



Mitel Cloud VOIP

Integration Guide



Mitel VoIP, WatchGuard Wi-Fi Cloud, WatchGuard Firebox, and QoS

Deployment Overview

This document describes how to set up QoS from the communication path of the Mitel Mobile Client, WatchGuard AP420, WatchGuard FireboxV, to the Mitel Cloud VoIP service. The document does not include information on switch configuration for QoS or VLANs. If your deployment uses a switch, verify it can be configured for QoS and VLANs.

Integration Summary

To complete this integration, you must have these versions of hardware, software, and services:

- Mitel Connect – Mitel Cloud Portal
- WatchGuard:
 - AP420 Wi-Fi Cloud Account
 - FireboxV with Fireware v12.1

Test Topology



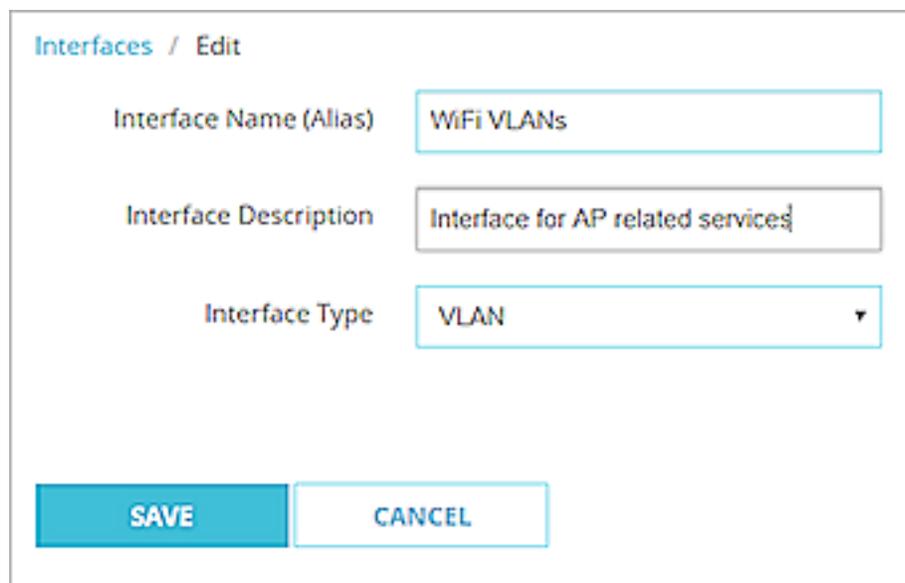
Configure Your Firebox with VLANs and Policies

In this example, we set up three VLANs – one for AP management, one for general use, and one for your mobile phone. The network traffic for the phone VLAN uses QoS markings for priority.

For more information on how to configure your Firebox for QoS, see [About QoS Marking](#) in *Fireware Help*.

To configure an interface from, Fireware Web UI:

1. Select **Network > Interfaces**. Select an interface to configure and select **Edit**.
2. In the **Interface Name (Alias)** text box, type the name for the VLAN interface.
3. (Optional) In the **Interface Description** text box, type a description for the VLAN.
4. From the **Interface Type** drop-down list, select **VLAN**.
5. Click **Save**.



Interfaces / Edit

Interface Name (Alias) WiFi VLANs

Interface Description Interface for AP related services

Interface Type VLAN ▼

SAVE CANCEL

To create a VLAN and assign it an interface from Fireware Web UI:

1. Select **Network > VLAN**.
The VLAN page appears, with a list of existing user-defined VLANs and their settings.
2. Click **Add**.
The VLAN Settings page appears.
3. In the **Name** text box, type a name for the VLAN. The name cannot contain spaces.
4. (Optional) In the **Description** text box, type a description of the VLAN.
5. In the **VLAN ID** text box, or type or select a value for the VLAN.
6. From the **Security Zone** drop-down list, select the zone you want to assign.
7. In the **IP Address** text box, type the address of the VLAN gateway.
8. In the **Select a VLAN tag setting for each interface** section, select one or more interfaces.
9. From the **Select Traffic** drop-down list, select **Untagged Traffic**.

VLAN / Add VLAN Settings

VLAN Settings Secondary Network IPv6 Bridge Protocols

VLAN Configuration

Name AP Management

Description VLAN for AP control

VLAN ID 10

Security Zone Trusted

IP Address 192.168.10.1 / 24

Select a VLAN tag setting for each interface

INTERFACE	TAGGED/UNTAGGED
<input checked="" type="checkbox"/> WIFI VLANs	Untagged Traffic

SELECT TRAFFIC ▾

Apply firewall policies to intra-VLAN traffic

SAVE CANCEL

To configure DHCP for a VLAN from Fireware Web UI:

1. Select the **Network** tab.
2. In the DHCP Settings section, from the **DHCP Mode** drop-down list, select **DHCP Server**.
3. In the **Domain Name** text box, type an optional domain suffix to provide to clients.
4. To change the default lease time, from the drop-down list at the top of the page, select a different time interval.
5. Configure the **Address Pool**, **Reserved Address**, **DNS Servers**, **WINS Servers**, and **DHCP Options** sections. Click **Save**.

VLAN / AP Management

VLAN Settings Secondary Network IPv6 Bridge Protocols

DHCP Settings

DHCP Mode: DHCP Server

Domain Name:

Lease Time: 8 Hours

Address Pool

START IP	END IP
192.168.10.50	192.168.10.150

ADD EDIT REMOVE

Reserved Address

IP ADDRESS	RESERVATION NAME
------------	------------------

ADD EDIT REMOVE

DNS Servers

DNS SERVERS
8.8.8.8

ADD REMOVE

WINS Servers

WINS SERVERS

ADD REMOVE

DHCP Options

CODE	NAME	TYPE	KIND	VALUE
------	------	------	------	-------

ADD EDIT REMOVE

SAVE CANCEL

6. Add the other two VLANs for general Wi-Fi and VoIP Wi-Fi. From the **Select Traffic** drop-down list, select **Tagged Traffic**. This creates two tagged VLANs for Wi-Fi traffic.



This is the example configuration for all available VLAN interfaces.

VLAN

Available VLAN Interfaces

Name (Alias)
WIFI VLANs

[CONFIGURE](#)

VLAN Settings

ID ↕	NAME	ZONE	IPV4 ADDRESS
10	AP Management	Trusted	192.168.10.1
20	General Wi-Fi	Trusted	192.168.20.1
30	VoIP Wi-Fi	Trusted	192.168.30.1

[ADD](#) [EDIT](#) [REMOVE](#)

Add two policies to use for General Wi-Fi and AP Cloud Management. The WatchGuard Wi-Fi Cloud requires HTTP TCP ports 80 and 443, and UDP port 3851 and 3852 to be open in an outbound policy. This example uses the WG-Cloud-Managed-Wi-Fi packet filter policy. For more information about WatchGuard Wi-Fi Cloud, see [About WatchGuard Wi-Fi Cloud](#).

The first policy handles traffic for AP management. To add a firewall policy from Fireware Web UI:

1. Select **Firewall > Firewall Policies**.
2. Click **Add Policy**.
3. Select **Packet Filter**. From the drop-down list, select **WG-Cloud-managed-WiFi**.
4. Click **Add Policy**.

The full settings of the created policy appear.

PORT	PROTOCOL
80	TCP
443	TCP
3851	UDP
3852	UDP

The WatchGuard Wi-Fi Cloud policy enables WatchGuard AP devices to communicate with Wi-Fi Cloud servers.

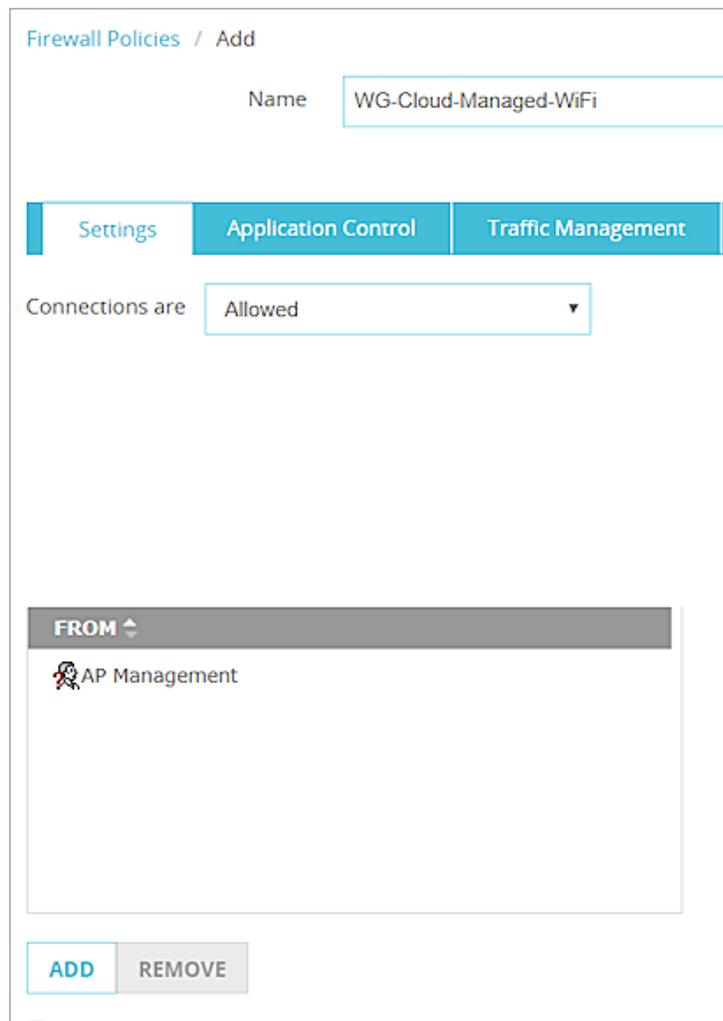
5. In the **From** section, remove the **Any-Trusted** alias. Select **Add**.
The Add Member page appears.
6. From the **Member type** drop-down list, select **Alias**. Select **AP Management**.

Add Member ✕

Member type

- Any-External
- Any-BOVPN
- Any-Multicast
- External
- Trusted
- AP Management**
- General Wi-Fi
- VoIP Wi-Fi

7. Click **OK**.



8. Click **Save** to add the policy.

Add another policy for general Wi-Fi traffic to match your company's corporate policy on filtering traffic.

The last policy is specific to traffic that passes through the Mitel mobile phone communication. Mitel documentation includes the [Mitel Connect Cloud Ports](#) necessary for communication to be successful. These ports include:

- TCP/UDP 5600 SIP
- TCP 5061 SIPS
- TCP 80 HTTP
- TCP/UDP 443
- TCP 8001 Admin
- TCP 31451 - 31471 ECC Supervisor
- UDP 10000 - 65535

To pass Mitel mobile phone communication traffic, add a policy from Fireware Web UI:

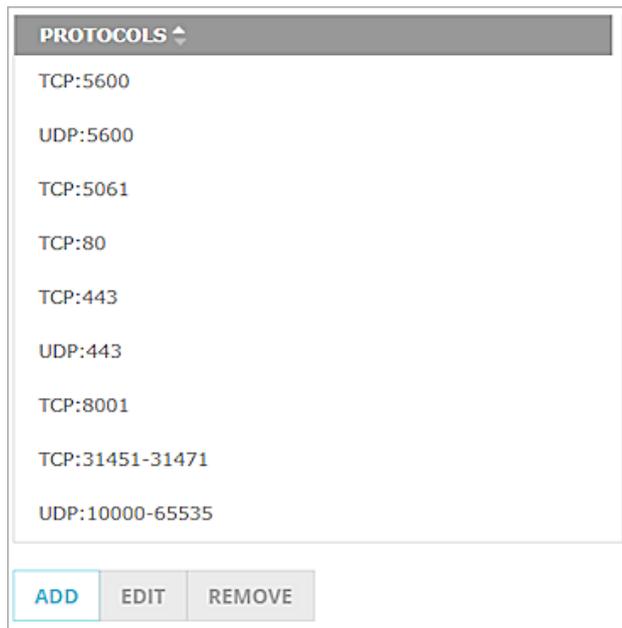
1. Select **Firewall > Firewall Policies > Add Policy**.
2. Select **Custom** policy type. Click **Add**.

A new custom policy type is created.



3. In the **Protocol** section, add each TCP or UDP port until the list is complete.

The Select a policy type page appears.



4. Click **Save**.
The Add Firewall Policy page appears with your custom selections.
5. Click **Add Policy**.

Firewall Policies / Add Firewall Policy

Select a policy type

Packet Filter
 --Select a packet filter--

Proxies
 --Select a proxy--
--Select a Proxy action--

Custom
 Mitel Cloud Ports
ADD
EDIT
REMOVE

PORT	PROTOCOL
5600	TCP
5600	UDP
5061	TCP
80	TCP
443	TCP
443	UDP
8001	TCP
31451-31471	TCP
10000-65535	UDP

ADD POLICY
CANCEL

6. Select the **Settings** tab.
7. In the **From** section, replace the Any-Trusted alias with the alias you created for the VoIP VLAN. Click **Save**.

Firewall Policies / Add

Name Enable

Settings Application Control **Traffic Management** Scheduling Advanced

Connections are

Policy Type **Mitel Cloud Ports**

PORT	PROTOCOL
5600	TCP
5600	UDP
5061	TCP
80	TCP
443	TCP
443	UDP
8001	TCP
31451-31471	TCP
10000-65535	UDP

FROM

VoIP Wi-Fi

TO

Any-External

ADD REMOVE ADD REMOVE



You must have an active DNS policy for Mitel MiCloud communication. You can modify the policy you created or add this subnet to your current DNS policy.

Apply QoS to Firewall Policies

Firewall policies can apply QoS markings for each policy and take precedence over the QoS settings for an interface. Globally, QoS, must be enabled before you configure the policy.

To preserve QoS marking from Fireware Web UI:

1. Select **System > Global Settings**.
2. On the **Networking** tab, below Traffic Management and QoS, select the **Enable all Traffic Management and QoS features** check box.

The screenshot shows the 'Global Settings' page with the 'Networking' tab selected. The 'Traffic Management and QoS' section is expanded, showing the following options:

- Enable all Traffic Management and QoS features

Other visible settings include:

- ICMP Error Handling:** Fragmentation req (PMTU), Time exceeded, Network unreachable, Host unreachable, Port unreachable, Protocol unreachable (all checked).
- TCP Settings:** TCP connection idle timeout (1 Hours), Enable TCP SYN packet and connection state verification (checked).
- TCP maximum segment size control:** Auto adjustment (selected), No adjustment, Limit to 1460.
- TCP MTU Probing:** Disabled (selected), Enabled only when ICMP network issues are detected, Always enabled.
- Traffic Flow:** When an SNAT action changes, clear active connections that use that SNAT action (unchecked).

A 'SAVE' button is located at the bottom of the settings panel.

3. Click **Save**.

To configure QoS marking, from Fireware Web UI:

1. Select **Firewall > Firewall Policies**. Select the check box for the Mitel Cloud Portal policy. Use the **Action** drop-down list to edit the policy.
2. Click the **Advanced** tab.
3. Select **Override per-interface settings**.
The QoS page appears.
4. From the **Marking Type** drop-down list, select an option. For this example we chose **DSCP**.
5. From the **Marking Method** drop-down list select an option. For this example we chose **Preserve**.
6. If you selected **Assign**, from the **Value** drop-down list, select a marking value.
If you selected the **IP Precedence** marking type, select a value from 0 (normal priority) through 7 (highest priority).
If you selected the **DSCP** marking type, the values are 0-56.
7. From the **Prioritize Traffic Based On** drop-down list, select **QoS Marking**.

QoS

Override per-interface settings

Marking Type: DSCP

Marking method: Preserve

Value: 0 (Best Effort)

Prioritize traffic based on: QoS Marking

Value: 0 (Normal)

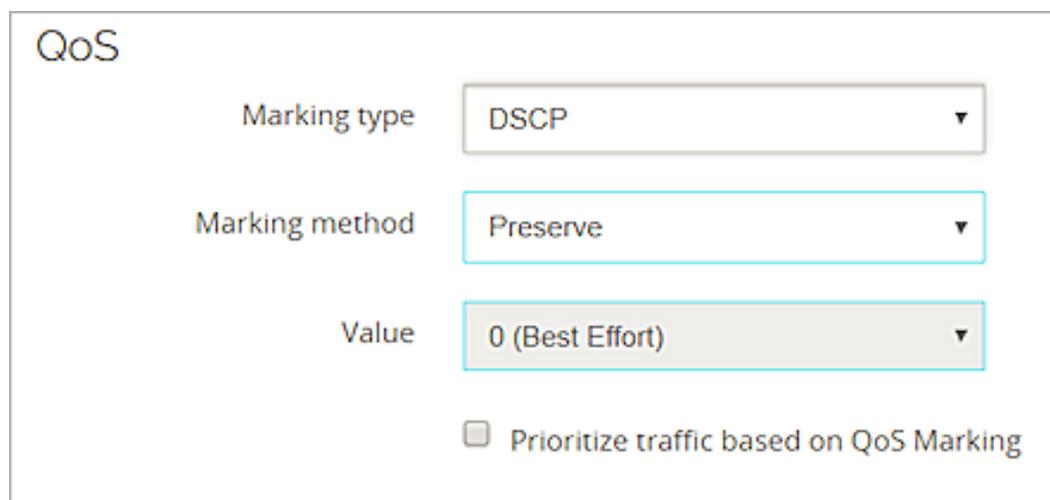
8. Click **Save**.

WatchGuard External Interface Configuration for QoS

Many Internet Service Providers drop the marking on the QoS packet when it is received. Make sure you understand how QoS is handled by your ISP before you configure the external interface of your Firebox to pass QoS marking.

From Fireware Web UI:

1. Select **Network > Interfaces**.
2. Highlight the external interface. Select **Edit**.
3. Select the **Advanced** tab.
4. From the **Marking type** drop-down list, select **DSCP**.
5. From the **Marking method** drop-down list, select **Preserve**.
6. Click **Save**.



QoS

Marking type: DSCP

Marking method: Preserve

Value: 0 (Best Effort)

Prioritize traffic based on QoS Marking

WatchGuard Wi-Fi Cloud Basic Configuration

This integration guide covers only part of the configuration of APs in WatchGuard Wi-Fi Cloud. To complete the configuration of your APs, you must:

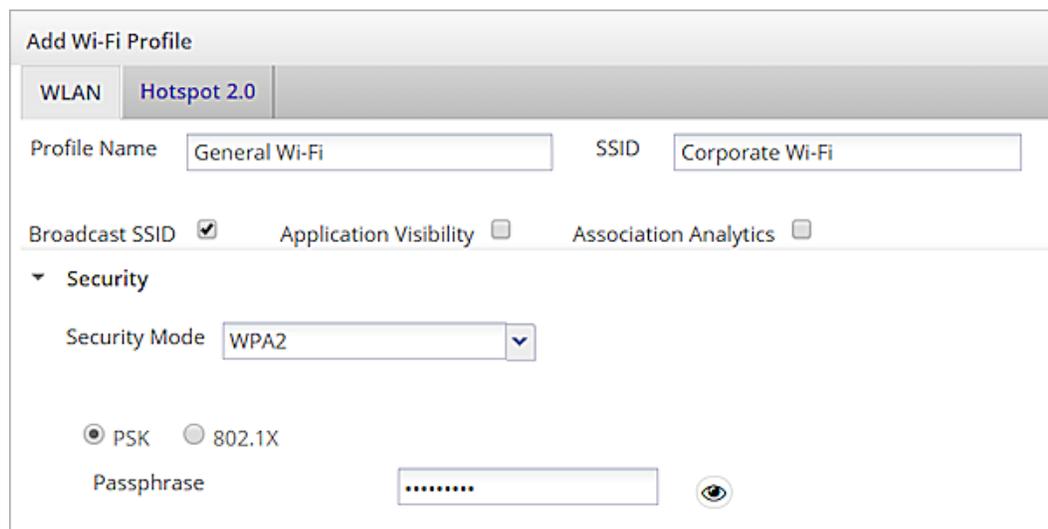
- [Upgrade your AP software](#)
- [Add the AP to a location in your organization tree](#)
- [Create SSID profiles for your AP](#)
- [Create a device template to apply common device, radio, and SSID settings to your AP](#)
- [Create and apply an authorized WLAN security policy for your SSID](#)

For more information on how to prioritize traffic with Wi-Fi Cloud, see [Quality of Service \(QoS\)](#).

WatchGuard Wi-Fi Cloud VLAN and QoS Assignment

To create the SSID profile for general Wi-Fi use:

1. Log in to your WatchGuard Cloud Wi-Fi account.
2. Select **My WatchGuard > Manage Wi-Fi Cloud**. Select **Manage**.
3. Select **Configuration > Device Configuration > SSID Profiles**.
4. Click **Add New Wi-Fi Profile**.
The Add Wi-Fi Profile dialog box appears.
5. Type a **Profile Name** and **SSID** name. Add the appropriate security settings for your general traffic.



Add Wi-Fi Profile

WLAN **Hotspot 2.0**

Profile Name SSID

Broadcast SSID Application Visibility Association Analytics

▼ Security

Security Mode

PSK 802.1X

Passphrase 

6. Expand the **Network** section. Add the VLAN ID for general traffic.



▼ Network

VLAN ID

 Range: 0 to 4094. To map to untagged VLAN in switch port, enter VLAN ID = 0, irrespective of what VLAN ID is assigned to untagged VLAN in switch.

7. Click **Save**.
8. Select **Add New Wi-Fi Profile** to add the SSID profile for Mitel VoIP VLAN.
9. Type a **Profile Name** and **SSID** name. Add the appropriate security settings for VoIP traffic.

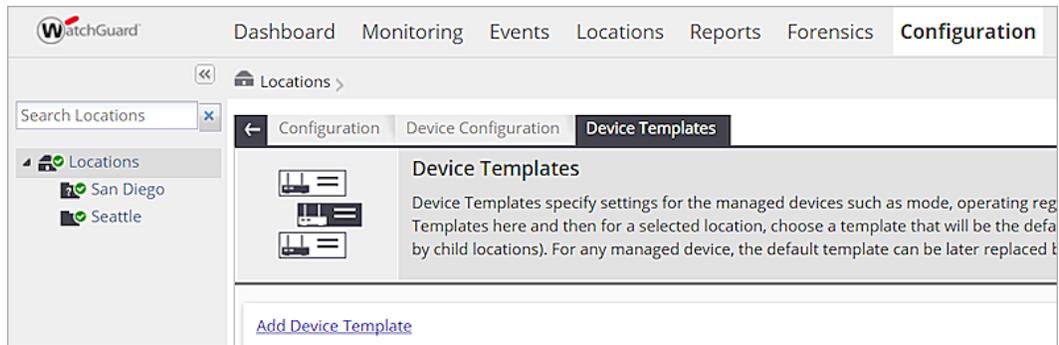
- Expand the **Network** section. Add the VLAN ID for the VoIP subnet.

- Expand the **Traffic Shaping & QoS** section. Select the **Enable QoS** check box.
- Set the **SSID Priority** to **Voice**.
- Select the **802.1p Marking** check box. This enables the **Upstream Marking** to map to a priority subject to a maximum of the selected SSID priority and set in the 802.1p header and the IP header.
- Select **DSCP** to enable the **DCSP/TOS Marking**.
- Set the **Priority Type** to **Fixed**. All traffic for this SSID must be transmitted at the selected priority regardless of the priority indicated in the 802.1p or IP header.
- Select **Save**.

WatchGuard Wi-Fi Cloud Template Assignment

To transfer the created settings to a template to apply to a device, from WatchGuard Wi-Fi Cloud:

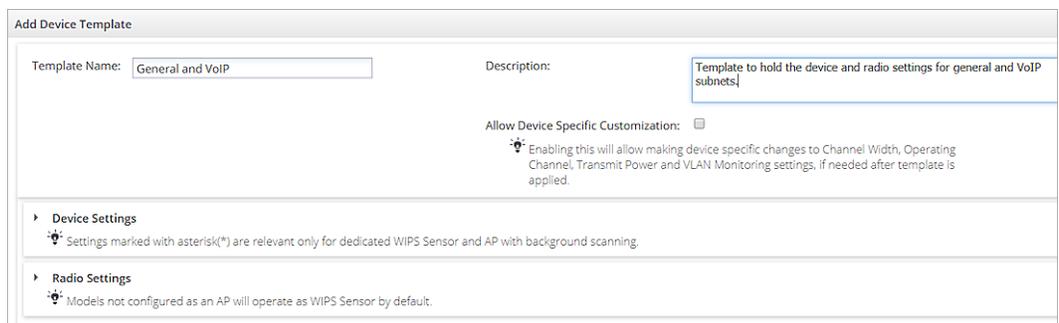
- Select **Manage > Configuration > Device Configuration > Device Templates**.



2. Click **Add Device Template**.

The Add Device Template dialog box appears.

3. In the **Template Name** text box, type a descriptive name for this template.



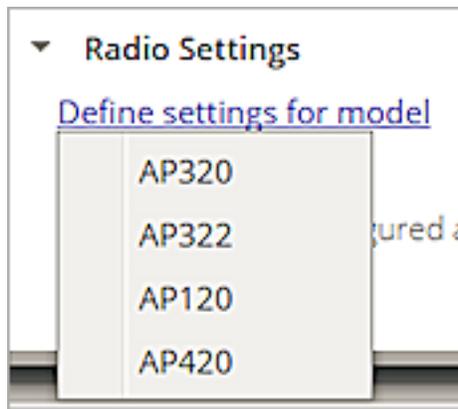
4. Expand the **Device Settings** section.

5. Expand the **Device Password** section and specify a user name and password.

The New password is applied on all the devices associated with the device template.

6. Expand the **Radio Settings** section.

7. Click **Define settings for model** and select your AP model.

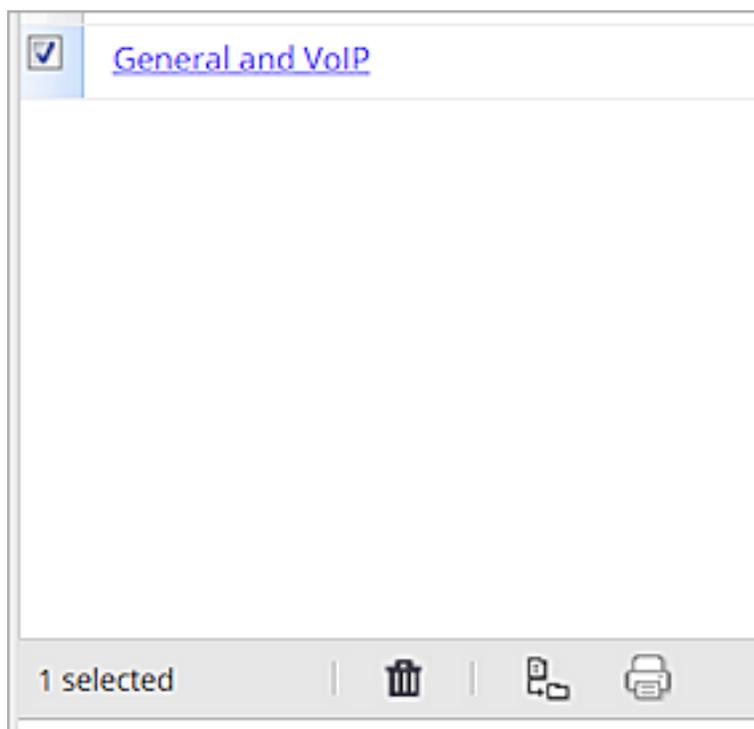


8. For each radio, click **Add SSID Profile** and select the created SSID profiles for each radio.

[Add SSID Profile](#)

Wi-Fi Profiles		Mesh Profiles			
	SSID Profile Name	SSID	Firewall	SSID S...	
<input type="checkbox"/>	General Wi-Fi	Corporat	Disabled	Disabl...	Remove
<input type="checkbox"/>	Voice Wi-Fi	VoIP	Disabled	Disabl...	Remove

9. Specify the other radio settings as required for your network. Click **Save**. If this template is needed for a different location, select the Copy-to icon to copy the template.



Apply the Device Template to an AP

The configuration is complete after you mark the template as default for the selected location. Apply it to the APs in the selected location. APs deployed in the future are configured with the settings in the default template.

1. Open **Manage** and select the desired location.
2. Select **Configuration > Device Configuration > Device Templates**.
3. Click **Make Default**.
4. To apply the template to the APs in this location, click **Yes**.

Test the Integration with the Mitel Phone Application

1. Get a [Mitel MiCloud](#) user account with user names, passwords, and assigned phone numbers.
2. Download and install the Mitel Connect App for [iOS](#) or [Andriod](#).
3. Connect to the configured VoIP SSID.
4. Open the Mitel application and type the user name, password, and assigned phone number.

About This Guide

Guide Type

Documented Integration – WatchGuard or a Technology Partner has provided documentation demonstrating integration.

Guide Details

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Guide revised: 2/20/2018

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