



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

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# **Application Notes for Configuring the Motorola Solutions PTP 800 Licensed Ethernet Microwave Solution with Avaya IP Office in a Wireless Multi-Site Converged VoIP and Data Network - Issue 1.0**

### **Abstract**

Application Notes for configuring the Motorola Solutions PTP 800 Licensed Ethernet Microwave solution with Avaya IP Office and Avaya IP Telephones in a multi-site wireless Converged VoIP and data network.

The Motorola Solutions PTP 800 Licensed Ethernet Microwave point-to-point radio solution is designed to satisfy the demand for high-throughput Internet Protocol (IP-based) traffic licensed-microwave solutions. The PTP 800 Series provides an Ethernet service between the data port at a local compact modem unit and the data port at an associated remote compact modem unit. The Ethernet service is based on conventional layer two transparent bridging.

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 a sample configuration of a multi-site Voice over IP (VoIP) solution using a Motorola Solutions PTP 800 with Avaya IP Office and Avaya IP Telephones in a multi-site wireless Converged VoIP and data network.

The Motorola Solutions PTP 800 Licensed Ethernet Microwave point-to-point radio solution is designed to satisfy the demand for high-throughput Internet Protocol (IP-based) licensed-microwave solutions for providing last-mile access in challenging environments. The PTP 800 Series provides an Ethernet service between the data port at a local compact modem unit (CMU) unit and the data port at an associated remote compact modem unit (CMU). The Ethernet service is based on conventional layer two transparent bridging.

The Motorola Solutions PTP 800 was compliance-tested with Avaya IP Office 500 and Avaya IP Telephones with emphasis placed on verifying voice quality in a multi-site converged VoIP and Data network scenario. QoS (Quality of Service) based on 802.1p (Layer 2 Priority) was implemented across the network to prioritize voice traffic over the LAN. The QoS settings are enforced in the network by the Motorola Solutions PTP 800. Tests were performed by oversubscribing the LAN interfaces with low priority data and verifying that good voice quality was achieved when calls were routed over all LAN interfaces. Compliance testing included QoS, throughput, Open, Direct Media and the G.711 and G.729 codecs.

The U.S. specification Motorola Solutions PTP 800 delivers up to 301 Mbps (full duplex) throughput with user-configurable channel bandwidths from 10 to 50 MHz. Operating in the 6 to 38 GHz<sup>1</sup> radio frequency (RF) bands, PTP 800 solutions are available in several models to address your local regulatory guidelines and specific application requirements.

## 1.1. Interoperability Compliance Testing

Interoperability compliance testing covered feature functionality, serviceability, and performance testing. Compliance testing emphasis was placed on verifying voice quality in a multi-site converged VoIP and data network scenario. Specifically, compliance testing verified that when the Motorola Solutions PTP 800 interfaces are oversubscribed with low priority data traffic, the higher priority VoIP media and signaling traffic still gets through with good voice quality.

Note: Compliance did not include radio or distances testing. Testing tools were used interconnect the radios during testing at the Avaya DevConnect Lab.

**Feature functionality tested:**

- Layer 2 Quality of Service (QoS)
- VLANs

**The telephony features verified to operate correctly included:**

- Attended/Unattended transfer
- Conference call add/drop/participation
- Multiple call appearances
- Caller ID operation
- Call forwarding
- Call Park./Call pick-up
- Bridged call appearances
- Voicemail using Avaya Voicemail Pro
- Message Waiting Indicator (MWI)
- Hold/Return from hold
- Direct IP Media (Shuffling)
- G.711 and G.729 codecs

**Serviceability testing:**

- Serviceability testing was conducted to verify the ability of the Avaya/ Motorola Solutions solution to recover from adverse conditions, such as power cycling devices and disconnecting cables between the LAN interfaces. In all cases, the ability to recover after the network normalized was verified.

## **1.2. Support**

Twenty four by seven Technical support for Motorola Solutions can be obtained through the following:

- Phone: + 1-866-961-9288
- Web support in the form of an online form at [www.motorola.com/ptp/support](http://www.motorola.com/ptp/support)

## 2. Reference Configuration

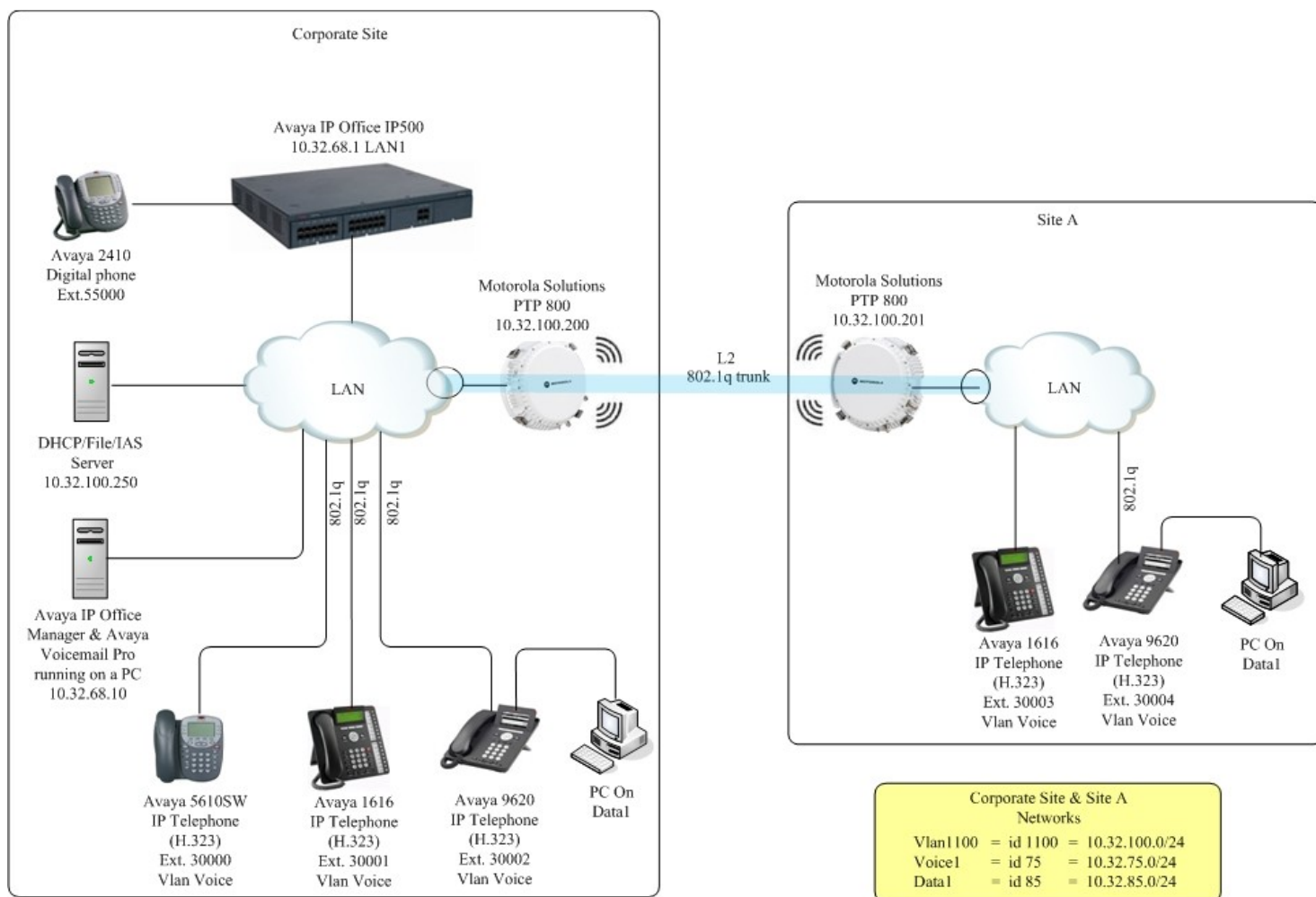
The network diagram shown in **Figure 1** illustrates the network environment used for the compliance test. The Motorola Solutions PTP 800 Licensed Ethernet Microwave solution provides network connectivity for the voice and data traffic between the Corporate and Remote Sites.

**The Avaya and Motorola Solutions components used to create the corporate site included:**

- Avaya IP Office 500
- Avaya 9600-Series IP telephones (H.323)
- Avaya 1600-Series IP telephones (H.323)
- Avaya digital telephones
- Motorola Solutions PTP 800 Licensed Ethernet Microwave
- LAN router/switch
- DHCP/HTTP/TFTP Server

**The Avaya and Motorola Solutions components used to create the remote site included:**

- Avaya 9600-Series IP telephones (H.323)
- Avaya 1600-Series IP telephones (H.323)
- Motorola Solutions PTP 800 Licensed Ethernet Microwave
- LAN router/switch



**Figure 1: Avaya IP Telephony Network traversing Motorola Solutions PTP 800 Licensed Ethernet Microwave Solution**

### 3. Equipment and Software Validated

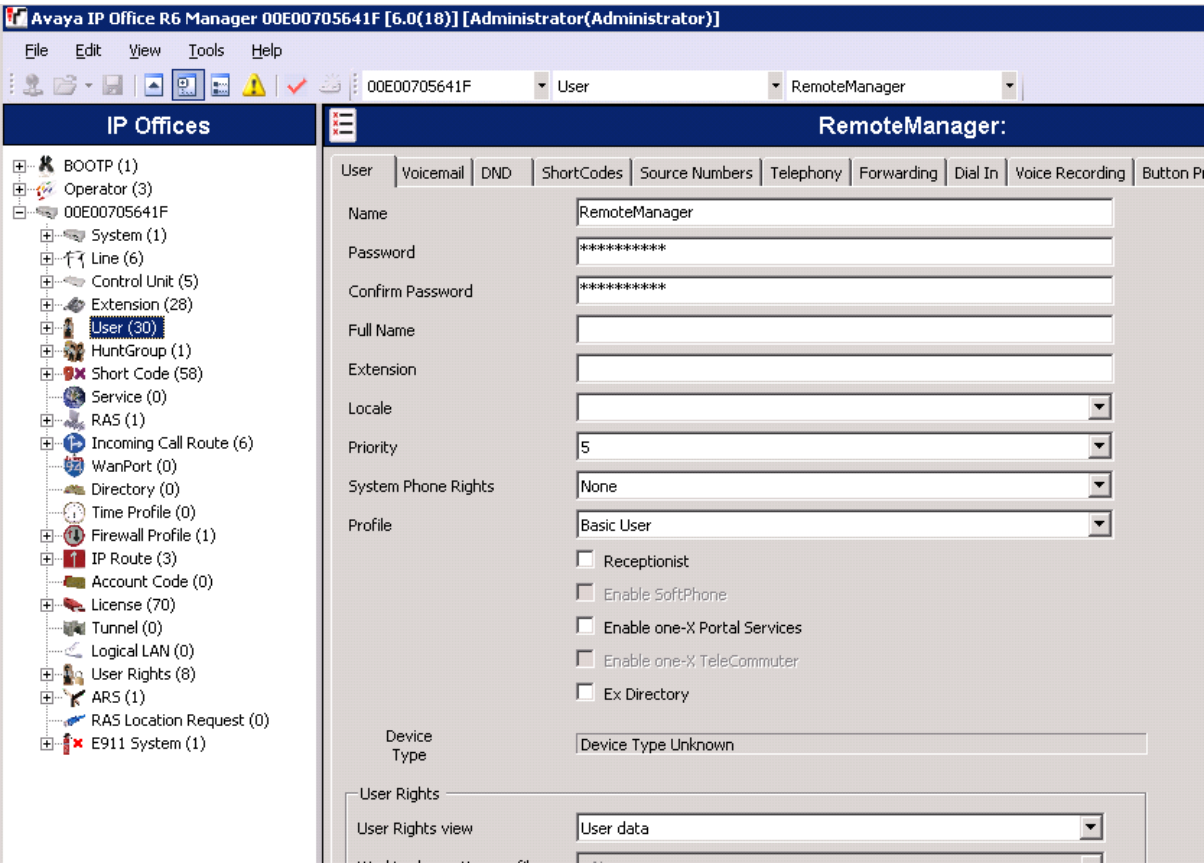
The following equipment and software were used for the sample configuration provided:

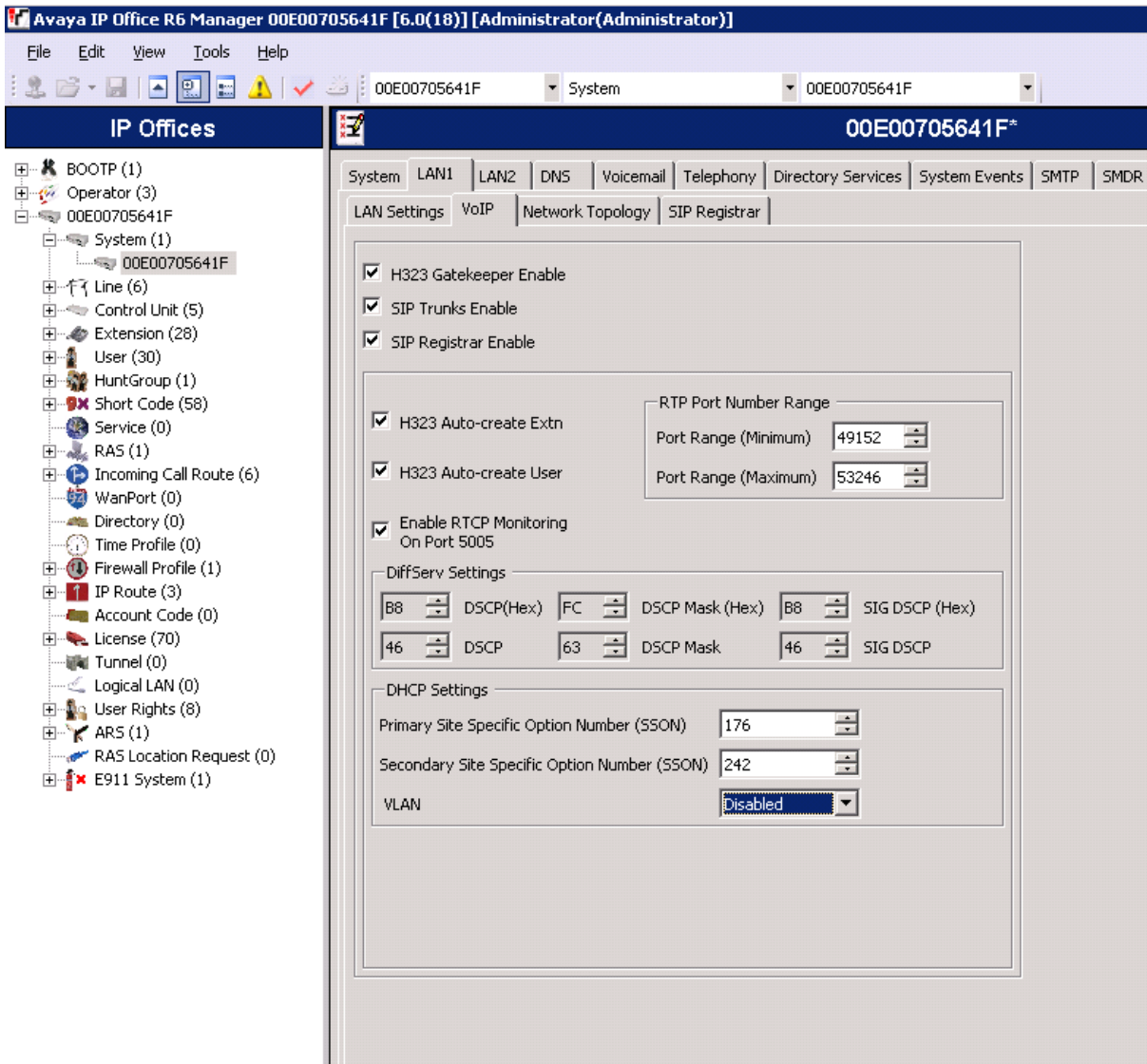
Equipment	Software/Firmware
<i>Avaya PBX Products</i>	
Avaya IP Office 500	6.0 (18)
Avaya IP Office Manager	8.0 (18)
<i>Avaya Messaging (Voice Mail) Products</i>	
Avaya Voicemail Pro	6.0.44
<i>Avaya Telephony Sets</i>	
Avaya 1600 Series IP Telephone (H.323)	1.2.2
Avaya 5600 Series IP Telephones (H.323)	8.016
Avaya 9600 Series IP Telephones (H.323)	S3.110b
Avaya 2410 Digital Telephone	NA
<i>Motorola Solutions Products</i>	
Motorola Solutions PTP 800 Licensed Ethernet Microwave	(02-04)
<i>MS Products</i>	
DHCP/HTTP/TFTP Server	Microsoft Windows 2003 Server

**Table 1: Equipment and Software Tested**

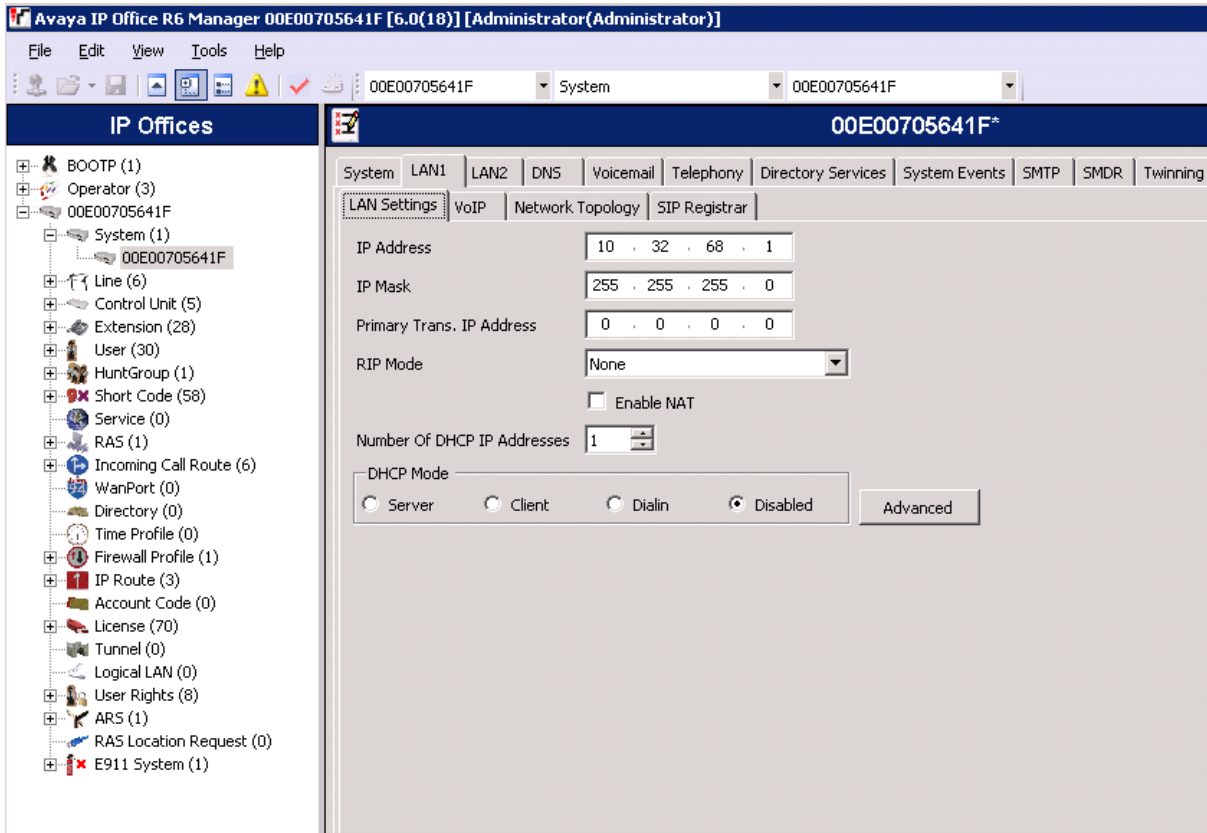
## 4. Avaya IP Office Settings


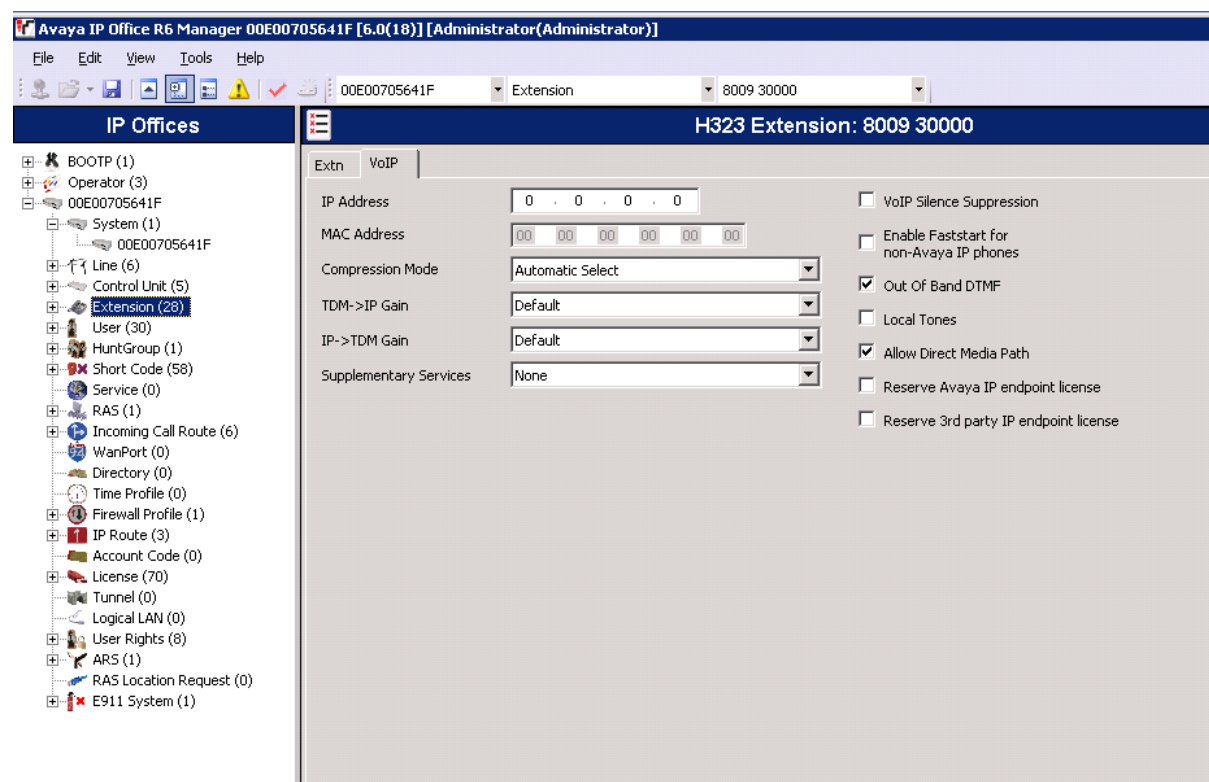
This section was included to verify that Avaya IP Office was configured correctly. Except where stated, the parameters in all steps are the default settings and are supplied for reference. For all other provisioning information such as provisioning of the trunks, call coverage, extensions, and voice mail, please refer to the Avaya IP Office product documentation in **Section 10**.

Step	Description
1.	Avaya IP Office is configured via the Avaya IP Office Manager program. Log into the Avaya IP Office Manager PC and select <b>Start</b> → <b>Programs</b> → <b>IP Office</b> → <b>Manager</b> to launch the Avaya IP Office Manager application. Log into the Avaya IP Office Manager application using the appropriate credentials.
2.	<p>Avaya IP Office Manager Window.</p> <p>The main Avaya IP Office Manager window appears. The following steps refer to the Configuration Tree, which is in the left pane of the window.</p> 

Step	Description
3.	<p>Verify H323 Gatekeeper information.</p> <p>The Avaya IP Telephones will get differentiated services information from the Avaya IP Office. In the Manager window, go to the Configuration Tree and click <b>System</b>, select the <b>LAN1</b> tab, then select the <b>VoIP</b> tab. Verify that the <b>DiffServ Settings</b> for <b>DSCP</b> and <b>SIG DSCP</b> are set to <b>46</b> and <b>46</b>, respectively.</p>  <p>The screenshot displays the Avaya IP Office R6 Manager interface. The title bar indicates the system ID '00E00705641F' and version '6.0(18)'. The left-hand Configuration Tree shows a hierarchy starting with 'IP Offices', followed by 'System (1)', and then '00E00705641F'. The right-hand pane is titled '00E00705641F*' and contains several tabs: 'System', 'LAN1', 'LAN2', 'DNS', 'Voicemail', 'Telephony', 'Directory Services', 'System Events', 'SMTP', and 'SMDR'. The 'LAN1' tab is active, and within it, the 'VoIP' sub-tab is selected. The 'VoIP' settings include checkboxes for 'H323 Gatekeeper Enable', 'SIP Trunks Enable', and 'SIP Registrar Enable', all of which are checked. Below these are 'H323 Auto-create Extn' and 'H323 Auto-create User', also checked. A section for 'RTP Port Number Range' shows 'Port Range (Minimum)' as 49152 and 'Port Range (Maximum)' as 53246. The 'DiffServ Settings' section shows 'DSCP' set to 46 and 'SIG DSCP' set to 46. The 'DHCP Settings' section shows 'Primary Site Specific Option Number (SSON)' as 176, 'Secondary Site Specific Option Number (SSON)' as 242, and 'VLAN' set to 'Disabled'.</p>



Step	Description
4.	<p>Disable DHCP server on Avaya IP Office.</p> <p>Select the <b>LAN Settings</b> tab. Set the <b>DHCP Mode</b> to <b>Disabled</b>. Click <b>OK</b> to continue (not shown).</p>  <p>The screenshot shows the Avaya IP Office R6 Manager [6.0(18)] [Administrator\Administrator] window. The left pane shows a tree view of the system configuration, with 'System (1)' selected. The right pane shows the 'LAN Settings' tab for system '00E00705641F'. The 'DHCP Mode' is set to 'Disabled'.</p>

Step	Description
5.	<p>Verify Direct Media Path.</p> <p>From the Configuration Tree, select <b>Extension</b>. Click on the IP telephone extension to verify. Select the <b>VoIP</b> tab. Verify that <b>Allow Direct Media Path</b> is checked. Click <b>OK</b> to continue. The changes must be saved before they will take effect, click the  icon to save the configuration.</p>  <p>The screenshot shows the Avaya IP Office R6 Manager interface. The title bar reads 'Avaya IP Office R6 Manager 00E00705641F [6.0(18)] [Administrator/Administrator]'. The menu bar includes File, Edit, View, Tools, and Help. Below the menu bar, there are fields for '00E00705641F' and 'Extension 8009 30000'. The left pane shows a configuration tree with 'Extension (28)' selected. The right pane shows the 'H323 Extension: 8009 30000' configuration. The 'VoIP' tab is active, displaying fields for IP Address (0.0.0.0), MAC Address (00 00 00 00 00 00), Compression Mode (Automatic Select), TDM-&gt;IP Gain (Default), IP-&gt;TDM Gain (Default), and Supplementary Services (None). On the right side of the VoIP tab, there are several checkboxes: 'VoIP Silence Suppression' (unchecked), 'Enable Faststart for non-Avaya IP phones' (unchecked), 'Out Of Band DTMF' (checked), 'Local Tones' (unchecked), 'Allow Direct Media Path' (checked), 'Reserve Avaya IP endpoint license' (unchecked), and 'Reserve 3rd party IP endpoint license' (unchecked).</p>

## 5. Configure the Corporate Motorola Solutions PTP 800

It is assumed that all Motorola Solutions PTP 800 outdoor unit (ODU) and compact modem unit (CMU) components and all appropriate licenses are installed. For ODU and CMU instruction, refer to the Motorola Solutions PTP 800 User Guild, **Section 10**.

### 5.1. Connecting the PTP 800 to a PC

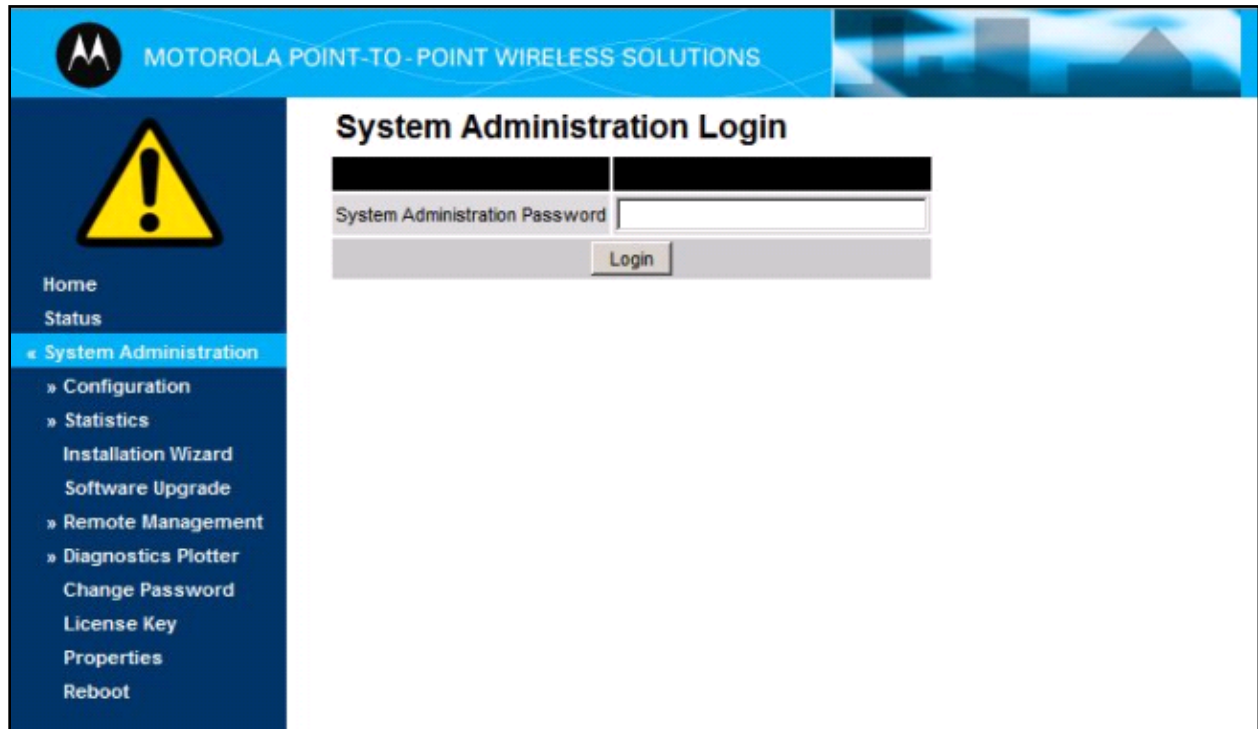
By default, the IP interface of the PTP 800 is configured for out-of-band local management with an IP address of 169.254.1.1, subnet mask of 255.255.0.0 and default gateway of 169.254.0.0.

Configure the PTP 800 using the built-in web-based Management Tool. Access this tool by establishing a web browser connection to the PTP 800. For more information on configuring PTP 800, please refer to **Section 10**.

Configure a PC with the following IP Address information:

- IP address - 169.254.0.20.
- Subnet Mask - 255.255.0.0.
- The default gateway can be left blank.

Connect the LAN port of the computer being used to the LAN port on the PTP 800. Start the web browser and enter **http://169.254.1.1**. The **System Administrator Login** page is displayed. Log into the PTP 800 using default credentials which can be obtained from the Motorola Solutions PTP 800 documentation, refer to **Section 10**.



The screenshot displays the Motorola Point-to-Point Wireless Solutions System Administration Login page. The page has a blue header with the Motorola logo and the text "MOTOROLA POINT-TO-POINT WIRELESS SOLUTIONS". On the left side, there is a dark blue sidebar with a yellow warning triangle icon at the top. Below the icon, the sidebar contains a list of navigation links: "Home", "Status", "« System Administration" (highlighted), "» Configuration", "» Statistics", "Installation Wizard", "Software Upgrade", "» Remote Management", "» Diagnostics Plotter", "Change Password", "License Key", "Properties", and "Reboot". The main content area is white and titled "System Administration Login". It features a login form with two input fields: the first is labeled "System Administration Password" and the second is empty. Below the input fields is a "Login" button.

## 5.2. Run the Installation Wizard

The Radio Licenses and wireless setting will vary from installation to installation and are beyond the scope of the compliance testing and will not be covered in this document. **Steps 1, 2 & 3** are shown for illustration purposes only. For more information on configuring PTP 800, please refer to **Section 10**.


From the left hand menu, select **System Administration** → **Installation Wizard**. The **Step 1: Enter equipment details** page appears. Select **Next** to continue.


The screenshot shows the Motorola PTP 800 - System Administration web interface. The browser title is "Motorola PTP 800 - System Admini2...". The header features the Motorola logo and the text "MOTOROLA POINT-TO-POINT WIRELESS SOLUTIONS". A left-hand navigation menu is visible, with "Installation Wizard" highlighted. The main content area is titled "Step 1: Enter equipment details" and contains a table for "Equipment configuration data entry".

Attributes	Value	Units
<b>Link</b>		
Link Name	Motorola PTP 800 Demo	
Site Name	Left CMU	
<b>Antenna</b>		
Antenna Gain	38.0	dBi
RF Feeder Loss	0.0	dB
<b>ODU</b>		
ODU Status	IF Card Attached	
ODU Type	18GHz TR1010 Hi 38304-40105MHz	
ODU Serial	MO 4E8CD1	
ODU Tx Power Max	30.0	dBm
ODU Tx Power Min	4.0	dBm
<b>IF Cable</b>		
IF Cable Length	0	m
<b>Modem</b>		
Short Power Cycle For Recovery	<input checked="" type="radio"/> Disabled <input type="radio"/> Enabled	

Next >>

The **Step 2: Enter details of the Radio License** page appears. Select **Next** to continue.

 **MOTOROLA POINT-TO-POINT WIRELESS SOLUTIONS**



- Home
- Status
- « System Administration
  - » Configuration
  - » Statistics
- Installation Wizard**
- Software Upgrade
- » Remote Management
- » Diagnostics Plotter
- Change Password
- License Key
- Properties
- Reboot
- » Production Test
- » Motorola Engineer

## Step 2: Enter details of the Radio License

Radio license data entry

Attributes	Value	Units
Radio License Identifier	AF10	
Radio License Band	38 GHz	
Radio License Region	FCC	
Radio License Bandwidth	50 MHz	
Radio License Modulation Selection	<input checked="" type="radio"/> Adaptive Modulation <input type="radio"/> Fixed Modulation	
Radio License Max Mod Mode	256QAM 0.83	
Radio License Min Mod Mode	QPSK 0.80	
Radio License Max EIRP	50.0	dBm
Radio License Tx Freq	39204.500	MHz
Radio License Rx Freq	38224.500	MHz

**« Back** **Next »**

The **Step 3: Enter wireless configuration** page appears. Enter a desired value for **Maximum Transmit Power (Max 12, Min 4.0) Value**. Select **Next** to continue.

The screenshot shows the 'Step 3: Enter wireless configuration' page. On the left is a dark blue sidebar with a yellow warning triangle icon at the top. Below the icon are navigation links: Home, Status, « System Administration, » Configuration, » Statistics, Installation Wizard (highlighted in light blue), Software Upgrade, » Remote Management, » Diagnostics Plotter, Change Password, License Key, Properties, Reboot, » Production Test, and » Motorola Engineer. The main content area has a blue header with the Motorola logo and 'MOTOROLA POINT-TO-POINT WIRELESS SOLUTIONS'. Below the header, the title 'Step 3: Enter wireless configuration' is displayed. Underneath is the text 'Wireless configuration data entry'. A table with three columns: Attributes, Value, and Units, contains one row: 'Maximum Transmit Power (Max 12.0, Min 4.0)', '4.0', and 'dBm'. At the bottom of the table are 'Back' and 'Next' buttons with double arrow icons.

Attributes	Value	Units
Maximum Transmit Power (Max 12.0, Min 4.0)	4.0	dBm

◀ Back      Next ▶



### 5.3. Configuring the IP interface of the PTP 800

Perform this task to review and update the IP interface settings of an operational or newly installed PTP 800 link. The IP interface allows users to connect to the PTP 800 web interface, either from a locally connected computer or from a management network.

Note: Before setting Management Mode to 'Out-of-Band' or 'In-Band', ensure that the local and remote CMUs are configured with different IP addresses, otherwise the management agent will not be able to distinguish between the two CMUs.

From the left hand menu, select **System Administration** → **Configuration** → **LAN**

**Configuration.** The LAN Configuration page is displayed. Update the IP interface attributes with the IP information shown in **Figure 1**. Select **Submit Updated System Configuration**. If there is a requirement to reboot the CMU in order to implement the updated attributes, perform a rebooting of the CMU.

Attributes	Value	Units
<b>IP Interface</b>		
IP Address	10 . 32 . 100 . 200	
Subnet Mask	255 . 255 . 255 . 0	
Gateway IP Address	10 . 32 . 100 . 254	
Use VLAN For Management Interfaces	No VLAN Tagging	
Management Mode	<input type="radio"/> Out-of-Band Local <input type="radio"/> Out-of-Band <input checked="" type="radio"/> In-Band	
<b>Data Port</b>		
Data Port Wireless Down Alert	<input checked="" type="radio"/> Disabled <input type="radio"/> Enabled	
Data Port Ethernet Media Type To Use	Auto with Fiber Preference	
Data Port Copper Auto Negotiation	<input type="radio"/> Disabled <input checked="" type="radio"/> Enabled	
Data Port Copper Auto Neg Advertisement	<input checked="" type="checkbox"/> 1000 Mbps Full Duplex <input checked="" type="checkbox"/> 100 Mbps Full Duplex	
<b>Bridging</b>		
Local Packet Filtering	<input type="radio"/> Disabled <input checked="" type="radio"/> Enabled	
Data Port Pause Frames	<input type="radio"/> Tunnel <input checked="" type="radio"/> Discard	
<input type="button" value="Submit Updated System Configuration"/> <input type="button" value="Reset Form"/>		



## 5.4. Configuring Quality of Service

Perform this task to configure the classification of Layer 2 Control Protocol frames and priority encoded Ethernet frames into up to eight traffic classes. To configure quality of service, proceed as follows:

From the left hand menu, select **System Administration** → **Configuration** → **Bridge Configuration**. The **Bridge Configuration** page is displayed. Select the **Set Default 802.1Q Priority Mappings**. Select **Submit Updated Values** to continue.

The screenshot shows the Motorola Bridge Configuration web interface. The header includes the Motorola logo and the text "MOTOROLA POINT-TO-POINT WIRELESS SOLUTIONS". The left sidebar contains a navigation menu with a yellow warning icon at the top. The main content area is titled "Bridge Configuration" and includes a description: "This page controls the bridging function and classification of tagged Ethernet frames into priority queues. Q0 is the lowest priority queue." Below this, there are two sections: "Layer 2 Control Protocol Frames" and "Tagged Ethernet Frames".

**Layer 2 Control Protocol Frames**

Protocol	Bridge	GARP
L2CP Queue Mapping	Q7	Q7


**Tagged Ethernet Frames**


VLAN Priority	P0	P1	P2	P3	P4	P5	P6	P7	Untagged
VLAN Priority Queue Mapping	Q1	Q0	Q2	Q3	Q4	Q5	Q6	Q7	Q1

Below the tables, there are two buttons: "Set Default 802.1Q Priority Mappings" and "Submit Updated Values".

## 5.5. Check System Status

Once the System is back up, check the status of the PTP 800. From the left hand menu, select **Status**. Verify that the **Data Port Status** and **Wireless Link Status** are up.

 MOTOROLA POINT-TO-POINT WIRELESS SOLUTIONS

  
Home  
**Status**  
» System Administration  
» Production Test  
» Motorola Engineer

### System Status

Attributes	Value	Units	Attributes	Value	Units
<b>Link</b>			<b>Wireless</b>		
Link Name	Motorola PTP 800 Demo		Wireless Link Status	Up	
Site Name	Left CMU		Maximum Transmit Power	4.0	dBm
Remote MAC Address	00:04: [REDACTED]		Remote Maximum Transmit Power	4.0	dBm
Remote IP Address	10.32.100.201		Channel Bandwidth	50	MHz
<b>ODU</b>			Transmit Power	4.0, 4.0, 4.0, 4.0	dBm
ODU Status	IF Card Attached		Receive Power	-39.5, -39.5, -39.5, -39.5	dBm
ODU Serial	MO 4E8CD1		Vector Error	-38.0, -38.0, -38.2, -38.0	dB
ODU Version Bank 1	FFFD380000		Link Loss	119.5, 119.5, 119.5, 119.5	dB
ODU Version Bank 2	4E8CD10702		Transmit Link Capacity	301	Mbps
<b>Modem</b>			Receive Link Capacity	301	Mbps
MAC Address	00:04:56:30:02:3e		Transmit Capacity Limit	Unlimited	
Software Version	800-02-04		Transmit Capacity Limit Detail	Running At Unlimited Capacity	
Hardware Version	05.02		Transmit Modulation Mode	256QAM 0.83	
Elapsed Time Indicator	00:09:21	hh:mm:ss	Receive Modulation Mode	256QAM 0.83	
<b>Ethernet</b>			Transmit Modulation Selection Detail	Installation ACM Highest	
Data Port Status	Copper Link Up				
Data Port Speed And Duplex	1000 Mbps Full Duplex				
Status Page Refresh Period	3600	Seconds			
			Update Page Refresh Period Reset form		

## 6. Configure Site A Motorola Solutions PTP 800

Repeat **Step 5.1** to connect the PC to configure the Site PTP 800.

### 6.1. Configuring the IP interface of the PTP 800

Perform this task to review and update the IP interface settings of an operational or newly installed PTP 800 link. The IP interface allows users to connect to the PTP 800 web interface, either from a locally connected computer or from a management network.

Note: Before setting Management Mode to 'Out-of-Band' or 'In-Band', ensure that the local and remote CMUs are configured with different IP addresses, otherwise the management agent will not be able to distinguish the two CMUs.

From the left hand menu, select **System Administration** → **Configuration** → **LAN**

**Configuration.** The LAN Configuration page is displayed. Update the IP interface attributes with the IP information shown in **Figure 1**. Select **Submit Updated System Configuration**. If there is a requirement to reboot the CMU in order to implement the updated attributes, perform a rebooting of the CMU.

Attributes	Value	Units
<b>IP Interface</b>		
IP Address	10 . 32 . 100 . 201	
Subnet Mask	255 . 255 . 255 . 0	
Gateway IP Address	10 . 32 . 100 . 254	
Use VLAN For Management Interfaces	No VLAN Tagging	
Management Mode	<input type="radio"/> Out-of-Band Local <input type="radio"/> Out-of-Band <input checked="" type="radio"/> In-Band	
<b>Data Port</b>		
Data Port Wireless Down Alert	<input checked="" type="radio"/> Disabled <input type="radio"/> Enabled	
Data Port Ethernet Media Type To Use	Auto with Fiber Preference	
Data Port Copper Auto Negotiation	<input type="radio"/> Disabled <input checked="" type="radio"/> Enabled	
Data Port Copper Auto Neg Advertisement	<input checked="" type="checkbox"/> 1000 Mbps Full Duplex	
	<input checked="" type="checkbox"/> 100 Mbps Full Duplex	
<b>Bridging</b>		
Local Packet Filtering	<input type="radio"/> Disabled <input checked="" type="radio"/> Enabled	
Data Port Pause Frames	<input type="radio"/> Tunnel <input checked="" type="radio"/> Discard	
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## 6.2. Configuring Quality of Service

Perform this task to configure the classification of Layer 2 Control Protocol frames and priority encoded Ethernet frames into up to eight traffic classes. To configure quality of service, proceed as follows:

From the left hand menu, select **System Administration** → **Configuration** → **Bridge Configuration**. The **Bridge Configuration** page is displayed. Select the **Set Default 802.1Q Priority Mappings**. Select **Submit Updated Values** to continue.

The screenshot shows the Motorola Bridge Configuration web interface. The header includes the Motorola logo and the text "MOTOROLA POINT-TO-POINT WIRELESS SOLUTIONS". The left sidebar contains a navigation menu with a yellow warning icon at the top. The main content area is titled "Bridge Configuration" and includes a description: "This page controls the bridging function and classification of tagged Ethernet frames into priority queues. Q0 is the lowest priority queue." Below this, there are two sections: "Layer 2 Control Protocol Frames" and "Tagged Ethernet Frames".

**Layer 2 Control Protocol Frames**

Protocol	Bridge	GARP
L2CP Queue Mapping	Q7	Q7

**Tagged Ethernet Frames**

VLAN Priority	P0	P1	P2	P3	P4	P5	P6	P7	Untagged
VLAN Priority Queue Mapping	Q1	Q0	Q2	Q3	Q4	Q5	Q6	Q7	Q1


Buttons at the bottom of the form:


- Set Default 802.1Q Priority Mappings
- Submit Updated Values
- Reset Form



### 6.3. Check System Status

Once the System is back up, check the status of the PTP 800. From the left hand menu, select **Status**. Verify that the **Data Port Status** and **Wireless Link Status** are up.

 MOTOROLA POINT-TO-POINT WIRELESS SOLUTIONS

  
Home  
Status  
» System Administration  
» Production Test  
» Motorola Engineer

### System Status

Attributes	Value	Units
<b>Link</b>		
Link Name	Motorola PTP 800 Demo	
Site Name	Right CMU	
Remote MAC Address	00:04: [REDACTED]	
Remote IP Address	10.32.100.200	Right
<b>ODU</b>		
ODU Status	IF Card Attached	
ODU Serial	MO 4E8CD1	
ODU Version Bank 1	FFFD380000	
ODU Version Bank 2	4E8CD10702	
<b>Modem</b>		
MAC Address	00:04:56:30:02:3e	
Software Version	800-02-04	
Hardware Version	05.02	
Elapsed Time Indicator	00:09:21	hh:mm:ss
<b>Ethernet</b>		
Data Port Status	Copper Link Up	
Data Port Speed And Duplex	1000 Mbps Full Duplex	
Status Page Refresh Period	3600	Seconds

Attributes	Value	Units
<b>Wireless</b>		
Wireless Link Status	Up	
Maximum Transmit Power	4.0	dBm
Remote Maximum Transmit Power	4.0	dBm
Channel Bandwidth	50	MHz
Transmit Power	4.0, 4.0, 4.0, 4.0	dBm
Receive Power	-39.5, -39.5, -39.5, -39.5	dBm
Vector Error	-38.0, -38.0, -38.2, -38.0	dB
Link Loss	119.5, 119.5, 119.5, 119.5	dB
Transmit Link Capacity	301	Mbps
Receive Link Capacity	301	Mbps
Transmit Capacity Limit	Unlimited	
Transmit Capacity Limit Detail	Running At Unlimited Capacity	
Transmit Modulation Mode	256QAM 0.83	
Receive Modulation Mode	256QAM 0.83	
Transmit Modulation Selection Detail	Installation ACM Highest	

Update Page Refresh PeriodReset form

## 7. General Test Approach and Test Results

The general test approach was to configure a multi-site Voice over IP (VoIP) Solution using the Motorola Solutions PTP 800 Licensed Ethernet Microwave Solution with Avaya IP Office and Avaya IP Telephones with emphasis placed on voice quality. The configuration, (shown in **Figure 1**) was used to exercise the features and functionality listed in **Section 1.1**.

The Motorola Solutions PTP 800 Licensed Ethernet Microwave Solution with Avaya IP Office and Avaya IP Telephones passed compliance testing.

## 8. Verification Steps

This section provides the steps for verifying end-to-end network connectivity and QoS. In general, the verification steps include:

- Place calls between the corporate and Remote Site Avaya IP Telephones.
- Place calls between the Avaya 2410 Digital Telephone and Avaya IP Telephones at the remote site.
- Verify DHCP relay is functioning by confirming that the Avaya IP Telephones in the remote site received their IP addresses from the DHCP server connected to the corporate network.

## 9. Conclusion

These Application Notes describe the configuration necessary for integrating the Motorola Solutions PTP 800 Licensed Ethernet Microwave Solution into an Avaya Telephony Infrastructure with Avaya IP Office and Avaya IP Telephones in a Wireless multi-site Converged VoIP and data network.

For the configuration described in these Application Notes, the Motorola Solutions PTP 800 Licensed Ethernet Microwave Solution was responsible for network connectivity for the voice and data traffic between the Corporate and Remote Sites and enforcing QoS. Good voice quality was successfully achieved in the Avaya/Motorola Solutions configuration described herein.

## 10. References

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

- [1] *IP Office 6.0 Documentation CD*, February 2010.
- [2] *IP Office Installation*, Document number15-601042, May 2010.
- [3] *IP Office Manager*, Document number15-601011, May 2010.
- [4] *System Status Application*, Document number15-601758, February 2010.
- [5] *Avaya one-X Deskphone Edition for 9600 Series IP Telephones Administrator Guide*, November 2009, Document Number 16-300698.
- [6] *Avaya one-X Deskphone Edition for 9600 Series IP Telephones Administrator Guide Release 3.0*, Document Number 16-300698.
- [7] *Avaya one-X Deskphone SIP for 9600 Series IP Telephones Administrator Guide, Release*

The following product documentation is provided by Motorola Solutions. For additional product and company information, visit: [www.motorola.com/ptp/software](http://www.motorola.com/ptp/software).

- [8] *Motorola Solutions PTP 800 User Guild*, System Release 800-02-04

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