



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

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# **Application Notes for Configuring Avaya IP Office R8.0 to interoperate with 2N Telekomunikace Helios IP - Issue 1.0**

### **Abstract**

These Application Notes describe the configuration steps required for 2N Telekomunikace Helios IP to interoperate with Avaya IP Office R8.0. The 2N Telekomunikace 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 Telekomunikace 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 Telekomunikace 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 Helios IP and exercise basic telephone operations. For serviceability testing, failures such as cable pulls and hardware resets were performed.

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 feature and serviceability testing. The feature testing was to verify that:

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

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

## 2.2. Test Results

All test cases passed. As 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).

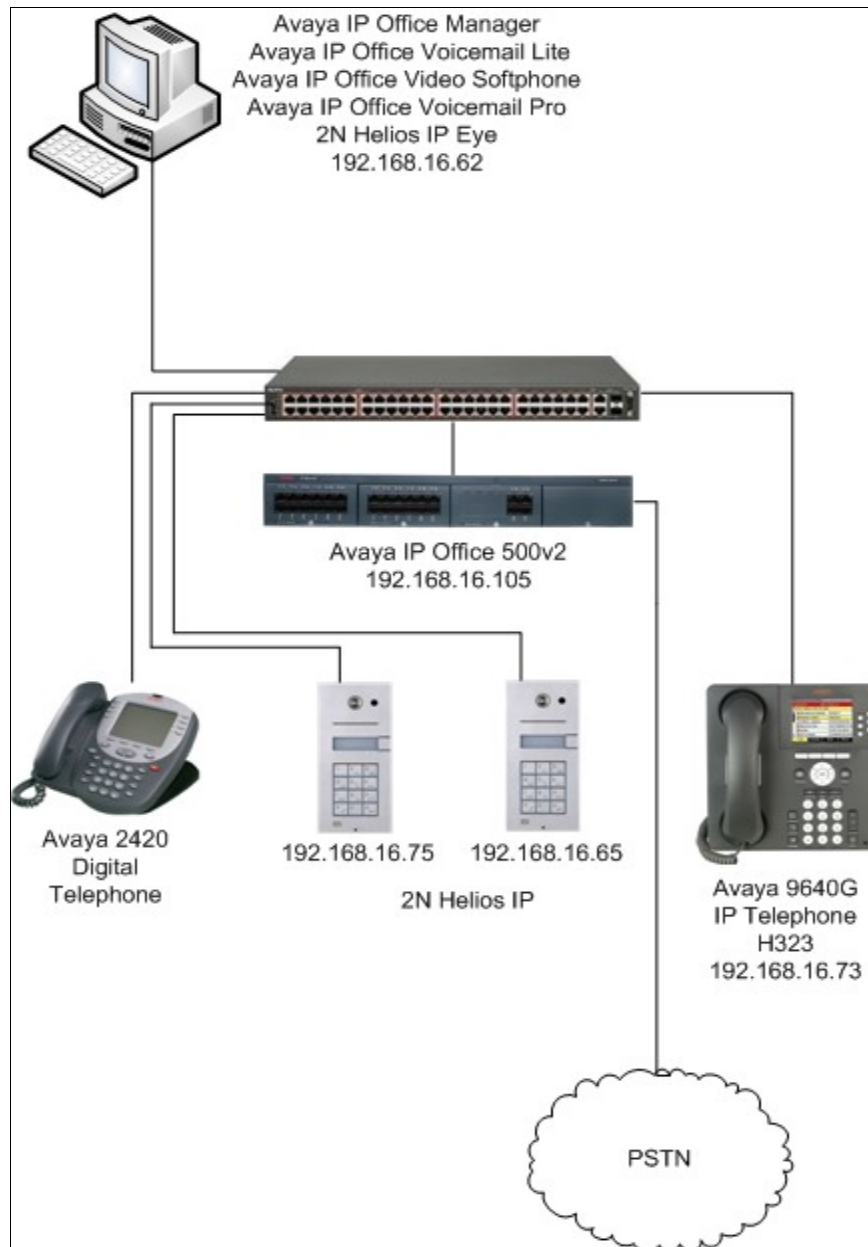
## 2.3. Support

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 Helios IP and IP Office. The configuration consists of an IP Office 500 and a server running IP Office Manager and Voicemail. The IP Office has connections to the following: 9640 IP Telephone, 2420 Digital Telephone, IP Office Video Softphone, Helios IP and an ISDN-PRI trunk to the PSTN. The Helios IP Eye application is also installed on a PC to receive the video streaming from Helios IP.



**Figure 1: Avaya IP Office with Telekomunikace 2N Helios IP Configuration**

## 4. Equipment and Software Validated

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

Equipment/Software	Release/Version
Avaya IP Office 500v2	R8.0(42)
Avaya IP Office Manager	10.0 (42)
Avaya IP Office Voicemail Pro	7.0 (23)
Avaya 9640 IP Telephone	3.1 SP4 (H.323)
Avaya 2420 Digital Telephone	N.A.
2N Telekomunikace Helios IP Tested models: 9137111CKU (1 button + camera + keypad)	Software version: 1.15.3.307.3 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 IP Office product documentation in **Section 9**.

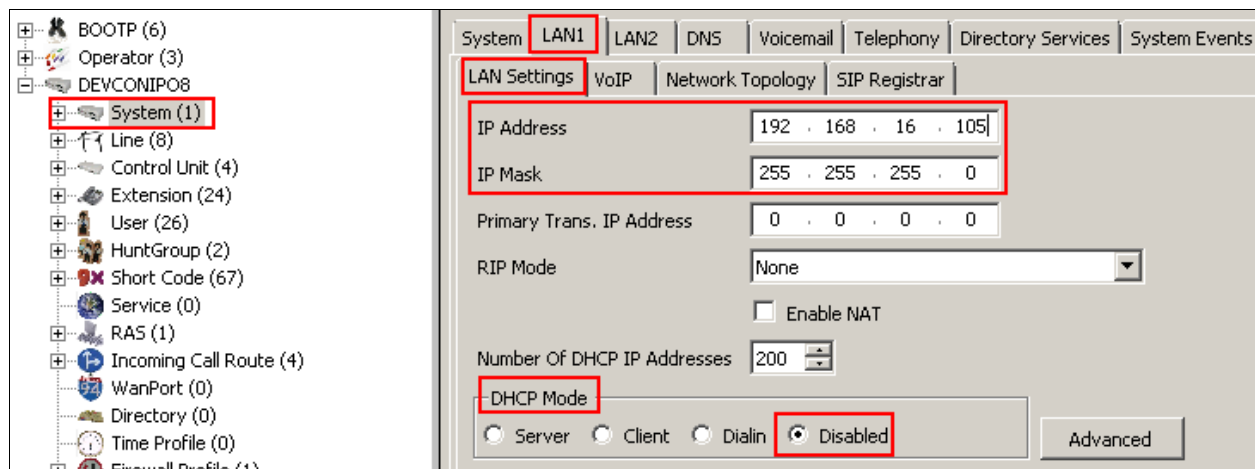
The procedures fall into the following areas:

- Setting LAN Parameters
- Administer SIP Registrar
- Add SIP Extensions
- Add Users
- Configure Sequential Hunt Group
- Save Configuration

## 5.1. Setting LAN Parameters

From the configuration tree in the left pane, select **System**. Click tab **LAN1** → **LAN Settings** to display the LAN Settings screen in the right pane.

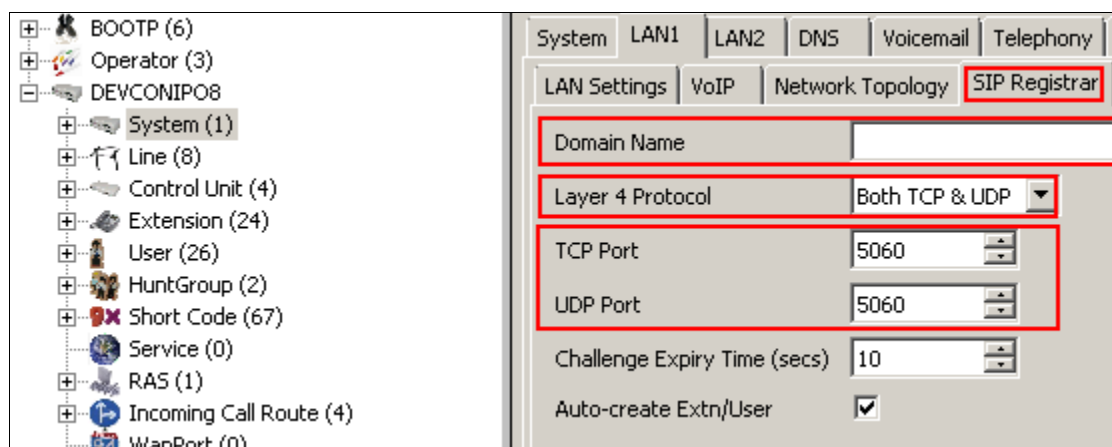
- Set the **IP Address**, which will be the address of the IP Office.
- Set the **IP Mask** based on the network setup.
- Set the **DHCP Mode** based on the network requirement. In this case, the **Disabled** option is chosen since DHCP was not used.
- Other fields can be left blank or at the default settings.



## 5.2. Administer SIP Registrar

Select **SIP Registrar** sub-tab in the right pane and enter the following values:

- **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).



### 5.3. Add Users

A SIP user must be added in order to register Helios IP with IP Office. Add a User by right-clicking **User** from the left pane and select **New** (not shown). For the **Name** field, enter a descriptive name, for example, **Extn304SIP**. For the **Full Name** field, enter a descriptive name for the user. For the **Extension** enter a valid extension Number.

User	Voicemail	DND	ShortCodes	Source Numbers	Telephony	Forwarding	Dial In	Voice Recording
Name	Extn304SIP							
Password								
Confirm Password								
Full Name	Extn304SIP							
Extension	304							
Locale								
Priority	5							
System Phone Rights	None							
Profile	Basic User							

Select the **Voicemail** tab and un-check the **Voicemail On** field.

User	Voicemail	DND	ShortCodes	Source Numbers	Telephony	Forwarding	Dial In	Voice Recording
Voicemail Code								
Confirm Voicemail Code								
Voicemail Email								
<input type="checkbox"/> Voicemail On								
<input type="checkbox"/> Voicemail Help								
<input type="checkbox"/> Voicemail Ringback								
<input type="checkbox"/> Voicemail Email Reading								
<input type="checkbox"/> UMS Web Services								

Select the **Telephony** → **Supervisor Settings** tab. Enter a **Login Code**. The **Login Code** is used to configure Helios IP in **Section 6.2** to log the user into the IP Office. Click **OK** (not shown) when done.

Avaya IP Office Manager Supervisor Settings

Call Settings | **Supervisor Settings** | Multi-line Options | Call Log

Login Code: \*\*\*\*

Login Idle Period (secs):

Monitor Group: <None>

Coverage Group: <None>

Status on No-Answer: Logged On (No change)

Reset Longest Idle Time:

- ☒ All Calls
- ☐ External Incoming

After Call Work Time (secs): System Default (10)

Force Login: ☐

Force Account Code: ☐

Outgoing Call Bar: ☐

Inhibit Off-Switch Forward/Transfer: ☐

Can Intrude: ☐

Cannot be Intruded: ☒

Can Trace Calls: ☐

CCR Agent: ☐

Automatic After Call Work: ☐

A prompt will appear asking if a new VoIP extension should be created. Click the **SIP Extension** radio button and click **OK**. Repeat as necessary.

Avaya IP Office Manager

Would you like a new VoIP extension created with this number?

☐ None

☐ H323 Extension

☒ SIP Extension

OK



## 5.4. Configure Sequential Hunt Group

In the left panel right-click **HuntGroup** 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, **402**, 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.

The screenshot displays the Avaya configuration interface for a Hunt Group. On the left, a tree view shows the system hierarchy, with 'HuntGroup (2)' selected. The main configuration area has several tabs: 'Hunt Group', 'Queuing', 'Overflow', 'Fallback', 'Voicemail', 'Voice Recording', and 'Announcements'. The 'Hunt Group' tab is active, showing the following fields:

- Name:** HeliosGrp
- Extension:** 402
- Ring Mode:** Sequential
- Hold Music Source:** No Change
- Agent's Status on No-Answer Applies To:** None
- No Answer Time (secs):** 10

Below these fields is a 'User List' table with columns 'Extension' and 'Name'. At the bottom right, there are 'Edit...' and 'Remove' buttons.

The screen below will appear, select the newly created SIP User and any other users required in the hunt group and click **Append**. Click **OK** to return to the previous window and click **OK** when done.

**Sequential HuntGroup 402 HeliosGrp Select Members**

Filters  
 Extn Name  Extn Number

Available Users ( 25/25 )

Name	Extn
Extn205	205
Extn206	206
Extn207	207
Extn208	208
Extn209	209
<b>Extn210</b>	<b>210</b>
Extn211	211
Extn212	212
Extn213	213
Extn214	214
Extn215	215
Extn216	216
<b>Extn217H323</b>	<b>217</b>
Extn218H323	218
Extn219H323	219
Extn301SIP	301
Extn302SIP	302
Extn303	303
<b>Extn304SIP</b>	<b>304</b>
Extn777	777

Members ( 3/3 )

Order	Enabled	Name	Extn
1	<input checked="" type="checkbox"/>	Extn217H323	217
2	<input checked="" type="checkbox"/>	Extn304SIP	304
3	<input checked="" type="checkbox"/>	Extn210	210

## 5.5. Save Configuration

Send the configuration to the IP Office in the customary fashion when all configuration is complete.

## 6. Configure 2N Helios IP

The following steps detail the configuration for 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 **Section 9 Reference [2]** to obtain the IP address of Helios IP.

### 6.1. Launch Web Interface

Access the Helios IP web interface, enter **http://<ipaddress>** in an Internet browser window, where **<ipaddress>** is the IP address of Helios IP. Log in with the appropriate credentials. The **Helios IP Information** screen is shown.

The screenshot displays the Helios IP web interface. At the top, the 'HeliosIP' logo is visible, along with language selection buttons for 'CZ' and 'EN'. On the left, a sidebar contains a '2N TELECOMMUNICATIONS' logo and a menu with options: 'Information', 'Basic Settings', 'Advanced Settings', 'Card reader', and 'Tools'. The 'Information' option is currently selected. The main content area is divided into several sections. The top section provides product details: Product name (2N Helios IP), Software version (1.15.3.307.3), Bootloader version (1.4.0.6.0), Hardware version (535v5), Number of buttons (1), Serial number (54-0349-2560), MAC address (7C-1E-B3-00-70-95), and Up time (12d 23h 37m). To the right of these details, the DHCP status is shown as 'On', followed by IP address, Net mask, Default gateway, Primary DNS, and Secondary DNS, each with a corresponding value. Below the product details, there are sections for 'Registration state' (Not registered), 'Registration at', 'Registration time' (N/A), and 'Call state' (Inactive), along with 'Opponent', 'Call duration', 'Audio codec', and 'Video codec'. On the far right, a statistics section lists various network metrics: Ethernet frames transmitted/received/dropped, UDP packets transmitted/received/dropped, and TCP packets transmitted/received/dropped. At the bottom left of the interface is a 'Logout' button with an information icon, and at the bottom right is a refresh icon.

Product name:	2N Helios IP	DHCP status:	On
Software version:	1.15.3.307.3	IP address:	16.65
Bootloader version:	1.4.0.6.0	Net mask:	255.255.255.0
Hardware version:	535v5	Default gateway:	16.1
Number of buttons:	1	Primary DNS:	16.115
Serial number:	54-0349-2560	Secondary DNS:	
MAC address:	7C-1E-B3-00-70-95		
Up time:	12d 23h 37m		

Registration state:	Not registered	Ethernet frames transmitted:	25618
Registration at:		Ethernet frames received: <td>57981</td>	57981
Registration time:	N/A	Ethernet frames dropped: <td>0</td>	0
		UDP packets transmitted: <td>12738</td>	12738
		UDP packets received: <td>20392</td>	20392
		UDP packets dropped: <td>1895</td>	1895
		TCP packets transmitted: <td>65050</td>	65050
		TCP packets received: <td>25387</td>	25387
		TCP packets dropped: <td>0</td>	0

Call state:	Inactive
Opponent:	N/A
Call duration:	0 s
Audio codec:	N/A
Video codec:	N/A

## 6.2. Administer SIP Settings

Select **Advanced Settings** → **SIP Settings** from the left menu. In the **User settings** section, configure the following:

- **Display name:** Enter the desired name.
- **User ID:** Enter the user extension from **Section 5.3**.
- **Domain:** Enter the IP address of Avaya IP Office from **Section 5.1**.
- **Use auth ID:** Select **No**.
- **Password:** Enter the **Login Code** from **Section 5.3**.

In the **SIP proxy settings** section, configure the following:

- **Proxy address:** Enter the IP address of Avaya IP Office from **Section 5.1**.
- **Proxy port:** Enter 5060 (default).

In the **SIP registration** section, configure the following:

- **Register Helios IP:** Select **Yes**.
- **Registration expires:** Enter the number of seconds for Helios IP to re-register.
- **Registrar address:** Enter the IP address of Avaya IP Office from **Section 5.1**.
- **Registrar port:** Enter 5060 (default).

Retain the default values for the remaining fields. Click the disk icon (not shown) to save when done.

**HeliosSIP** CZ EN

**2N TELECOMMUNICATIONS**

**SIP Settings**

**User settings**

Display name: Entry01

User ID: 304

Domain: 192.168.16.105

Use auth ID: No

Auth ID:

Password: \*\*\*\*

**SIP proxy settings**

Proxy address: 192.168.16.105

Proxy port: 5060

**SIP registration**

Enable registration: Yes

Registration expires: 120 s

Registrar address: 192.168.16.105

Registrar port: 5060

**Other settings**

Local SIP port: 5060

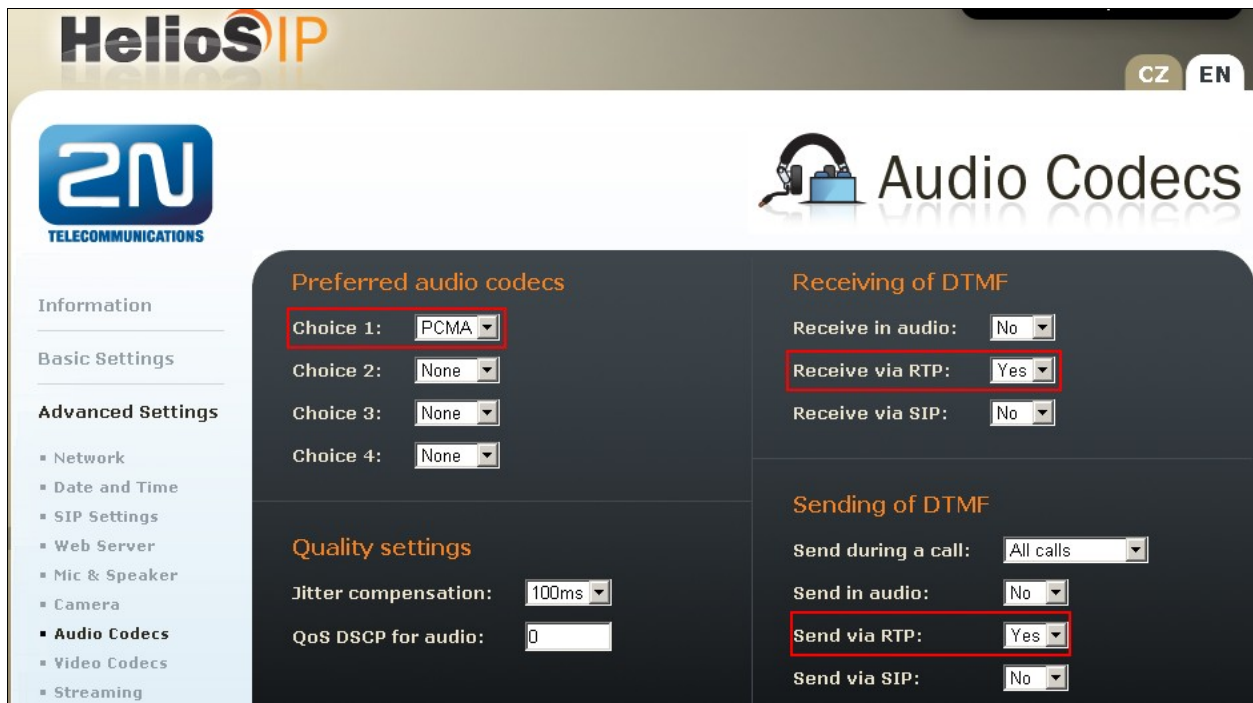
Send keepalive packets: Yes

Starting RTP port: 5000

RTP Timeout: 10 s

### 6.3. Administer Codecs

Click **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**. Click the save icon (not shown) when complete.



The screenshot displays the HeliosIP web interface for configuring audio codecs. The page is titled "Audio Codecs" and features a sidebar with navigation options: Information, Basic Settings, and Advanced Settings. The Advanced Settings section is expanded, showing a list of settings including Network, Date and Time, SIP Settings, Web Server, Mic & Speaker, Camera, Audio Codecs (selected), Video Codecs, and Streaming.

The main content area is divided into three sections:

- Preferred audio codecs:** This section contains four dropdown menus for "Choice 1", "Choice 2", "Choice 3", and "Choice 4". "Choice 1" is set to "PCMA", while the others are set to "None".
- Quality settings:** This section includes "Jitter compensation" set to "100ms" and "QoS DSCP for audio" set to "0".
- Receiving of DTMF:** This section contains three dropdown menus: "Receive in audio" (set to "No"), "Receive via RTP" (set to "Yes"), and "Receive via SIP" (set to "No").
- Sending of DTMF:** This section contains three dropdown menus: "Send during a call" (set to "All calls"), "Send in audio" (set to "No"), and "Send via RTP" (set to "Yes").

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.

**HelioSIP** CZ EN

**2N TELECOMMUNICATIONS**

**Video Codecs**

**Information**

**Basic Settings**

**Advanced Settings**

- Network
- Date and Time
- SIP Settings
- Web Server
- Mic & Speaker
- Camera
- Audio Codecs
- Video Codecs**
- Streaming
- Auto Updates

**Preferred video codecs**

Choice 1:

Choice 2:

Choice 3:

Choice 4:

**Video codec settings**

Video resolution:

Frame rate:

Video bitrate:

Video packet size:  B

**Quality settings**

QoS DSCP for video:

**Advanced RTP settings**

H.264 payload type (1):

H.264 payload type (2):

H.263+ payload type:

Polycom compatibility mode:

## 6.4. Configure Quick Dialling Buttons

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 Helios IP. For example, the following shows the configuration for Position 1.

- **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 5.4**.

The screenshot shows the HeliosIP web interface for configuring the Phone book. The left sidebar contains a menu with 'Basic Settings' selected, and 'Phone book' highlighted. The main content area is titled 'Phone book' and shows a navigation bar with positions 1 through 10, with position 1 selected. The configuration is divided into several sections:

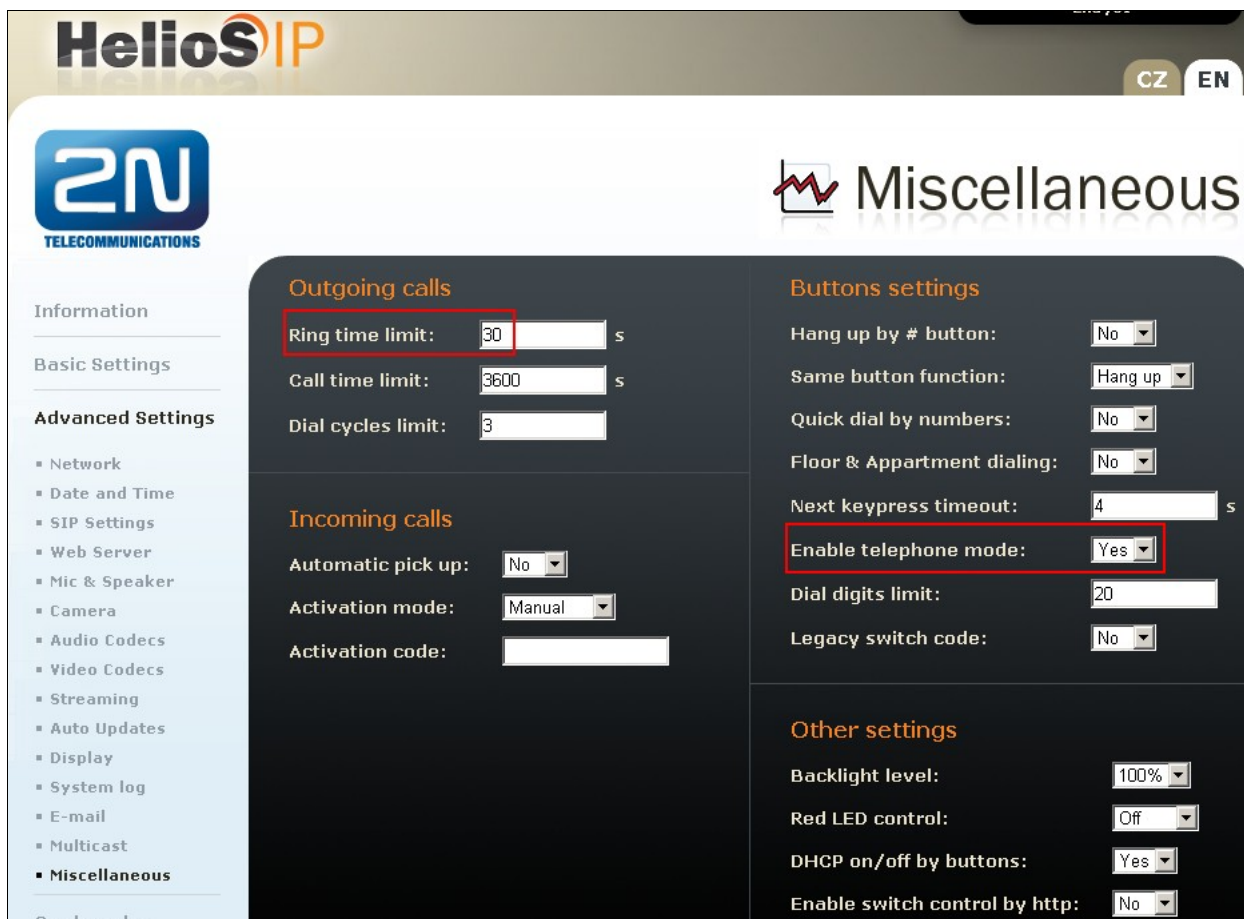
- General settings:** Includes 'Position enabled' (set to 'Yes'), 'Position name' (set to 'Pos1'), and 'E-Mail'.
- User activation & deactivation:** Includes 'Activation code', 'Deactivation code', and 'User current state' (set to 'Active' with a 'Change' button).
- Phone numbers:** Includes 'Number 1' (set to '402'), 'Time profile' (set to '[not used]'), 'Station name', 'Number 2' (set to '6002'), 'Time profile' (set to '[not used]'), and 'Station name'.
- User switch codes:** Includes 'Switch 1 code' and 'Switch 2 code'.
- Card reader:** Includes 'User card ID'.

For the description and usage of all other fields on the page, e.g. door-lock codes, activation codes, refer to **Section 9 Reference [2]**.



## 6.5. Configure Miscellaneous Settings

Select **Advanced Settings** → **Miscellaneous** from the left menu. To allow 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 5.4**. Optionally, set **Enable telephone mode** to **Yes** to allow Helios IP to call any number using the keypad.



**HeliosIP** CZ EN

**2N TELECOMMUNICATIONS**

**Miscellaneous**

**Information**

**Basic Settings**

**Advanced Settings**

- Network
- Date and Time
- SIP Settings
- Web Server
- Mic & Speaker
- Camera
- Audio Codecs
- Video Codecs
- Streaming
- Auto Updates
- Display
- System log
- E-mail
- Multicast
- Miscellaneous**

**Outgoing calls**

Ring time limit: 30 s

Call time limit: 3600 s

Dial cycles limit: 3

**Incoming calls**

Automatic pick up: No

Activation mode: Manual

Activation code:

**Buttons settings**

Hang up by # button: No

Same button function: Hang up

Quick dial by numbers: No

Floor & Appartment dialing: No

Next keypress timeout: 4 s

Enable telephone mode: Yes

Dial digits limit: 20

Legacy switch code: No

**Other settings**

Backlight level: 100%

Red LED control: Off

DHCP on/off by buttons: Yes

Enable switch control by http: No



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

## 7.1. Verify Avaya IP Office

From a PC running the 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 Helios IP endpoints are successfully registered as shown below.

SIPPhoneStatus

Total Configured: 5

Total Registered: 1

Registered Status: ■■■■■

Waiting 2 secs for update

Extn Num	IP Address	Transport	User Agent	SIP Options	SIP Events	Status	LastAv...	LastIP...
301	16.65	UDP	2N Helios IP 1.15.3.307.3			SIP: Registered		31/05/...
302	0.0.0.0		UA?			SIP: Unregistered		15/05/...
111	0.0.0.0		UA?			SIP: Unregistered		
777	0.0.0.0		UA?			SIP: Unregistered		
303	0.0.0.0		UA?			SIP: Unregistered		

Display Options: ☒ Show All ☐ Registered ☐ UnRegistered

Print Reset Phones Cancel

## 7.2. Verify 2N Helios IP

From the 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 IP Office to verify basic call operation.

The screenshot shows the Helios IP web interface. On the left is a navigation menu with the 2N logo and the following items: Information, Basic Settings, Advanced Settings, Card reader, and Tools. The 'Information' page is active, displaying various system details. The 'Registration state' is highlighted with a red box and shows 'Registered'. Other details include product name, software/hardware versions, serial number, MAC address, up time, DHCP status, IP address, net mask, default gateway, DNS settings, and network statistics like Ethernet frames and TCP/UDP packets transmitted and received.

Product Information	
Product name:	2N Helios IP
Software version:	1.15.3.307.3
Bootloader version:	1.4.0.6.0
Hardware version:	535v5
Number of buttons:	1
Serial number:	54-0349-2560
MAC address:	7C-1E-B3-00-70-95
Up time:	13d 0h 8m

Registration Information	
Registration state:	Registered
Registration at:	16.105
Registration time:	1970-01-14 01:08:19

Call Information	
Call state:	Inactive
Opponent:	N/A
Call duration:	0 s
Audio codec:	N/A
Video codec:	N/A

Network Statistics	
DHCP status:	On
IP address:	16.65
Net mask:	255.255.255.0
Default gateway:	16.1
Primary DNS:	16.115
Secondary DNS:	
Ethernet frames transmitted:	27907
Ethernet frames received:	64510
Ethernet frames dropped:	0
UDP packets transmitted:	12965
UDP packets received:	20524
UDP packets dropped:	1895
TCP packets transmitted:	1284
TCP packets received:	27021
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 R8.0. All feature and serviceability tests were completed successfully with observations made in **Section 2.2**.

## 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 8.0 Documentation Library CD*, November 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 Configuration manual version 1.15*, March 2012.

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