



Avaya Solution & Interoperability Test Lab

Application Notes for Configuring 2N Telekomunikace Helios IP to interoperate with Avaya IP Office 7.0 - Issue 1.0

Abstract

These Application Notes describe the configuration steps required for 2N Telekomunikace Helios IP to interoperate with Avaya IP Office 7.0. The 2N Helios IP is a door communicator that supports both voice and video transmission using the Session Initiation Protocol (SIP).

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 2N Telekomunikace Helios IP to interoperate with Avaya IP Office. The 2N Helios IP is a door communicator that supports both voice and video transmission using the Session Initiation Protocol (SIP), in addition to being a door entry device with its keyboard or card reader. In the compliance testing, the 2N Helios IP was set up as a SIP extension on Avaya IP Office and underwent testing of various call scenarios with other Avaya telephones.

2. General Test Approach and Test Results

The general test approach was to place calls to and from 2N Helios IP and exercise basic telephone operations. For serviceability testing, failures such as cable pulls and hardware resets were performed.

2.1. Interoperability Compliance Testing

The interoperability compliance test included feature and serviceability testing.

The feature testing was to verify that:

- 2N Helios IP successfully registers with Avaya IP Office.
- 2N Helios IP successfully establishes audio calls with Avaya H.323 and digital telephones registered to Avaya IP Office.
- 2N Helios IP successfully establishes audio calls with PSTN.
- 2N Helios IP successfully establishes video calls with Avaya IP Office Video Softphone registered to Avaya IP Office.
- 2N Helios IP successfully negotiates the appropriate audio codec (G.711MU or G.729A).
- 2N Helios IP successfully negotiates the appropriate video codec (H.263+ or H.264).
- DTMF tones could be passed successfully to IP Office Voicemail Pro.
- DTMF tones could be passed successfully to 2N Helios IP as door un-lock codes.
- 2N Helios IP successfully calls multiple destinations using a Sequential Hunt Group.
- 2N Helios IP successfully streams video to a PC running 2N Helios IP Eye when calling phones without video capabilities.

The serviceability testing focused on verifying the ability of 2N Helios IP to recover from adverse conditions, such as disconnecting/reconnecting the Ethernet cable to the devices and rebooting Avaya IP Office.

2.2. Test Results

All test cases passed. As 2N Helios IP was not designed to be a desk phone, the following features were not supported:

- Handling multiple calls.
- Call hold and un-hold.
- Call park and un-park.
- Call transfer and conference.
- Message Waiting Indicator (MWI) activation and deactivation.
- Activating of features using Short Codes (the * and # buttons are used for answer and hang up respectively).

2.3. Support

Technical support on 2N Telekomunikace Helios IP can be obtained through the following:

- **Phone:** +420 261 301 111
- **Web:** <http://www.2n.cz/en/support/>

3. Reference Configuration

Figure 1 illustrates a test configuration that was used to compliance test the interoperability of 2N Helios IP and Avaya IP Office. The configuration consists of an Avaya IP Office 500 and a server running Avaya IP Office Manager and Voicemail Pro connected to the Avaya 4548GT-PWR Ethernet Routing Switch with Layer 3 routing function. The IP Office has connections to the following: Avaya 9640 IP Telephone, Avaya 1416 Digital Telephone, Avaya IP Office Video Softphone, 2N Helios IP and an ISDN-PRI trunk to the PSTN. The 2N Helios IP Eye application is also installed on a PC to receive the video streaming from 2N Helios IP.

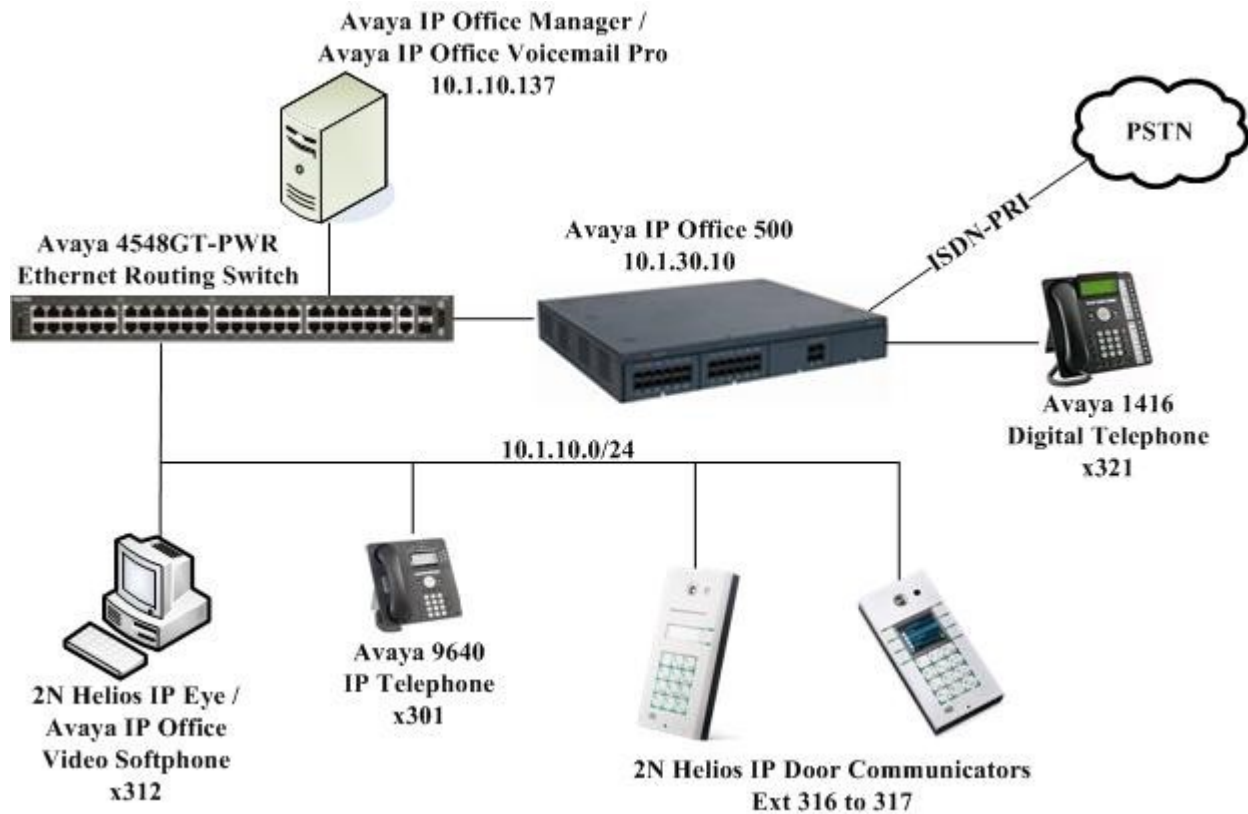


Figure 1: Test Configuration

4. Equipment and Software Validated

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

Equipment	Software
Avaya IP Office 500	7.0 (12)
Avaya IP Office Manager	9.0 (5)
Avaya IP Office Voicemail Pro	7.0 (19)
Avaya 9640 IP Telephone	3.1 SP2 (H.323)
Avaya 1416 Digital Telephone	N.A.
Avaya 4548GT-PWR Ethernet Routing Switch	V5.4.0.008
2N Telekomunikace Helios IP Tested models: 9137111CKU (1 button + camera + keypad) 9137160CKDU (3x2 buttons + camera + keypad + display)	Software version: 1.13.0.288.0 Bootloader version: 1.4.0.6.0 Hardware version: 535v5

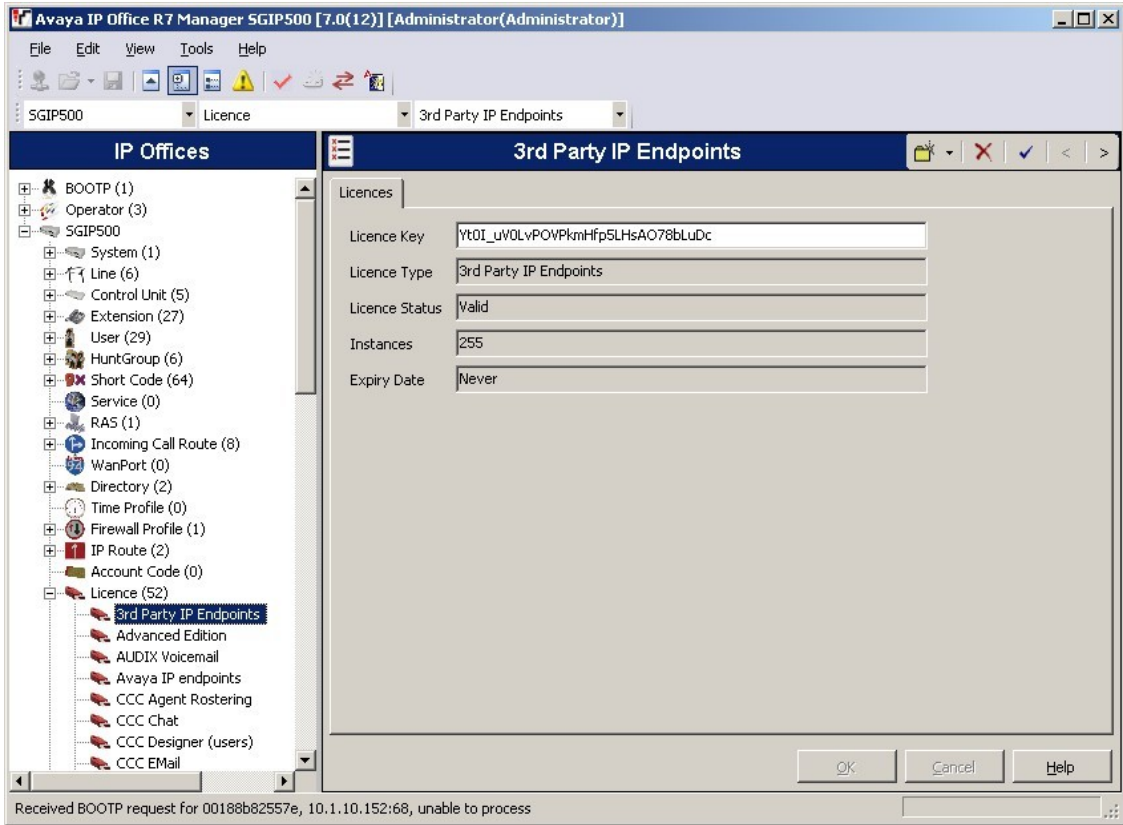
5. Configure Avaya IP Office

The configuration changes in this section for IP Office are performed through the IP Office Manager. Except where stated, the parameters in all steps are the default settings and are supplied for reference. For all other provisioning information such as provisioning of the trunks, call coverage, extensions, and voicemail, please refer to the Avaya IP Office product documentation in **Section 9**.

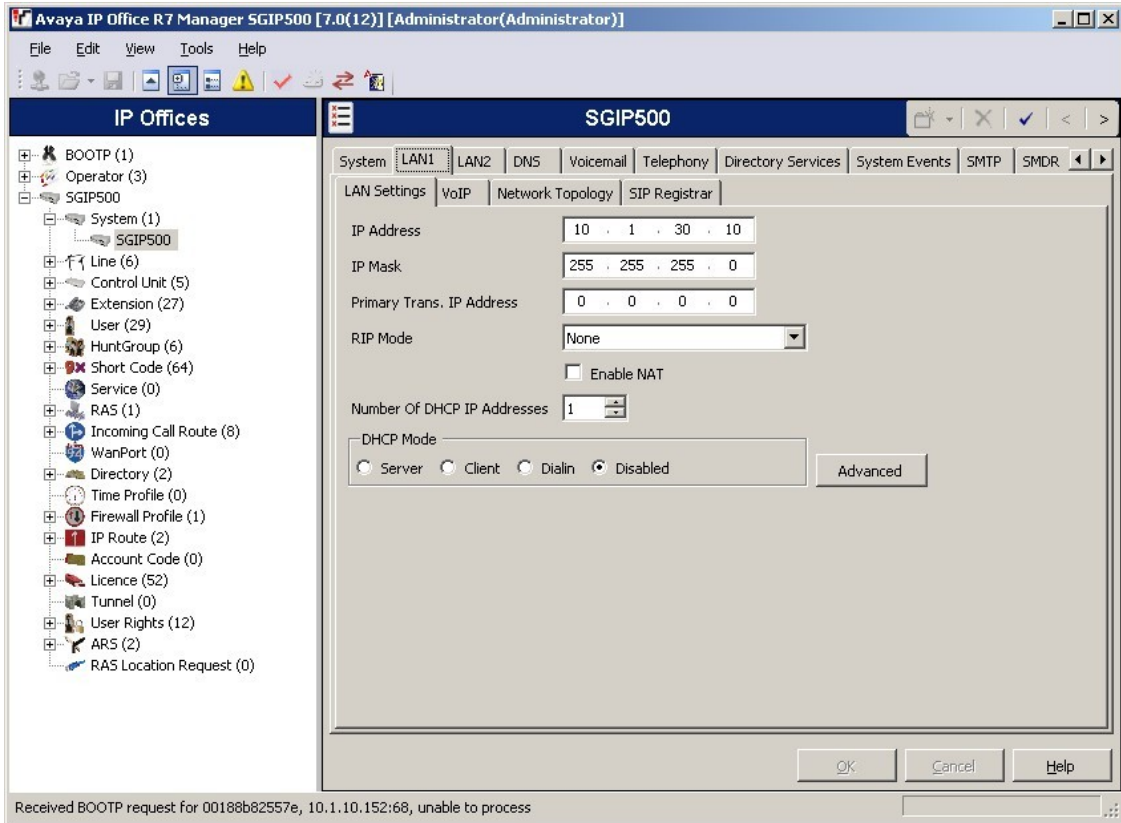
The procedures fall into the following areas:

- Verify Avaya IP Office Licensing
- Setting LAN Parameters
- Administer SIP Registrar
- Add SIP Extensions
- Add Users
- Configure Sequential Hunt Group
- Save Configuration

5.1. Verify Avaya IP Office Licensing

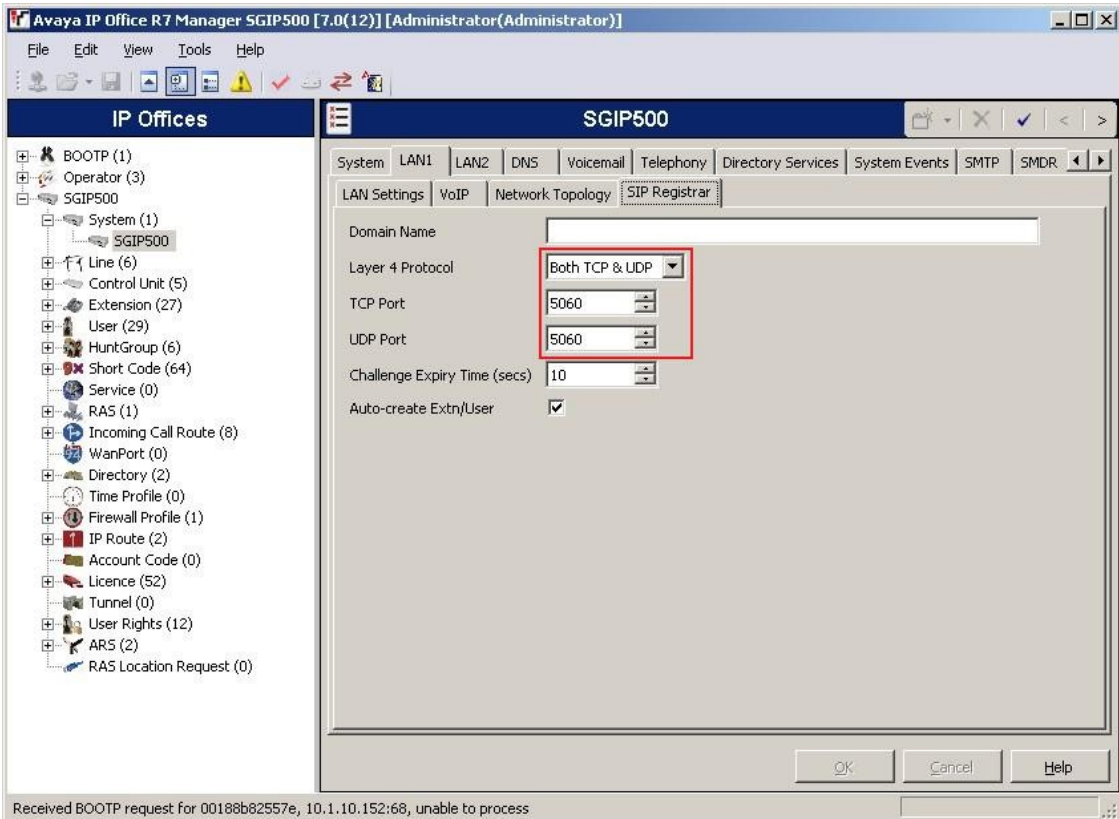
Step	Description
1.	Log into the Avaya IP Office Manager PC and select Start > All Programs > IP Office > Manager to launch the Avaya IP Office Manager application. Select File > Open Configuration to search for IP Offices in the network. Select the appropriate Avaya IP Office and click OK (not shown). Log into the Avaya IP Office Manager application using the appropriate credentials.
2.	<p>The main IP Office Manager window appears. From the configuration tree in the left pane, select License > 3rd Party IP Endpoints to display the 3rd Party IP Endpoints screen in the right pane. Verify that the License Status is Valid and the value for Instances is sufficient for the number of SIP endpoints to be deployed.</p> 

5.2. Setting LAN Parameters

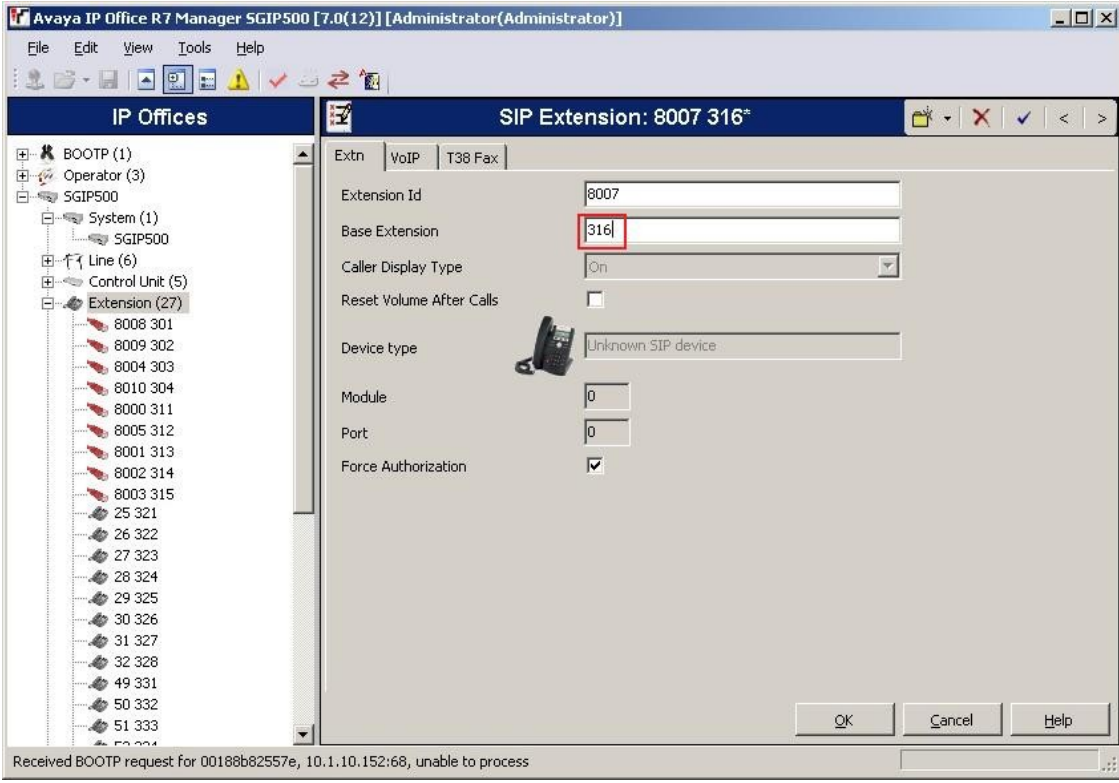
Step	Description
1.	<p>From the configuration tree in the left pane, select System. Access the tab LAN1 > LAN Settings to display the LAN Settings screen in the right pane.</p> <ul style="list-style-type: none"> Set the IP Address, which will be the address of the IP Office. Set the IP Mask based on the network setup. Set the DHCP Mode based on the network requirement. In this case, the Disabled option is chosen since DHCP was not used. Other fields can be left blank or at the default settings. 

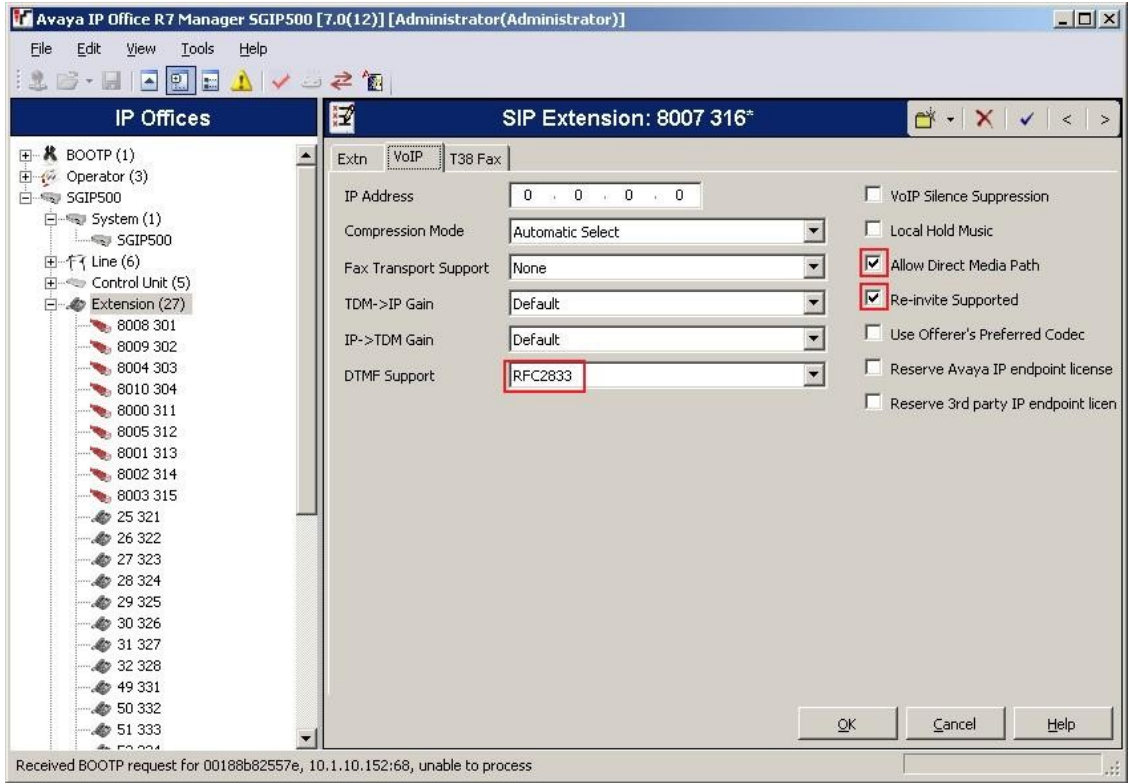
5.3. Administer SIP Registrar

Step	Description
1.	<p>Select SIP Registrar sub-tab in the right pane and enter the following values:</p> <ul style="list-style-type: none">• Domain Name: Enter a valid Domain Name. In this case, it was left blank as registration is done using the IP address of the LAN1 interface.• Layer 4 Protocol: Select Both TCP & UDP.• TCP Port: Set to 5060 (default).• UDP Port: Set to 5060 (default).

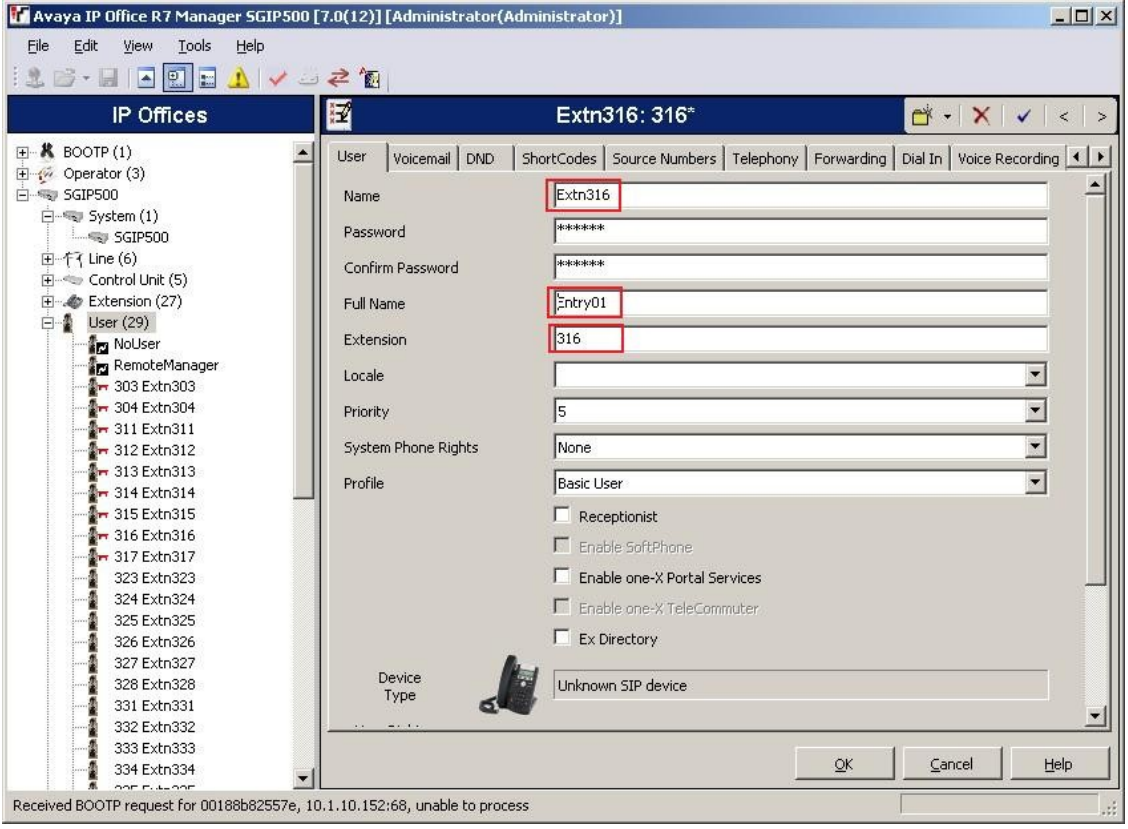


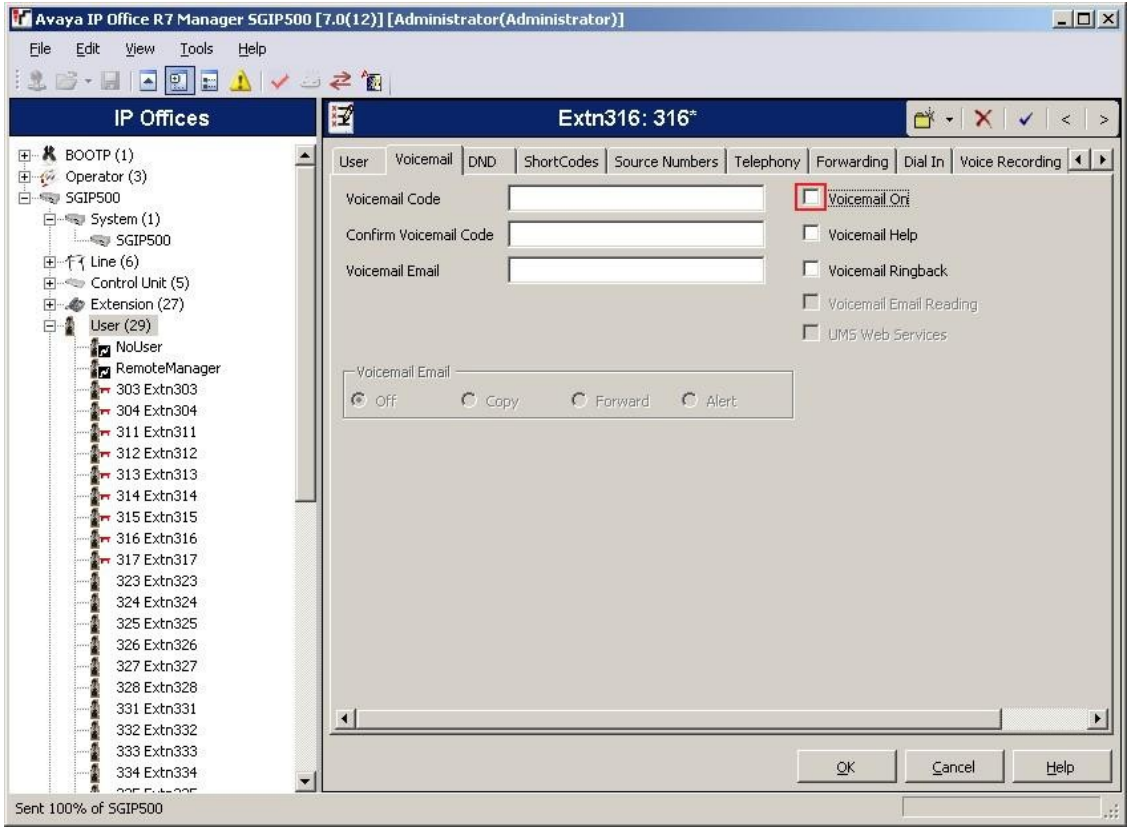
5.4. Add SIP Extensions

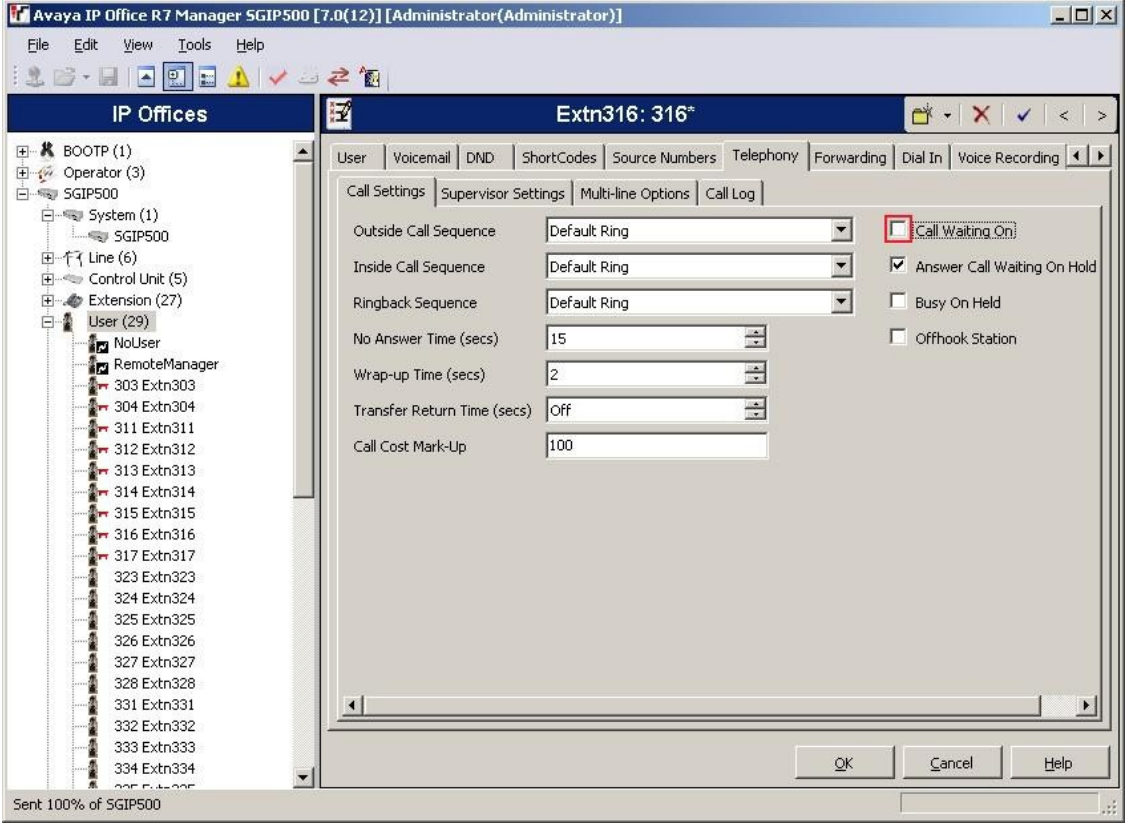
Step	Description
1.	<p>Add a SIP Extension by selecting Extension from the left pane. Right-click and select New > SIP Extension (not shown). In the Extn tab, set the Base Extension to an unused extension, in this case, 316.</p>  <p>Received BOOTP request for 00188b82557e, 10.1.10.152:68, unable to process</p>

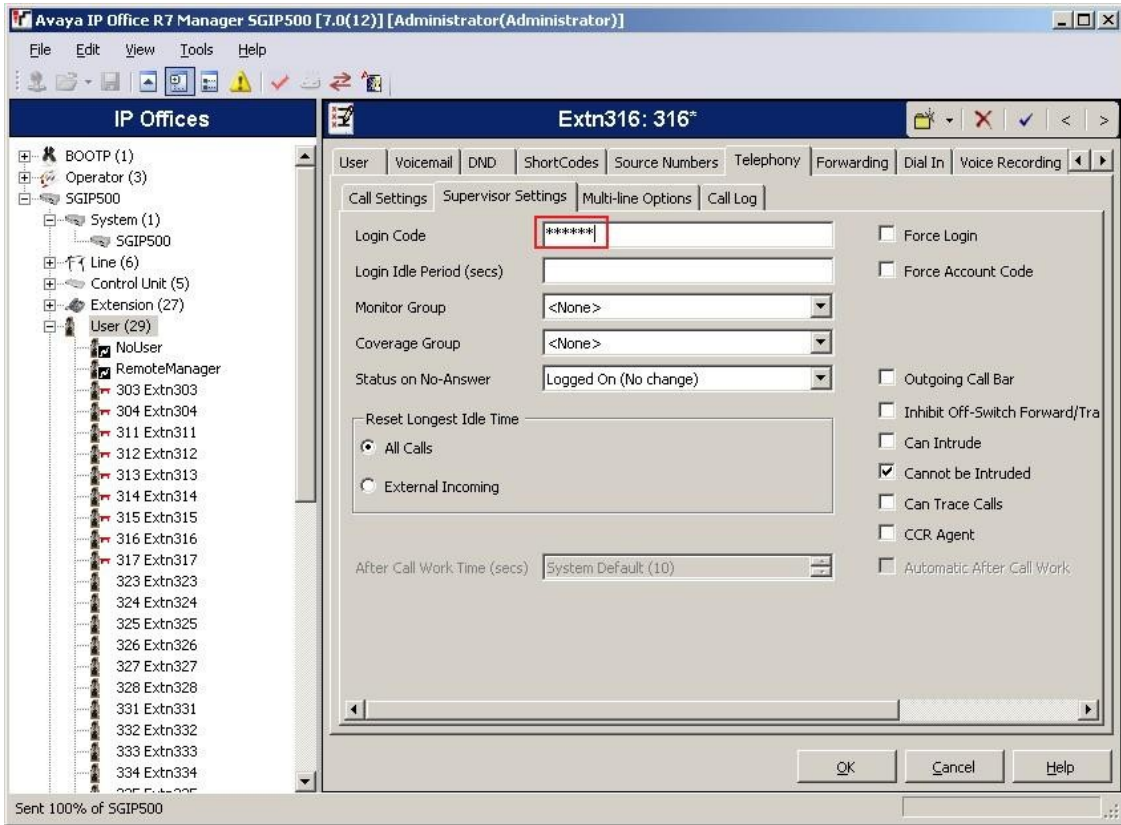
Step	Description
2.	<p>Select the VoIP tab. Verify that Allow Direct Media Path and Re-invite Supported are checked. Select RFC2833 for DTMF Support.</p> 
3.	<p>Repeat Steps 1 and 2 to create more SIP extensions. In this testing, extensions 316 to 317 are created.</p>

5.5. Add Users

Step	Description
1.	<p>Add a User by right-clicking User from the left pane and select New (not shown). For the Name field, enter the extension that was created in Section 5.4 and precede it with Extn, for example, Extn316. For the Full Name field, enter a descriptive name for the user, for example, Entry01. Enter the extension created in Section 5.4 for Extension.</p> 

Step	Description
2.	<p>Select the Voicemail tab and un-check the Voicemail On field.</p>  <p>The screenshot shows the Avaya IP Office R7 Manager SGIP500 [7.0(12)] [Administrator/Administrator] window. The 'Voicemail' tab is selected for extension 316. The 'Voicemail On' checkbox is un-checked. Other options like 'Voicemail Help', 'Voicemail Ringback', 'Voicemail Email Reading', and 'UMS Web Services' are also un-checked. The left sidebar shows a tree view of the system hierarchy including IP Offices, System, Line, Control Unit, Extension, and User.</p>

Step	Description
3.	<p>Select the Telephony > Call Settings tab and un-check the Call Waiting On field.</p> 

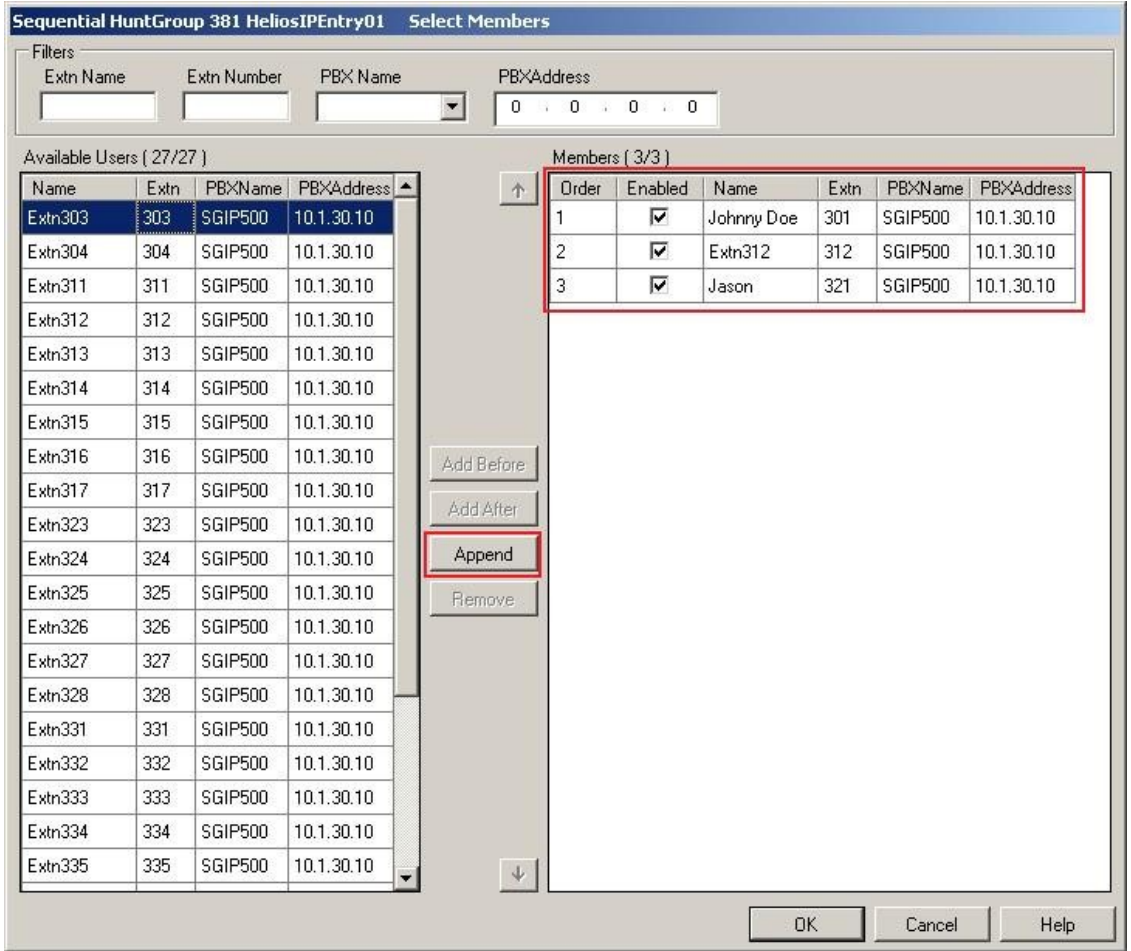
Step	Description
4.	<p>Select the Telephony > Supervisor Settings tab. Enter a Login Code, e.g. 111222 was used for compliance testing. The Login Code is used to configure 2N Helios IP in Section 6.2 Step 1 to log into the IP Office.</p> 
5.	<p>Repeat Steps 1 and 3 to create more users. In this testing, Extn316 to Extn317 are created.</p>

5.6. Configure Sequential Hunt Group

Step	Description
6.	<p>Add a Sequential Hunt Group by right-click HuntGroup from the left pane and select New (not shown). For the Name field, enter a descriptive name for the hunt group. Set the Extension field to an unused extension, in this case, 381, and set Ring Mode to Sequential. For the No Answer Time (secs) field, set the number of seconds an extension rings before the call is passed to the next extension in the list, in this case, 10. Click Edit to configure the list of extensions.</p>

The screenshot shows the Avaya IP Office R7 Manager SGIP500 [7.0(12)] [Administrator/Administrator] window. The 'Sequential Group HeliosIPEntry01: 381' configuration window is open. The 'Name' field is 'HeliosIPEntry01', 'Extension' is '381', 'Ring Mode' is 'Sequential', and 'No Answer Time (secs)' is '10'. The 'User List' table shows three entries: 301 Johnny Doe SGIP500, 312 Extn312 SGIP500, and 321 Jason SGIP500. The 'Edit...' button is highlighted.

Extension	Name	System
301	Johnny Doe	SGIP500
312	Extn312	SGIP500
321	Jason	SGIP500

Step	Description
7.	<p>In the new dialog window, select from the Available Users on the left pane, and click Append to add the user to the list. Click OK to return to the previous window.</p> 

5.7. Save Configuration

Select **File > Save Configuration** to save and send the configuration to the IP Office server.


6. Configure 2N Helios IP

The following steps detail the configuration for the 2N Helios IP using the Web Interface. The steps include the following areas:


- Launch Web Interface
- Administer SIP Settings
- Administer Codecs
- Configure Quick Dialling Buttons
- Configure Miscellaneous Settings

The factory default setting for DHCP is on. Prior to configuration, follow the procedures in **Reference [2]** to obtain the IP address of 2N Helios IP.

6.1. Launch Web Interface

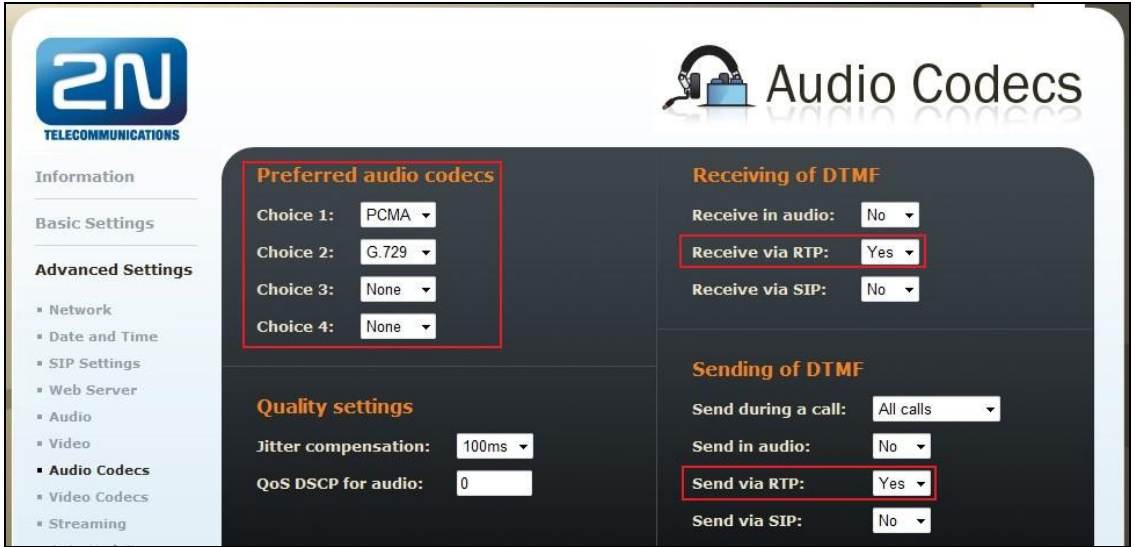
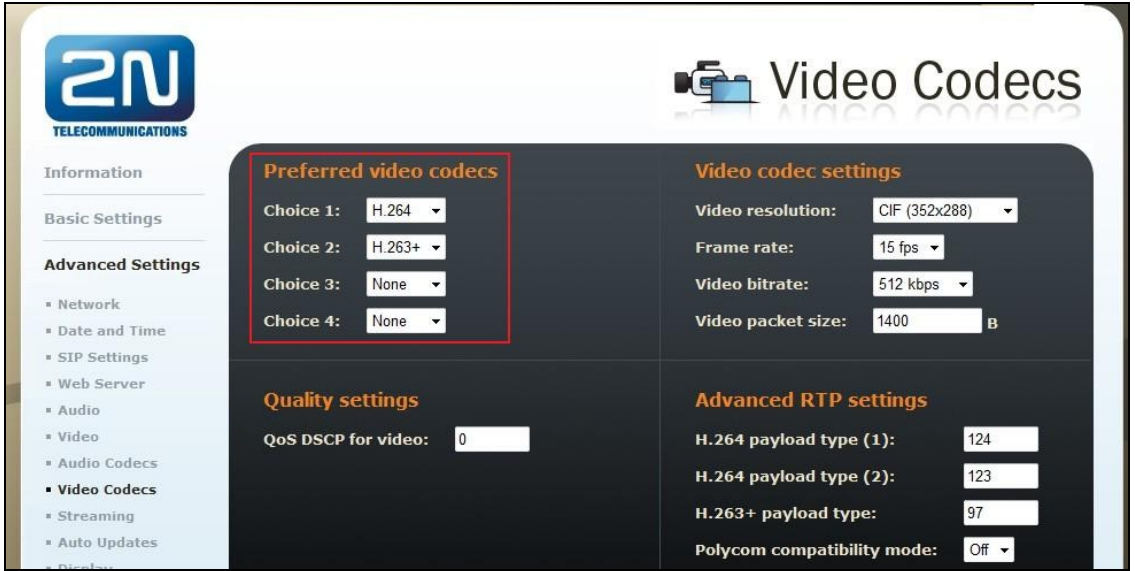
Step	Description
1.	<p>Access the 2N Helios IP web interface, enter http://<ipaddress> in an Internet browser window, where <ipaddress> is the IP address of 2N Helios IP. Log in with the appropriate credentials. The Helios IP Information screen is shown.</p>  <p>The screenshot displays the HeliosSIP web interface. At the top, there's a header with 'Entry01' and language buttons 'CZ' and 'EN'. The main content area is divided into several sections. On the left, a sidebar contains a '2N TELECOMMUNICATIONS' logo and a menu with 'Information', 'Basic Settings', 'Advanced Settings', 'Card reader', and 'Tools'. The 'Information' section is active, showing a list of system details: Product name (2N Helios IP), Software version (1.13.0.288.0), Bootloader version (1.4.0.6.0), Hardware version (535v5), Number of buttons (1), Serial number (54-0344-0322), MAC address (7C-1E-B3-00-4B-26), and Up time (7d 23h 28m). To the right of this, there's a section for DHCP status (On) and IP address (10.1.10.162), along with Net mask (255.255.255.0), Default gateway (10.1.10.1), Primary DNS (10.1.10.101), and Secondary DNS. Below these, network statistics are listed: Ethernet frames transmitted (40669), Ethernet frames received (43711), Ethernet frames dropped (0), UDP packets transmitted (55260), UDP packets received (47662), UDP packets dropped (3), TCP packets transmitted (26555), TCP packets received (40644), and TCP packets dropped (0). At the bottom left, there's a 'Logout' button with an information icon. At the bottom right, there's a refresh icon.</p>

6.2. Administer SIP Settings

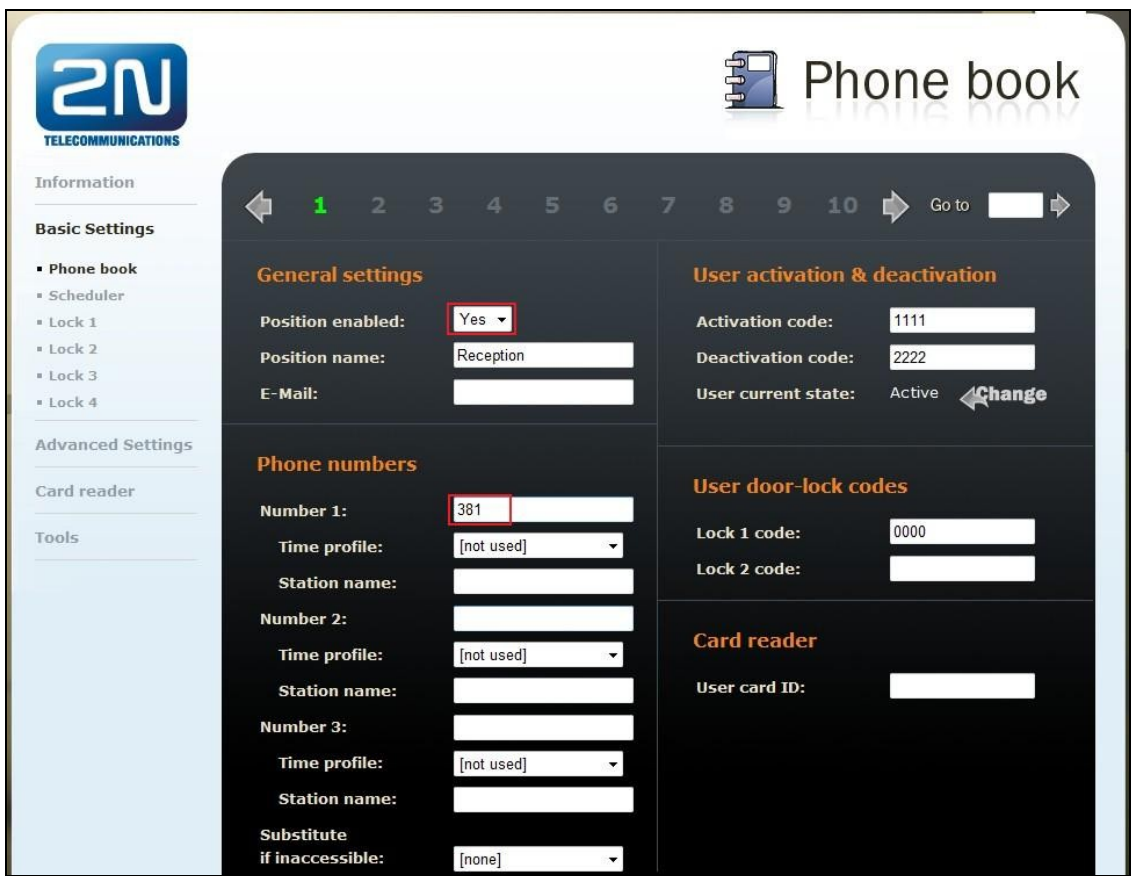
Step	Description
1.	<p>Select Advanced Settings > SIP Settings from the left menu. In the User settings section, configure the following:</p> <ul style="list-style-type: none">• Display name: Enter the desired name.• User ID: Enter the user extension from Section 5.5 Step 1.• Domain: Enter the IP address of Avaya IP Office from Section 5.2 Step 1.• User auth ID: Select No.• Password: Enter the Login Code from Section 5.5 Step 4.
	

Step	Description
	<p>In the SIP proxy settings section, configure the following:</p> <ul style="list-style-type: none"> • Proxy address: Enter the IP address of Avaya IP Office from Section 5.2 Step 1. • Proxy port: Enter 5060 (default). <p>In the SIP registration section, configure the following:</p> <ul style="list-style-type: none"> • Register Helios IP: Select Yes. • Registration expires: Enter the number of seconds for 2N Helios IP to re-register, e.g. 300 secs was used. • Registrar address: Enter the IP address of Avaya IP Office from Section 5.2 Step 1. • Registrar port: Enter 5060 (default). <p>Retain the default values for the remaining fields.</p>

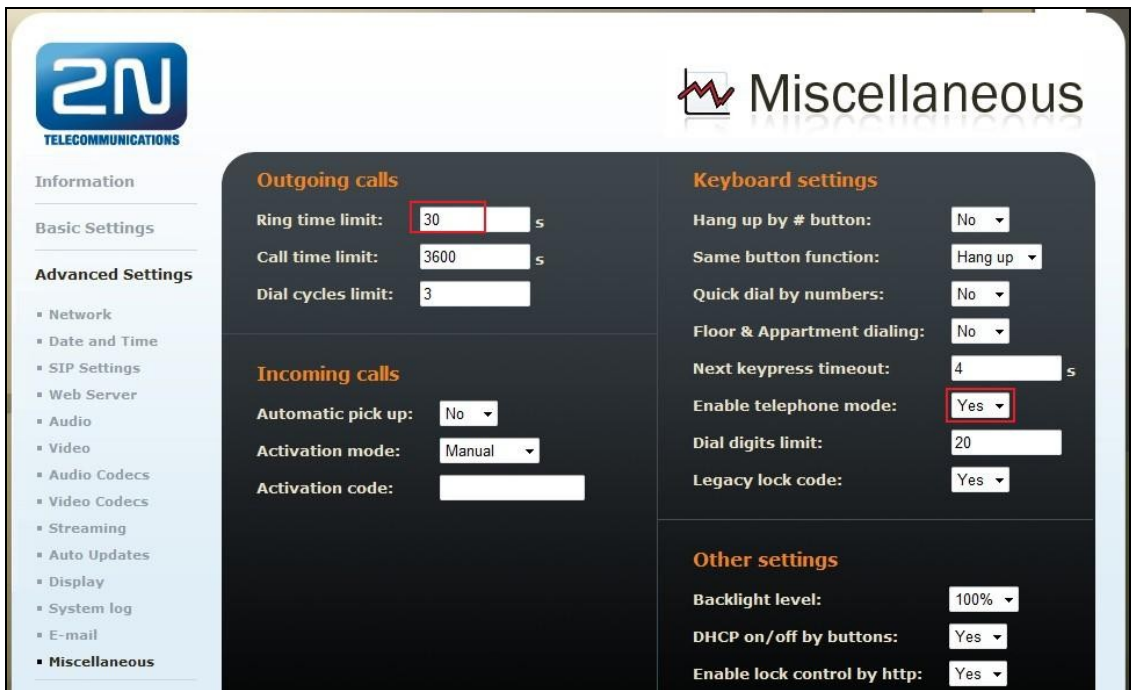
6.3. Administer Codecs

Step	Description
1.	<p>Select Advanced Settings > Audio Codecs from the left menu to configure the audio codecs. In the Preferred audio codecs section, enable and prioritize the codecs as per requirement. To enable DTMF using RFC2833, set Receive via RTP and Send via RTP to Yes.</p> 
2.	<p>Select Advanced Settings > Video Codecs from the left menu to configure the video codecs. In the Preferred video codecs section, enable and prioritize the codecs as per requirement. The default values were used for the remaining fields.</p> 

6.4. Configure Quick Dialling Buttons

Step	Description
1.	<p>Select Basic Settings > Phone book from the left menu and select one of the positions (e.g. 1 to 10 as shown below) to configure it. The position number corresponds to the Quick Dialling Button on the 2N Helios IP. For example, the following shows the configuration for Position 1.</p> <ul style="list-style-type: none"> • Position enabled: Select Yes. • Position name: Enter a descriptive name. • Number 1: Enter the number to call when the button is pressed, for example, calling the Sequential Hunt Group created in Section 5.6. • Station name: Optionally, enter the IP address of a PC to receive video streaming from the 2N Helios IP camera using the 2N Helios IP Eye application when the call is made. This is useful when the receiving phones do not support video.
	 <p>For the description and usage of all other fields on the page, e.g. door-lock codes, activation codes, refer to Reference [2].</p>

6.5. Configure Miscellaneous Settings

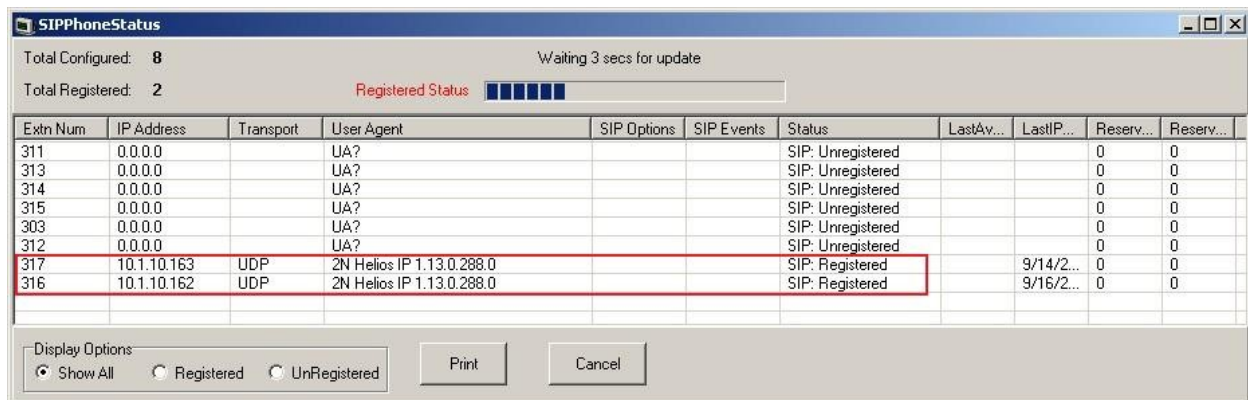
Step	Description
2.	<p>Select Advanced Settings > Miscellaneous from the left menu. To allow 2N Helios IP to ring all the users in the Sequential Hunt Group, configure the Ring time limit with a value that is equal to or greater than the No Answer Time (secs) value multiplied by the number of users in the list created in Section 5.6. Optionally, set Enable telephone mode to Yes to allow 2N Helios IP to call any number using the keypad.</p>  <p>The screenshot displays the 'Miscellaneous' settings page for 2N Helios IP. The left sidebar contains a menu with categories: Information, Basic Settings, and Advanced Settings. Under Advanced Settings, the following options are listed: Network, Date and Time, SIP Settings, Web Server, Audio, Video, Audio Codecs, Video Codecs, Streaming, Auto Updates, Display, System log, E-mail, and Miscellaneous (which is currently selected). The main content area is divided into four sections: Outgoing calls, Incoming calls, Keyboard settings, and Other settings. In the Outgoing calls section, the Ring time limit is set to 30 seconds, Call time limit is 3600 seconds, and Dial cycles limit is 3. In the Incoming calls section, Automatic pick up is set to No, Activation mode is Manual, and the Activation code field is empty. In the Keyboard settings section, Hang up by # button is set to No, Same button function is set to Hang up, Quick dial by numbers is set to No, Floor & Appartment dialing is set to No, Next keypress timeout is 4 seconds, Enable telephone mode is set to Yes (highlighted with a red box), Dial digits limit is 20, and Legacy lock code is set to Yes. In the Other settings section, Backlight level is 100%, DHCP on/off by buttons is Yes, and Enable lock control by http is Yes.</p>

7. Verification Steps

This section provides the tests that can be performed to verify correct configuration of Avaya IP Office and 2N Helios IP.

7.1. Verify Avaya IP Office

From a PC running the Avaya IP Office Manager, select **Start > Programs > IP Office > Monitor** to launch the Monitor application. Choose the **Status** menu and select **SIP Phone Status** (not shown). This will display a table of the SIP phones and indicate those registered. Verify that 2N Helios IP endpoints are successfully registered as shown below.



The screenshot shows the SIPPhoneStatus application window. At the top, it indicates 'Total Configured: 8' and 'Total Registered: 2'. A progress bar shows the 'Registered Status' with 2 bars filled. Below this is a table with columns: Extn Num, IP Address, Transport, User Agent, SIP Options, SIP Events, Status, LastAv..., LastIP..., Reserv..., and Reserv... The table lists several SIP phones. The last two rows are highlighted with a red border, showing 'SIP: Registered' status.

Extn Num	IP Address	Transport	User Agent	SIP Options	SIP Events	Status	LastAv...	LastIP...	Reserv...	Reserv...
311	0.0.0.0		UA?			SIP: Unregistered			0	0
313	0.0.0.0		UA?			SIP: Unregistered			0	0
314	0.0.0.0		UA?			SIP: Unregistered			0	0
315	0.0.0.0		UA?			SIP: Unregistered			0	0
303	0.0.0.0		UA?			SIP: Unregistered			0	0
312	0.0.0.0		UA?			SIP: Unregistered			0	0
317	10.1.10.163	UDP	2N Helios IP 1.13.0.288.0			SIP: Registered		9/14/2...	0	0
316	10.1.10.162	UDP	2N Helios IP 1.13.0.288.0			SIP: Registered		9/16/2...	0	0

At the bottom, there are 'Display Options' with radio buttons for 'Show All' (selected), 'Registered', and 'UnRegistered'. There are also 'Print' and 'Cancel' buttons.

7.2. Verify 2N Helios IP

From the 2N Helios IP web interface, select **Information** from the left menu. Verify that the **Registration state** shows **Registered**. Place a call to another phone on the Avaya IP Office to verify basic call operation.



The screenshot shows the 2N Helios IP web interface. On the left is a navigation menu with 'Information' selected. The main area displays system information in two columns. The 'Registration state' is highlighted with a red box and shows 'Registered'.

System Information		Network Settings	
Product name:	2N Helios IP	DHCP status:	On
Software version:	1.13.0.288.0	IP address:	10.1.10.162
Bootloader version:	1.4.0.6.0	Net mask:	255.255.255.0
Hardware version:	535v5	Default gateway:	10.1.10.1
Number of buttons:	1	Primary DNS:	10.1.10.101
Serial number:	54-0344-0322	Secondary DNS:	
MAC address:	7C-1E-B3-00-4B-26		
Up time:	0d 0h 49m		
Registration state:	Registered	Ethernet frames transmitted:	2519
Registration at:	10.1.30.10	Ethernet frames received:	6434
Registration time:	2011-09-16 16:15:08	Ethernet frames dropped:	0
Call state:	Inactive	UDP packets transmitted:	1695
Opponent:	N/A	UDP packets received:	1952
		UDP packets dropped:	0
		TCP packets transmitted:	591
		TCP packets received:	719
		TCP packets dropped:	0

8. Conclusion

These Application Notes describe the configuration steps required for configuring 2N Telekomunikace Helios IP to interoperate with Avaya IP Office 7.0. All feature and serviceability tests were completed successfully.

9. Additional References

This section references the Avaya and 2N product documentation that are relevant to these Application Notes.

The following Avaya product documentation can be found at <http://support.avaya.com>.

[1] *IP Office 7.0 Documentation Library CD*, May 2011.

The 2N Helios IP documentation can be found at <http://www.2n.cz/en/products/communicators/doors/helios-ip/downloads/>.

[2] *2N® Helios IP User Manual*, Version 1.13.0, June 2011.

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