Spectralink VIEW Certified Configuration Guide

Fortinet

FortiGate/FortiWiFI Wireless Controllers (Series) 30D/E, 50E, 60D/E, 70D, 80D, 90D, 90E, 92D with FAP421E, FAP423E, FAPS421E, FAPS422E, FAPS423E

FortiGate Controllers (Series) 100D, 200D, 330D, 400D, 500D, 600C, 600D, 800C, 800D, 900D, 1000, 2000, 3000, FG-5000, FG-VM with FAP421E, FAP423E, FAPS421E, FAPS422E, FAPS423E

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Contact Information

US Location
+1 800-775-5330

Spectralink Corporation
2560 55th Street
Boulder, CO 80301
USA

info@spectralink.com

Denmark Location
+45 7560 2850

Spectralink Europe ApS
Bygholm Soepark 21 E Stuen
8700 Horsens
Denmark

infoemea@spectralink.com

UK Location
+44 (0) 20 3284 1536

Spectralink Europe UK
329 Bracknell, Doncastle Road
Bracknell, Berkshire, RG12 8PE
United Kingdom

infoemea@spectralink.com

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Introduction

Spectralink's Voice Interoperability for Enterprise Wireless (VIEW) Certification Program is designed to ensure interoperability and high performance between PIVOT™ by Spectralink® (PIVOT) and 84-Series Wireless Telephones and WLAN infrastructure products.

The products listed below have been tested in Spectralink's lab and have passed VIEW Certification.

Certified Product Summary

Manufacturer:	Fortinet, Inc.
Certified products:	Controllers (Series): 30D/E, 50E, 60D/E, 70D, 80D, 90D, 90E, 92D, 100D, 200D, 330D, 400D, 500D, 600C, 600D, 800C, 800D, 900D, 1000, 2000, 3000, FG-5000, FG-VM Access Points: FAP421E, FAP423E, FAPS421E, FAPS422E, FAPS423E
AP Radio(s):	2.4 GHz (802.11b/g/n), 5 GHz (802.11a/n/ac)
Security:	None, WEP, WPA-PSK, WPA2-PSK
QoS:	Wi-Fi Standard for Spectralink 84-Series and PIVOT
Network topology:	Bridged
AP and WLC software version approved:	5.6.0-1449

Handset models tested:*	*Spectralink 8741/8742/8744/8753 Wireless Telephone (PIVOT)*			
Handset radio mode:	802.11b	802.11b/g	802.11bgn	802.11a, 802.11an, 802.11ac
Meets VIEW minimum call capacity per AP:	8	8	8	10

Handset models tested:	Spectralink 8440/8441/8450/8452/8453 Wireless Telephone			
Handset radio mode:	802.11b	802.11b/g	802.11bgn	802.11a & 802.11an
Meets VIEW minimum call capacity per AP:	8	8	8	10

*****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".

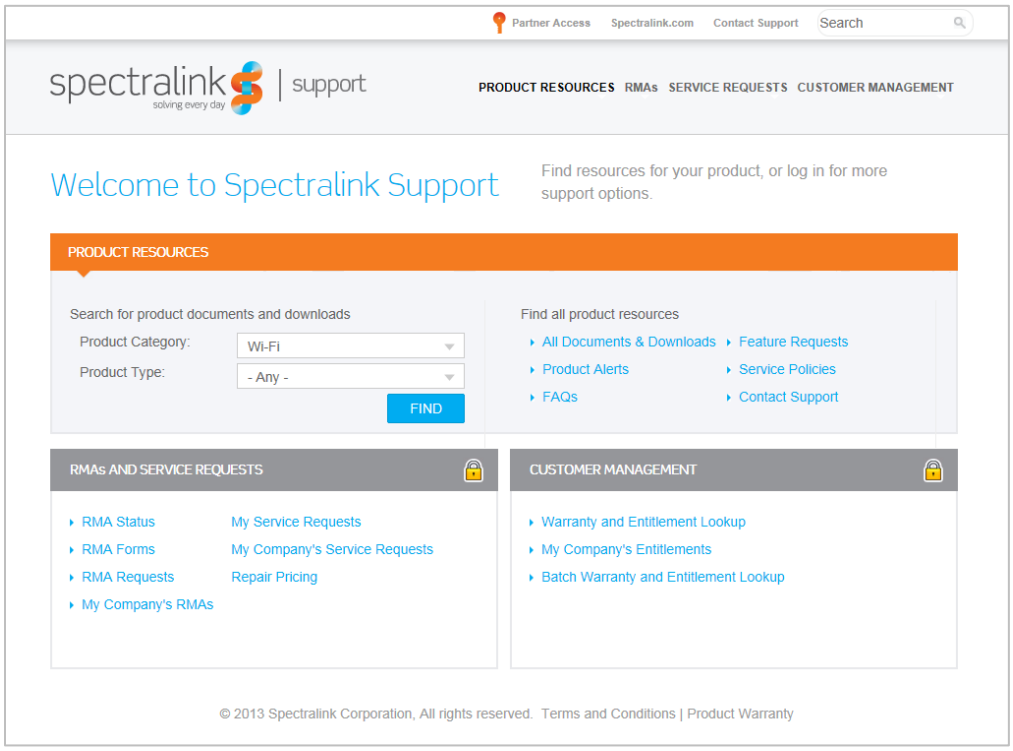
** Maximum calls tested per the VIEW Certification Test Plan. The certified product may actually support a higher number of maximum calls

Known Limitations

- Spectralink PIVOT handsets manufactured with 2.4+ and 84-series manufactured with 5.3.4+ ship with 802.11n disabled.
- PTT (Push-to-Talk) was tested with multicast to unicast (multicast-enhance) enabled
- WMM_AC is applied only to Voice packets and not to SIP control packets in the Fortinet product.
- WPA2-Enterprise implementation on Fortinet has an interoperability conflict with Spectralink phones for OKC roaming. This problem will be corrected in the next release, 5.6.1, expected about 8/1/2017.
- DFS Channels are available in the next Fortinet release 5.6.1, expected about 8/1/2017.

Spectralink References

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



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.

Support Documents

PIVOT by Spectralink Configuration Guide The PIVOT Configuration Guide provides detailed information about PIVOT menu items that have been developed specifically for the PIVOT handset.

Spectralink 87-Series Wireless Telephone Deployment Guide The Deployment Guide provides sequential information for provisioning and deploying the handsets. It covers deployment using the SLIC tool and CMS as well as manual deployment.

The *Spectralink 84-Series Wireless Telephone Administration Guide* provides a comprehensive list of every parameter available on Spectralink 84-Series Wireless Telephones.

The *Spectralink 84-Series Deployment Guide* is your essential reference for provisioning and deploying Spectralink 84-Series handsets in any environment.

The *Web Configuration Utility User Guide* explains how to use a web browser to configure the Spectralink 84-Series handsets on a per handset basis.

*Best Practices for Deploying Spectralink 87-Series Hand*sets provides detailed information on wireless LAN layout, network infrastructure, QoS, security and subnets.

White Papers

Spectralink White Papers are available at http://www.spectralink.com/resources/white-papers.

For the Spectralink 84-Series Wireless Telephones, please refer to *Best Practices Guide for Deploying Spectralink 84-Series Handsets* for detailed information on wireless LAN layout, network infrastructure, QoS, security and subnets.

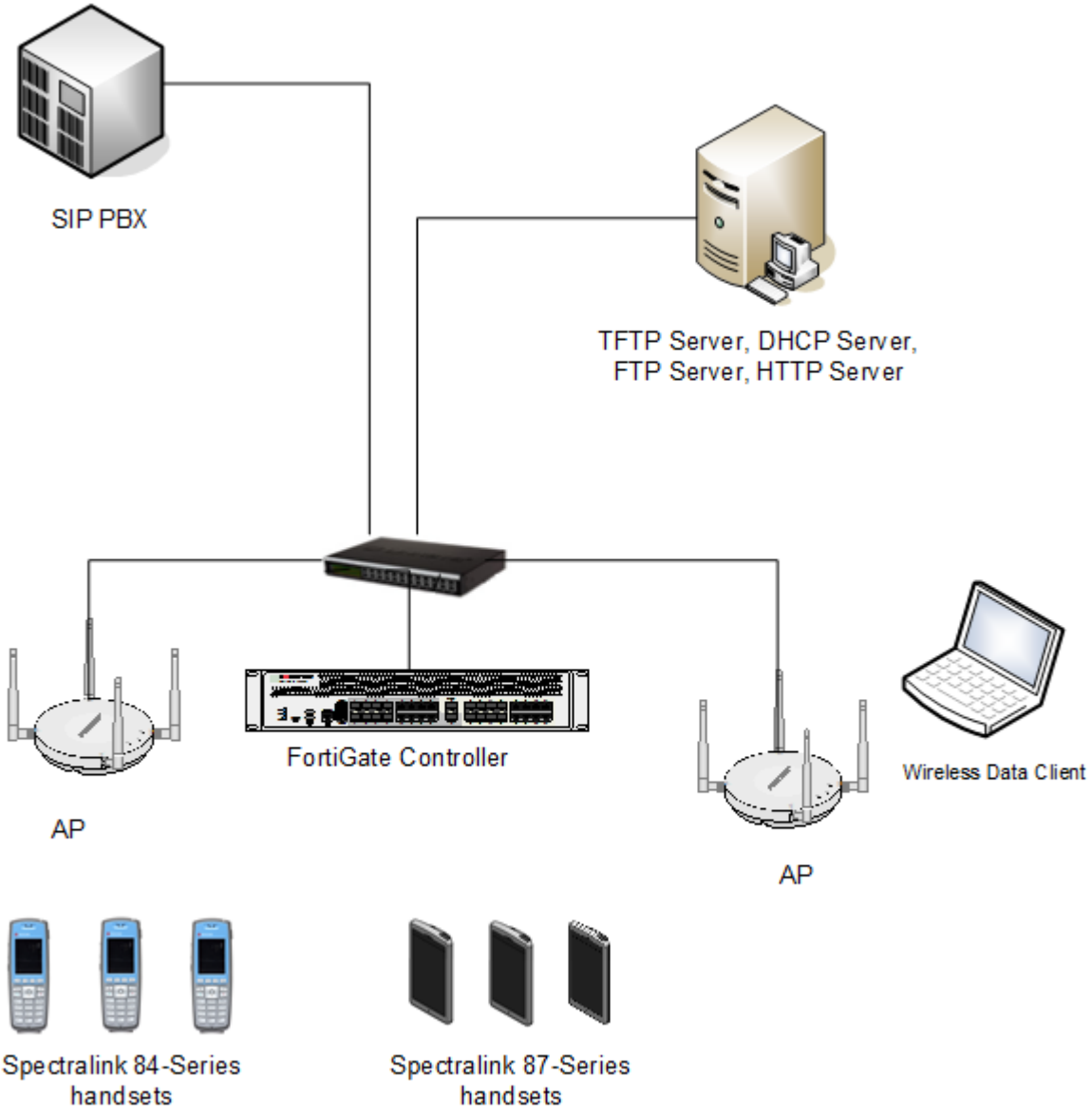
For additional details on RF deployment please see *The challenges of ensuring excellent voice quality in a Wi-Fi workplace* and *Deploying Enterprise-Grade Wi-Fi Telephony*.

These 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 Telephones.

Product Support

If you encounter difficulties or have questions regarding the configuration process, please contact Fortinet customer service at https://www.fortinet.com/support-and-training/support/contact.html or Spectralink at support.spectralink.com.

Chapter 1: Network Topology



Note: Example configuration shown

This is a modified diagram and not all components are shown for every system type.

Chapter 2: Initial Administrative Setup

Connecting to the FortiGate

Connect he FortiGate's **wan** interface to your ISP-supplied equipment, and then connect the internal network to the FortiGate's default **lan** interface.

Using the GUI

Browse to http://docs.fortinet.com/fortigate/admin-guides. Find the appropriate "Getting Started" guide for the FortiOS version you are using. Follow the directions in the "Connecting to the GUI using a web browser" section. The FortiExplorer application may also be used. At the time of this writing, it is only released in an Apple IOS version.

Note: CLI-only features

There are several features that are only available using the Command Line Interface (CLI), rather than appearing in the GUI.

From the GUI, you can open the CLI console so that it automatically opens to the object you wish to configure. For example, to edit a firewall policy, right-click on the policy in the policy list (**Policy & Objects > IPv4 Policy**) and select **Edit in CLI**. The CLI console will appear, with the commands to access this part of the configuration added automatically

Using CLI

Browse to http://docs.fortinet.com/fortigate/admin-guides. Find the appropriate "Getting Started" guide for the FortiOS version you are using. Follow one of the Connection options described in the "Using the CLI" section. The FortiExplorer application may also be used. At the time of this writing, it is only released in an Apple IOS version.

Registering the FortiGate

Follow the directions in the "Registration" section of the "Getting Started" guide.

Upgrading the Firmware

Follow the directions in the “Firmware” section of the “Getting Started” guide to backup/restore the system (if desired), download firmware, and install firmware. The firmware may also be installed using a scheduled upgrade at a convenient time, as described in the “Controlled upgrade” section.

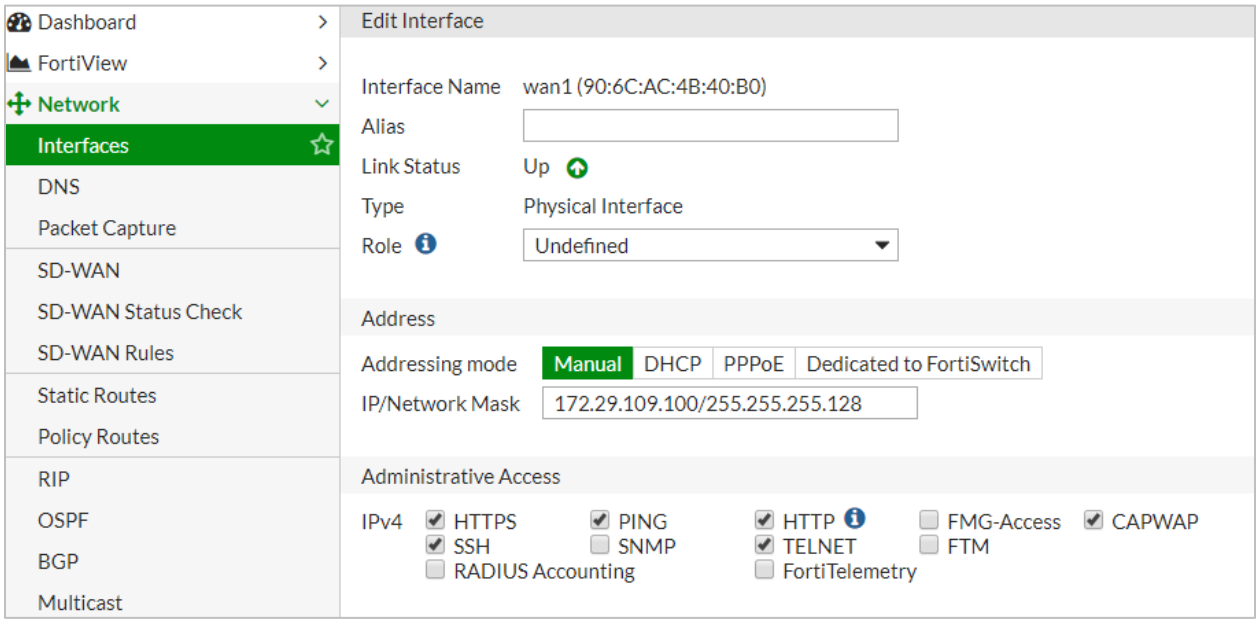
Chapter 3: Configure the Environment

Physical Interfaces

The connections to the wired network can be defined from either the web GUI or from CLI.

From the Web GUI

1. Navigate to **Network>Interfaces.**
2. Click on the name of the port to be configured, i.e. **wan1**.
3. Click on **Edit**.
4. Select the Desired **Addressing mode**, i.e. **Manual** or **DHCP.**
5. Enter the parameters for the desired addressing mode, such as **IP/Network Mask** for a **Manual** connection.
6. Check the methods allowed for **Administrative Access**



From the CLI

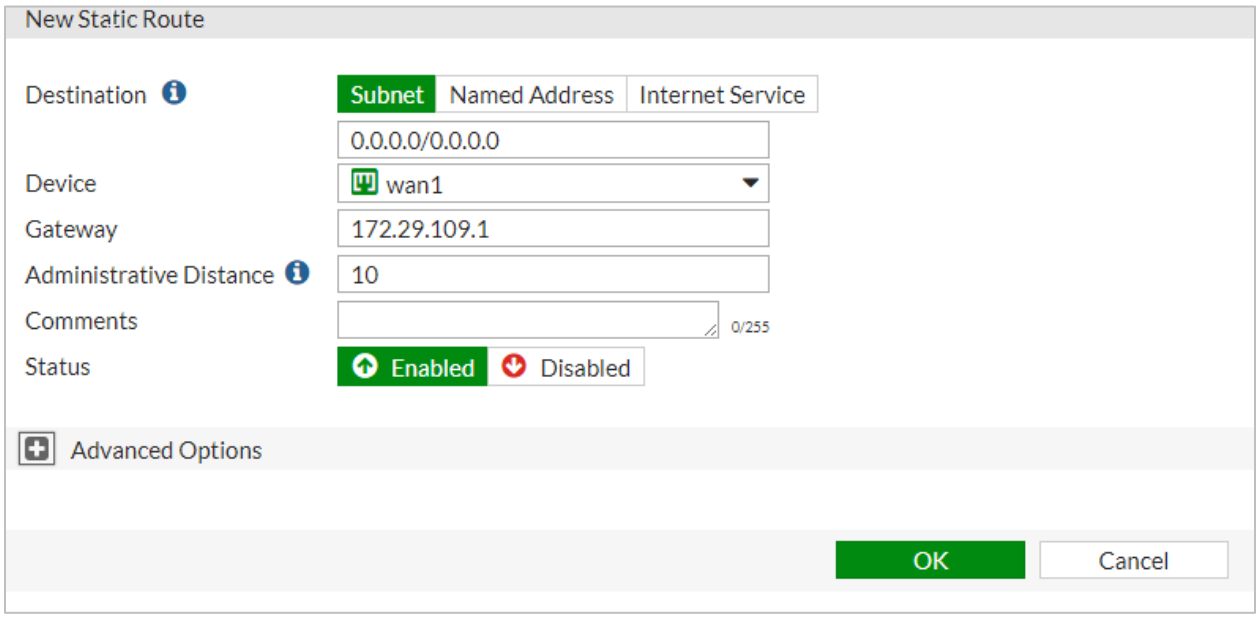
```
config system interface
   edit "<port number>"
     set mode "<IP Addressing Scheme Static or DHCP>"
     set ip "<IP Address with Netmask>"
```

Static Route to Gateway

The default gateway must be defined so that the controller can reach the network

From the Web GUI

1. Navigate to **Network>Static Routes.**
2. Click on **Create New.**
3. Select the physical interface for the static route to the gateway from the **Device** dropdown.
4. Enter the **IP** address for the route in the **Gateway** field.



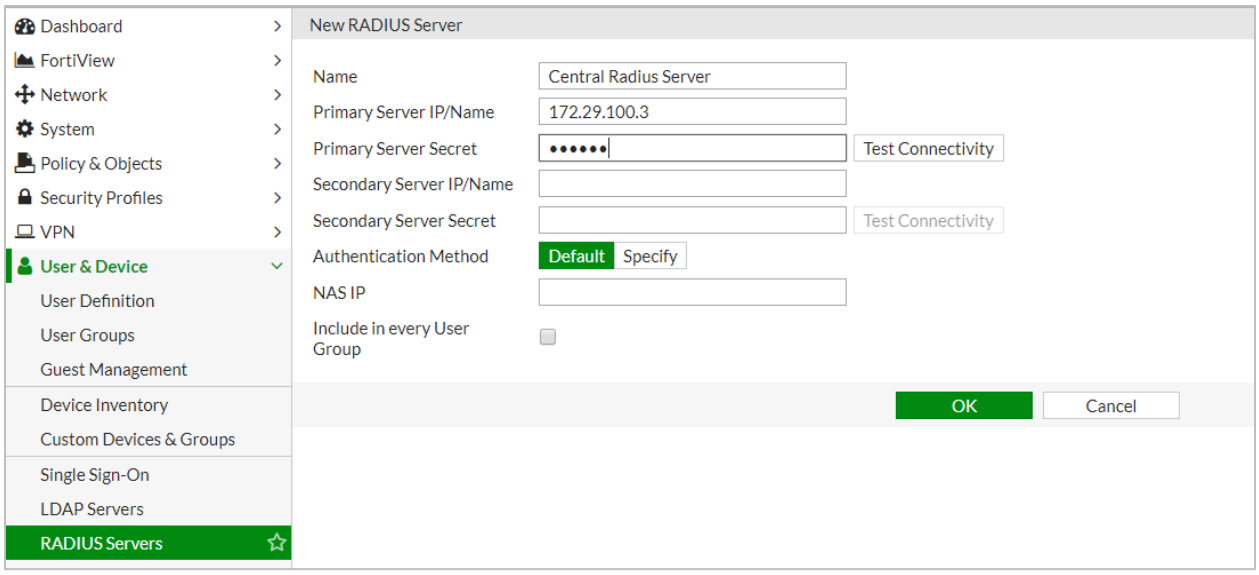
From the CLI

```
config router static
   edit "<Entry>"
      set gateway "<IP Address  Of the Gateway>"
      set device "<Physical Interface Connected to Gateway>"
```

Radius Server Identification

From the Web

1. Navigate to **User & Device>RADIUS Servers.**
2. Click on **Create New.**
3. Enter the **Name**, **Primary Server IP/Name,** and **Primary Server Secret.**
4. Touch **OK.**



From the CLI

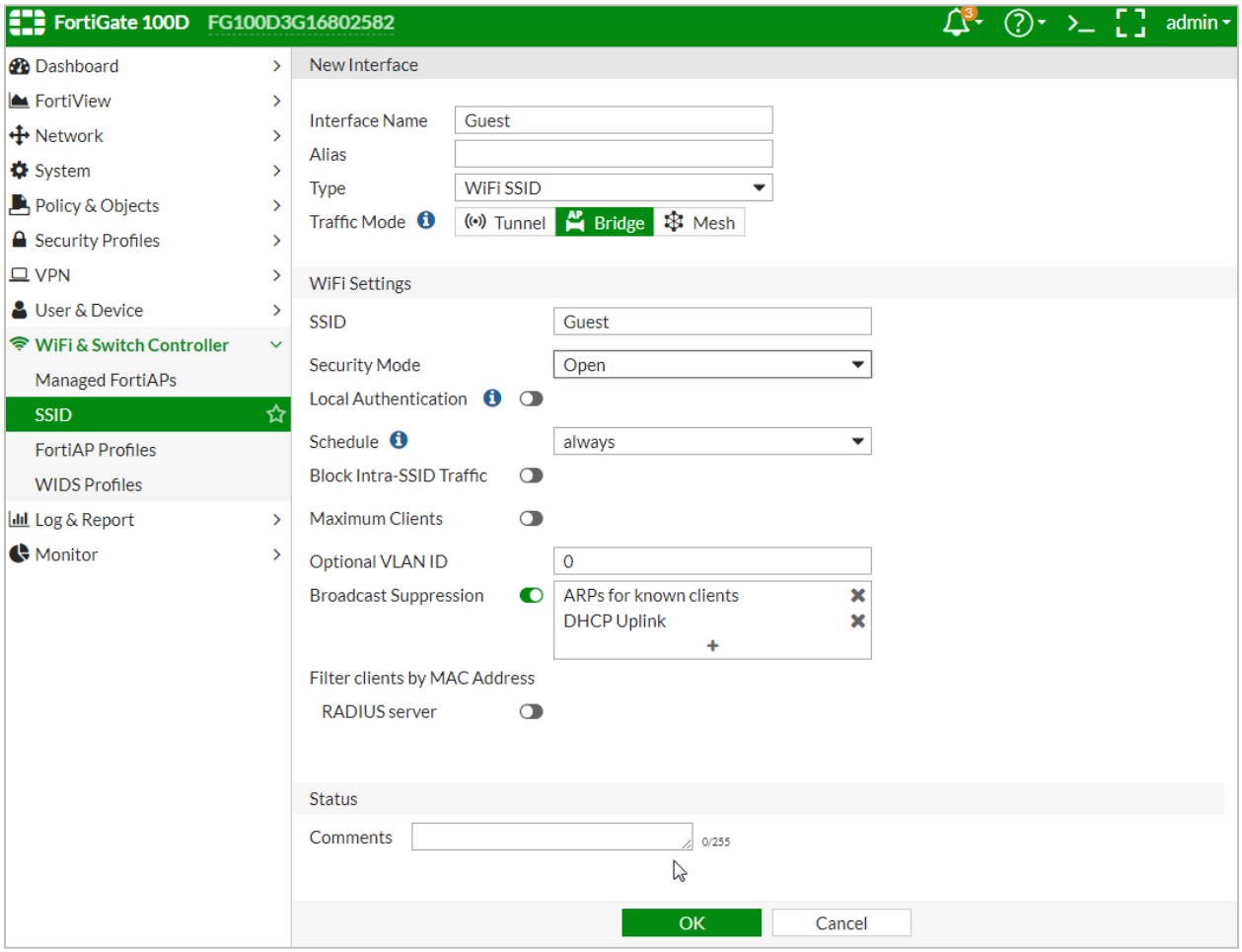
```
config user radius
   edit "<Name of the Radius-Server>"
       set server "<ip address of the Radius Server>"
       set secret "<Radius Server Secret>"
```

Chapter 4: Configure Wi-Fi

Configure SSIDs

From the Web

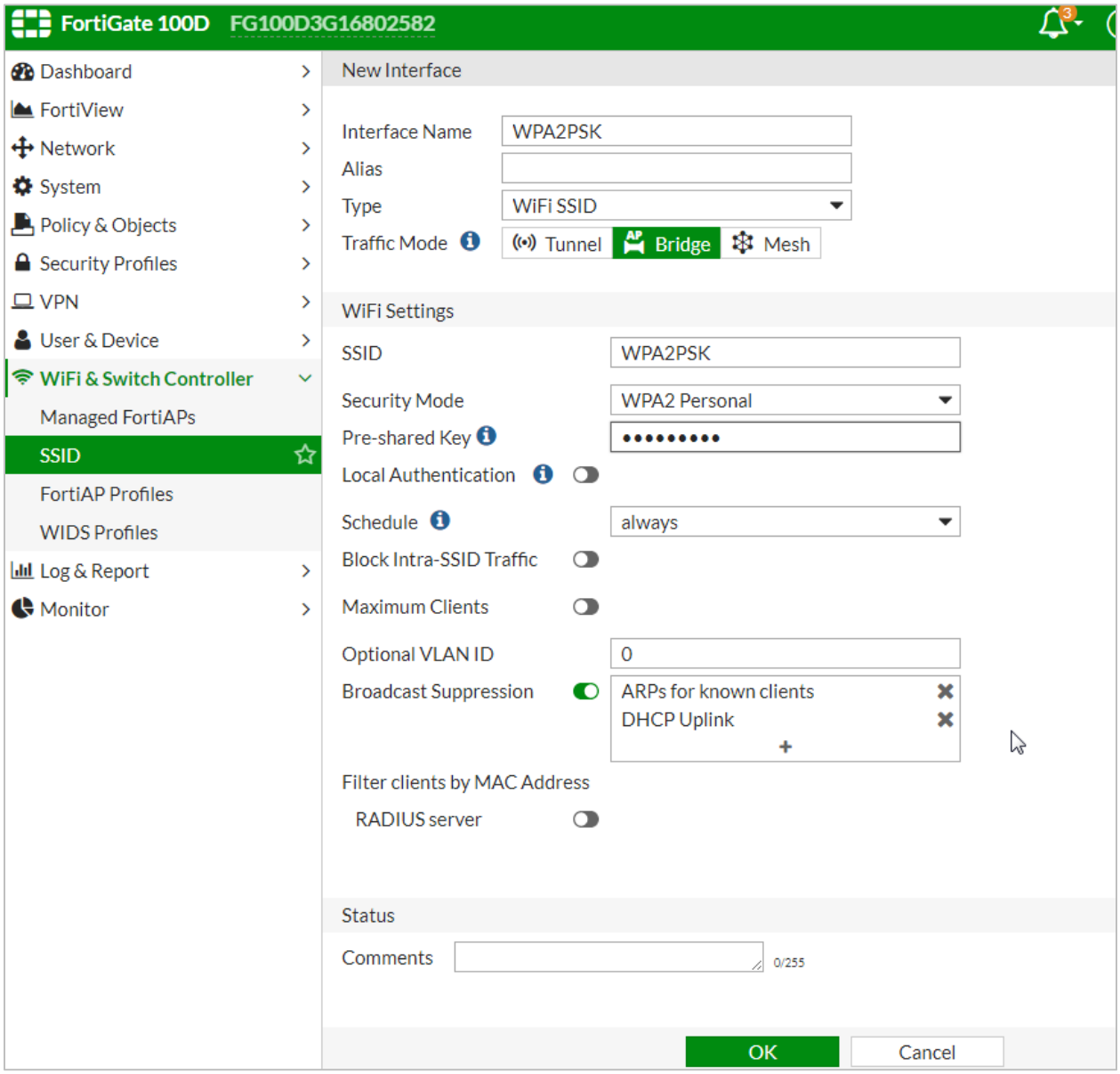
1. Navigate to **WiFi & Switch Controller>SSID.**
2. Click on **Create New** and select **SSID** from the dropdown list**.**
3. For all security types:
   - **a** Enter an Interface Name.
   - **b** Choose **WiFi SSID** from the dropdown list for **Type.**
   - **c** Enter the **SSID** name for on the wireless.
   - **d** Set the **Traffic Mode** to **Bridge** (only topology tested).
   - **e** The **Broadcast Suppression** was tested with the default setting of on and a list of **ARPs for known clients** and **DHCP Uplink** and was found to have good performance.
4. Enter security-specific items:
   - **a** Open security – choose **Open** from the **Security Mode** dropdown list.



b WPA2-PSK

i Choose **WPA2 Personal** from the **Security Mode** dropdown list.

ii Enter the value for the **Pre-shared Key** and enter the same value in the phones.



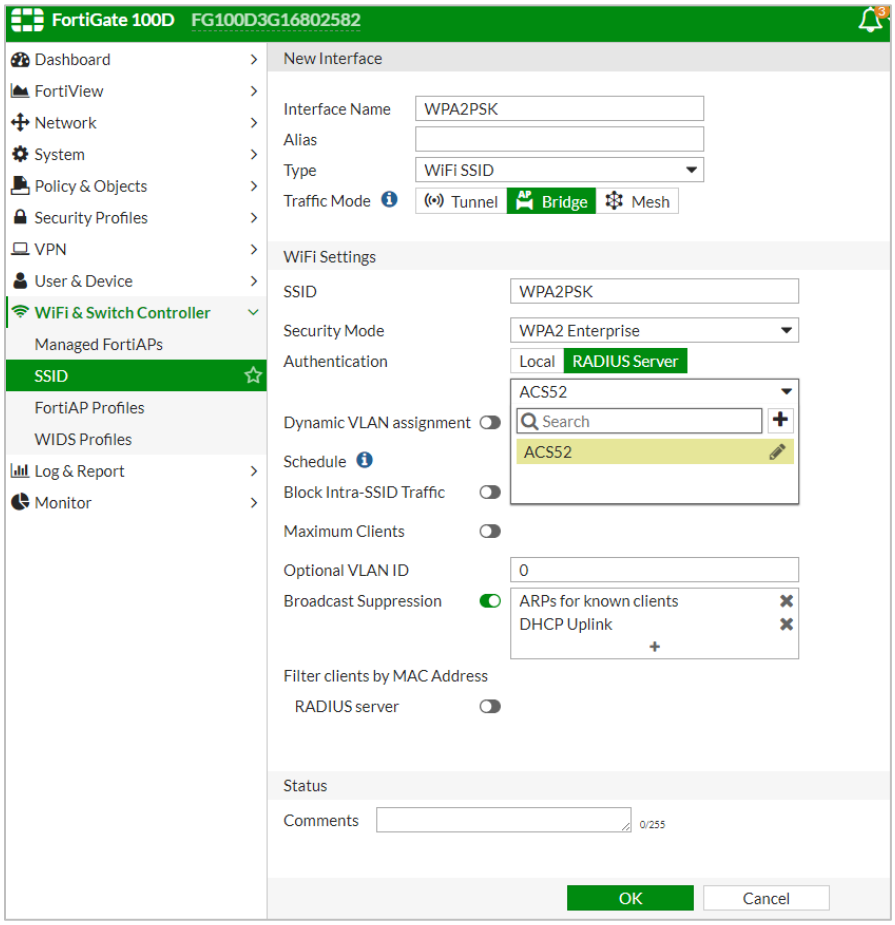
Note: Fast roaming not yet working

Fast roaming using OKC does not have good performance in the version described in this document. A fix will be available in the next GA release of the FortiOS. Phone calls on an SSID that has Enterprise security may experience audio gaps while roaming.

c WPA2-Enterprise – for PEAP, EAP-FAST, and EAP-TLS on the handsets.

i Choose **WPA2 Enterprise** from the **Security Mode** dropdown list.

ii Indicate whether the Radius server is the Fortinet (**Local)** or external (**RADIUS Server).** If the external Radius server has already been entered, it can be selected from the dropdown list. Alternatively, the edit button can be pressed which opens a window with the same parameters as described in Radius Server Identification.



5 Touch **OK.**

6 From CLI

```
config wireless-controller vap
   edit "<name of SSID>"
      set multicast-enhance enable
```

Note: Set multicast enhance from CLI

The **multicast-enhance** parameter can only be set from CLI. It causes multicast (used for Push-to-talk on the phone) to be converted to unicast. This setting is required for acceptable network performance even if PTT is not in use.

From the CLI

```
config wireless-controller vap
   edit "<name of SSID>"
```

For open security:

```
set security open
set local-bridging enable
set multicast-enhance enable
```

For WPA2-PSK:

```
set passphrase "XXXXXXXX"
set local-bridging enable
set multicast-enhance enable
```

Note: Fast roaming improvements coming

Fast roaming using OKC does not have good performance in the version described in this document. A fix will be available in the next GA release of the FortiOS. Phone calls on an SSID that has Enterprise security may experience audio gaps while roaming.

For PEAP, EAP-TLS, or EAP-FAST :

```
set security wpa2-only-enterprise
```

For an external radius server:

```
set auth radius
set radius-server "<radius server name>"
```

For a local authentication server:

```
set auth usergroup
set usergroup "<user group name>"
set local-bridging enable
set multicast-enhance enable
```

Configure QoS Profiles (voice/control priorities)

Note: Qos profile settings only available from the CLI

Video/voice prioritization and bandwidth control are only available from the CLI. These settings are essential to good network performance.

From the CLI

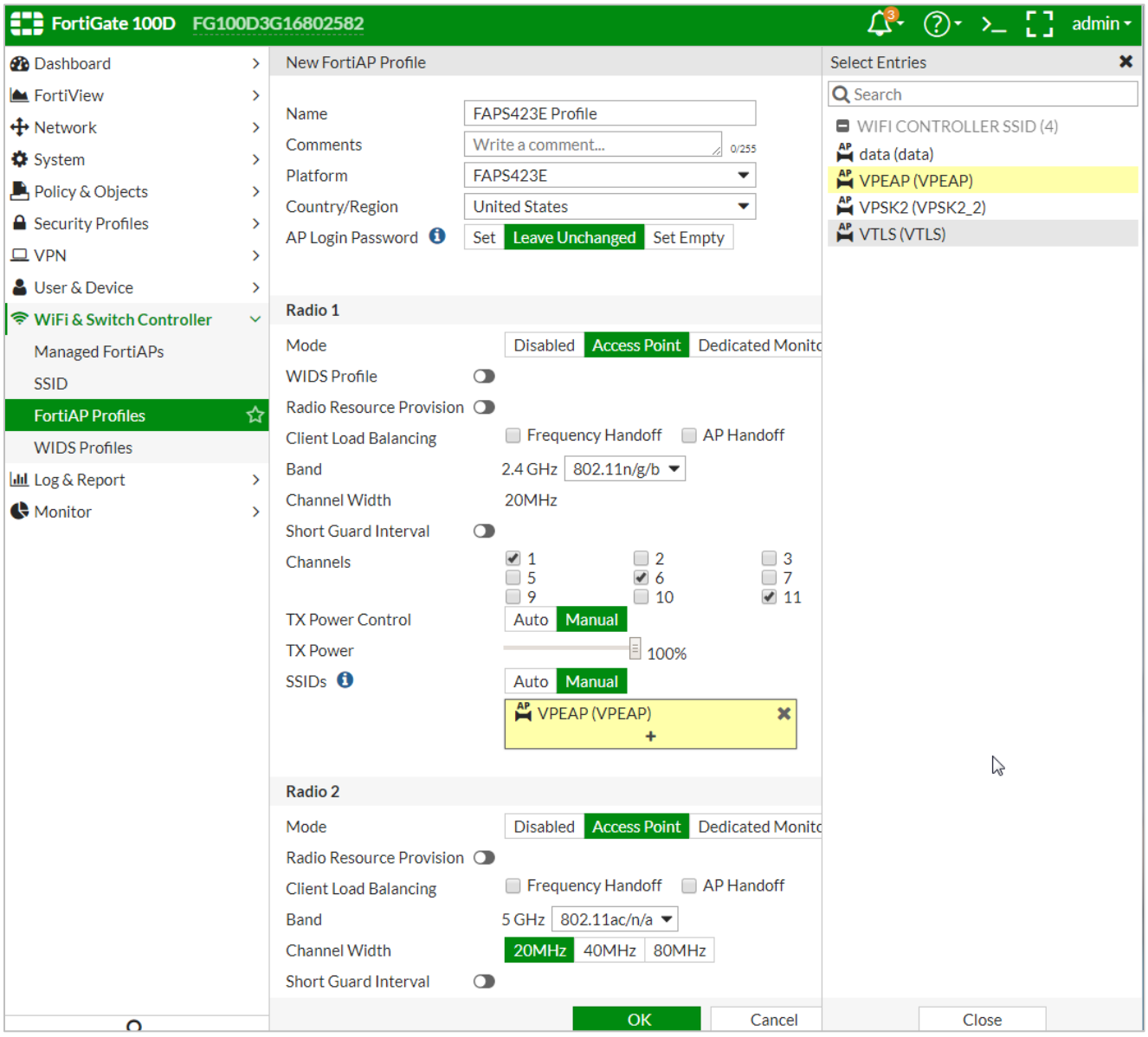
```
config wireless-controller qos-profile
   edit "<qos profile name>"
   call-admission-control enable
   bandwidth-admission-control enable
   bandwidth-capacity 2000
   burst enable
    wmm enable
   wmm-uapsd enable
   dscp-wmm-mapping enable
   dscp-wmm-vo 63 62 61 60 59 58 57 56 55 54 53 52 51 50 49 48
   dscp-wmm-vi 47 46 45 44 43 42 41 40 39 38 37 36 35 34 33 32
   dscp-wmm-be 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
   dscp-wmm-bk 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
```

Configure FortiAP Profiles

FortiAP profiles set up general radio, channel, and bandwidth control policies for all APs of a certain model. They can be overridden by management settings, as described in the next section.

From the Web

1. Navigate to **WiFi & Switch Controller>FortiAP Profiles.**
2. Click on **Create New.**
3. Give the profile a name in the **Name** field.
4. Set the **Platform** field to the model number.
5. In the radio sections, choose whether the radio is **Disabled,** provides wireless service (**Access Point)**, or is a **Dedicated Monitor.**
6. **WIDS** (Wireless Intrusion Detection) profiles were not tested.
7. **Radio Resource Provision** (automatic best channel detection) was not tested.
8. Set the **Band, Channel Width, Short Guard Interval, Channels, Tx Power Control,** and **Tx Power** as desired to meet site design wireless cell coverages needs.
9. Choose the **SSIDs**. (In **Bridged** mode, **Manual** must be used.)
   a. Choose **Manual.**
   b. Click on the +.
   c. From the window, highlight the desired SSID names to choose them.
10. Click on **OK.**



From the CLI

```
config wireless-controller wtp-profile
   edit "<Name of the FortiAP Profile>"
      config platform
        set type "<FortiAP Model>"
     config "<Radio ID>"
        set mode ap
        set band "<Radio Band a/b/g/n/ac>"
        set channel "<Desired Broadcasting Channel>"
        set channel-bonding "<Channel Width 20/40/80MHz>"
        set vap-all disable
```

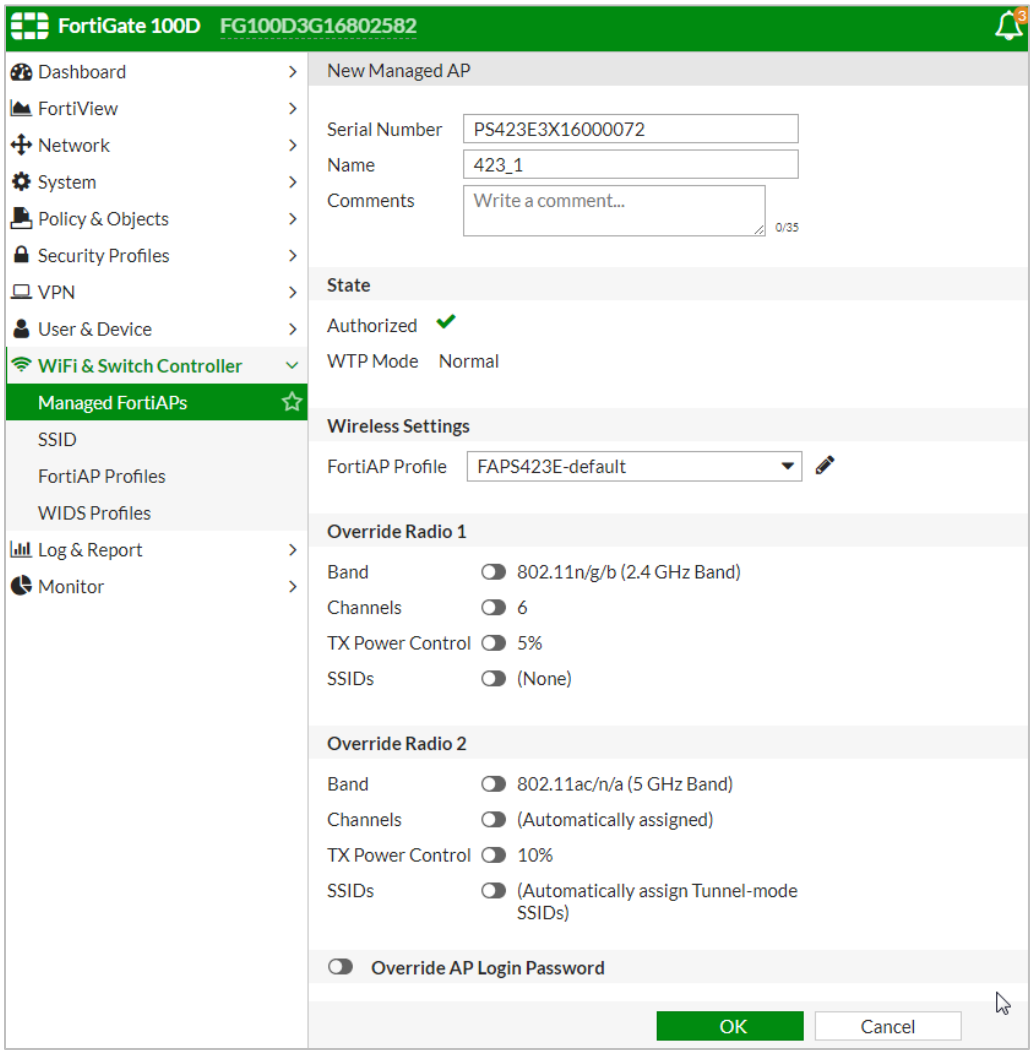
```
set vap "<SSID>"
set call-admission-control enable
set bandwidth-admission-control enable
set bandwidth-capacity 2000
```

Configure Managed FortiAPs

To set up values for specific APs, use the Managed FortiAPs secion.

From the Web

1. Navigate to **WiFi & Switch Controller>Managed FortiAPs.**
2. Click on **Create New**.
3. Enter the serial number of the AP in the **Serial Number** box. Note: the AP can be automatically discovered if connected to any of the physical ports of the Fortigate or if both the controller and the AP are in the same subnet.
4. Identify the **FortiAP Profile** to be assigned to the AP.
5. Override the **Band, Channels, Tx Power Control,** and SSID assignment method in the **FortiAP Profile** as desired.
6. Click on **OK**.



From the CLI

```
config wireless-controller wtp
edit "<FortiAP Serial No>"
set admin "<Enable to be Managed by Fortigate>"
set  wtp-profile "<FortiAp Profile Name>"
```

*****END OF DOCUMENT*****