

Spectralink VIEW Certified Configuration Guide

Juniper Networks

Juniper WLAN Controllers WLC2, 8, 200, 216, 800, 880, 2800
with WLA372, 422, 432, 522, 522E, 532, 532E APs

(formerly Trapeze Networks MX2, 8, 200, 216, 800, 2800
with MP372, 422, 432, 522, 522E, 532)

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Chapter 1: Overview

Spectralink's Voice Interoperability for Enterprise Wireless (VIEW) Certification Program is designed to ensure interoperability and high performance between Spectralink Wireless Handsets and wireless LAN (WLAN) infrastructure products.

The products listed below have been thoroughly tested in Spectralink's lab and have passed VIEW Certification. This document details how to configure the Juniper Networks WLAN controllers and access points with Spectralink Wireless Handsets.

Certified Product Summary

Manufacturer:	Juniper Networks: http://www.juniper.net/us/en/			
Certified products:	Controllers:	Access Points:		
	WLC2	WLC800	WLA372	WLA522
	WLC8	WLC880	WLA422	WLA522E
	WLC200	WLC2800	WLA432	WLA532
	WLC216			WLA532E
AP radio:	2.4 GHz (802.11b/g/n), 5 GHz (802.11a/n)			
Security :	None, WEP, WPA-PSK, WPA2-PSK, and WPA2-Enterprise (EAP-FAST and PEAPv0/MSCHAPv2)			
QoS:	Wi-Fi Standard for Spectralink 8440/8450/8452 8020/8030 for all AP's SVP for Spectralink 8020/8030 for all AP's but 532, 532E			
AP and WLC software version tested:	7.6.3.1			
Network topology:	Switched Ethernet (recommended)			
<i>Handset* models tested:</i>	<i>Spectralink 8440/8450/8452 Wireless Handset</i>			
Handset radio mode:	802.11b	802.11b/g	802.11b/g/n	802.11 a & a/n
Meets VIEW minimum call capacity per AP:	6	8	8	10

<i>Handset models tested:</i>	<i>Spectralink 8020/8030 Wireless Handset***</i>	
Handset radio mode:	802.11b	802.11a
Meets VIEW minimum call capacity per AP:**	8 with SVP 6 with Wi-Fi Std QoS	12 with SVP 8 with Wi-Fi Std QoS

*Spectralink handset models and their OEM derivatives are verified compatible with the WLAN hardware and software identified in the table. Throughout the remainder of this document they will be referred to collectively as “Spectralink wireless telephones”, “phones” or “handsets”.

** Maximum calls tested per the VIEW Certification Test Plan. The certified product may actually support a higher number of maximum calls

***WPA2-Enterprise and Wi-Fi Standard QoS are not available for Spectralink 8020/8030 handsets connecting to PBXs using the TDM protocol through a Spectralink Telephony Gateway (handset type 30 on the 8020/8030).

Service Information

If you encounter difficulties or have questions regarding the configuration process, please contact Juniper Networks at 1-888-314-5822.

Known Limitations

Spectralink 8020/8030 handsets using the TDM protocol through a Spectralink Telephony Gateway (handset type 30 on the 8020/8030) can not use WPA2-Enterprise Security and Wi-Fi Standard QoS settings.

- Heavy multicast, broadcast or push-to-talk (PTT) traffic may impair voice quality.
- Voice and data must be separated onto separate service set identifiers (SSIDs) (service profiles within the Juniper) to obtain the best voice performance.
- Ensure that the RSSI for handset clients as indicated at the AP does not exceed -30 dBm to avoid potential radio issues.
- The SVP QoS mode is not recommended for use with WLA532, 532E model AP's.



Note: RADIUS server configuration

This document does not cover the steps involved to configure a RADIUS server required for using WPA2-Enterprise.

Spectralink References

All Spectralink documents are available at <http://support.spectralink.com>.

The screenshot shows the Spectralink Support website. At the top, there is a navigation bar with links for Partner Access, Spectralink.com, Contact Support, and a search box. Below this is the Spectralink logo with the tagline 'solving every day' and the word 'support'. A secondary navigation bar contains links for PRODUCT RESOURCES, RMAs, SERVICE REQUESTS, and CUSTOMER MANAGEMENT. The main content area features a large heading 'Welcome to Spectralink Support' and a sub-heading 'Find resources for your product, or log in for more support options.' Below this is a 'PRODUCT RESOURCES' section with a search form. The search form includes 'Product Category' (set to 'Wi-Fi') and 'Product Type' (set to '- Any -'), with a 'FIND' button. To the right of the search form are links for 'All Documents & Downloads', 'Feature Requests', 'Product Alerts', 'Service Policies', 'FAQs', and 'Contact Support'. Below the search form are two sections: 'RMAs AND SERVICE REQUESTS' and 'CUSTOMER MANAGEMENT', both with lock icons. The 'RMAs AND SERVICE REQUESTS' section contains links for 'RMA Status', 'My Service Requests', 'RMA Forms', 'My Company's Service Requests', 'RMA Requests', 'Repair Pricing', and 'My Company's RMAs'. The 'CUSTOMER MANAGEMENT' section contains links for 'Warranty and Entitlement Lookup', 'My Company's Entitlements', and 'Batch Warranty and Entitlement Lookup'. At the bottom of the page, there is a copyright notice: '© 2013 Spectralink Corporation, All rights reserved. Terms and Conditions | Product Warranty'.

To go to a specific product page

Select the Product Category and Product Type from the dropdown lists and then select the product from the next page. All resources for that particular product are displayed by default under the All tab. Documents, downloads and other resources are sorted by the date they were created so the most recently created resource is at the top of the list. You can further sort the list by the tabs across the top of the list to find exactly what you are looking for. Click the title to open the link.

Specific documents

For the Spectralink 8020/8030 Wireless Handsets, please refer to *Best Practices Guide for Deploying Spectralink 8020/8030 Wireless Handsets*. This white paper covers the security, coverage, capacity and QoS considerations necessary for ensuring excellent voice quality with enterprise Wi-Fi networks.

For the Spectralink 8400 Series Wireless Handsets, please refer to *Best Practices Guide for Deploying Spectralink 8400 Series Wireless Handsets* for detailed information on wireless LAN layout, network infrastructure, QoS, security and subnets.

These two white papers identify issues and solutions based on Spectralink's extensive experience in enterprise-class Wi-Fi telephony. It provides recommendations for ensuring that a network environment is adequately optimized for use with Spectralink Wireless Handsets.

The *Spectralink 8400 Series Wireless Handset Administration Guide* provides a comprehensive list of every parameter available on Spectralink 8400 Series Wireless Handsets.

The *Spectralink 8400 Series Deployment Guide* is your essential reference for provisioning and deploying Spectralink 8400 handsets in any environment.

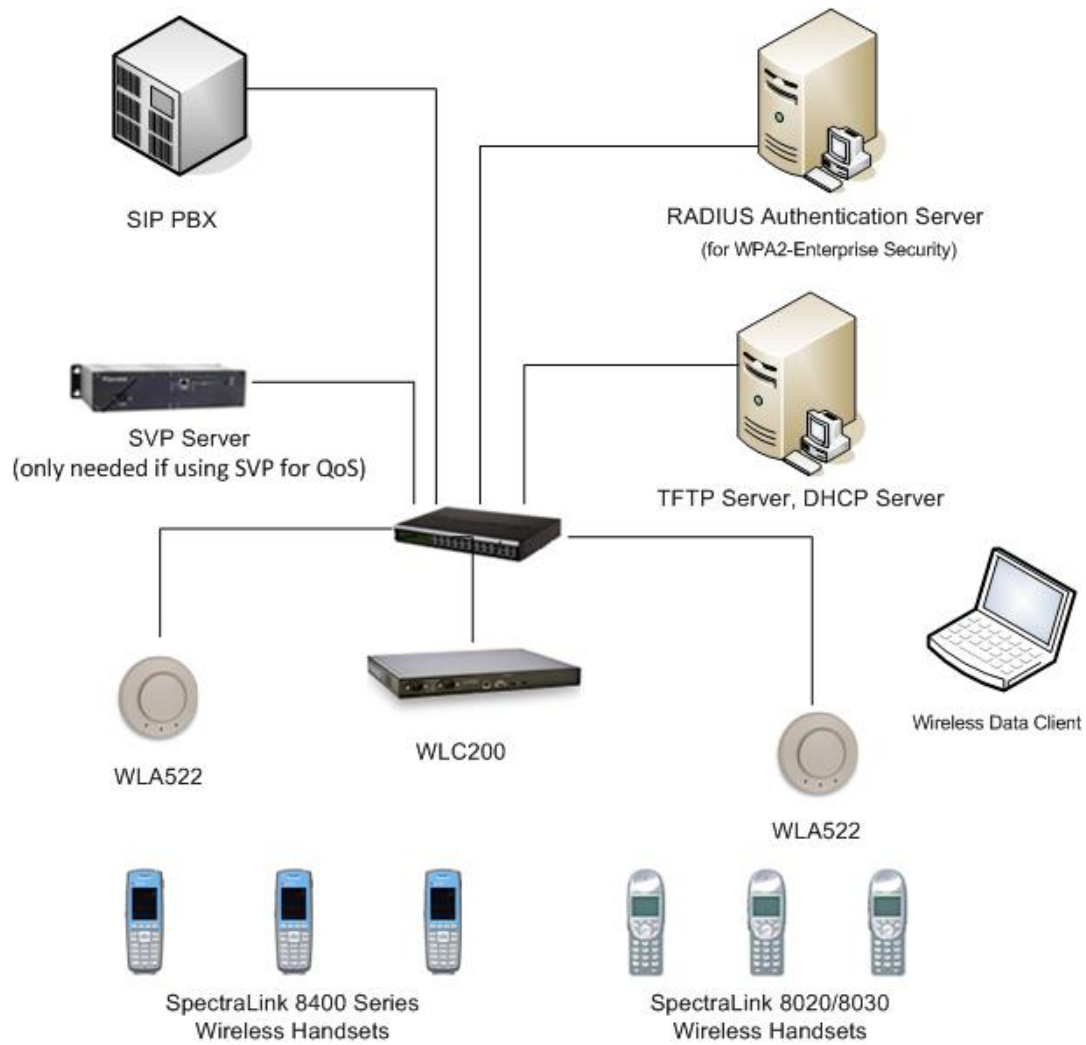
The *Web Configuration Utility User Guide* explains how to use a web browser to configure the Spectralink 8400 Series handsets on a per handset basis.

The *Spectralink 8020/8030 Wireless Handset Handset Administration Tool* document explains how to use a software interface to configure the handsets.

Product Support

If you encounter difficulties or have questions regarding the configuration process, please contact Juniper Networks at 1-888-314-5822 or Spectralink at support.spectralink.com.

Test Network Topology



Note: Your configuration may differ

This configuration is not applicable to all customer environments.

Chapter 2: High-Level Concepts

Juniper WLAN controller's configuration has two profiles:

- Radio
- Service

Radio Profile

This is where parameters like DTIM interval and QoS mechanisms are customized. There can be only **one** radio profile assigned to one of the two radios in an AP. However, as can be seen in the example below there can be **more than one** service profile assigned to a radio profile. In this case the service profiles **common** and **wpa2** have been associated with the radio profile **wmmps**.

The output of the show command below provides an example of a radio profile configured for WMM-Power Save QoS mode:

```
MX-200-AB48EE# show radio-profile
```

```
Options
```

```
QoS mode:           wmm
WMM powersave:     enabled
Weighted-fair-queuing: disabled
Rate-enforcement:  disabled
Auto tune:         None
```

```
802.11
```

```
Beacon interval:   100           Max Tx lifetime: 2000
DTIM interval:     2             Max Rx lifetime: 2000
RTS threshold:     65535         Frag threshold: 2346
Long-preamble:     disabled
```

```
11n
```

```
Channel width (11na): 40MHz
```

```
Auto tune
```

```
Tune channel range (11a): lower-bands
Tune power interval:     600
Tune channel interval:  3600           Power ramp interval: 60
Channel holddown:       900
```

```
RF-scanning
```

```
Mode:               PASSIVE
```

Channel-scope: OPERATING
 CTS-to-self: disabled
 RFID: disabled

Other

Countermeasures: none
 DFS channels: enabled
 Client tx power constraint: none
 WMM CAC Parameters:

Queue	ACM	Max %	Police
Background	NO	0	YES
BestEffort	NO	0	YES
Video	YES	0	YES
Voice	YES	0	YES

Service profiles: s1
 Snoop filters: none

Service Profile

The service profile is where attributes like the SSID name and security options are defined. A service profile is never directly associated with a particular radio on an AP. A service profile is only active when it is associated with a radio profile and the radio profile is associated with an AP.

The output of the show command below provides an example of a service profile with settings specific to WMM-Power Save QoS:

```
MX-200-AB48EE# show serviceprofile s1
```

General attributes

SSID name: s1
 SSID type: crypto

11n attributes

11n Mode (na): enabled
 11n Mode (ng): disabled
 Guard Interval: long
 Frame aggregation mode: enabled
 MSDU Max length: 4k
 MPDU Max length: 64k

Options

Auth: Fallthru none
 Mesh: None
 L2: None
 802.11: Beacon, Idle-client-probing

Crypto

RSN-IE	
Authentication:	802.1X
Encryption:	RSN
Cipher:	CCMP

SSID attributes

Vlan name:	default
Qos profile:	sip

WEP

Active-unicast-index:	1
Active-multicast-index:	1
Preset keys:	None

Web Portal

Logout mode:	disabled
Session timeout:	5

SODA

Enforce checks:	enabled
-----------------	---------

Miscellaneous

CAC:	None
CAC max-sessions:	14
CAC VoIP max-calls:	12
Short retry counter:	3
Long retry counter:	5
Max bandwidth:	unlimited
User idle timeout:	180 s
Active call timeout:	120 s
Handshake timeout:	no timeout

802.11 settings

11a

Beacon rate:	6
Multicast rate:	24
Mandatory rates:	6, 12, 24
Standard rates:	9, 18, 36, 48, 54
Disabled rates:	None

11b

Beacon rate:	5.5
Multicast rate:	11
Mandatory rates:	5.5, 11
Standard rates:	None

Disabled rates:	1, 2
11g	
Beacon rate:	5.5
Multicast rate:	11
Mandatory rates:	5.5, 11
Standard rates:	6, 9, 12, 18, 24, 36, 48, 54
Disabled rates:	1, 2
11na	
Beacon rate:	6
Multicast rate:	24
Mandatory rates:	6, 12, 24
Standard rates:	9, 18, 36, 48, 54, m0, m1, m2, m3, m4, m5, m6, m7, m8, m9, m10, m11, m12, m13, m14, m15, m16, m17, m18, m19,m20, m21, m22, m23
Disabled rates:	None
11ng	
Beacon rate:	1
Multicast rate:	11
Mandatory rates:	5.5, 11
Standard rates:	9, 18, 36, 48, 54, m0, m1, m2, m3, m4, m5, m6, m7, m8, m9, m10, m11, m12, m13, m14, m15, m16, m17, m18, m19,m20, m21, m22, m23
Disabled rates:	1,2

Radio Profiles on an AP

This summary shows two APs and the radio profiles associated with the two radios. **Radio 1** is the 2.4GHz (802.11b/g/n) radio band and **Radio 2** is the 5GHz (802.11a/n) radio band. In the configuration below the **view** radio profile is associated with all of the A-Band and B/G-Band radios.

Purpose:

To view which radio profiles are configured on the APs, use the following show command:

Command:

```
show ap config
```

Result:

AP	AP Name	Model	Mode	Radio 1 profile	Radio 2 profile
---	-----	-----	-----	-----	-----
1	AP01	MP-522		view	view
2	AP02	MP-522		view	view

Chapter 3: Configure Controller from Factory Defaults

Configuring Communication through the Console Port

- 1 Using a standard RS-232 cable, connect the **WLC** to the serial port of a terminal or PC.
- 2 Run a terminal emulation program (such as Putty or HyperTerminal) or use a VT-100 terminal with the following configuration:

Bits per second:	9600
Data bits:	8
Parity:	None
Stop bits:	1
Flow control:	None

- 3 Press Enter three times to display the **WLC** login screen, and to get past the **Username** prompt and the **Password** prompt. There are no default usernames or passwords.
- 4 Type enable to enter privileged mode. The default password is blank.

Configuring Communication through the Web Server

The Juniper Web interface is known as WebView. This interface provides rudimentary configuration and monitoring, but many of the advanced configuration options need to be set through the command line interface.

Below is the set of commands enabling WebView. Note that the embedded Web server uses HTTPS, so the configuration of the crypto functions is required.

Purpose:

Enable Web server.

Command:

```
set ip https server enable
```

Purpose

Generate keys for security. Assuming username of **admin**, which is the default. Answer prompts as needed. Answer to **Common Name** prompt must be **admin.cert**

Command:

```
crypto generate key admin 1024
```

Purpose:

Generate self-signed certificate.

Command:

```
crypto generate self-signed admin
```

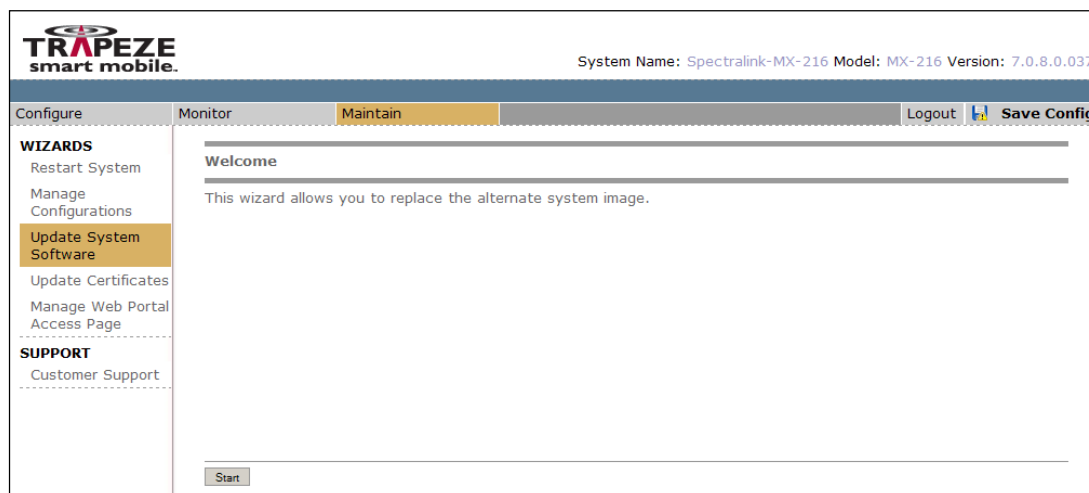


Note: WebView username and password

The username for WebView is "admin" and the password the enable password. The password for the "admin" user will not work as the password for WebView.

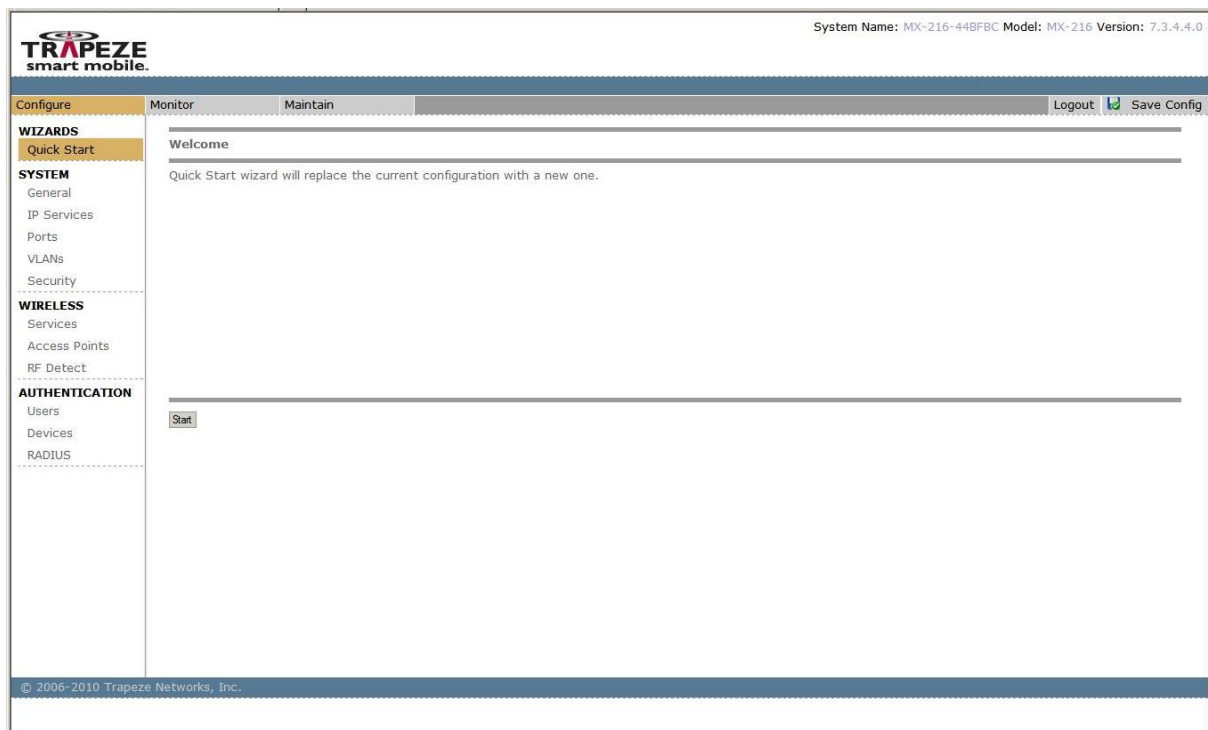
Upgrade Firmware using WebView

Using WebView, click the **Maintain** tab and select **Update System Software** in the navigation pane on the left (see below). The wizard will guide you through the upgrade process.



Reset to Factory Defaults using WebView

Using WebView, click the **Configure** tab and select **Quick Start** in the navigation pane on the left (see below). The wizard will guide you to enter a minimal set of starting parameters. The other parameters will be set to their default values.



Chapter 4: Configure VLAN, Ports and Security

Common Parameters

Purpose:

Set controller name.

Command:

```
set system name <Name>
```

Purpose:

Set controller IP address.

Command:

```
set system ip-address <IP Address>
```

Purpose:

Set controller default gateway.

Command:

```
set ip route default <Gateway IP Address> <VLAN Number>
```

Purpose:

Configure VLAN IP address.

Command:

```
set interface <VLAN Number> ip <IP Address> <IP Mask>
```

Purpose:

Set vlan route.

Command:

```
set ip route <Subnet Start Address> <Subnet Mask> <Default Gateway> <VLAN Number>
```

Purpose:

Configure VLAN on ports used for APs and connected to the LAN.

Command:

```
set vlan 1 port <Port Number>
```

Purpose:

Enable Power-Over-Ethernet on ports used for APs.

Command:

```
set port poe <Port Number> enable
```

Purpose:

Enable Telnet. This is optional, but allows configuration through the CLI without requiring a serial cable.

Command:

```
set ip telnet server enable
```

WMM Parameters

No WMM specific VLAN or security settings required.

SVP Parameters **(for use with Spectralink 8020/8030 only)**

Purpose:

Place all SVP traffic (protocol 119) traffic in the class-of-service (CoS) queue 6.

Command:

```
set security acl ip svp permit cos 6 119 0.0.0.0 255.255.255.255 0.0.0.0
255.255.255.255
```

Purpose:

(Optional) If data traffic is to be shared with voice traffic, it must be explicitly enabled.

Commands:

```
set security acl name svp permit 0.0.0.0 255.255.255.255
commit security acl svp
set security acl map svp vlan 1 out
set security acl map svp vlan 1 in
```

Purpose:

Disable Internet Group Management Protocol (IGMP) snooping on a designated VLAN. IGMP snooping must be disabled only when running Spectralink Radio Protocol (SRP), which is used with the Spectralink 8000 Telephony Gateway. SRP uses multicast packets to do an SRP Check-In. These packets are not forwarded through the Mobility Exchange Switch when IGMP snooping is enabled. NOTE: SRP does not support Spectralink Wi-Fi Release 3.0 features, which means that neither Wi-Fi Standard QoS nor WPA2-Enterprise may be used in these deployments.



Note: IGMP snooping

When a tunneled virtual LAN (VLAN) is configured over a Layer-3 network, IGMP snooping is turned on by default. IGMP snooping must be disabled each time the tunnel is established.

Command:

```
set igmp disable vlan <name of vlan>
```

Chapter 5: Configure Radio Profile

The radio profile configuration is described below and divided between the two types of QoS supported by the handsets. The handsets and an AP radio can only support one type of QoS mode (WMM-Power Save or SVP) at one time. There is a section for configuring the AP radios common radio-profile to both QoS modes and for each of the QoS modes.

The string <profile name> should be substituted with the radio profile name desired. The example configuration in the appendix uses `view` for the WMM-Power Save QoS mode radio profile and `svp` for the SVP QoS mode radio profile.

Common Parameters

Purpose:

Setting the DTIM interval to 2.

Command:

```
set radio-profile <profile name> dtim-interval 2
```

Purpose:

Prevent the AP from going off-channel to scan.

Commands:

```
set radio-profile <profile name> rf-scanning channel-scope operating  
set radio-profile <profile name> rf-scanning mode passive
```

Purpose:

Disable auto tune power.

Command:

```
set radio-profile <profile name> auto-tune power-config disable
```

Purpose:

Enable DFS (radar avoidance) channels

Command:

```
set radio-profile <profile name> dfs-channels enable
```

Purpose:

Enable service-profiles (SSID's) on a given radio. More than one service-profile may be assigned to a radio profile

Command:

```
set radio-profile <profile name> service-profile <service-e-profile-name>  
(to remove clear radio-profile <profile name> service-profile <service-  
profile-name>)
```

Purpose:

Set or clear paired channel width if desired for 5 GHz.

Command:

```
set radio-profile <profile name> channel-width-na <choice of 20MHz, 40  
MHz>.
```



Note: 2.4 Ghz and paired channels

Paired channels (40 Mhz) are not provided for 2.4 GHz radios.

WMM Parameters

Purpose:

Enable WMM-Power Save (UAPSD).

Command:

```
set radio-profile <profile name> wmm-powersave enable
```

Purpose:

Enable WMM QoS.

Command:

```
set radio-profile <profile name> qos-mode wmm
```

Purpose:

Enable Voice/Video admission control, disable policing, and configure max-utilization for each of the WMM access category queues. This setting is required if the handset is configured for **Mandatory** admission control (recommended) and optional if the handset is configured for **Optional** admission control. Enabling admission control for Voice/Video provides enterprise grade quality of service. Admission control is disabled by default for all access categories.

Commands:

```
set radio-profile <profile name> cac voice mode enable  
set radio-profile <profile name> cac video mode enable
```

Purpose:

Disable policing for all access categories. The maximum utilization settings are set to recommended values for each access category. Policing is enabled by default on all access categories.

Commands:

```
set radio-profile <profile name> cac voice policing disable  
set radio-profile <profile name> cac video policing disable  
set radio-profile <profile name> cac best-effort policing disable  
set radio-profile <profile name> cac background policing disable
```

Purpose:

Set the maximum utilization settings are set to recommended values for each access category. Maximum utilization is disabled (set to 0) by default.

Commands:

For 2.4 GHz Radio:

8400 series with the codecs G722, G711M-law, or G711A-law codecs (not high definition audio):

```
set radio-profile <profile name> cac voice max-utilization 40
```

8020/8030:

```
set radio-profile <profile name> cac voice max-utilization 30
```

```
set radio-profile <profile name> cac video max-utilization 20
```

For 5 GHz Radio:

8400 series with the codecs G722, G711M-law, or G711A-law codecs (not high definition audio):

```
set radio-profile <profile name> cac voice max-utilization 45
```

8020/8030:

```
set radio-profile <profile name> cac voice max-utilization 30
```

For Both Radios:

```
set radio-profile <profile name> cac best-effort max-utilization 0
```

```
set radio-profile <profile name> cac background max-utilization 0
```

SVP Parameters

(for use with Spectralink 8020/8030 only)

Purpose:

Enable SVP QoS.

Command:

```
set radio-profile <profile name> qos-mode svp
```


Review Settings

Purpose:

Review the radio profile settings. The results below are shown for a radio profile configured for WMM-Power Save.

Command:

```
show radio-profile <profile name>
```

Result

```
MX-200-AB48EE# show radio-profile view
```

Options

```
QoS mode:           wmm
WMM powersave:     enabled
Weighted-fair-queuing: disabled
Rate-enforcement:  disabled
Auto tune:         None
```

802.11

```
Beacon interval:   100           Max Tx lifetime: 2000
DTIM interval:     2             Max Rx lifetime: 2000
RTS threshold:     65535         Frag threshold: 2346
Long-preamble:    disabled
```

11n

```
Channel width (11na): 40MHz
```

Auto tune

```
Tune channel range (11a): lower-bands  Tune power interval: 600
Tune channel interval: 3600           Power ramp interval: 60
Channel holddown: 900
```

RF-scanning

```
Mode:             PASSIVE           Channel-scope: OPERATING
CTS-to-self:     disabled          RFID:           disabled
```

Other

```
Countermeasures:  none
DFS channels:     enabled
Client tx power constraint: none
WMM CAC Parameters:
Queue            ACM      Max %      Police
Background      NO       0          YES
BestEffort      NO       0          YES
Video           YES      0          YES
```

Voice	YES	0	YES
Service profiles: s1			
Snoop filters: none			

Chapter 6: Configure Service Profile

Common Parameters

Purpose:

Set frame aggregation for 11n mode to allow both msdu and mpdu operation.

Command:

```
set service-profile <profile name> 11n frame-aggregation all
```

Purpose:

Allow short guard band interval.

Command:

```
set service-profile <profile name> 11n short-guard-interval enable
```

Purpose:

Set data rates.



Note: Minimum dBm readings

1.0 and 2.0 Mbps rates are disabled on 2.4 GHz to increase throughput and improve network performance. This could lower the range of the AP's in the network. For setting up the **Data Rates**, please consult your facility's RF site survey, designed for voice traffic, to determine if you have sufficient coverage to support all data rates. Spectralink Wireless Handsets require the following minimum dBm reading to support the corresponding **Mandatory** data rate setting in the access point.

<i>802.11 Radio Standard</i>	<i>Minimum Available Signal Strength (RSSI)</i>	<i>Maximum "Mandatory" Data Rate</i>
802.11b	-63 dBm	5.5 Mb/s
	-60 dBm	11 Mb/s
802.11g	-63 dBm	6 Mb/s
	-47 dBm	54 Mb/s
802.11a	-60 dBm	6 Mb/s
	-45 dBm	54 Mb/s

Commands:

```

set service-profile <profile-name> transmit-rates 11b mandatory 5.5,11.0
disabled 1.0,2.0 5.5,11.0 beacon-rate 5.5 multicast-rate 11.0
set service-profile <profile-name> transmit-rates 11g mandatory 5.5,11.0
disabled 1.0,2.0 beacon-rate 5.5 multicast-rate 11.0
set service-profile <profile-name> transmit-rates 11a mandatory
6.0,12.0,24.0 beacon-rate 6.0 multicast-rate 24.0
set service-profile <profile-name> transmit-rates 11na mandatory
6.0,12.0,24.0 beacon-rate 6.0 multicast-rate 24.0
set service-profile <profile-name> transmit-rates 11ng mandatory 5.5,11.0
disabled 1.0,2.0 beacon-rate 1.0 multicast-rate 11.0

```

Purpose:

Enable Proxy-ARP. This eliminates delays in audio at the start of a call and may be necessary for a handset in standby to ring when called.

Command:

```
set service-profile <profile name> proxy-arp enable
```

WMM Parameters

No specific service profile parameter settings are necessary for the WMM QoS mode.

SVP Parameters

(for use with Spectralink 8020/8030 only)

Purpose:

Sets the number of short retries to 3

Command:

```
set service-profile <profile name> short-retry-count 3
```

Open Parameters

(No Security - Security is “None”)

Purpose:

Configure SSID name.

Command:

```
set service-profile <profile name> ssid-name <SSID Name>
```

Purpose:

Authentication set to open access.

Command:

```
set service-profile <profile name> auth-fallthru last-resort  
set service-profile <profile name> ssid-type clear
```

Purpose:

Associate the service profile with a VLAN

Command:

```
set service-profile <profile name> attr vlan-name <VLAN Name>
```

WEP Parameters



Note: WEP and WPA-PSK disable 11n

Setting an SSID in WEP or WPA-PSK security disables 11n packet elements and rates on the radio to which the service profile is assigned.

Purpose:

Configure SSID name.

Command:

```
set service-profile <profile name> ssid-name <SSID Name>
```

Purpose:

Authentication set to open access.

Command:

```
set service-profile <profile name> auth-fallthru last-resort
```

Purpose:

Authentication set to shared access.

Command:

```
set service-profile <profile name> shared-key-auth enable
```

Purpose:

Set to 40-bit WEP security.

Command:

```
set service-profile <profile name> cipher-wep40 enable
```

Purpose:

Set to 104-bit WEP security (called 128-bit in the handset).

Command:

```
set service-profile <profile name> cipher-wep104 enable
```

Purpose:

Choose the key index and the key. Note: if a key index greater than 1 is used, the lower keys must be filled with a value of the correct number of digits.

Command:

```
set service-profile <profile name> wep key-index 1 key <either 10 or 26  
ASCII characters representing hexadecimal digits>
```

Purpose:

Associate the service profile with a VLAN

Command:

```
set service-profile <profile name> attr vlan-name <VLAN Name>
```

WPA-PSK Parameters



Note: WEP and WPA-PSK disable 11n

Setting an SSID in WEP or WPA-PSK security disables 11n packet elements and rates on the radio to which the service profile is assigned.

Purpose:

Configure SSID name.

Command:

```
set service-profile <profile name> ssid-name <SSID Name>
```

Purpose:

Authentication set to open access.

Command:

```
set service-profile <profile name> auth-fallthru last-resort
```

Purpose:

Disable RSN-IE security.

Command:

```
set service-profile <profile name> rsn-ie disable
```

Purpose:

Set to WPA security.

Command:

```
set service-profile <profile name> wpa cipher-tkip enable
```

Purpose:

Enable WPA Security.

Command:

```
set service-profile <profile name> wpa-ie enable
```

Purpose:

Configure Pre-Shared Key passphrase.

Command:

```
set service-profile <profile name> psk-phrase <passphrase>
```

Purpose:

Enable Pre-Shared Key Authentication.

Command:

```
set service-profile <profile name> wpa auth-psk enable
```

Purpose:

Disable dot1x Authentication.

Command:

```
set service-profile <profile name> wpa auth-dot1x disable
```

Purpose:

Disable 802.1X Authentication.

Command:

```
set service-profile <profile name> auth-dot1x disable
```

Purpose:

Associate the service profile with a VLAN.

Command:

```
set service-profile <profile name> attr vlan-name <VLAN Name>
```

WPA2-PSK Parameters

Purpose:

Configure SSID name.

Command:

```
set service-profile <profile name> ssid-name <SSID Name>
```

Purpose:

Authentication set to open access.

Command:

```
set service-profile <profile name> auth-fallthru last-resort
```

Purpose:

Enable WPA2-PSK Security cipher (AES-CCMP).

Command:

```
set service-profile <profile name> cipher-ccmp enable
```

Purpose:

Enable WPA2 Security.

Command:

```
set service-profile <profile name> rsn-ie enable
```

Purpose:

Configure PSK passphrase.

Command:

```
set service-profile <profile name> psk-phrase <passphrase>
```

Purpose:

Enable Pre-Shared Key Authentication.

Command:

```
set service-profile <profile name> auth-psk enable
```

Purpose:

Disable 802.1X Authentication.

Command:

```
set service-profile <profile name> auth-dot1x disable
```

Purpose:

Associate the service profile with a VLAN.

Command:

```
set service-profile <profile name> attr vlan-name default
```

WPA2-Enterprise Parameters

Purpose:

Set a timeout to use if something goes wrong during an enterprise authentication (recommended value is 60 ms).

Command:

```
set dot1x timeout handshake 60
```

Purpose:

Configure the SSID name.

Command:

```
set service-profile <profile name> ssid-name <SSID Name>
```

Purpose:

Enable WPA2-Enterprise (802.1X) Security.

Commands:

```
set service-profile <profile name> cipher-cmp enable  
set service-profile <profile name> rsn-ie enable  
set service-profile <profile name> attr vlan-name default
```

Review Settings

Purpose:

Review the service profile settings. The results below are shown for a radio profile configured for WMM-Power Save and WPA2-Enterprise security.

Command:

```
show service-profile <profile name>
```

Result:

```
MX-200-AB48EE# show service-profile s1
```

General attributes

```
  SSID name:          s1
  SSID type:          crypto
```

11n attributes

```
  11n Mode (na):      enabled
  11n Mode (ng):      disabled
  Guard Interval:     short
  Frame aggregation mode: all
  MSDU Max length:    4k
  MPDU Max length:    64k
```

Options

```
  Auth:               Fallthru none
  Mesh:               None
  L2:                 Proxy-ARP
  802.11:             Beacon, Idle-client-probing
```

Crypto

```
  RSN-IE
  Authentication:     802.1X
  Encryption:         RSN
  Cipher:             CCMP
```

SSID attributes

```
  Vlan name:          default
  Qos profile:         sip
```

WEP

```
  Active-unicast-index: 1
  Active-multicast-index: 1
  Preset keys:          None
```

Web Portal

Logout mode: disabled
 Session timeout: 5

SODA

Enforce checks: enabled

Miscellaneous

CAC: None
 CAC max-sessions: 14
 CAC VoIP max-calls: 12
 Short retry counter: 3
 Long retry counter: 5
 Max bandwidth: unlimited
 User idle timeout: 180 s
 Active call timeout: 120 s
 Handshake timeout: no timeout

802.11 settings

11a

Beacon rate: 6
 Multicast rate: 24
 Mandatory rates: 6, 12, 24
 Standard rates: 9, 18, 36, 48, 54
 Disabled rates: None

11b

Beacon rate: 5.5
 Multicast rate: 11.0
 Mandatory rates: 5.5, 11
 Standard rates: None
 Disabled rates: 1, 2

11g

Beacon rate: 5.5
 Multicast rate: 11
 Mandatory rates: 5.5, 11
 Standard rates: 6, 9, 12, 18, 24, 36, 48, 54
 Disabled rates: 1, 2

11na

Beacon rate: 6
 Multicast rate: 24
 Mandatory rates: 6, 12, 24
 Standard rates: 9, 18, 36, 48, 54, m0, m1, m2, m3, m4, m5, m6, m7, m8, m9, m10,

	m11, m12, m13, m14, m15, m16, m17, m18, m19, m20, m21, m22, m23
Disabled rates:	None
11ng	
Beacon rate:	1
Multicast rate:	11
Mandatory rates:	1, 2, 5.5, 11
Standard rates:	6, 9, 12, 18, 24, 36, 48, 54, m0, m1, m2, m3, m4, m5, m6, m7, m8, m9, m10, m11, m12, m13, m14, m15, m16, m17, m18, m19, m20, m21, m22, m23
Disabled rates:	1,2

Chapter 7: Configure APs

Purpose:

Set AP model and port.

Command:

```
set ap <ap #> port <port #> model <AP model>
```

Purpose:

Configure B-Band Radio (known as radio 1). In this example, the B-Radio is disabled.. The A-Band radio is known as radio 2.

Command:

```
set ap <ap #> radio 1 mode disable
```

Purpose:

Disable load balancing between APs. Repeat for all APs and radios.

Command:

```
set ap <ap #> radio <radio #> load-balancing disable
```

Purpose:

Configure A-Band Radio (known as radio 2). In this example, the A-Band radio is enabled, set to Channel 161 at 15dBm. The radio profile associated with the radio will be one that was configured for SVP or WMM-Power Save QoS.

Command:

```
set ap <ap #> radio 2 channel 161 radio-profile <radio profile> mode enable  
tx-power 15
```

Review Settings

Purpose:

Review AP configuration settings.

Command:

```
show ap config <ap #>
```

Result:

```
MX-200-AB48EE# show ap config 12
```

```
AP 12 (AP12)
```

```
Model:                               MP-522
  Mode:
  Bias:                               high
  Options:                            upgrade-firmware, led-auto
  Connection:                         network
  Serial number:                      a28102000040
  Fingerprint:
  Communication timeout:              25
  Location:
  Contact:
  Description:
  Vlan-profile:
  Tunnel affinity:                    4

Radio 1 (802.11ng)
  Mode:                               enabled      Radio profile: view
  Channel:                            8          Load balancing: NO
  Tx power:                           5          Load balancing group:
  Auto tune max power:                 default    Force rebalance: NO
  Antenna location:                   indoors    Antenna type: INTERNAL
  Service profiles:
  s1
  Snoop filters on radio: none
  Snoop filters on radio profile: none

Radio 2 (802.11na)
  Mode:                               disabled    Radio profile: view
  Channel:                            44        Load balancing: NO
  Tx power:                           5          Load balancing group:
  Auto tune max power:                 default    Force rebalance: NO
  Antenna location:                   indoors    Antenna type: INTERNAL
  Service profiles:
```



```
s1
Snoop filters on radio: none
Snoop filters on radio profile: none
```

Purpose:

Summary of all APs' configuration settings. When the AP number is left out of the command a brief summary is displayed, as shown below.

Command:

```
show ap config
```

Result:

AP	AP Name	Model	Mode	Radio 1 profile	Radio 2 profile
1	AP01	MP-522		view	view
2	AP02	MP-522		view	view

Chapter 8: Configure RADIUS Server Example (WPA2-Enterprise Only)

Purpose:

Configure a RADIUS server to be used by the WLAN controller. Timeout, retransmit, and deadtime parameters may be customized as desired. The values in the command example are valid, but other values may also be used.

Command:

```
set radius server <Name of RADIUS Server> address <IP Address of RADIUS Server> timeout 5 retransmit 3 deadtime 0 key <shared secret key>
```

Purpose:

Create a server group.

Command:

```
set server group <Group Name> members <Name of RADIUS Server>
```

Purpose:

Associate server group with an SSID configured for WPA2-Enterprise security using a server group as an external RADIUS server.

Command:

```
set authentication dot1x ssid <SSID Name> ** pass-through <Group Name>
```

Chapter 9: Configure QoS

In addition to QoS parameters present in the radio and service profiles, there are system-wide settings. Only ingress (packets from the wire side of the switch) needs to be configured.

Purpose:

Set COS/DSCP Mappings for **Voice** packets. The specific values depend on how the call server is configured. Common values for DSCP values are 46 and 48.

Command:

```
set qos dscp-to-cos-map <DSCP value> cos 6
```

Purpose:

Set COS/DSCP Mappings for **Control** packets. The specific values depend on how the call server is configured. Common values for DSCP values are 26 and 40.

Command:

```
set qos dscp-to-cos-map <DSCP value> cos 4
```

Purpose:

Set DSCP/DSCP Mappings for **Voice** packets. The specific values depend on how the call server is configured. Common values for DSCP values are 46 and 48.

Command:

```
set qos cos-to-dscp-map 6 dscp <DSCP value>
```

Purpose:

Set DSCP/COS Mappings for **Control** packets. The specific values depend on how the call server is configured. Common values for DSCP values are 26 and 40.

Command:

```
set qos cos-to-dscp-map 4 dscp <DSCP value>
```

Purpose:

Enable SIP Aware so that all SIP traffic will be prioritized

Commands:

```
set qos-profile <sip profile name> cos 0
```

```
set qos-profile <sip profile name> traffic-class voip-data cos 6
```

Command to map to service profile:

```
set service-profile <sp-name> attr qos-profile <sip profile name>
```

Chapter 10: Configure Subnet Roaming

If more than one MX switch is used, then subnet roaming needs to be configured.

To set up subnet roaming between two switches, a mobility domain must be configured on both switches. Choose one of the switches to be the “seed MX switch.”



Note: IP addressing for mobility domain configuration

The IP addresses used in mobility domain configuration must use the system IP address of each switch.

The following commands are performed on the “seed MX switch”

Purpose:

Configure the “seed MX switch” for a domain member.

Commands:

```
set system ip-address <system ip address>
set mobility-domain mode seed domain-name <domain name>
set mobility-domain member <member ip address>
```

The following commands are performed on the other (member) MX switch:

Purpose:

Configure the “member MX switch” for a seed MX switch.

Commands:

```
set system ip-address <system ip address>
set mobility-domain mode member seed-ip <member ip address>
```

Purpose:

Disable IGMP snooping temporarily on the MX that does NOT have the VLAN statically configured.

Command:

```
set igmp disable vlan <vlan name>
```

Purpose:

Clear an existing mobility domain before defining a new one.

Command:

```
clear mobility-domain
```

Purpose:

Check the mobility domain.

Command:

```
show mobility-domain
```

Response

Mobility Domain	name:	default
Member	State	
1.1.1.1	STATE_UP	SEED
1.1.3.1	STATE_UP	MEMBER

Chapter 11: Monitoring

QoS

Purpose:

Monitor which CoS queue traffic is being sent. Most of the traffic should be in the voice queue. If there is no traffic in the voice queue when voice traffic is present, then the DSCP mapping isn't working properly. This could be a result of missing DSCP values in the packets or a misconfigured WLAN controller.

Command:

```
show ap qos-stats
```

Response

CoS	Queue	Rx kb/s	Rx %	Tx kb/s	Tx %	Tx %Req	Tx %Max	Tx Packets	Tx Dropped
1,2	Background	<1	0	<1	0	0	0	0	0
0,3	BestEffort	<1	0	<1	0	0	0	0	0
4,5	Video	<1	0	<1	0	0	0	0	0
6,7	Voice	<1	0	<1	0	0	0	0	0
====>	AP:0001	R:1	<1	0	<1	0			
1,2	Background	<1	0	<1	0	0	0	13	2
0,3	BestEffort	<1	0	<1	0	0	0	211093	103
4,5	Video	98	3	<1	0	0	0	0	0
6,7	Voice	224	1	254	1	0	0	81192	42
====>	AP:0001	R:2	322	4	254	1			
1,2	Background	<1	0	<1	0	0	0	0	0
0,3	BestEffort	<1	0	<1	0	0	0	0	0
4,5	Video	<1	0	<1	0	0	0	0	0
6,7	Voice	<1	0	<1	0	0	0	0	0
====>	AP:0016	R:1	<1	0	<1	0			
1,2	Background	<1	0	<1	0	0	0	15	4
0,3	BestEffort	<1	0	<1	0	0	0	34159	1
4,5	Video	<1	0	<1	0	0	0	0	0
6,7	Voice	80	0	95	0	0	0	8488	4
====>	AP:0016	R:2	80	0	95	0			

WPA2-Enterprise

Purpose:

View clients authenticated with the WLAN controller APs. The response below shows two clients authenticated with WPA2-Enterprise and four with no WPA2-Enterprise-based authentication and no cipher for encrypting data.

Command:

```
show dot1x clients
```

Response

MAC Address	State	vlan	Identity	cipher
-----	-----	-----	-----	-----
00:90:7a:06:e8:9c	Authenticated	default	eapuser	CCMP (RSN)
00:90:7a:06:e7:ad	Authenticated	default	eapuser	CCMP (RSN)
00:90:7a:07:95:8a	Authenticated	default	last-resort	NO-CIPHER
00:90:7a:05:42:fb	Authenticated	default	last-resort	NO-CIPHER
00:90:7a:05:42:eb	Authenticated	default	last-resort	NO-CIPHER
00:90:7a:07:11:c1	Authenticated	default	last-resort	NO-CIPHER

Radio Performance

Purpose:

View counters on an AP and radio basis to inspect radio and other 802.11-related performance counters.

Command:

```
show ap counters 16
```

Response

```
show ap counters 16
```

```
AP: 16                radio: 1
=====
Last packet transfer rate:    <unknown>
Tx packets count:            0      Rx packets count:            0
Clients in power save mode:  0      Multi packets drop:         0
Last packet Rx signal strength: <unknown> Multi bytes drop:         0
Last packet signal noise ratio: 0      User sessions:              0
TKIP packets transfer count:  0      MIC error count:            0
TKIP packets replays:        0      TKIP decrypt errors:       0
CCMP packets decrypt errors:  0      CCMP packets replays:     0
CCMP packets transfer count:  0      Radio resets:              0
Radio receive physical errors: 0      Transmit retries:         0
Radio adjusted Tx power:     0      Noise floor:               0
802.3 Tx packets count:     0      802.3 Rx packets count:   0
No receive descriptor:      0      Invalid Rates              0
```

	TxUnicast		TxMulticast		RxPkts	RxBytes	Undcrypt		
	Pkts	Bytes	Pkts	Bytes			Pkts	Bytes	PhyErr
1.0:	0	0	0	0	0	0	0	0	0
2.0:	0	0	0	0	0	0	0	0	0
5.5:	0	0	0	0	0	0	0	0	0
6.0:	0	0	0	0	0	0	0	0	0
9.0:	0	0	0	0	0	0	0	0	0
11.0:	0	0	0	0	0	0	0	0	0
12.0:	0	0	0	0	0	0	0	0	0
18.0:	0	0	0	0	0	0	0	0	0
24.0:	0	0	0	0	0	0	0	0	0
36.0:	0	0	0	0	0	0	0	0	0
48.0:	0	0	0	0	0	0	0	0	0
54.0:	0	0	0	0	0	0	0	0	0
m0:	0	0	0	0	0	0	0	0	0
m1:	0	0	0	0	0	0	0	0	0
m2:	0	0	0	0	0	0	0	0	0
m3:	0	0	0	0	0	0	0	0	0
m4:	0	0	0	0	0	0	0	0	0
m5:	0	0	0	0	0	0	0	0	0
m6:	0	0	0	0	0	0	0	0	0
m7:	0	0	0	0	0	0	0	0	0
m8:	0	0	0	0	0	0	0	0	0
m9:	0	0	0	0	0	0	0	0	0
m10:	0	0	0	0	0	0	0	0	0
m11:	0	0	0	0	0	0	0	0	0
m12:	0	0	0	0	0	0	0	0	0
m13:	0	0	0	0	0	0	0	0	0
m14:	0	0	0	0	0	0	0	0	0
m15:	0	0	0	0	0	0	0	0	0
TOTL:	0	0	0	0	0	0	0	0	0

```
AP: 16                radio: 2
=====
Last packet transfer rate:      54
Tx packets count:              429034
Clients in power save mode:    2
Last packet Rx signal strength: -27
Last packet signal noise ratio: 68
TKIP packets transfer count:   0
TKIP packets replays:         0
CCMP packets decrypt errors:  0
CCMP packets transfer count:  76
Radio receive physical errors: 0
Radio adjusted Tx power:      11
802.3 Tx packets count:       0
No receive descriptor:         0
Rx packets count:             70280
Multi packets drop:           0
Multi bytes drop:             0
User sessions:                2
MIC error count:              0
TKIP decrypt errors:          0
CCMP packets replays:         0
Radio resets:                 0
Transmit retries:             3328
Noise floor:                  -96
802.3 Rx packets count:       0
Invalid Rates                 0
```

	TxUnicast		TxMulticast		Rx		Undcrypt		PhyErr
	Pkts	Bytes	Pkts	Bytes	RxPkts	RxBytes	Pkts	Bytes	
6.0:	11314	2660308	288678	77221365	0	0	0	0	17982
9.0:	1	236	0	0	0	0	0	0	0
12.0:	173	42410	2787	360393	0	0	0	0	4
18.0:	186	42606	2315	296529	0	0	0	0	8
24.0:	170	33708	1435	189818	1289	134889	0	0	122
36.0:	170	27604	2687	344545	377	66766	0	0	17
48.0:	1476	294852	3058	389195	389	67417	0	0	5
54.0:	89123	16205320	24641	3207296	68225	14064722	0	0	161
m0:	0	0	0	0	0	0	0	0	8
m1:	0	0	0	0	0	0	0	0	0
m2:	0	0	0	0	0	0	0	0	0
m3:	0	0	0	0	0	0	0	0	0
m4:	0	0	0	0	0	0	0	0	0
m5:	0	0	0	0	0	0	0	0	0
m6:	0	0	0	0	0	0	0	0	0
m7:	0	0	0	0	0	0	0	0	0
m8:	0	0	0	0	0	0	0	0	0
m9:	0	0	0	0	0	0	0	0	0
m10:	0	0	0	0	0	0	0	0	1
m11:	0	0	0	0	0	0	0	0	0
m12:	0	0	0	0	0	0	0	0	0
m13:	0	0	0	0	0	0	0	0	0
m14:	0	0	0	0	0	0	0	0	0
m15:	0	0	0	0	0	0	0	0	0
TOTL:	102613	19307044	325601	82009141	70280	14333794	0	0	18308

Appendix

Configuration Example #1: Minimal Configuration on a Single MX with WMM and SVP

Use the command **show configuration** to display all non-default configuration parameters, as shown below. To include the default parameters in this output, use the command **show configuration all**.

This configuration contains radio profiles for both QoS methods supported (WMM and SVP); *however, recall that only one method can be used on any one radio at a time*. This configuration shows only WMM QoS being used on APs "4" and "5" on the 2.4GHz radio (radio "1") and the 5GHz radio (radio "2").

```
# Configuration nvgen'd at 2011-2-25 14:09:26
# Image 7.3.4.4.0
# Model MX-216
# Last change occurred at 2011-2-25 13:43:25
set ip route default 172.29.104.1 1
set ip route 172.29.104.0 255.255.255.0 172.29.104.1 1
set dot1x timeout handshake 60
set system name SystemTestTrapeze
set system ip-address 172.29.104.150
set system location Battery
set system countrycode US
set timezone mountain -8 0
set qos-profile sip cos 0
set qos-profile sip traffic-class voip-data cos 6
set service-profile 1X ssid-name 1X
set service-profile 1X short-retry-count 3
set service-profile 1X proxy-arp enable
set service-profile 1X cipher-ccmp enable
set service-profile 1X rsn-ie enable
set service-profile 1X transmit-rates 11g mandatory 5.5,11.0 disabled
1.0,2.0 beacon-rate 5.5 multicast-rate 11.0
set service-profile 1X transmit-rates 11na mandatory 6.0,12.0,24.0 beacon-
rate 6.0 multicast-rate 24.0
set service-profile 1X transmit-rates 11ng mandatory 5.5,11.0 disabled
1.0,2.0 beacon-rate 5.5 multicast-rate 11.0
set service-profile 1X attr vlan-name default
set service-profile OPEN ssid-name OPEN
```

```
set service-profile OPEN short-retry-count 3
set service-profile OPEN ssid-type clear
set service-profile OPEN proxy-arp enable
set service-profile OPEN auth-fallthru last-resort
set service-profile OPEN auth-dot1x disable
set service-profile OPEN transmit-rates 11g mandatory 5.5,11.0 disabled
1.0,2.0 beacon-rate 5.5 multicast-rate 11.0
set service-profile OPEN transmit-rates 11na mandatory 6.0,12.0,24.0
beacon-rate 6.0 multicast-rate 24.0
set service-profile OPEN transmit-rates 11ng mandatory 5.5,11.0 disabled
1.0,2.0 beacon-rate 5.5 multicast-rate 11.0
set service-profile OPEN attr vlan-name default
set service-profile WEPO128 ssid-name WEPO128
set service-profile WEPO128 short-retry-count 3
set service-profile WEPO128 proxy-arp enable
set service-profile WEPO128 auth-fallthru last-resort
set service-profile WEPO128 wep key-index 1 key encrypted
12485744465a5e577e7a767b676470405347515202080a00005b55
set service-profile WEPO128 wep key-index 2 key encrypted
12485744465a5e577e7a767b676470405347515202080a00005b55
set service-profile WEPO128 wep key-index 3 key encrypted
1446405858517c7c7c7163647040534355560e000802065d574d40
set service-profile WEPO128 wep active-unicast-index 3
set service-profile WEPO128 wep active-multicast-index 3
set service-profile WEPO128 cipher-wep104 enable
set service-profile WEPO128 auth-dot1x disable
set service-profile WEPO128 transmit-rates 11g mandatory 5.5,11.0 disabled
1.0,2.0 beacon-rate 5.5 multicast-rate 11.0
set service-profile WEPO128 transmit-rates 11na mandatory 6.0,12.0,24.0
beacon-rate 6.0 multicast-rate 24.0
set service-profile WEPO128 transmit-rates 11ng mandatory 5.5,11.0 disabled
1.0,2.0 beacon-rate 5.5 multicast-rate 11.0
set service-profile WEPO128 attr vlan-name default
set service-profile WEPO40 ssid-name WEPO40
set service-profile WEPO40 short-retry-count 3
set service-profile WEPO40 proxy-arp enable
set service-profile WEPO40 auth-fallthru last-resort
set service-profile WEPO40 wep key-index 1 key encrypted
014254570f5e505879151e
set service-profile WEPO40 cipher-wep40 enable
set service-profile WEPO40 auth-dot1x disable
set service-profile WEPO40 transmit-rates 11g mandatory 5.5,11.0 disabled
1.0,2.0 beacon-rate 5.5 multicast-rate 11.0
set service-profile WEPO40 transmit-rates 11na mandatory 6.0,12.0,24.0
beacon-rate 6.0 multicast-rate 24.0
```

```
set service-profile WEPO40 transmit-rates 11ng mandatory 5.5,11.0 disabled
1.0,2.0 beacon-rate 5.5 multicast-rate 11.0
set service-profile WEPO40 attr vlan-name default
set service-profile WEPS128 ssid-name WEPS128
set service-profile WEPS128 short-retry-count 3
set service-profile WEPS128 auth-fallthru last-resort
set service-profile WEPS128 wep key-index 1 key encrypted
091d1c5a4d5041455355547b79777c6663754b5e465253050d0d05
set service-profile WEPS128 wep key-index 2 key encrypted
075e731f1a5c4f524f4b5b5d56797f717e646d7b4356445055030f
set service-profile WEPS128 wep key-index 3 key encrypted
1446405858517c7c7c7163647040534355560e000802065d574d40
set service-profile WEPS128 wep key-index 4 key encrypted
014254570f5e505879151e584b5643475d5b5c737b757a60617745
set service-profile WEPS128 wep active-unicast-index 4
set service-profile WEPS128 wep active-multicast-index 4
set service-profile WEPS128 cipher-wep104 enable
set service-profile WEPS128 shared-key-auth enable
set service-profile WEPS128 auth-dot1x disable
set service-profile WEPS128 transmit-rates 11g mandatory 5.5,11.0 disabled
1.0,2.0 beacon-rate 5.5 multicast-rate 11.0
set service-profile WEPS128 transmit-rates 11na mandatory 6.0,12.0,24.0
beacon-rate 6.0 multicast-rate 24.0
set service-profile WEPS128 transmit-rates 11ng mandatory 5.5,11.0 disabled
1.0,2.0 beacon-rate 5.5 multicast-rate 11.0
set service-profile WEPS128 attr vlan-name default
set service-profile WEPS40 ssid-name WEPS40
set service-profile WEPS40 short-retry-count 3
set service-profile WEPS40 proxy-arp enable
set service-profile WEPS40 auth-fallthru last-resort
set service-profile WEPS40 wep key-index 1 key encrypted
06575d72181b5f4e5d4e42
set service-profile WEPS40 wep key-index 2 key encrypted
101f5b4a5142445c545d7a
set service-profile WEPS40 wep active-unicast-index 2
set service-profile WEPS40 wep active-multicast-index 2
set service-profile WEPS40 cipher-wep40 enable
set service-profile WEPS40 shared-key-auth enable
set service-profile WEPS40 auth-dot1x disable
set service-profile WEPS40 transmit-rates 11g mandatory 5.5,11.0 disabled
1.0,2.0 beacon-rate 5.5 multicast-rate 11.0
set service-profile WEPS40 transmit-rates 11na mandatory 6.0,12.0,24.0
beacon-rate 6.0 multicast-rate 24.0
set service-profile WEPS40 transmit-rates 11ng mandatory 5.5,11.0 disabled
1.0,2.0 beacon-rate 5.5 multicast-rate 11.0
set service-profile WEPS40 11n frame-aggregation disable
```

```

set service-profile WEPS40 attr vlan-name default
set service-profile WMM ssid-name WMM
set service-profile WEPS40 short-retry-count 3
set service-profile WMM proxy-arp enable
set service-profile WMM cipher-ccmp enable
set service-profile WMM wpa-ie enable
set service-profile WMM rsn-ie enable
set service-profile WMM transmit-rates 11g mandatory 5.5,11.0 disabled
1.0,2.0 beacon-rate 5.5 multicast-rate 11.0
set service-profile WMM transmit-rates 11na mandatory 6.0,12.0,24.0 beacon-
rate 6.0 multicast-rate 24.0
set service-profile WMM transmit-rates 11ng mandatory 5.5,11.0 disabled
1.0,2.0 beacon-rate 5.5 multicast-rate 11.0
set service-profile WMM attr vlan-name default
set service-profile WPA ssid-name WPA
set service-profile WPA short-retry-count 3
set service-profile WPA proxy-arp enable
set service-profile WPA auth-fallthru last-resort
set service-profile WPA cipher-tkip enable
set service-profile WPA wpa-ie enable
set service-profile WPA transmit-rates 11g mandatory 5.5,11.0 disabled
1.0,2.0 beacon-rate 5.5 multicast-rate 11.0
set service-profile WPA transmit-rates 11na mandatory 6.0,12.0,24.0 beacon-
rate 6.0 multicast-rate 24.0
set service-profile WPA transmit-rates 11ng mandatory 5.5,11.0 disabled
1.0,2.0 beacon-rate 5.5 multicast-rate 11.0
set service-profile WPA psk-encrypted
091c4f5d4a5c1644085a557a737d2c3165744a544e005803010e060256014e130d0e5100535
7025f5d07535a525315
5f000209055d78141c5c41064247520a507d
set service-profile WPA auth-psk enable
set service-profile WPA auth-dot1x disable
set service-profile WPA attr vlan-name default
set service-profile WPA2 ssid-name WPA2
set service-profile WPA2 short-retry-count 3
set service-profile WPA2 proxy-arp enable
set service-profile WPA2 auth-fallthru last-resort
set service-profile WPA2 cipher-ccmp enable
set service-profile WPA2 rsn-ie enable
set service-profile WPA2 transmit-rates 11g mandatory 5.5,11.0 disabled
1.0,2.0 beacon-rate 5.5 multicast-rate 11.0
set service-profile WPA2 transmit-rates 11na mandatory 6.0,12.0,24.0
beacon-rate 6.0 multicast-rate 24.0
set service-profile WPA2 transmit-rates 11ng mandatory 5.5,11.0 disabled
1.0,2.0 beacon-rate 5.5 multicast-rate 11.0

```



```
set service-profile WPA2 psk-encrypted
045f5a575b7319165f4c004e135c0d017f28212a67367a4253415154520b0f0a0508521e460
80155040a57055e5a0
2515d0000425254085250597815485c1f0041
set radius server ciscoacs address 172.29.65.9 encrypted-key
121d001b04021e05
set server group ciscoacsgrp members ciscoacs
set enablepass password b6b706525e1814394621eeb2a1c4d5803fcf
set authentication mac ssid any * local
set authentication dot1x ssid WMM ** pass-through ciscoacsgrp
set authentication dot1x ssid 1X ** pass-through ciscoacsgrp
set user admin password encrypted 11081d081e1c
set user eapuser password encrypted 011607144b1c
set radio-profile SVP
set radio-profile SVP dtim-interval 2
set radio-profile SVP rts-threshold 2347
set radio-profile SVP auto-tune channel-config disable
set radio-profile SVP rf-scanning mode passive
set radio-profile SVP rf-scanning channel-scope operating
set radio-profile SVP qos-mode svp
set radio-profile SVP service-profile OPEN
set radio-profile SVP service-profile WPA2
set radio-profile SVP service-profile WEPO40
set radio-profile SVP service-profile 1X
set radio-profile SVP service-profile WEPO128
set radio-profile SVP service-profile WEPS40
set radio-profile SVP service-profile WEPS128
set radio-profile SVP service-profile WPA
set radio-profile WMMa8400
set radio-profile WMMa8400 dtim-interval 2
set radio-profile WMMa8400 rf-scanning mode passive
set radio-profile WMMa8400 rf-scanning channel-scope operating
set radio-profile WMMa8400 wmm-powersave enable
set radio-profile WMMa8400 cac video mode enable
set radio-profile WMMa8400 cac voice mode enable
set radio-profile WMMa8400 cac video max-utilization 20
set radio-profile WMMa8400 cac voice max-utilization 50
set radio-profile WMMa8400 cac background policing disable
set radio-profile WMMa8400 cac best-effort policing disable
set radio-profile WMMa8400 cac video policing disable
set radio-profile WMMa8400 cac voice policing disable
set radio-profile WMMa8400 service-profile OPEN
set radio-profile WMMa8400 service-profile WEPO40
set radio-profile WMMa8400 service-profile 1X
```

```
set radio-profile wMma8400 service-profile WEPS40
set radio-profile wMma8400 service-profile WEPO128
set radio-profile wMma8400 service-profile WEPS128
set radio-profile wMma8400 service-profile WPA
set radio-profile wMma8400 service-profile WPA2
set radio-profile wMmb8400
set radio-profile wMmb8400 dtim-interval 2
set radio-profile wMmb8400 rf-scanning mode passive
set radio-profile wMmb8400 rf-scanning channel-scope operating
set radio-profile wMmb8400 wmm-powersave enable
set radio-profile wMmb8400 cac video mode enable
set radio-profile wMmb8400 cac voice mode enable
set radio-profile wMmb8400 cac video max-utilization 20
set radio-profile wMmb8400 cac voice max-utilization 40
set radio-profile wMmb8400 cac background policing disable
set radio-profile wMmb8400 cac best-effort policing disable
set radio-profile wMmb8400 cac video policing disable
set radio-profile wMmb8400 cac voice policing disable
set radio-profile wMmb8400 service-profile OPEN
set radio-profile wMmb8400 service-profile WEPO40
set radio-profile wMmb8400 service-profile 1X
set radio-profile wMmb8400 service-profile WEPS40
set radio-profile wMmb8400 service-profile WEPO128
set radio-profile wMmb8400 service-profile WEPS128
set radio-profile wMmb8400 service-profile WPA
set radio-profile wMmb8400 service-profile WPA2
set ap 4 port 4 model MP-372
set ap 4 radio 1 radio-profile WMM mode disable
set ap 4 radio 2 radio-profile WMM mode disable
set ap 5 port 5 model MP-372
set ap 5 radio 1 radio-profile WMM mode disable
set ap 5 radio 1 load-balancing disable
set ap 5 radio 2 channel 60 radio-profile WMM mode disable tx-power 5
set ip telnet server enable
set port poe 1 enable
set port poe 2 enable
set port poe 3 enable
set port poe 4 enable
set port poe 5 enable
set port poe 6 enable
set vlan 1 port 3
set vlan 1 port 6
set vlan 1 port 7
set vlan 1 port 8
```

```
set interface 1 ip 172.29.104.150 255.255.255.0
set security acl name svp permit cos 6 119 0.0.0.0 255.255.255.255 0.0.0.0
255.255.255.255
set security acl name svp permit 0.0.0.0 255.255.255.255
commit security acl svp
set security acl map svp vlan 1 out
set security acl map svp vlan 1 in
set qos dscp-to-cos-map 26 cos 4
set qos dscp-to-cos-map 46 cos 6
set ntp enable
set ntp server 172.29.65.2
```

Configuration Example #2: SVP Configuration for Single MX

(for use with Spectralink 8020/8030 only)

For Reference Only

```
# General Configuration
set ip dns domain trpz.com
set ip dns enable
set ip route default 172.16.1.1 1
set log console enable severity error
set log session disable severity info
set log buffer enable severity error
set log trace enable severity debug
set log mark disable severity notice interval 300
set web-portal enable
set dot1x timeout handshake 60
set dot1x timeout supplicant 30
set dot1x timeout auth-server 30
set dot1x quiet-period 0
set dot1x reauth-max 2
set dot1x tx-period 5
set dot1x reauth-period 3600
set dot1x max-req 2
set dot1x key-tx enable
set dot1x reauth enable
set dot1x authcontrol enable
set dot1x wep-rekey-period 1800
set dot1x wep-rekey enable
set dot1x bonded-period 0
set system name VIEW
set prompt ""
set system ip-address 172.16.1.22
set system idle-timeout 0
set domain security none
set auto-config disable
set system countrycode US

# Security Profile
set service-profile svpvoip ssid-name voip
set service-profile svpvoip ssid-type clear
set service-profile svpvoip beacon enable
```

```
set service-profile Svpvoip proxy-arp disable
set service-profile Svpvoip dhcp-restrict disable
set service-profile Svpvoip no-broadcast disable
set service-profile Svpvoip short-retry-count 3
set service-profile Svpvoip long-retry-count 5
set service-profile Svpvoip auth-fallthru last-resort
set service-profile Svpvoip soda mode disable
set service-profile Svpvoip soda enforce-checks enable
set service-profile Svpvoip max-bw 0
set service-profile Svpvoip cac-mode none
set service-profile Svpvoip cac-session 14
set service-profile Svpvoip user-idle-timeout 180
set service-profile Svpvoip idle-client-probing enable
set service-profile Svpvoip keep-initial-vlan enable
set service-profile Svpvoip web-portal-session-timeout 5
set service-profile Svpvoip wep active-unicast-index 1
set service-profile Svpvoip wep active-multicast-index 1
set service-profile Svpvoip cipher-tkip disable
set service-profile Svpvoip cipher-ccmp enable
set service-profile Svpvoip cipher-wep104 disable
set service-profile Svpvoip cipher-wep40 disable
set service-profile Svpvoip wpa-ie disable
set service-profile Svpvoip rsn-ie enable
set service-profile Svpvoip psk-encrypted <password>
set service-profile Svpvoip auth-psk enable
set service-profile Svpvoip shared-key-auth disable
set service-profile Svpvoip tkip-mc-time 60000
set service-profile Svpvoip auth-dot1x disable
set service-profile Svpvoip mesh mode disable
set service-profile Svpvoip bridging disable
set service-profile Svpvoip load-balancing-exempt disable
set service-profile Svpvoip web-portal-logout mode disable
set service-profile Svpvoip 11n mode-na enable
set service-profile Svpvoip 11n mode-ng enable
set service-profile Svpvoip 11n short-guard-interval enable
set service-profile Svpvoip 11n frame-aggregation all
set service-profile Svpvoip 11n a-msdu-max-length 4k
set service-profile Svpvoip 11n a-mpdu-max-length 64k
set service-profile Svpvoip active-call-idle-timeout 120
set service-profile Svpvoip transmit-rate 11a mandatory 6.0,12.0,24.0
beacon-rate 6.0 multicast-rate AUTO
set service-profile Svpvoip transmit-rate 11b mandatory 5.5,11.0 disabled
1.0,2.0 beacon-rate 5.5 multicast-rate 11.0
```

```

set service-profile SvpVoip transmit-rate 11g mandatory 5.5,11.0 disabled
1.0,2.0 beacon-rate 5.5 multicast-rate 11.0
set service-profile SvpVoip transmit-rate 11na mandatory 6.0,12.0,24.0
beacon-rate 6.0 multicast-rate AUTO
set service-profile SvpVoip transmit-rate 11ng mandatory 5.5,11.0 disabled
1.0,2.0 beacon-rate 5.5 multicast-rate 11.0
set service-profile SvpVoip attr vlan-name Vln
set radius deadtime 0
set radius timeout 5
set radius retransmit 3
set radius das-port 3799
set enablepass password <password>
set authentication mac ssid any * local
set user admin password encrypted <password>

```

AP Radio Profile

```

set radio-profile default beacon-interval 100
set radio-profile default dtim-interval 2
set radio-profile default max-tx-lifetime 2000
set radio-profile default max-rx-lifetime 2000
set radio-profile default rts-threshold 65535
set radio-profile default frag-threshold 2346
set radio-profile default preamble-length short
set radio-profile default auto-tune channel-config disable
set radio-profile default auto-tune 11a-channel-range lower-bands
set radio-profile default auto-tune ignore-clients disable
set radio-profile default auto-tune power-config disable
set radio-profile default auto-tune channel-interval 3600
set radio-profile default auto-tune power-interval 600
set radio-profile default auto-tune power-ramp-interval 60
set radio-profile default auto-tune channel-holddown 900
set radio-profile default countermeasures none
set radio-profile default rf-scanning mode active
set radio-profile default rf-scanning channel-scope operating
set radio-profile default rf-scanning cts-to-self disable
set radio-profile default rfid-mode disable
set radio-profile default wmm-powersave disable
set radio-profile default qos-mode svp
set radio-profile default weighted-fair-queuing disable
set radio-profile default rate-enforcement disable
set radio-profile default dfs-channels enable
set radio-profile default 11n channel-width-na 40MHz
set radio-profile default cac background mode disable
set radio-profile default cac best-effort mode disable

```

```
set radio-profile default cac video mode disable
set radio-profile default cac voice mode disable
set radio-profile default cac background max-utilization 0
set radio-profile default cac best-effort max-utilization 0
set radio-profile default cac video max-utilization 0
set radio-profile default cac voice max-utilization 0
set radio-profile default cac background policing disable
set radio-profile default cac best-effort policing disable
set radio-profile default cac video policing disable
set radio-profile default cac voice policing disable
set radio-profile default service-profile Svpvoip

# AP Basic Configuration
set ap 1 port 4 model MP-422 radiotype 11g
set ap 1 name AP04
set ap 1 bias high
set ap 1 blink disable
set ap 1 upgrade-firmware enable
set ap 1 force-image-download disable
set ap 1 time-out 25
set ap 1 power-mode auto
set ap 1 radio 1 channel 6 radio-profile default mode enable antenna-
location indoors antennatype INTERNAL tx-power 9
set ap 1 radio 1 auto-tune max-power default
set ap 1 radio 1 load-balancing enable
set ap 1 radio 2 channel 36 radio-profile default mode disable antenna-
location indoors antennatype INTERNAL tx-power 18
set ap 1 radio 2 auto-tune max-power default
set ap 1 radio 2 load-balancing enable
set ap 1 local-switching mode disable vlan-profile default

# IP services and port configuration
set arp agingtime 1200
set ip https server enable
set ip telnet server enable
set ip telnet 23
set ip snmp server disable
set ip ssh server enable
set ip ssh 22
set load-balancing mode disable
set load-balancing strictness low
set band-preference none
set port enable 1
set port speed 1 AUTO
```

```
set port duplex 1 full
set port trap 1 disable
set port trap 1 NO
# Set additional ports as appropriate.

# SNMP Configuration
set snmp protocol v1 enable
set snmp protocol v2c disable
set snmp protocol usm disable

# VLAN Configuration
set vlan tagtype dot1q
set vlan 1 name vln tunnel-affinity 5
set vlan 1 port 1
set vlan 1 port 2
# add ports to vlan as appropriate

set spantree backbonefast disable
set spantree uplinkfast disable
set spantree fwddelay 15 vlan 1
set spantree hello 2 vlan 1
set spantree maxage 20 vlan 1
set spantree priority 32768 vlan 1
set spantree disable vlan 1
set spantree enable port 1 1
set spantree portpri 1 priority 128
set spantree portfast 1 disable
set igmp disable vlan 1
set igmp proxy-report enable vlan 1
set igmp querier disable vlan 1
set igmp mrsol disable vlan 1
set igmp version 2 vlan 1
set igmp mrsol mrsi 30 vlan 1
set igmp qi 125 vlan 1
set igmp oqi 255 vlan 1
set igmp qri 100 vlan 1
set igmp lmqi 10 vlan 1
set igmp rv 2 vlan 1
set igmp mrouter port 1 disable
set igmp receiver port 1 disable
# disable router and receivers on other ports as appropriate
set fdb agingtime 1 age 300
set interface 1 ip 172.16.1.22 255.255.255.0
set interface 1 ip dhcp-server disable start 192.168.100.2 stop
192.168.100.254
```



```
set snmp notify profile default drop all
set mobility-domain mode seed domain-name mobdom
set mobility-domain member 172.16.2.20
set rfdetect classification ssid-masquerade rogue
set rfdetect classification seen-in-network rogue
set rfdetect classification ad-hoc skip-test
set rfdetect classification default-classification suspect
set rfdetect log enable
set rfdetect countermeasures mode normal
set rfdetect signature enable
set rfdetect voice-ext snr-threshold 12
set security acl hit-sample-rate 0
set security acl name svp permit cos 6 119 0.0.0.0 255.255.255.255 0.0.0.0
255.255.255.255
set security acl name svp permit 0.0.0.0 255.255.255.255
commit security acl svp
set security acl map svp vlan 1 in
set security acl map svp vlan 1 out
set qos dscp-to-cos-map 1 cos 0
set qos dscp-to-cos-map 2 cos 0
set qos dscp-to-cos-map 3 cos 0
set qos dscp-to-cos-map 4 cos 0
set qos dscp-to-cos-map 5 cos 0
set qos dscp-to-cos-map 6 cos 0
set qos dscp-to-cos-map 7 cos 0
set qos dscp-to-cos-map 8 cos 1
set qos dscp-to-cos-map 9 cos 1
set qos dscp-to-cos-map 10 cos 1
set qos dscp-to-cos-map 11 cos 1
set qos dscp-to-cos-map 12 cos 1
set qos dscp-to-cos-map 13 cos 1
set qos dscp-to-cos-map 14 cos 1
set qos dscp-to-cos-map 15 cos 1
set qos dscp-to-cos-map 16 cos 2
set qos dscp-to-cos-map 17 cos 2
set qos dscp-to-cos-map 18 cos 2
set qos dscp-to-cos-map 19 cos 2
set qos dscp-to-cos-map 20 cos 2
set qos dscp-to-cos-map 21 cos 2
set qos dscp-to-cos-map 22 cos 2
set qos dscp-to-cos-map 23 cos 2
set qos dscp-to-cos-map 24 cos 3
set qos dscp-to-cos-map 25 cos 3
set qos dscp-to-cos-map 26 cos 3
```

```
set qos dscp-to-cos-map 27 cos 3
set qos dscp-to-cos-map 28 cos 3
set qos dscp-to-cos-map 29 cos 3
set qos dscp-to-cos-map 30 cos 3
set qos dscp-to-cos-map 31 cos 3
set qos dscp-to-cos-map 32 cos 4
set qos dscp-to-cos-map 33 cos 4
set qos dscp-to-cos-map 34 cos 4
set qos dscp-to-cos-map 35 cos 4
set qos dscp-to-cos-map 36 cos 4
set qos dscp-to-cos-map 37 cos 4
set qos dscp-to-cos-map 38 cos 4
set qos dscp-to-cos-map 39 cos 4
set qos dscp-to-cos-map 40 cos 5
set qos dscp-to-cos-map 41 cos 5
set qos dscp-to-cos-map 42 cos 5
set qos dscp-to-cos-map 43 cos 5
set qos dscp-to-cos-map 44 cos 5
set qos dscp-to-cos-map 45 cos 5
set qos dscp-to-cos-map 46 cos 5
set qos dscp-to-cos-map 47 cos 5
set qos dscp-to-cos-map 48 cos 6
set qos dscp-to-cos-map 49 cos 6
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set qos dscp-to-cos-map 52 cos 6
set qos dscp-to-cos-map 53 cos 6
set qos dscp-to-cos-map 54 cos 6
set qos dscp-to-cos-map 55 cos 6
set qos dscp-to-cos-map 56 cos 7
set qos dscp-to-cos-map 57 cos 7
set qos dscp-to-cos-map 58 cos 7
set qos dscp-to-cos-map 59 cos 7
set qos dscp-to-cos-map 60 cos 7
set qos dscp-to-cos-map 61 cos 7
set qos dscp-to-cos-map 62 cos 7
set qos dscp-to-cos-map 63 cos 7
set qos cos-to-dscp-map 1 dscp 8
set qos cos-to-dscp-map 2 dscp 16
set qos cos-to-dscp-map 3 dscp 24
set qos cos-to-dscp-map 4 dscp 32
set qos cos-to-dscp-map 5 dscp 40
set qos cos-to-dscp-map 6 dscp 48
set qos cos-to-dscp-map 7 dscp 56
```

```
set ntp disable  
set ntp update-interval 64
```

Configuration Example #3: WMM Configuration for Multiple MXs

MX1 Seed

```

set ip route default 172.16.233.252 1
set ip route 10.2.106.0 255.255.255.0 10.2.28.1 1
set ip route 10.9.0.0 255.255.255.0 10.2.28.1 1
set ip route 10.2.30.0 255.255.255.0 10.2.28.1 1
set ip route 10.64.84.0 255.255.255.0 10.2.28.1 1
set log console enable severity debug
set dot1x quiet-period 0
set dot1x timeout handshake 60
set system name MX1
set prompt view_cert
set system ip-address 172.16.233.253
set system idle-timeout 0
set system countrycode US
set qos-profile sip cos 0
set qos-profile sip traffic-class voip-data cos 6
set service-profile open ssid-name open
set service-profile open ssid-type clear
set service-profile open auth-fallthru last-resort
set service-profile open attr vlan-name default
set service-profile s1 ssid-name s1
set service-profile s1 short-retry-count 3
set service-profile s1 long-retry-count 3
set service-profile s1 psk-encrypted
0948180c4a074043525e567e2d7470676720415f145352060a005557570641140d0005570a5
6005e5a50025e03531053060d0d555d271c4b50495645410958567f
set service-profile s1 lln mode-ng disable
set service-profile s1 lln frame-aggregation disable
set service-profile s1 wpa-ie auth-dot1x disable
set service-profile s1 rsn-ie cipher-ccmp enable
set service-profile s1 rsn-ie enable
set service-profile s1 attr vlan-name default
set service-profile s1 attr qos-profile sip
set radius deadtime 1
set radius server rs1 address 10.2.28.5 encrypted-key
025756085f535976141759
set radius server rs2 address 10.9.0.11 encrypted-key
1446405858517c7c7c7163
set radius server rs3 address 10.2.30.61 encrypted-key
075e731f1a5c4f524f4b5b

```

```
set radius server rs4 address 10.2.28.240 encrypted-key
014254570f5e505879151e
set server group sg1 members rs1
set server group sg2 members rs2
set server group sg3 members rs3
set server group sg4 members rs4
set enablepass password b6b706525e1814394621eeb2a1c4d5803fcf
set authentication dot1x ssid s1 ** pass-through sg4
set user wifi-user password encrypted 0835495d1d5c5446
set user wifi password encrypted 08345f4b1b
set user wifi attr idle-timeout 0
set user wifi attr session-timeout 0
set radio-profile bar
set radio-profile default auto-tune channel-config disable
set radio-profile default wmm-powersave enable
set radio-profile default service-profile s1
set radio-profile open
set radio-profile open auto-tune channel-config disable
set radio-profile open rf-scanning mode passive
set radio-profile open rf-scanning channel-scope operating
set radio-profile open service-profile open
set radio-profile view
set radio-profile view dtim-interval 2
set radio-profile view auto-tune channel-config disable
set radio-profile view rf-scanning mode passive
set radio-profile view rf-scanning channel-scope operating
set radio-profile view wmm-powersave enable
set radio-profile view cac video mode enable
set radio-profile view cac voice mode enable
set radio-profile view service-profile s1
set ap security none
set ap 11 serial-id a28102000066 model MP-522
set ap 11 radio 1 channel 8 radio-profile view mode enable tx-power 5
set ap 11 radio 2 channel 44 radio-profile view mode disable tx-power 5
set ap 12 serial-id a28102000040 model MP-522
set ap 12 radio 1 channel 8 radio-profile view mode enable tx-power 5
set ap 12 radio 2 radio-profile view mode disable
set port poe 1 enable
set port poe 2 enable
set port poe 3 enable
set vlan 1 port 5
set vlan 1 port 8
set vlan 1 port 7
set vlan 1 port 3
```

```
set vlan 1 port 2
set vlan 1 port 9
set vlan 1 port 10
set vlan 1 port 11
set vlan 1 port 12
set vlan 1 port 13
set vlan 1 port 14
set vlan 1 port 15
set vlan 1 port 16
set vlan 1 port 17
set vlan 1 port 1
set vlan 1 port 4
set vlan 1 port 6
set vlan 1 port 18
set vlan 2 name sqa
set vlan 2 port 19
set igmp disable vlan 1
set interface 1 ip 172.16.233.253 255.255.255.0
set interface 1 ip dhcp-server disable start 172.16.233.10 stop
172.16.233.20
set interface 2 ip 10.2.28.47 255.255.255.0
set mobility-domain mode seed domain-name mdl
set mobility-domain member 172.16.233.48
```

MX2 Member:

```
MX-200-AB48EE# show config
set ip route 10.2.30.0 255.255.255.0 10.2.28.1 1
set log console enable severity debug
set system name MX-200-AB48EE
set system ip-address 172.16.233.48
set system countrycode US
set qos-profile sip cos 0
set qos-profile sip traffic-class voip-data cos 6
set service-profile s1 ssid-name s1
set service-profile s1 short-retry-count 3
set service-profile s1 long-retry-count 3
set service-profile s1 psk-encrypted
0948180c4a074043525e567e2d7470676720415f145352060a005557570641140d0005570a5
6005e5a50025e03531053060d0d555d271c4b50495645410958567f
set service-profile s1 11n mode-ng disable
set service-profile s1 11n short-guard-interval disable
set service-profile s1 11n frame-aggregation disable
set service-profile s1 wpa-ie auth-dot1x disable
```

```
set service-profile s1 rsn-ie cipher-ccmp enable
set service-profile s1 rsn-ie enable
set service-profile s1 attr vlan-name default
set service-profile s1 attr qos-profile sip
set radius deadtime 1
set radius server rs1 address 10.2.28.5 encrypted-key
025756085f535976141759
set radius server rs2 address 10.9.0.11 encrypted-key
1446405858517c7c7c7163
set radius server rs3 address 10.2.30.61 encrypted-key
075e731f1a5c4f524f4b5b
set radius server rs4 address 10.2.28.240 encrypted-key
014254570f5e505879151e
set server group sg1 members rs1
set server group sg2 members rs2
set server group sg3 members rs3
set server group sg4 members rs4
set enablepass password b6b706525e1814394621eeb2a1c4d5803fcf
set authentication dot1x ssid s1 ** pass-through sg4
set user wifi-user password encrypted 0835495d1d5c5446
set user wifi password encrypted 08345f4b1b
set radio-profile view
set radio-profile view dtim-interval 2
set radio-profile view auto-tune channel-config disable
set radio-profile view rf-scanning mode passive
set radio-profile view rf-scanning channel-scope operating
set radio-profile view wmm-powersave enable
set radio-profile view cac video mode enable
set radio-profile view cac voice mode enable
set radio-profile view service-profile s1
set ap security none
set ap 12 serial-id a28102000040 model MP-522
set ap 12 radio 1 channel 8 radio-profile view mode enable tx-power 5
set ap 12 radio 2 channel 44 radio-profile view mode disable tx-power 5
set vlan 1 name sqa
set vlan 1 port 3
set vlan 2 name view
set vlan 2 port 1
set interface 1 ip 10.2.28.48 255.255.255.0
set interface 2 ip 172.16.233.48 255.255.255.0
set mobility-domain mode secondary-seed domain-name md1 seed-ip
172.16.233.253
```

Configuration Example #4: SVP Configuration For Multiple MXs (Subnet Roaming)

(for use with Spectralink 8020/8030 only)

For Reference Only

SEED MX

```
# General Configuration
set ip dns domain trpz.com
set ip dns disable
set ip route default 172.16.1.1 1
set log console enable severity error
set log session disable severity info
set log buffer enable severity error
set log trace enable severity debug
set log mark disable severity notice interval 300
set web-portal enable
set dot1x timeout handshake 60
set dot1x timeout supplicant 30
set dot1x timeout auth-server 30
set dot1x quiet-period 0
set dot1x reauth-max 2
set dot1x tx-period 5
set dot1x reauth-period 3600
set dot1x max-req 2
set dot1x key-tx enable
set dot1x reauth enable
set dot1x authcontrol enable
set dot1x wep-rekey-period 1800
set dot1x wep-rekey enable
set dot1x bonded-period 0
set system name VIEW_Seed
set prompt ""
set system ip-address 172.16.1.22
set system idle-timeout 0
set domain security none
set auto-config disable
set system countrycode US
# Security Profile
set service-profile SvpVoip ssid-name voip
```



```
set service-profile Svpvoip ssid-type clear
set service-profile Svpvoip beacon enable
set service-profile Svpvoip proxy-arp disable
set service-profile Svpvoip dhcp-restrict disable
set service-profile Svpvoip no-broadcast disable
set service-profile Svpvoip short-retry-count 3
set service-profile Svpvoip long-retry-count 5
set service-profile Svpvoip auth-fallthru last-resort
set service-profile Svpvoip soda mode disable
set service-profile Svpvoip soda enforce-checks enable
set service-profile Svpvoip max-bw 0
set service-profile Svpvoip cac-mode none
set service-profile Svpvoip cac-session 14
set service-profile Svpvoip user-idle-timeout 180
set service-profile Svpvoip idle-client-probing enable
set service-profile Svpvoip keep-initial-vlan enable
set service-profile Svpvoip web-portal-session-timeout 5
set service-profile Svpvoip wep active-unicast-index 1
set service-profile Svpvoip wep active-multicast-index 1
set service-profile Svpvoip cipher-tkip disable
set service-profile Svpvoip cipher-ccmp enable
set service-profile Svpvoip cipher-wep104 disable
set service-profile Svpvoip cipher-wep40 disable
set service-profile Svpvoip wpa-ie disable
set service-profile Svpvoip rsn-ie enable
set service-profile Svpvoip psk-encrypted <password>
set service-profile Svpvoip auth-psk enable
set service-profile Svpvoip shared-key-auth disable
set service-profile Svpvoip tkip-mc-time 60000
set service-profile Svpvoip auth-dot1x disable
set service-profile Svpvoip mesh mode disable
set service-profile Svpvoip bridging disable
set service-profile Svpvoip load-balancing-exempt disable
set service-profile Svpvoip web-portal-logout mode disable
set service-profile Svpvoip 11n mode-na enable
set service-profile Svpvoip 11n mode-ng enable
set service-profile Svpvoip 11n short-guard-interval enable
set service-profile Svpvoip 11n frame-aggregation all
set service-profile Svpvoip 11n a-msdu-max-length 4k
set service-profile Svpvoip 11n a-mpdu-max-length 64k
set service-profile Svpvoip active-call-idle-timeout 120
set service-profile Svpvoip transmit-rate 11a mandatory 6.0,12.0,24.0
beacon-rate 6.0 multicast-rate AUTO
```

```

set service-profile SvpVoip transmit-rate 11b mandatory 5.5,11.0 disabled
1.0,2.0 beacon-rate 5.5 multicast-rate 11.0
set service-profile SvpVoip transmit-rate 11g mandatory 5.5,11.0 diasbled
5.5,11.0 beacon-rate 5.5 multicast-rate 11.0
set service-profile SvpVoip transmit-rate 11na mandatory 6.0,12.0,24.0
beacon-rate 6.0 multicast-rate AUTO
set service-profile SvpVoip transmit-rate 11ng mandatory 5.5,11.0 dsabled
1.0,2.0 beacon-rate 5.5 multicast-rate 11.0
set service-profile SvpVoip attr vlan-name vlnSeed
set radius deadtime 0
set radius timeout 5
set radius retransmit 3
set radius das-port 3799
set enablepass password <password>
set authentication mac ssid any * local
set user admin password encrypted <password>

```

AP Radio Profile

```

set radio-profile default beacon-interval 100
set radio-profile default dtim-interval 2
set radio-profile default max-tx-lifetime 2000
set radio-profile default max-rx-lifetime 2000
set radio-profile default rts-threshold 65535
set radio-profile default frag-threshold 2346
set radio-profile default preamble-length short
set radio-profile default auto-tune channel-config disable
set radio-profile default auto-tune 11a-channel-range lower-bands
set radio-profile default auto-tune ignore-clients disable
set radio-profile default auto-tune power-config disable
set radio-profile default auto-tune channel-interval 3600
set radio-profile default auto-tune power-interval 600
set radio-profile default auto-tune power-ramp-interval 60
set radio-profile default auto-tune channel-holddown 900
set radio-profile default countermeasures none
set radio-profile default rf-scanning mode active
set radio-profile default rf-scanning channel-scope operating
set radio-profile default rf-scanning cts-to-self disable
set radio-profile default rfid-mode disable
set radio-profile default wmm-powersave disable
set radio-profile default qos-mode svp
set radio-profile default weighted-fair-queuing disable
set radio-profile default rate-enforcement disable
set radio-profile default dfs-channels ensable
set radio-profile default 11n channel-width-na 40MHZ

```

```
set radio-profile default cac background mode disable
set radio-profile default cac best-effort mode disable
set radio-profile default cac video mode disable
set radio-profile default cac voice mode disable
set radio-profile default cac background max-utilization 0
set radio-profile default cac best-effort max-utilization 0
set radio-profile default cac video max-utilization 0
set radio-profile default cac voice max-utilization 0
set radio-profile default cac background policing disable
set radio-profile default cac best-effort policing disable
set radio-profile default cac video policing disable
set radio-profile default cac voice policing disable
set radio-profile default service-profile Svpvoip

# AP Basic Configuration
set ap 1 port 4 model MP-422 radiotype 11g
set ap 1 name AP04
set ap 1 bias high
set ap 1 blink disable
set ap 1 upgrade-firmware enable
set ap 1 force-image-download disable
set ap 1 time-out 25
set ap 1 power-mode auto
set ap 1 radio 1 channel 6 radio-profile default mode enable antenna-
location indoors antennatype INTERNAL tx-power 9
set ap 1 radio 1 auto-tune max-power default
set ap 1 radio 1 load-balancing enable
set ap 1 radio 2 channel 36 radio-profile default mode disable antenna-
location indoors antennatype INTERNAL tx-power 18
set ap 1 radio 2 auto-tune max-power default
set ap 1 radio 2 load-balancing enable
set ap 1 local-switching mode disable vlan-profile default

# IP services and port configuration
set arp agingtime 1200
set ip https server enable
set ip telnet server enable
set ip telnet 23
set ip snmp server disable
set ip ssh server enable
set ip ssh 22
set load-balancing mode disable
set load-balancing strictness low
set band-preference none
```

```
set port enable 1
set port speed 1 AUTO
set port duplex 1 full
set port trap 1 disable
# Set additional ports as appropriate.

# SNMP Configuration
set snmp protocol v1 enable
set snmp protocol v2c disable
set snmp protocol usm disable

# VLAN Configuration
set vlan tagtype dot1q
set vlan 1 name vlnSeed tunnel-affinity 5
set vlan 1 port 19
set vlan 1 port 1
set vlan 1 port 2
# Add ports to vlan as appropriate.

# Spanning Tree Configuration
set spantree backbonefast disable
set spantree uplinkfast disable
set spantree fwddelay 15 vlan 1
set spantree hello 2 vlan 1
set spantree maxage 20 vlan 1
set spantree priority 32768 vlan 1
set spantree disable vlan 1
set spantree enable port 1 1
set spantree portpri 1 priority 128
set spantree portfast 1 disable
set spantree enable port 2 1
set spantree portpri 2 priority 128
set spantree portfast 2 disable
#Configure ports as needed.

# IGMP Configuration
set igmp disable vlan 1
set igmp proxy-report enable vlan 1
set igmp querier disable vlan 1
set igmp mrsol disable vlan 1
set igmp version 2 vlan 1
set igmp mrsol mrsi 30 vlan 1
set igmp qi 125 vlan 1
```

```
set igmp oqi 255 v1an 1
set igmp qri 100 v1an 1
set igmp 1mqi 10 v1an 1
set igmp rv 2 v1an 1
set igmp mrouter port 19 disable
set igmp receiver port 19 disable
set igmp mrouter port 1 disable
set igmp receiver port 1 disable
set igmp mrouter port 2 disable
set igmp receiver port 2 disable
# Configure additional ports as needed
```

```
set fdb agingtime 1 age 300
set interface 1 ip 172.16.1.22 255.255.255.0
set interface 1 ip dhcp-server disable start 192.168.100.2 stop
192.168.100.254
set snmp notify profile default drop all
```

Mobility Domain configuration

```
set mobility-domain mode seed domain-name mobdom
set mobility-domain member 172.16.2.20
set rfdetect classification ssid-masquerade rogue
set rfdetect classification seen-in-network rogue
set rfdetect classification ad-hoc skip-test
set rfdetect classification default-classification suspect
set rfdetect log enable
set rfdetect countermeasures mode normal
set rfdetect signature enable
set rfdetect voice-ext snr-threshold 12
set security acl hit-sample-rate 0
```

VIEW ACL configuration

```
set security acl name svp permit cos 6 119 0.0.0.0 255.255.255.255 0.0.0.0
255.255.255.255
set security acl name svp permit 0.0.0.0 255.255.255.255
commit security acl svp
set security acl map svp v1an 1 in
set security acl map svp v1an 1 out
```

QoS Settings

```
set qos dscp-to-cos-map 1 cos 0
set qos dscp-to-cos-map 2 cos 0
set qos dscp-to-cos-map 3 cos 0
```

```
set qos dscp-to-cos-map 4 cos 0
set qos dscp-to-cos-map 5 cos 0
set qos dscp-to-cos-map 6 cos 0
set qos dscp-to-cos-map 7 cos 0
set qos dscp-to-cos-map 8 cos 1
set qos dscp-to-cos-map 9 cos 1
set qos dscp-to-cos-map 10 cos 1
set qos dscp-to-cos-map 11 cos 1
set qos dscp-to-cos-map 12 cos 1
set qos dscp-to-cos-map 13 cos 1
set qos dscp-to-cos-map 14 cos 1
set qos dscp-to-cos-map 15 cos 1
set qos dscp-to-cos-map 16 cos 2
set qos dscp-to-cos-map 17 cos 2
set qos dscp-to-cos-map 18 cos 2
set qos dscp-to-cos-map 19 cos 2
set qos dscp-to-cos-map 20 cos 2
set qos dscp-to-cos-map 21 cos 2
set qos dscp-to-cos-map 22 cos 2
set qos dscp-to-cos-map 23 cos 2
set qos dscp-to-cos-map 24 cos 3
set qos dscp-to-cos-map 25 cos 3
set qos dscp-to-cos-map 26 cos 3
set qos dscp-to-cos-map 27 cos 3
set qos dscp-to-cos-map 28 cos 3
set qos dscp-to-cos-map 29 cos 3
set qos dscp-to-cos-map 30 cos 3
set qos dscp-to-cos-map 31 cos 3
set qos dscp-to-cos-map 32 cos 4
set qos dscp-to-cos-map 33 cos 4
set qos dscp-to-cos-map 34 cos 4
set qos dscp-to-cos-map 35 cos 4
set qos dscp-to-cos-map 36 cos 4
set qos dscp-to-cos-map 37 cos 4
set qos dscp-to-cos-map 38 cos 4
set qos dscp-to-cos-map 39 cos 4
set qos dscp-to-cos-map 40 cos 5
set qos dscp-to-cos-map 41 cos 5
set qos dscp-to-cos-map 42 cos 5
set qos dscp-to-cos-map 43 cos 5
set qos dscp-to-cos-map 44 cos 5
set qos dscp-to-cos-map 45 cos 5
set qos dscp-to-cos-map 46 cos 5
set qos dscp-to-cos-map 47 cos 5
```

```
set qos dscp-to-cos-map 48 cos 6
set qos dscp-to-cos-map 49 cos 6
set qos dscp-to-cos-map 50 cos 6
set qos dscp-to-cos-map 51 cos 6
set qos dscp-to-cos-map 52 cos 6
set qos dscp-to-cos-map 53 cos 6
set qos dscp-to-cos-map 54 cos 6
set qos dscp-to-cos-map 55 cos 6
set qos dscp-to-cos-map 56 cos 7
set qos dscp-to-cos-map 57 cos 7
set qos dscp-to-cos-map 58 cos 7
set qos dscp-to-cos-map 59 cos 7
set qos dscp-to-cos-map 60 cos 7
set qos dscp-to-cos-map 61 cos 7
set qos dscp-to-cos-map 62 cos 7
set qos dscp-to-cos-map 63 cos 7
set qos cos-to-dscp-map 1 dscp 8
set qos cos-to-dscp-map 2 dscp 16
set qos cos-to-dscp-map 3 dscp 24
set qos cos-to-dscp-map 4 dscp 32
set qos cos-to-dscp-map 5 dscp 40
set qos cos-to-dscp-map 6 dscp 48
set qos cos-to-dscp-map 7 dscp 56
set ntp disable
set ntp update-interval 64
```

MEMBER MX

```
# Model MX-8
set command-audit level default size 500
set ip dns disable
set ip route default 172.16.2.1 1
set log console enable severity error
set log session disable severity info
set log buffer enable severity error
set log trace enable severity debug
set log mark disable severity notice interval 300
set web-portal enable
set dot1x timeout handshake 60
set dot1x timeout supplicant 30
set dot1x timeout auth-server 30
set dot1x quiet-period 0
```

```
set dot1x reauth-max 2
set dot1x tx-period 5
set dot1x reauth-period 3600
set dot1x max-req 2
set dot1x key-tx enable
set dot1x reauth enable
set dot1x authcontrol enable
set dot1x wep-rekey-period 1800
set dot1x wep-rekey enable
set dot1x bonded-period 0
set system name VIEW_Member
set prompt ""
set system ip-address 172.16.2.20
set system idle-timeout 0
set domain security none
set auto-config disable
set system countrycode US
set service-profile Svpvoip ssid-name voip
set service-profile Svpvoip ssid-type clear
set service-profile Svpvoip beacon enable
set service-profile Svpvoip proxy-arp disable
set service-profile Svpvoip dhcp-restrict disable
set service-profile Svpvoip no-broadcast disable
set service-profile Svpvoip short-retry-count 3
set service-profile Svpvoip long-retry-count 5
set service-profile Svpvoip auth-fallthru last-resort
set service-profile Svpvoip soda mode disable
set service-profile Svpvoip soda enforce-checks enable
set service-profile Svpvoip max-bw 0
set service-profile Svpvoip cac-mode none
set service-profile Svpvoip cac-session 14
set service-profile Svpvoip user-idle-timeout 180
set service-profile Svpvoip idle-client-probing enable
set service-profile Svpvoip keep-initial-vlan enable
set service-profile Svpvoip web-portal-session-timeout 5
set service-profile Svpvoip wep active-unicast-index 1
set service-profile Svpvoip wep active-multicast-index 1
set service-profile Svpvoip cipher-tkip disable
set service-profile Svpvoip cipher-ccmp disable
set service-profile Svpvoip cipher-wep104 disable
set service-profile Svpvoip cipher-wep40 disable
set service-profile Svpvoip wpa-ie disable
set service-profile Svpvoip rsn-ie disable
set service-profile Svpvoip auth-psk disable
```



```
set service-profile Svpvoip shared-key-auth disable
set service-profile Svpvoip tkip-mc-time 60000
set service-profile Svpvoip auth-dot1x disable
set service-profile Svpvoip mesh mode disable
set service-profile Svpvoip bridging disable
set service-profile Svpvoip load-balancing-exempt disable
set service-profile Svpvoip web-portal-logout mode disable
set service-profile Svpvoip 11n mode-na enable
set service-profile Svpvoip 11n mode-ng enable
set service-profile Svpvoip 11n short-guard-interval enable
set service-profile Svpvoip 11n frame-aggregation all
set service-profile Svpvoip 11n a-msdu-max-length 4k
set service-profile Svpvoip 11n a-mpdu-max-length 64k
set service-profile Svpvoip active-call-idle-timeout 120
set service-profile Svpvoip transmit-rate 11a mandatory 6.0,12.0,24.0
beacon-rate 6.0 multicast-rate AUTO
set service-profile Svpvoip transmit-rate 11b mandatory 1.0,2.0 beacon-rate
2.0 multicast-rate AUTO
set service-profile Svpvoip transmit-rate 11g mandatory 1.0,2.0,5.5,11.0
beacon-rate 2.0 multicast-rate AUTO
set service-profile Svpvoip transmit-rate 11na mandatory 6.0,12.0,24.0
beacon-rate 6.0 multicast-rate AUTO
set service-profile Svpvoip transmit-rate 11ng mandatory 1.0,2.0,5.5,11.0
beacon-rate 2.0 multicast-rate AUTO
set service-profile Svpvoip attr vlan-name vlnMember
set radius deadtime 0
set radius timeout 5
set radius retransmit 3
set radius das-port 3799
set enablepass password <password>
set authentication mac ssid any * local
set user admin password encrypted 070e25414707
set radio-profile default beacon-interval 100
set radio-profile default dtim-interval 2
set radio-profile default max-tx-lifetime 2000
set radio-profile default max-rx-lifetime 2000
set radio-profile default rts-threshold 65535
set radio-profile default frag-threshold 2346
set radio-profile default preamble-length short
set radio-profile default auto-tune channel-config disable
set radio-profile default auto-tune 11a-channel-range lower-bands
set radio-profile default auto-tune ignore-clients disable
set radio-profile default auto-tune power-config disable
set radio-profile default auto-tune channel-interval 3600
set radio-profile default auto-tune power-interval 600
```

```
set radio-profile default auto-tune power-ramp-interval 60
set radio-profile default auto-tune channel-holddown 900
set radio-profile default countermeasures none
set radio-profile default rf-scanning mode active
set radio-profile default rf-scanning channel-scope operating
set radio-profile default rf-scanning cts-to-self disable
set radio-profile default rfid-mode disable
set radio-profile default wmm-powersave disable
set radio-profile default qos-mode svp
set radio-profile default weighted-fair-queuing disable
set radio-profile default rate-enforcement disable
set radio-profile default dfs-channels enable
set radio-profile default 11n channel-width-na 40MHZ
set radio-profile default cac background mode disable
set radio-profile default cac best-effort mode disable
set radio-profile default cac video mode disable
set radio-profile default cac voice mode disable
set radio-profile default cac background max-utilization 0
set radio-profile default cac best-effort max-utilization 0
set radio-profile default cac video max-utilization 0
set radio-profile default cac voice max-utilization 0
set radio-profile default cac background policing disable
set radio-profile default cac best-effort policing disable
set radio-profile default cac video policing disable
set radio-profile default cac voice policing disable
set radio-profile default service-profile SvpVoip
set vlan-profile default vlan default
set ap security none
set ap auto mode disable
set ap auto radiotype 11g
set ap auto bias high
set ap auto blink disable
set ap auto upgrade-firmware enable
set ap auto force-image-download disable
set ap auto time-out 25
set ap auto power-mode auto
set ap auto radio 1 radio-profile default mode enable antenna-location
indoors antenntatype INTERNAL
set ap auto radio 1 auto-tune max-power default
set ap auto radio 1 load-balancing enable
set ap auto radio 2 radio-profile default mode enable antenna-location
indoors antenntatype INTERNAL
set ap auto radio 2 auto-tune max-power default
set ap auto radio 2 load-balancing enable
```

```
set ap auto local-switching mode disable vlan-profile default
set ap 1 port 5 model MP-372 radiotype 11g
set ap 1 name AP01
set ap 1 bias high
set ap 1 blink disable
set ap 1 upgrade-firmware enable
set ap 1 force-image-download disable
set ap 1 time-out 25
set ap 1 power-mode auto
set ap 1 radio 1 channel 6 radio-profile default mode enable antenna-
location indoors antennatype INTERNAL tx-power 5
set ap 1 radio 1 auto-tune max-power default
set ap 1 radio 1 load-balancing enable
set ap 1 radio 2 channel 36 radio-profile default mode disable antenna-
location indoors antennatype INTERNAL tx-power 17
set ap 1 radio 2 auto-tune max-power default
set ap 1 radio 2 load-balancing enable
set ap 1 local-switching mode disable vlan-profile default
set arp agingtime 1200
set ip https server enable
set ip telnet server enable
set ip telnet 23
set ip snmp server disable
set ip ssh server enable
set ip ssh 22
set load-balancing mode disable
set load-balancing strictness low
set band-preference none
set port enable 1
set port speed 1 AUTO
set port duplex 1 full
set port trap 1 disable
set port enable 2
set port speed 2 AUTO
set port duplex 2 full
set port trap 2 disable
set port enable 3
set port speed 3 AUTO
set port duplex 3 full
set port trap 3 disable
set port enable 4
set port speed 4 AUTO
set port duplex 4 full
set port trap 4 disable
```

```
set port enable 5
set port speed 5 AUTO
set port poe 5 enable
set port duplex 5 full
set port trap 5 disable
set port enable 6
set port speed 6 AUTO
set port duplex 6 full
set port trap 6 disable
set port enable 7
set port speed 7 AUTO
set port duplex 7 full
set port trap 7 disable
set port enable 8
set port speed 8 AUTO
set port duplex 8 full
set port trap 8 disable
set snmp protocol v1 enable
set snmp protocol v2c disable
set snmp protocol usm disable
set vlan tagtype dot1q
set vlan 1 name vlnMember tunnel-affinity 5
set vlan 1 port 1
set vlan 1 port 2
set vlan 1 port 3
set vlan 1 port 4
set vlan 1 port 6
set vlan 1 port 7
set spantree backbonefast disable
set spantree uplinkfast disable
set spantree fwddelay 15 vlan 1
set spantree hello 2 vlan 1
set spantree maxage 20 vlan 1
set spantree priority 32768 vlan 1
set spantree disable vlan 1
set igmp disable vlan 1
set igmp proxy-report enable vlan 1
set igmp querier disable vlan 1
set igmp mrsol disable vlan 1
set igmp version 2 vlan 1
set igmp mrsol mrsi 30 vlan 1
set igmp qi 125 vlan 1
set igmp oqi 255 vlan 1
set igmp qri 100 vlan 1
```

```
set igmp lmqi 10 vlan 1
set igmp rv 2 vlan 1
set igmp mrouter port 1 disable
set igmp receiver port 1 disable
set igmp mrouter port 2 disable
set igmp receiver port 2 disable
set igmp mrouter port 3 disable
set igmp receiver port 3 disable
set igmp mrouter port 4 disable
set igmp receiver port 4 disable
set igmp mrouter port 6 disable
set igmp receiver port 6 disable
set igmp mrouter port 7 disable
set igmp receiver port 7 disable
set fdb agingtime 1 age 300
set interface 1 ip 172.16.2.20 255.255.255.0
set snmp notify profile default drop all
set mobility-domain mode member seed-ip 172.16.1.22
set rfdetect classification ssid-masquerade rogue
set rfdetect classification seen-in-network rogue
set rfdetect classification ad-hoc skip-test
set rfdetect classification default-classification suspect
set rfdetect log enable
set rfdetect countermeasures mode normal
set rfdetect signature enable
set rfdetect voice-ext snr-threshold 12
set security acl hit-sample-rate 0
set security acl name svp permit cos 6 119 0.0.0.0 255.255.255.255 0.0.0.0
255.255.255.255
set security acl name svp permit 0.0.0.0 255.255.255.255
commit security acl svp
set security acl map svp vlan 1 in
set security acl map svp vlan 1 out
set qos dscp-to-cos-map 1 cos 0
set qos dscp-to-cos-map 2 cos 0
set qos dscp-to-cos-map 3 cos 0
set qos dscp-to-cos-map 4 cos 0
set qos dscp-to-cos-map 5 cos 0
set qos dscp-to-cos-map 6 cos 0
set qos dscp-to-cos-map 7 cos 0
set qos dscp-to-cos-map 8 cos 1
set qos dscp-to-cos-map 9 cos 1
set qos dscp-to-cos-map 10 cos 1
set qos dscp-to-cos-map 11 cos 1
```

```
set qos dscp-to-cos-map 12 cos 1
set qos dscp-to-cos-map 13 cos 1
set qos dscp-to-cos-map 14 cos 1
set qos dscp-to-cos-map 15 cos 1
set qos dscp-to-cos-map 16 cos 2
set qos dscp-to-cos-map 17 cos 2
set qos dscp-to-cos-map 18 cos 2
set qos dscp-to-cos-map 19 cos 2
set qos dscp-to-cos-map 20 cos 2
set qos dscp-to-cos-map 21 cos 2
set qos dscp-to-cos-map 22 cos 2
set qos dscp-to-cos-map 23 cos 2
set qos dscp-to-cos-map 24 cos 3
set qos dscp-to-cos-map 25 cos 3
set qos dscp-to-cos-map 26 cos 3
set qos dscp-to-cos-map 27 cos 3
set qos dscp-to-cos-map 28 cos 3
set qos dscp-to-cos-map 29 cos 3
set qos dscp-to-cos-map 30 cos 3
set qos dscp-to-cos-map 31 cos 3
set qos dscp-to-cos-map 32 cos 4
set qos dscp-to-cos-map 33 cos 4
set qos dscp-to-cos-map 34 cos 4
set qos dscp-to-cos-map 35 cos 4
set qos dscp-to-cos-map 36 cos 4
set qos dscp-to-cos-map 37 cos 4
set qos dscp-to-cos-map 38 cos 4
set qos dscp-to-cos-map 39 cos 4
set qos dscp-to-cos-map 40 cos 5
set qos dscp-to-cos-map 41 cos 5
set qos dscp-to-cos-map 42 cos 5
set qos dscp-to-cos-map 43 cos 5
set qos dscp-to-cos-map 44 cos 5
set qos dscp-to-cos-map 45 cos 5
set qos dscp-to-cos-map 46 cos 5
set qos dscp-to-cos-map 47 cos 5
set qos dscp-to-cos-map 48 cos 6
set qos dscp-to-cos-map 49 cos 6
set qos dscp-to-cos-map 50 cos 6
set qos dscp-to-cos-map 51 cos 6
set qos dscp-to-cos-map 52 cos 6
set qos dscp-to-cos-map 53 cos 6
set qos dscp-to-cos-map 54 cos 6
set qos dscp-to-cos-map 55 cos 6
```

```
set qos dscp-to-cos-map 56 cos 7
set qos dscp-to-cos-map 57 cos 7
set qos dscp-to-cos-map 58 cos 7
set qos dscp-to-cos-map 59 cos 7
set qos dscp-to-cos-map 60 cos 7
set qos dscp-to-cos-map 61 cos 7
set qos dscp-to-cos-map 62 cos 7
set qos dscp-to-cos-map 63 cos 7
set qos cos-to-dscp-map 1 dscp 8
set qos cos-to-dscp-map 2 dscp 16
set qos cos-to-dscp-map 3 dscp 24
set qos cos-to-dscp-map 4 dscp 32
set qos cos-to-dscp-map 5 dscp 40
set qos cos-to-dscp-map 6 dscp 48
set qos cos-to-dscp-map 7 dscp 56
set ntp disable
set ntp update-interval 64
```