



Avaya Solution & Interoperability Test Lab

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 GHz¹ 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

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

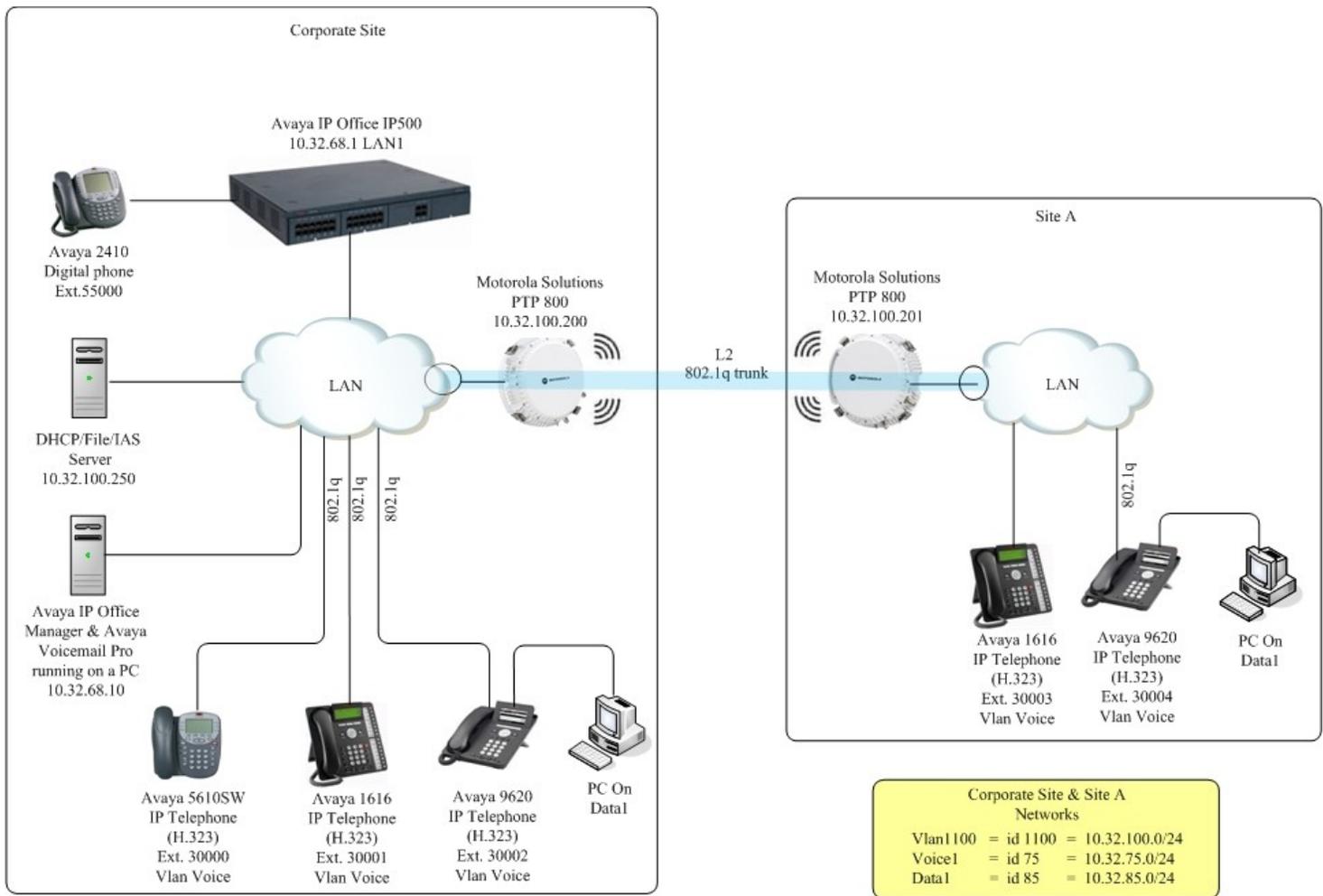


Figure 1: Avaya IP Telephony Network traversing Motorola Solutions PTP 800 Licensed Ethernet Microwave Solution

3. Equipment and Software Validated

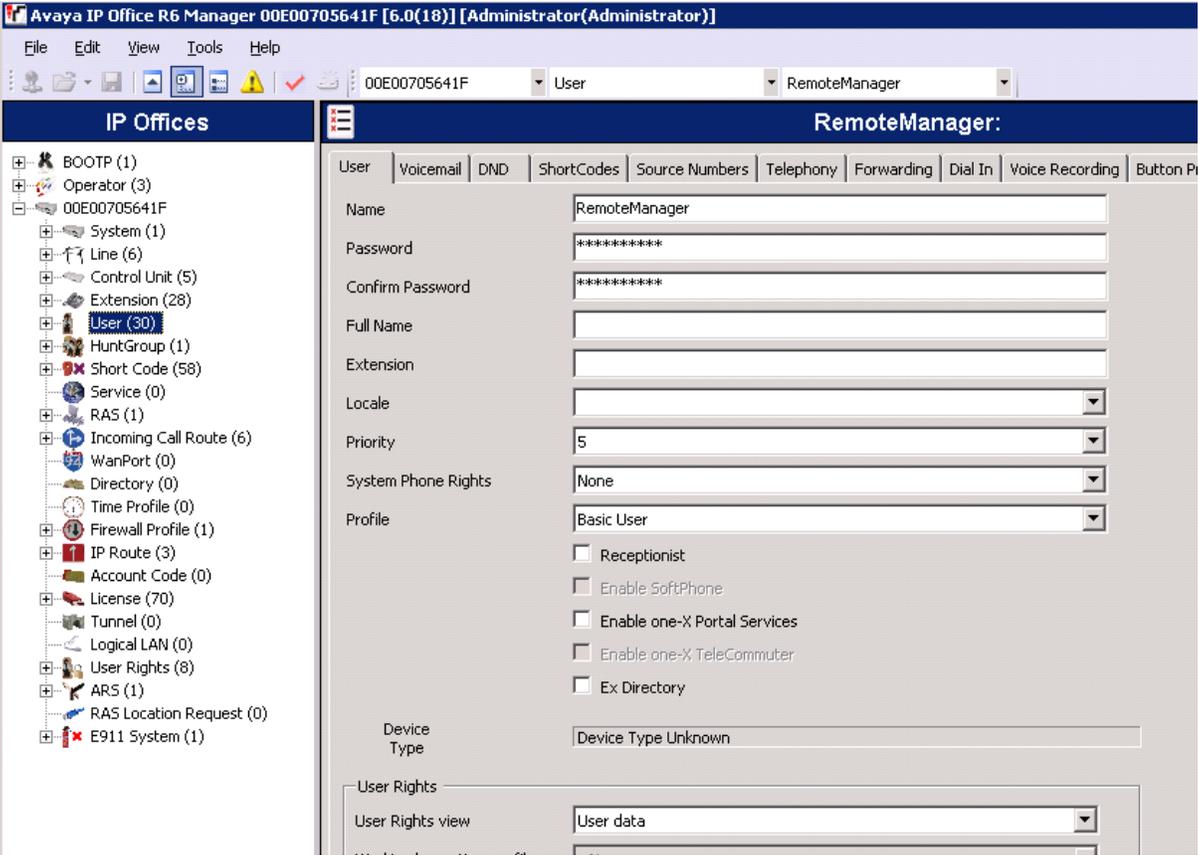
The following equipment and software were used for the sample configuration provided:

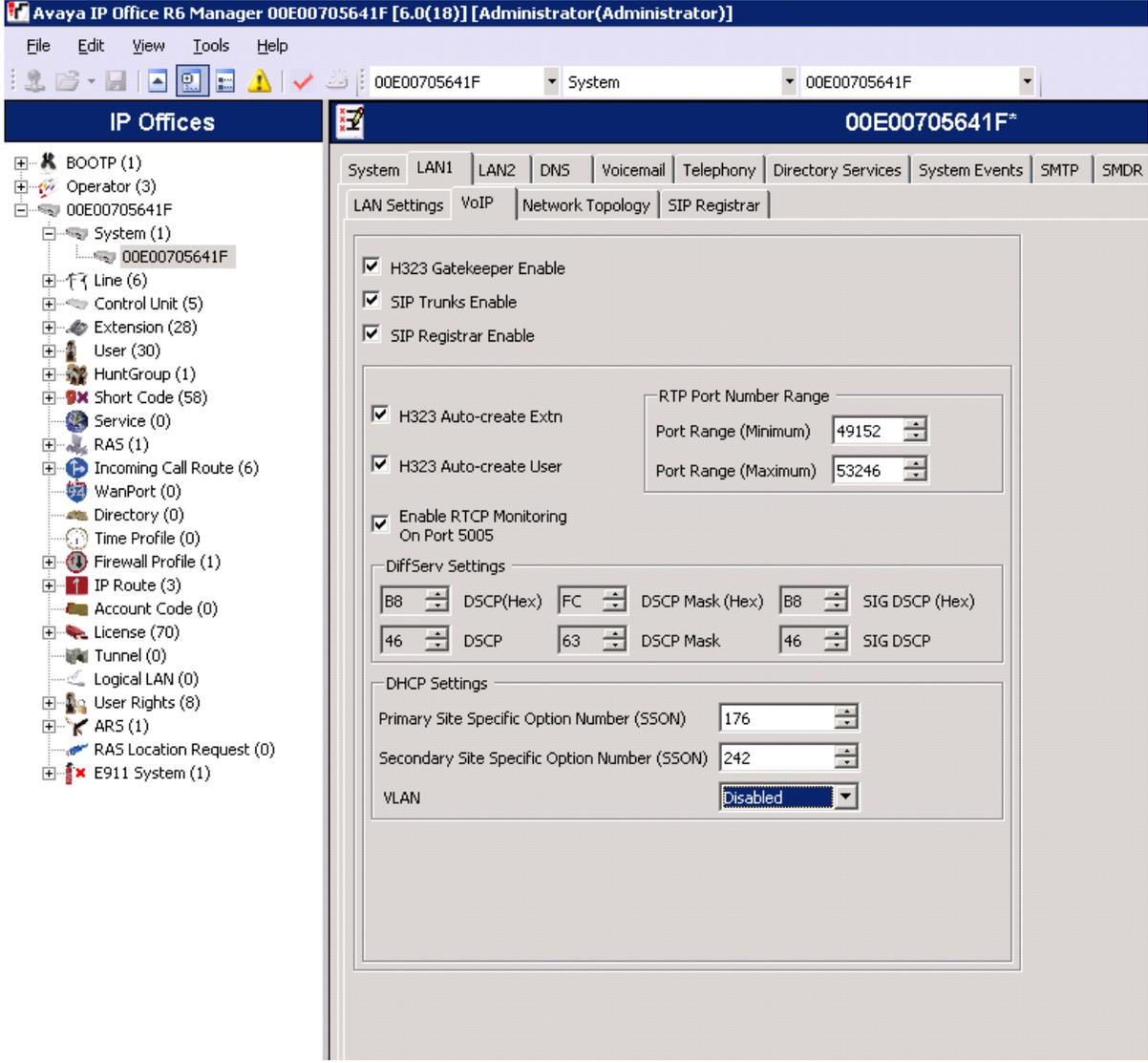
Equipment	Software/Firmware
<i>Avaya PBX Products</i>	
Avaya IP Office 500	6.0 (18)
Avaya IP Office Manager	8.0 (18)
<i>Avaya Messaging (Voice Mail) Products</i>	
Avaya Voicemail Pro	6.0.44
<i>Avaya Telephony Sets</i>	
Avaya 1600 Series IP Telephone (H.323)	1.2.2
Avaya 5600 Series IP Telephones (H.323)	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

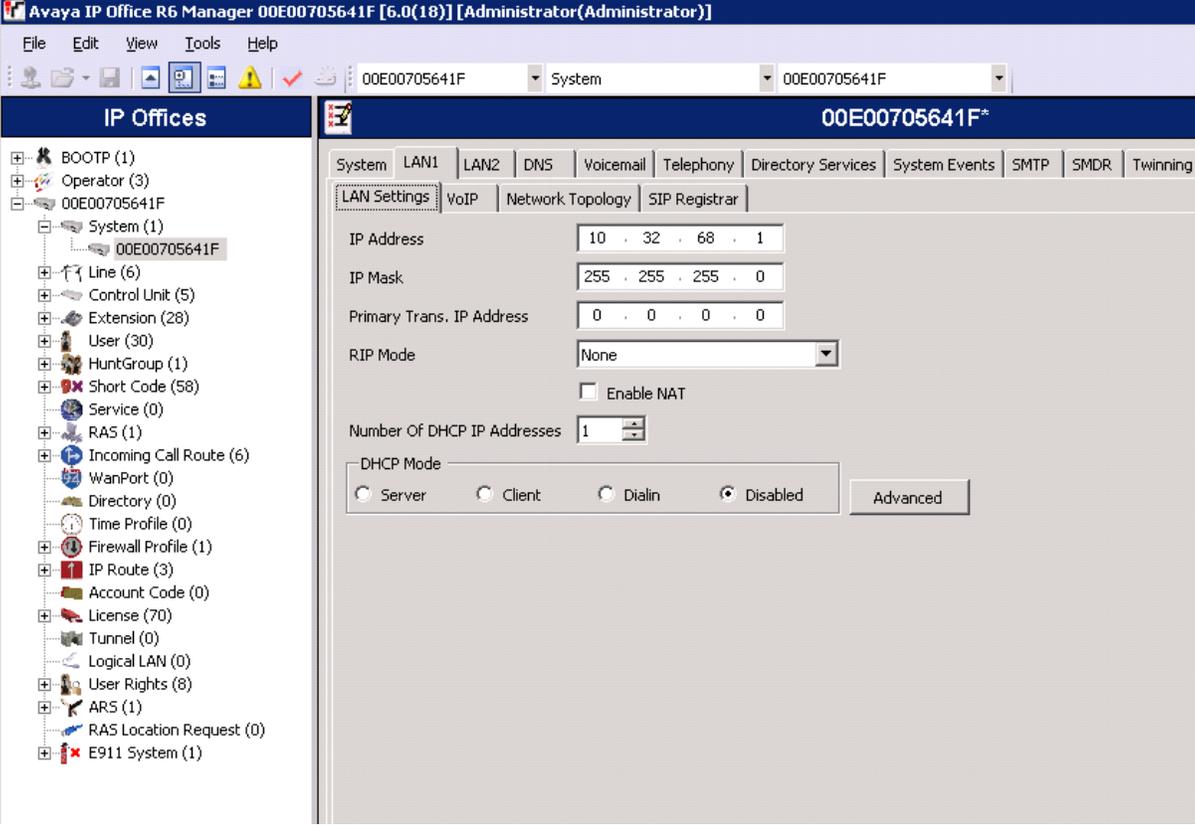
Table 1: Equipment and Software Tested

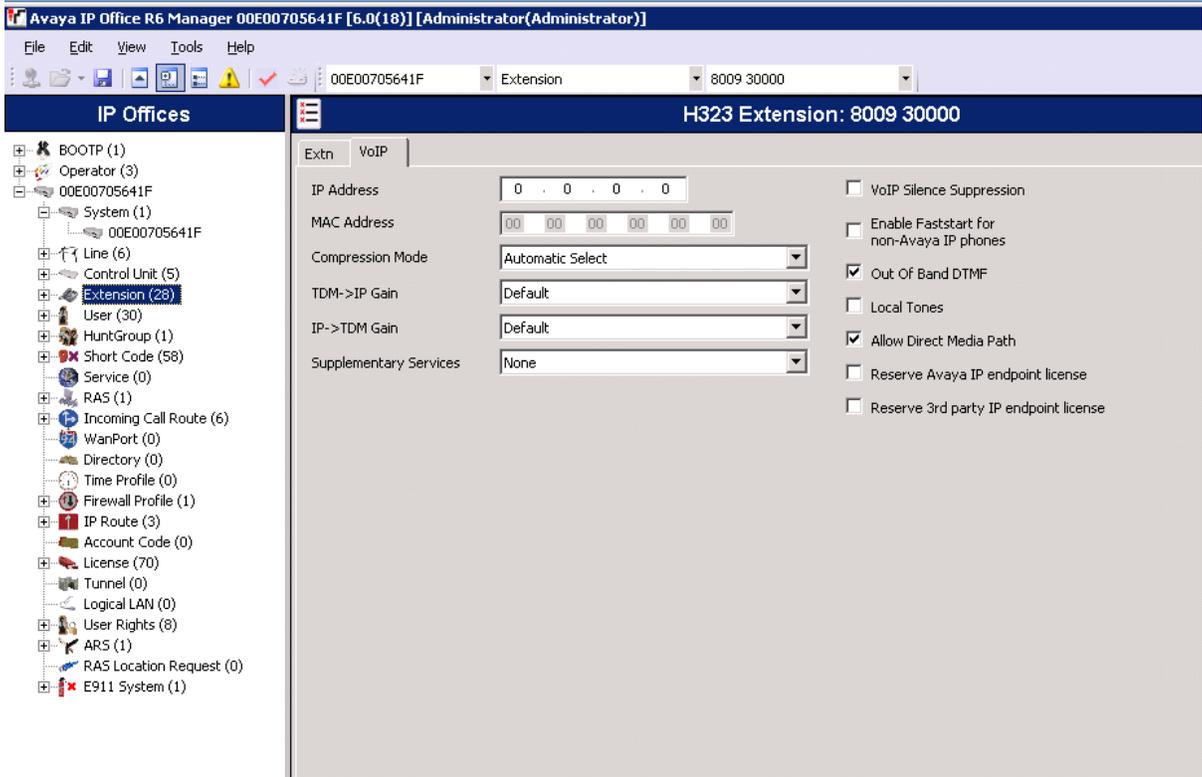
4. Avaya IP Office Settings

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 Start → Programs → IP Office → Manager 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. 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 System, select the LAN1 tab, then select the VoIP tab. Verify that the DiffServ Settings for DSCP and SIG DSCP are set to 46 and 46, respectively.</p>  <p>The screenshot shows the Avaya IP Office R6 Manager interface. The left pane shows the Configuration Tree with 'System' expanded under '00E00705641F'. The right pane shows the 'VoIP' configuration for 'LAN1'. Under 'DiffServ Settings', the 'DSCP' is set to 46 and 'SIG DSCP' is set to 46. Other settings include 'H323 Gatekeeper Enable', 'SIP Trunks Enable', 'SIP Registrar Enable', 'H323 Auto-create Extn', 'H323 Auto-create User', 'Enable RTCP Monitoring On Port 5005', and 'DHCP Settings' with 'Primary Site Specific Option Number (SSON)' set to 176, 'Secondary Site Specific Option Number (SSON)' set to 242, and 'VLAN' set to Disabled.</p>

Step	Description
4.	<p>Disable DHCP server on Avaya IP Office.</p> <p>Select the LAN Settings tab. Set the DHCP Mode to Disabled. Click OK to continue (not shown).</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 main window is titled '00E00705641F*' and has several tabs: System, LAN1, LAN2, DNS, Voicemail, Telephony, Directory Services, System Events, SMTP, SMDR, and Twinning. The 'LAN Settings' tab is active. The 'IP Address' field is set to '10 . 32 . 68 . 1', 'IP Mask' is '255 . 255 . 255 . 0', and 'Primary Trans. IP Address' is '0 . 0 . 0 . 0'. The 'RIP Mode' is set to 'None'. There is an unchecked checkbox for 'Enable NAT'. The 'Number Of DHCP IP Addresses' is set to '1'. The 'DHCP Mode' section has four radio buttons: 'Server', 'Client', 'Dialin', and 'Disabled', with 'Disabled' selected. An 'Advanced' button is visible to the right of the radio buttons. On the left side of the interface, a tree view shows the system hierarchy, including 'System (1)' and '00E00705641F'.</p>

Step	Description
5.	<p>Verify Direct Media Path.</p> <p>From the Configuration Tree, select Extension. Click on the IP telephone extension to verify. Select the VoIP tab. Verify that Allow Direct Media Path is checked. Click OK 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 main window is divided into a left-hand 'IP Offices' tree and a right-hand configuration pane. The tree shows a hierarchy starting with 'System (1)' containing '00E00705641F', which includes 'Line (6)', 'Control Unit (5)', 'Extension (28)', 'User (30)', 'HuntGroup (1)', 'Short Code (58)', 'Service (0)', 'RAS (1)', 'Incoming Call Route (6)', 'WanPort (0)', 'Directory (0)', 'Time Profile (0)', 'Firewall Profile (1)', 'IP Route (3)', 'Account Code (0)', 'License (70)', 'Tunnel (0)', 'Logical LAN (0)', 'User Rights (8)', 'ARS (1)', and 'RAS Location Request (0)'. The 'Extension (28)' folder is expanded, and the configuration pane shows settings for 'H323 Extension: 8009 30000'. 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->IP Gain (Default), IP->TDM Gain (Default), and Supplementary Services (None). On the right side of the configuration pane, several checkboxes are visible: '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**.



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 page header includes the Motorola logo and "MOTOROLA POINT-TO-POINT WIRELESS SOLUTIONS". A navigation menu on the left includes: Home, Status, System Administration, Configuration, Statistics, **Installation Wizard** (highlighted), Software Upgrade, Remote Management, Diagnostics Plotter, Change Password, License Key, Properties, Reboot, Production Test, and Motorola Engineer. A yellow warning icon is visible above the menu. The main content area is titled "Step 1: Enter equipment details" and contains a table for "Equipment configuration data entry".

Attributes	Value	Units
Link		
Link Name	Motorola PTP 800 Demo	
Site Name	Left CMU	
Antenna		
Antenna Gain	38.0	dBi
RF Feeder Loss	0.0	dB
ODU		
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
IF Cable		
IF Cable Length	0	m
Modem		
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

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 ▶▶](#)

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

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 Motorola Point-to-Point Wireless Solutions web interface. The top navigation bar is blue with the Motorola logo and the text "MOTOROLA POINT-TO-POINT WIRELESS SOLUTIONS". On the left is a dark blue sidebar with a yellow warning triangle icon and a list of navigation options: Home, Status, System Administration (with sub-items Configuration and 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 is white and titled "Step 3: Enter wireless configuration". Below the title is the text "Wireless configuration data entry". A table with three columns: "Attributes", "Value", and "Units" is displayed. The "Attributes" column contains "Maximum Transmit Power (Max 12.0, Min 4.0)", the "Value" column contains a text input field with "4.0" entered, and the "Units" column contains "dBm". Below the table are "Back" and "Next" navigation buttons with double arrow icons.

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

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.

MOTOROLA POINT-TO-POINT WIRELESS SOLUTIONS

LAN Configuration

This page controls the LAN configuration of the PTP wireless unit.

Attributes	Value	Units
IP Interface		
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	
Data Port		
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	
Bridging		
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	

Submit Updated System Configuration 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 'Bridge Configuration' page. At the top, there is a blue header with the Motorola logo and the text 'MOTOROLA POINT-TO-POINT WIRELESS SOLUTIONS'. Below the header is a navigation menu on the left with a yellow warning icon. The main content area is titled 'Bridge Configuration' and contains the following elements:

- A descriptive text: 'This page controls the bridging function and classification of tagged Ethernet frames into priority queues. Q0 is the lowest priority queue.'
- A section for 'Layer 2 Control Protocol Frames' with a table:

Protocol	Bridge	GARP
L2CP Queue Mapping	Q7	Q7
- A section for 'Tagged Ethernet Frames' with a table:

VLAN Priority	P0	P1	P2	P3	P4	P5	P6	P7	Untagged
VLAN Priority Queue Mapping	Q1	Q0	Q2	Q3	Q4	Q5	Q6	Q7	Q1
- A button labeled 'Set Default 802.1Q Priority Mappings'.
- Two buttons at the bottom: 'Submit Updated Values' and 'Reset Form'.

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

System Status

Attributes	Value	Units	Attributes	Value	Units
Link			Wireless		
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
ODU			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
Modem			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	
Ethernet			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.

MOTOROLA POINT-TO-POINT WIRELESS SOLUTIONS

LAN Configuration

This page controls the LAN configuration of the PTP wireless unit.

Attributes	Value	Units
IP Interface		
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	
Data Port		
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	
Bridging		
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	

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.

Bridge Configuration

This page controls the bridging function and classification of tagged Ethernet frames into priority queues. Q0 is the lowest priority queue.

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

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

System Status

Attributes	Value	Units	Attributes	Value	Units
Link			Wireless		
Link Name	Motorola PTP 800 Demo		Wireless Link Status	Up	
Site Name	Right CMU		Maximum Transmit Power	4.0	dBm
Remote MAC Address	00:04: [REDACTED]		Remote Maximum Transmit Power	4.0	dBm
Remote IP Address	10.32.100.200		Channel Bandwidth	50	MHz
ODU			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
Modem			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	
Ethernet			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

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.

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

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