** tab and retain the default values in the all fields. During the compliance test, Revolabs FLX UC 1000 was tested using G.711 and G.729 codecs. Enable **Allow Direct Media Path** so that audio/RTP flows directly between two SIP endpoints without using media resources in Avaya IP Office.

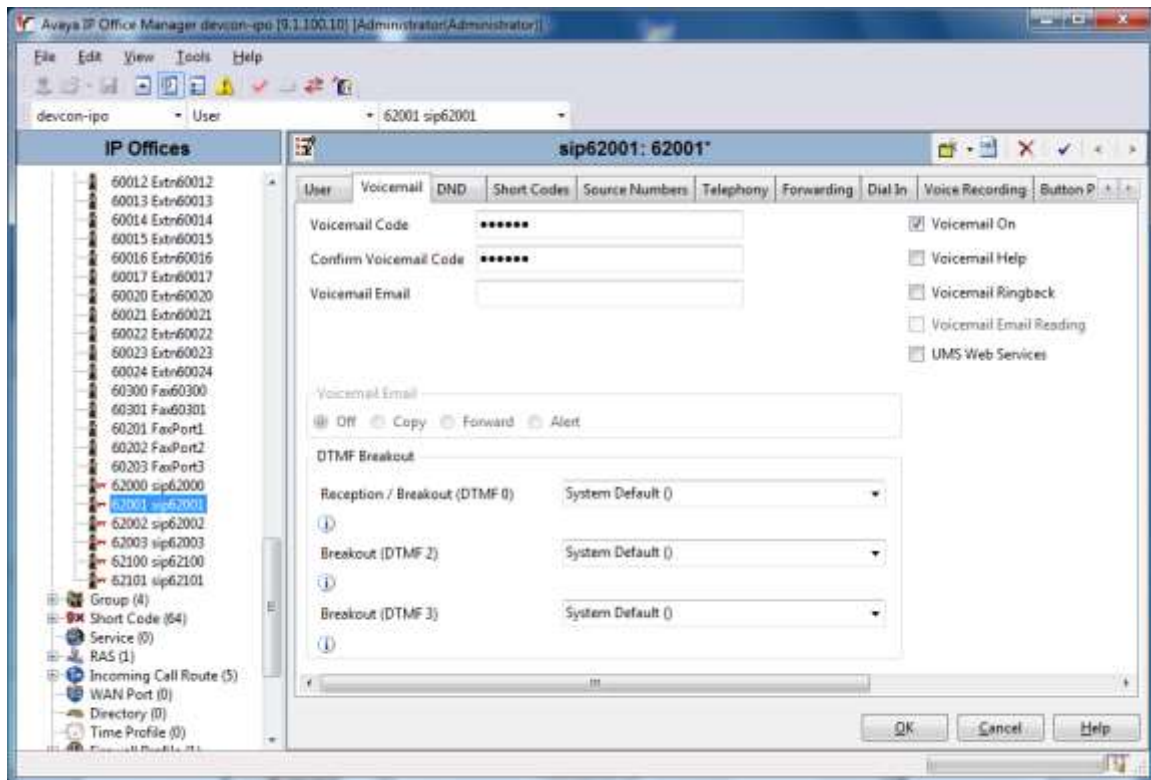


## 5.4. Administer SIP User for Revolabs FLX UC 1000

From the configuration tree in the left pane, right-click on **User** and select **New** from the pop-up list. Enter desired values for the **Name** and **Full Name** fields. For the **Extension** field, enter the SIP extension created above.

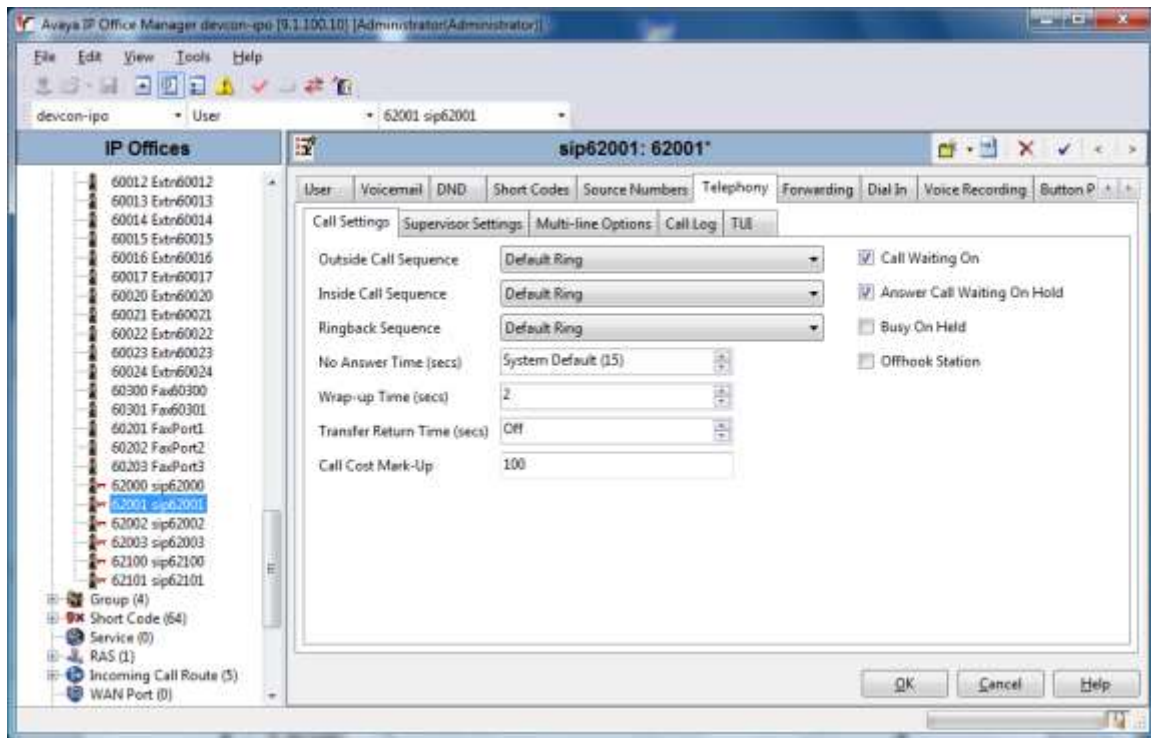


Select the **Voicemail** tab and select **Voicemail On** to enable voicemail for Revolabs FLX UC 1000.

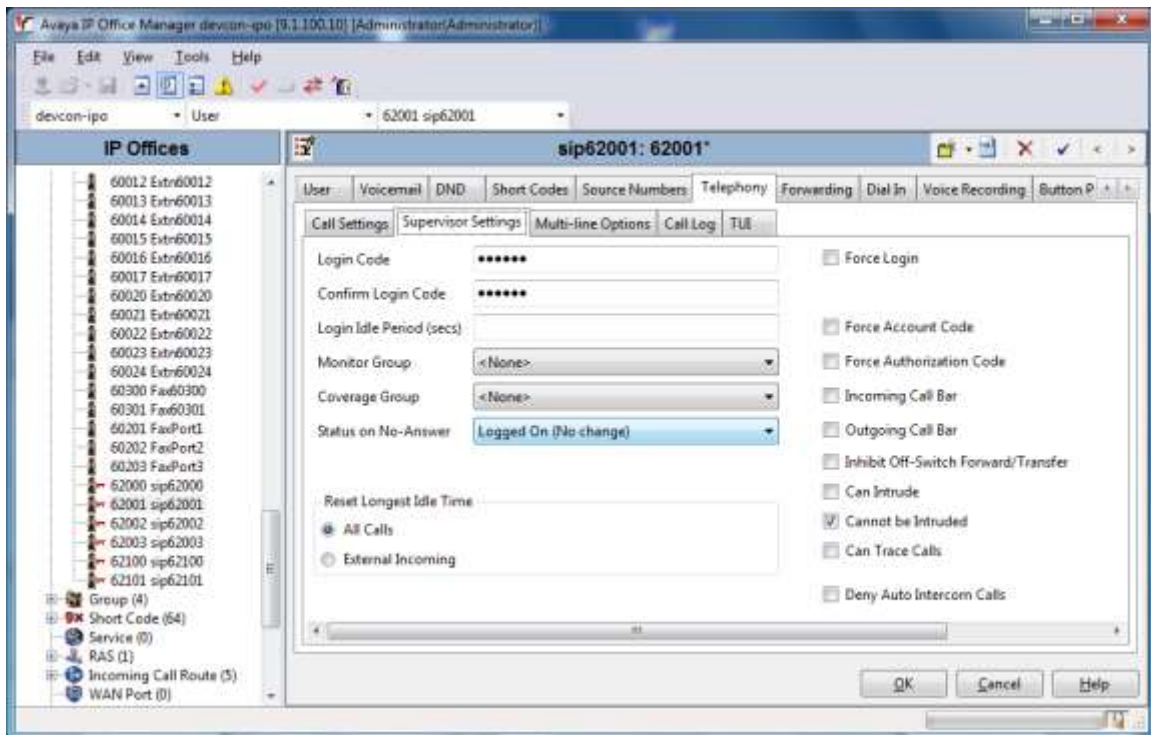


Select the **Telephony** tab followed by the **Call Settings** sub-tab. Note the settings below for the user.

**Note:** Call Waiting is required to allow a secondary incoming call to Revolabs FLX UC 1000; otherwise, the call second incoming call will be denied.



Select the **Supervisor Settings** tab and enter a desired **Login Code**. The Login Code is the password that will be used by Revolabs FLX UC 1000 to register with IP Office.



## 6. Configure Revolabs FLX UC 1000

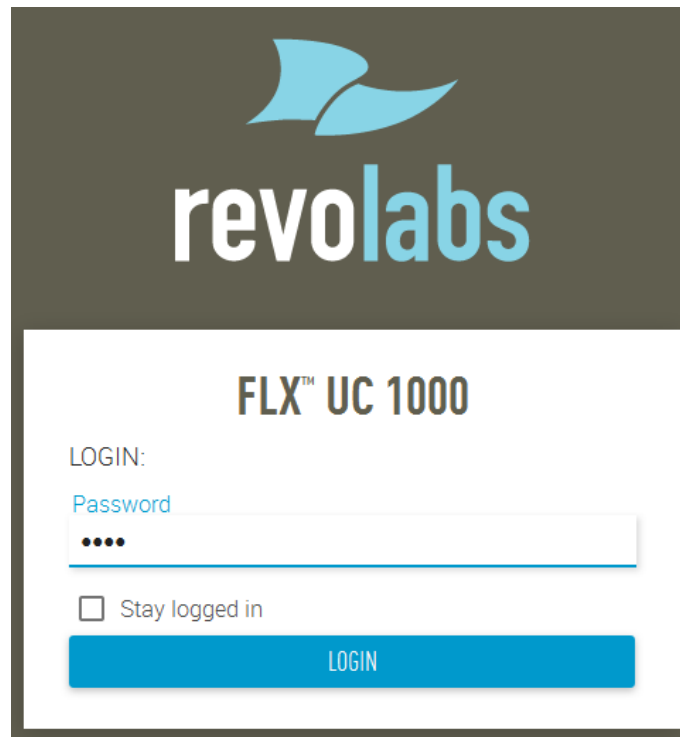
This section provides the procedures for configuring Revolabs FLX UC 1000. The procedures fall into the following areas:

- Launch web interface.
- Administer network settings.
- Administer SIP settings.
- Configure SIP Port and Transport Protocol.
- Enable Message Waiting Indicator (MWI).
- Configure Audio Codecs.

### 6.1. Launch Web Interface

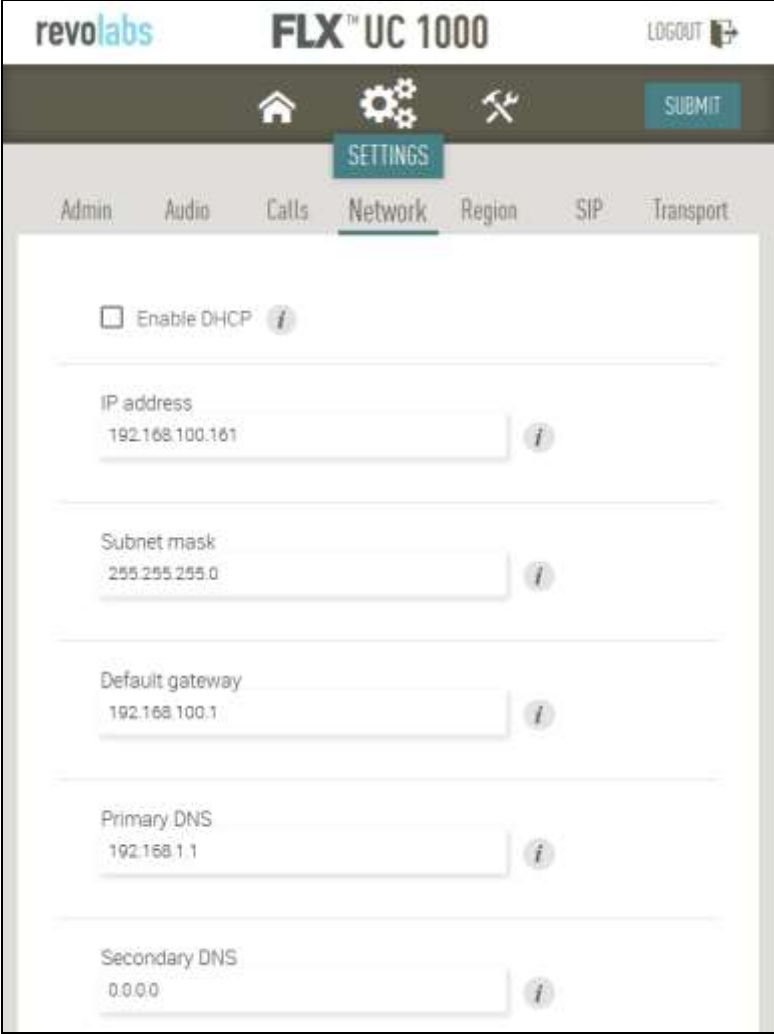
The Revolabs FLX UC 1000 may be configured directly from its keypad and display or using its web interface. For the compliance test, the configuration was performed through the web interface as described in this section. Access the Revolabs FLX UC 1000 web interface by using the URL “https://ip-address” in an Internet browser window, where “ip-address” is the IP address of the SIP conference phone. Log in using the appropriate credentials and then click **Enter**.

**Note:** Initially, the network parameters can be configured directly from the Revolabs FLX UC 1000 keypad and display as described in [2]. After the IP address is changed to match the customer’s network, configuration can proceed through the web interface, if desired.



## 6.2. Administer Network Settings

To configure network settings, click on **Settings** → **Network** at the top of the web page. Disable DHCP and configure the **IP address**, **Subnet mask**, **Default gateway**, and **Primary DNS**. Click **Submit** when done. The **Primary DNS** is required so that FLX UC 1000 can reach the NTP servers.



The screenshot shows the 'revolabs FLX UC 1000' web interface. At the top, there is a 'LOGOUT' button. Below the header, a navigation bar contains icons for home, settings, and tools, with a 'SUBMIT' button on the right. The 'SETTINGS' tab is active, and the 'Network' sub-tab is selected. The network configuration form includes:

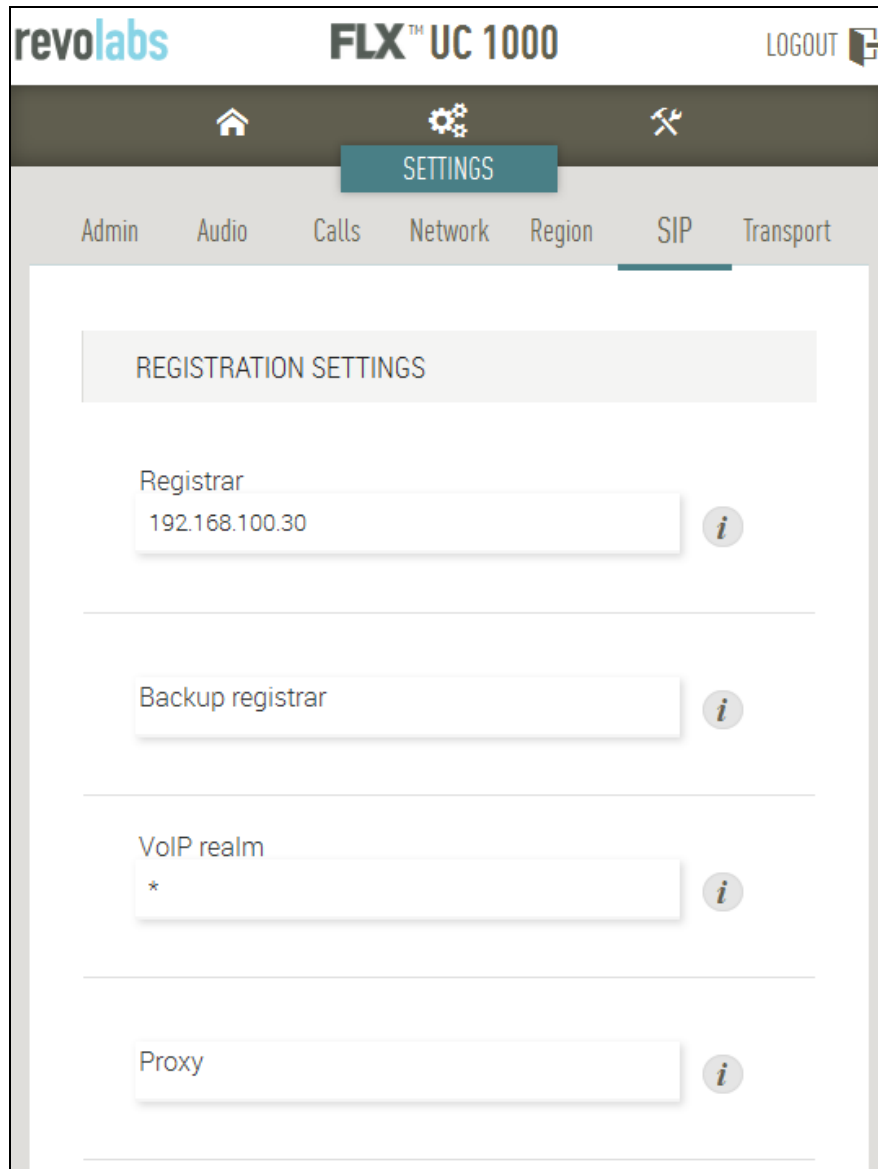
- An unchecked checkbox for 'Enable DHCP' with an information icon.
- An 'IP address' field containing '192.168.100.161' with an information icon.
- A 'Subnet mask' field containing '255.255.255.0' with an information icon.
- A 'Default gateway' field containing '192.168.100.1' with an information icon.
- A 'Primary DNS' field containing '192.168.1.1' with an information icon.
- A 'Secondary DNS' field containing '0.0.0.0' with an information icon.

### 6.3. Administer SIP Settings

To configure SIP settings, click on **Settings** → **SIP** at the top of the web page. Configure the following fields:

- **Registrar** Enter the LAN1 IP address of IP Office.
- **VoIP realm** Set to \* so that FLX UC 1000 responds to calls from all domains.

Retain the default values for the other fields.



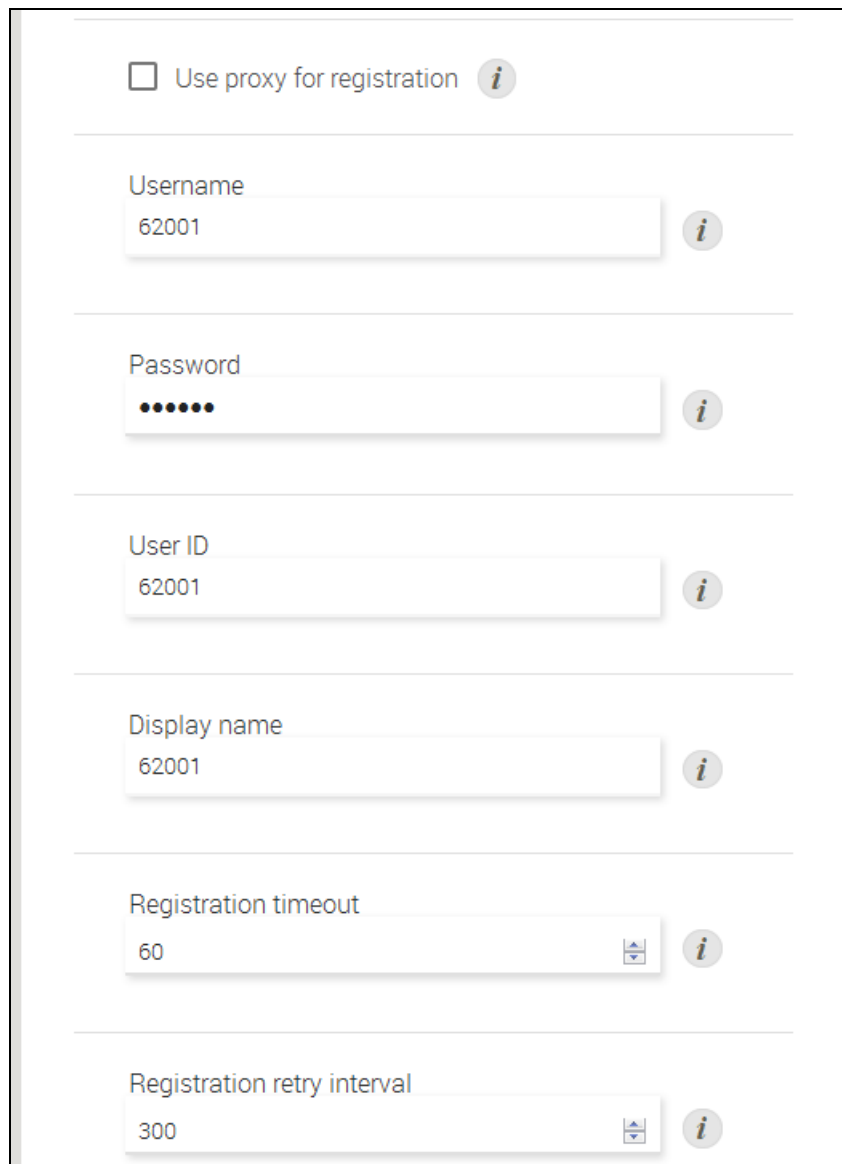
The screenshot displays the FLX UC 1000 web interface. At the top, the 'revolabs' logo is on the left, 'FLX™ UC 1000' is in the center, and a 'LOGOUT' button with a user icon is on the right. Below the header is a navigation bar with icons for Home, Settings (active), and Tools. The 'SETTINGS' tab is selected, and the 'SIP' sub-tab is active within a menu that also includes Admin, Audio, Calls, Network, Region, and Transport. The main content area is titled 'REGISTRATION SETTINGS' and contains four configuration fields, each with an information icon (i) to its right: 'Registrar' with the value '192.168.100.30', 'Backup registrar' (empty), 'VoIP realm' with the value '\*', and 'Proxy' (empty).



Scroll down and set the following fields:

- **Username** Set to the SIP extension configured in **Section 5.3**.
- **Password** Enter the password configured in the **Login Code** field in **Section 5.4**.
- **User ID** Enter the SIP extension.
- **Display name** Enter the SIP extension.

Retain the default values for the other fields.



The screenshot shows a configuration form with the following fields and values:

- ☐ Use proxy for registration *i*
- Username: 62001 *i*
- Password: [masked with dots] *i*
- User ID: 62001 *i*
- Display name: 62001 *i*
- Registration timeout: 60 *i*
- Registration retry interval: 300 *i*

Scroll down to the Configuration Settings section and configure the following fields:

- **Use SIP session timers** Set this field to **Required**.
- **Session timers expiration** Enter the desired value for the session refresh interval.

Retain the default value for the other fields.

### CONFIGURATION SETTINGS

Use SIP session timers

Required

i

Session timers expiration

1800

i

Session timers min expiration

90

i

☐ Require reliable SIP provisional response

i

☒ Enable SIP traversal behind symmetric NAT

i

☐ Suppress SIP event subscription during call transfer

i

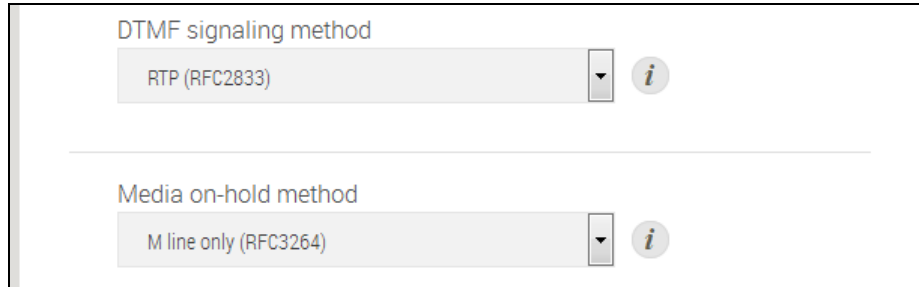
☐ Allow strict routing

i

☐ Minimize SIP message size

i

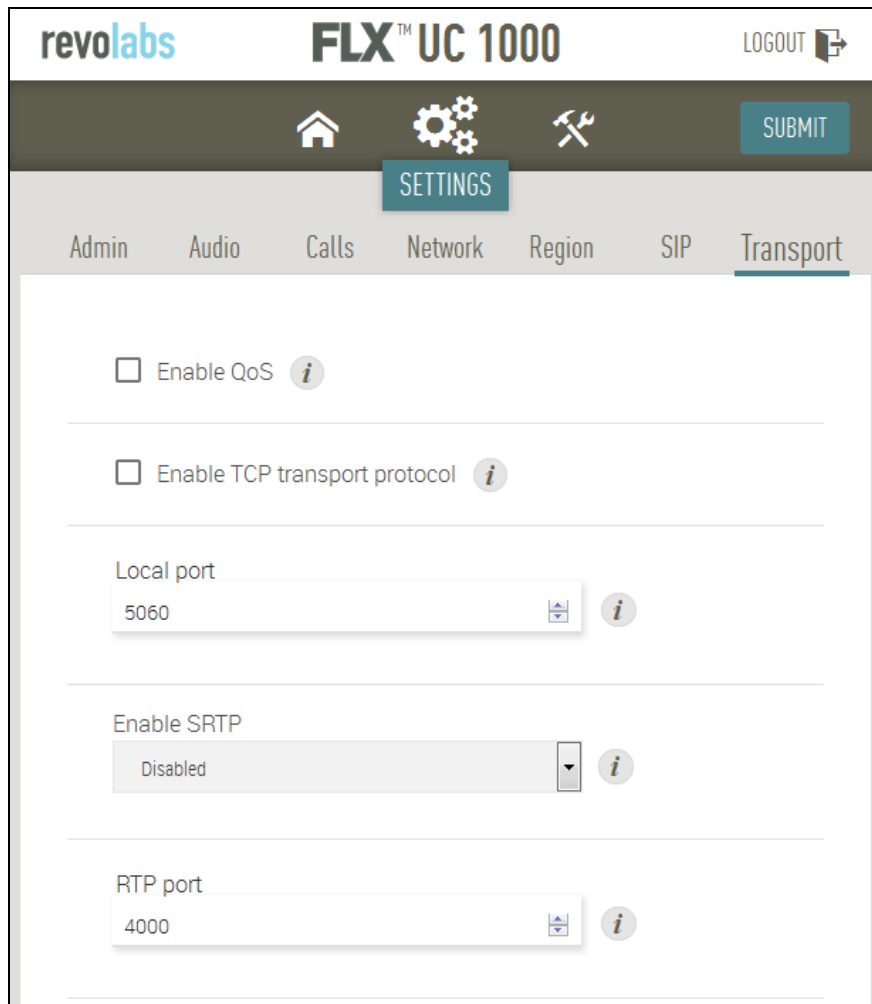
Set **DTMF signaling method** to *RTP (RFC2833)* as shown below. Click **Submit** (not shown).



The screenshot shows a configuration interface with two sections. The first section is titled "DTMF signaling method" and contains a dropdown menu with "RTP (RFC2833)" selected. To the right of the dropdown is an information icon (a lowercase 'i' in a circle). The second section is titled "Media on-hold method" and contains a dropdown menu with "M line only (RFC3264)" selected. To the right of this dropdown is also an information icon.

### 6.3.1. Configure SIP Port and Transport Protocol

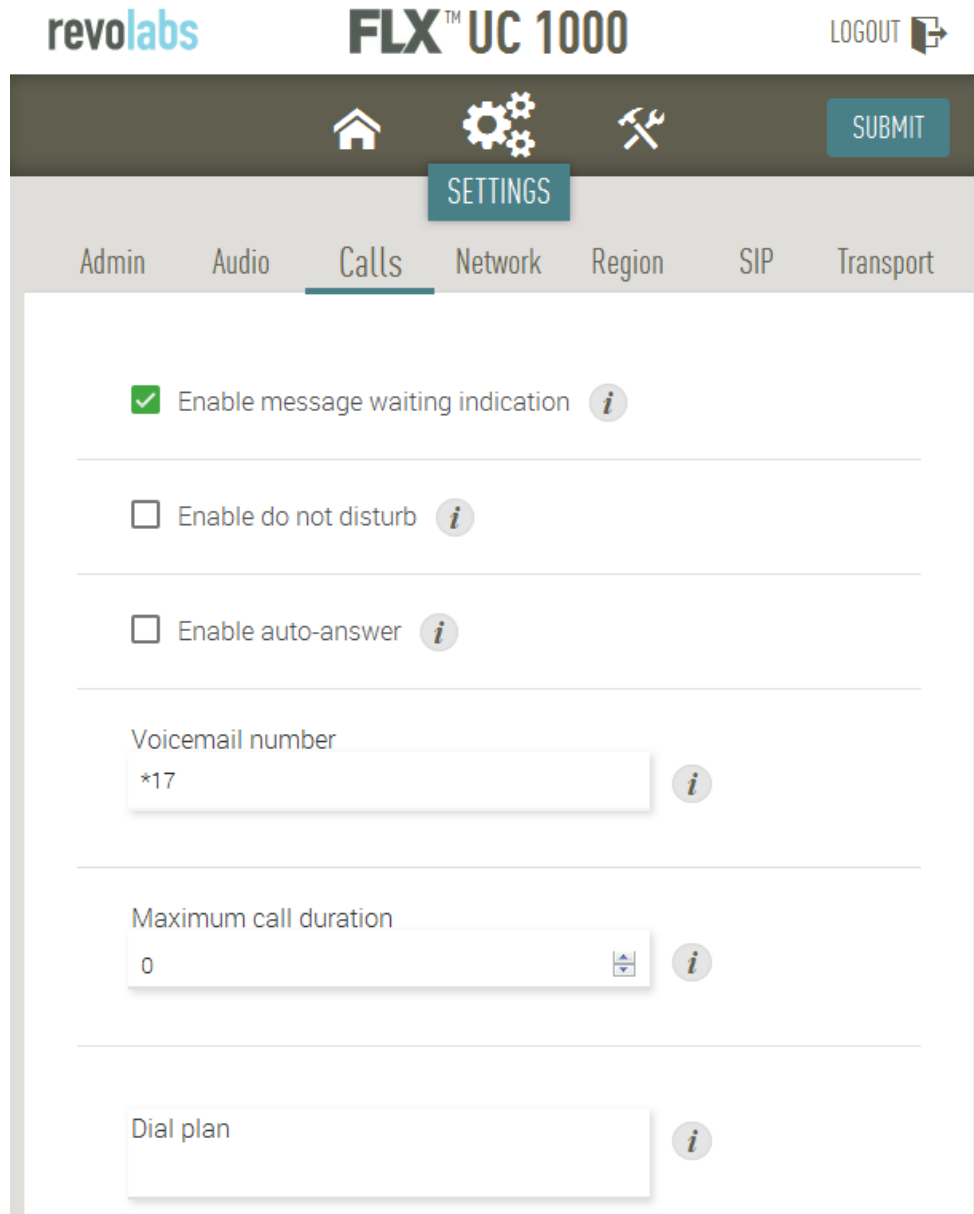
Under **Settings** → **Transport**, configure the SIP port and transport protocol. The **Local port** is set to *5060*, and by default, the transport protocol is set to UDP, unless TCP is enabled below. These are the default values.



The screenshot shows the "FLX UC 1000" settings interface. At the top, there is a header with the "revolabs" logo, the product name "FLX UC 1000", a "LOGOUT" button with an arrow icon, and a "SUBMIT" button. Below the header is a navigation bar with icons for Home, Settings (active), and Tools. The "SETTINGS" tab is selected, and the "Transport" sub-tab is active. The main content area contains several configuration options: "Enable QoS" (checkbox), "Enable TCP transport protocol" (checkbox), "Local port" (text input with "5060" and a spinner icon), "Enable SRTP" (dropdown menu with "Disabled" selected), and "RTP port" (text input with "4000" and a spinner icon). Each option has an information icon (a lowercase 'i' in a circle) to its right.

## 6.4. Enable Message Waiting Indicator (MWI)

Enable MWI under **Settings** → **Calls** and set the **Voicemail number** as shown below. The voicemail number is the Voicemail Collect shortcode.



The screenshot shows the 'revolabs' logo and 'FLX™ UC 1000' header. A 'LOGOUT' button with an arrow icon is in the top right. Below the header is a navigation bar with icons for Home, Settings (active), and Tools, and a 'SUBMIT' button. The 'SETTINGS' tab is selected, showing sub-tabs: Admin, Audio, Calls (active), Network, Region, SIP, and Transport. The 'Calls' tab contains the following settings:

- ☒ Enable message waiting indication ⓘ
- ☐ Enable do not disturb ⓘ
- ☐ Enable auto-answer ⓘ
- Voicemail number: \*17 ⓘ
- Maximum call duration: 0 ⓘ
- Dial plan ⓘ

## 6.5. Administer Media Settings

Under **Settings** → **Audio**, the supported audio codecs are displayed along with their priority order. The web page below shows the audio codecs supported by IP Office. This web page allows audio codecs to be disabled or the codec precedence to be modified.

The screenshot shows the 'revolabs' logo on the left, 'FLX™ UC 1000' in the center, and a 'LOGOUT' button with an arrow icon on the right. Below the header is a 'SUBMIT' button. The main content area is titled 'MEDIA SETTINGS'. Under this title, there is a section for 'Audio codec' with an information icon. This section is divided into two groups: 'Enabled' and 'Disabled'. The 'Enabled' group contains three items: 'G.711 μ-law (PCMU)', 'G.711 A-law (PCMA)', and 'G.729'. The 'Disabled' group contains two items: 'G.722' and 'G.726'. Below the audio codec section is a section for 'Codec ptime override (ms)' with an information icon. It features a horizontal slider with a blue dot at the left end and a numeric input field showing '20' with an up/down arrow icon.

revolabs FLX™ UC 1000 LOGOUT

SUBMIT

MEDIA SETTINGS

Audio codec *i*

**Enabled**

- G.711 μ-law (PCMU)
- G.711 A-law (PCMA)
- G.729

**Disabled**

- G.722
- G.726

Codec ptime override (ms) *i*

20

FLX UC 1000 Device Manager. © Revolabs, Inc. 2015. All rights reserved.

## 7. Verification Steps

This section provides the tests that can be performed to verify proper configuration of Avaya IP Office and Revolabs FLX UC 1000.

1. Verify that Revolabs FLX UC 1000 has successfully registered with IP Office. In **IP Office System Status**, select the extension of Revolabs FLX UC 1000 in the left pane and verify that the **Current State** is *Idle* as shown below.

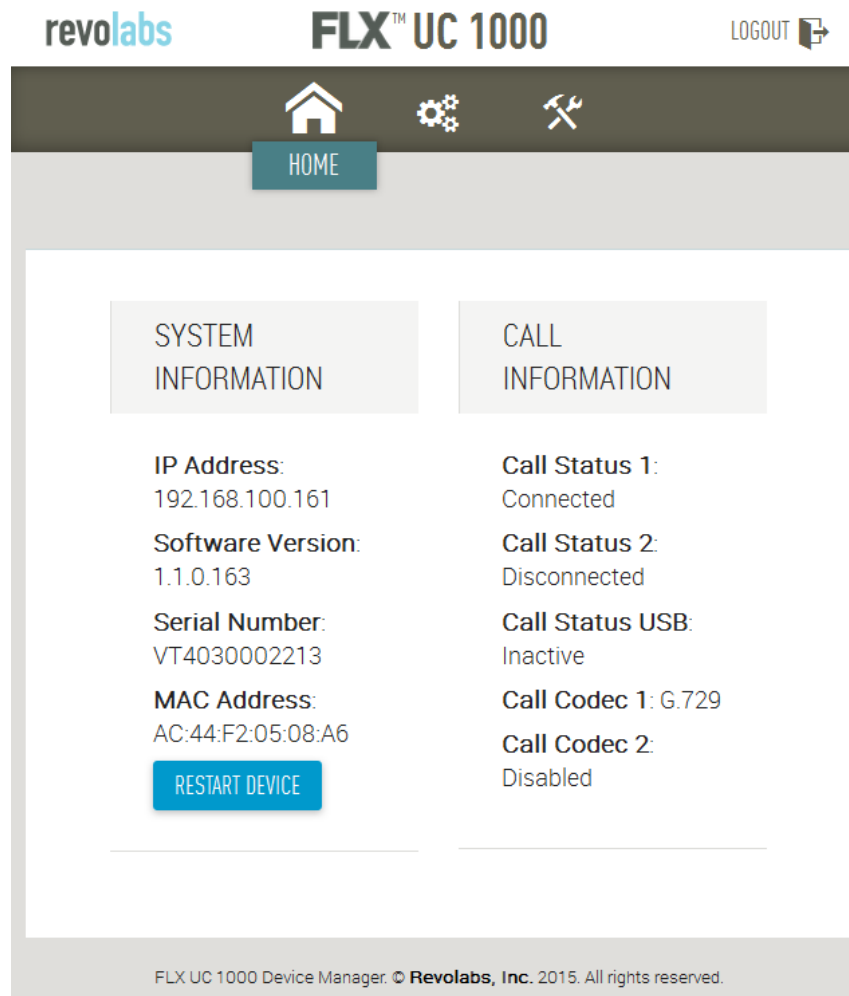
The screenshot shows the 'Avaya IP Office System Status' window. The title bar indicates the connection to 'devcon-ipo (192.168.100.30) - IP500 V2 9.1.1.0 build 10'. The window has a menu bar with 'Help', 'Snapshot', 'LogOff', 'Exit', and 'About'. On the left is a tree view with categories: System, Alarms (9), Extensions (15), Trunks (3), Active Calls, Resources, Voicemail, IP Networking, and Locations. Under 'Extensions (15)', extension 62001 is selected. The main area displays the 'Extension Status' for 62001, including fields for Extension Number, IP address, Active Location, Telephone Type, User Agent, Media Stream, Layer 4 Protocol, Current User Extension Number, Current User Name, Forwarding, Twinning, Do Not Disturb, Message Waiting, Number of New Messages, Phone Manager Type, SIP Device Features, License Reserved, Last Date and Time License Allocated, Packet Loss Fraction, Jitter, Round Trip Delay, Connection Type, Codec, and Remote Media Address. At the bottom, a table shows the current state of the extension.

Call Ref	Current State	Time in State	Calling Number or Called Number	Direction	Other Party on Call
	Idle	00:20:55			

At the bottom of the window, there are buttons for 'Trace', 'Trace All', 'Pause', 'Ping', 'Call Details', 'Print...', and 'Save As...'. The status bar at the bottom right shows the time '12:45:32 PM' and the status 'Online'.

2. Verify basic telephony features by establishing calls between Revolabs FLX UC 1000 and another phone.

3. In the **Home** webpage of Revolabs FLX UC 1000, the **Call Status** will be set to *Connected* when it is active on a call and the **Call Codec** used for the call will also be displayed as shown below.



## 8. Conclusion

These Application Notes describe the configuration steps required to integrate Revolabs FLX UC 1000 with Avaya IP Office. Revolabs FLX UC 1000 was able to register with Avaya IP Office successfully establish calls to H.323 and SIP stations and the PSTN, and exercise telephony features. All feature and serviceability test cases were completed successfully with observations noted in **Section 2.2**.

## 9. References

This section references the Avaya documentation relevant to these Application Notes. The Avaya product documentation is available at <http://support.avaya.com>.

- [1] *Avaya IP Office Manager*, Release 9.0, Issue 9.01, September 2013, Document Number 15-601011.
- [2] *Revolabs FLX UC 1000 IP & USB Conference Phone Installation and Operation Guide*, March 2015 (Rev 2.1.0).



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