CONFIGURATION GUIDE

Cloudpath Enrollment System for Hotspot 2.0 (Passpoint) Release 2 Configuration Guide, 5.6

Supporting Cloudpath Software Release 5.6

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Passpoint Overview

Hotspot 2.0 (HS 2.0), often referred to as Wi-Fi Certified Passpoint, is the new standard for Wi-Fi public access that automates and secures the connection.

Passpoint Release 1

Release 1 of HS 2.0 was based on the IEEE 802.11u standard and introduced new capabilities for automatic Wi-Fi network discovery, selection and 802.1X authentication based on the Access Network Query Protocol (ANQP).

Passpoint Release 2

Release 2 is largely focused on standardizing the management of the credentials; how they are provisioned, how they are stored on the device, how they are used in network selection, and how long they are valid. Some of these capabilities aren't applicable to cellular credentials (SIM/USIM), because those are provisioned by the home mobile network operator (MNO) and are themselves the stored credential.

In Release 2 mobile devices use Online Sign-Up (OSU) to accomplish registration and credential provisioning to obtain secure network access. Each Service Provider network has an OSU Server, an AAA Server, and access to a certificate authority (CA). The CA is known by two attributes: its name and its public key.

One of the requirements for a mobile device and the hotspot to trust each other is that OSU Server shall hold a certificate signed by a Certificate Authority whose root certificate is issued by one of the CAs authorized by Wi-Fi Alliance, and that these trust root CA certificates are installed on the mobile device.

All certificates for Release 2 of the Passpoint program are governed by the Hotspot 2.0 Online Sign-Up Certificate Policy Specification. An OSU server certificate should be obtained from any of the CAs authorized by Wi-Fi Alliance.

Prerequisites

To configure passpoint with your Cloudpath system, you need a Hotspot 2.0 WWW certificate with Common Language icon embedded, signed by a certified Hotspot 2.0 Root CA.

Devices That Support Passpoint

At the time of the Cloudpath 5.1 release, this device supported Hotspot 2.0 Release 2:

- Samsung Galaxy S5, running OS 4.4.2, kernel version 3.4.0-2727827eng, build number kltexx-eng 4.4.2 KOT49H G900FXXUTAMK6 test-keys.

> **NOTE**
> Reportedly, Windows 10 supports Hotspot 2.0 R2, but it does not support the open browser command, and it only supports the PEAP EAP method. Therefore, Cloudpath 5.1 cannot support Windows 10 devices with a passpoint configuration.

Controller Configuration

Passpoint is supported on the Ruckus Virtual SmartZone (vSZ) controller, version 3.2.1.0.245.

Controller Configuration Summary

The following is a list of configuration steps on the vSZ controller:

- Configure AAA Services
- Configure Hotspot 2.0 Wi-Fi Operator Profile
- Configure Hotspot 2.0 Identity Provider
- Configure Guess Access Portal
- Configure Onboarding SSID
- Configure Hotspot 2.0 Profile
- Configure Secure SSID

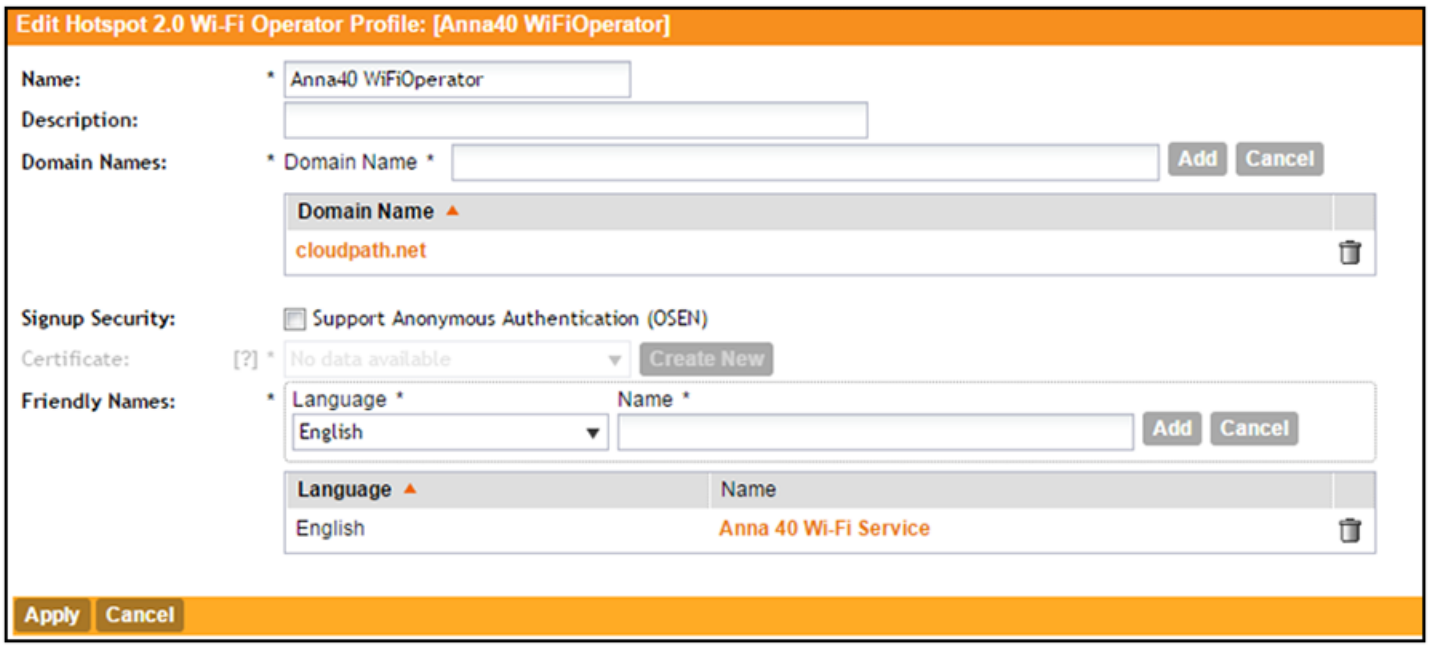
Configure AAA Services

There are several places on the vSZ controller to configure AAA services. Be sure to configure them under **Services**.

1. Navigate to **Configuration** > **Service and Profiles** > **Services** to configure AAA Authentication and Accounting Services
2. For the AAA Authentication server, use the IP address of the Cloudpath system and port 1812.
3. For the AAA Accounting server, use the IP address of the Cloudpath system and port 1813.
4. The **Shared Secret** must match the shared secret for the Cloudpath onboard RADIUS server (**Configuration** > **Advanced** > **RADIUS Server**).
5. Leave the default values for the remaining fields, and **Apply** changes.

Configure Hotspot 2.0 Wi-Fi Operator Profile

FIGURE 1 Wi-Fi Operator Profile



1. Navigate to **Configuration** > **Service and Profiles** > **Service Profiles** > **Hotspot 2.0 Wi-Fi Operator**.
2. Enter a **Name** for the **Wi-Fi Operator profile**.
3. **Add** the **Domain Name** for the Cloudpath system.
4. Select a **Language**, and **Add** the **Friendly Name** for the Cloudpath system. You can enter multiple languages for the same Friendly Name.

   NOTE
   The Friendly Name in the vSZ controller must match the Friendly Name in the Hotspot 2.0 WWW certificate on the Cloudpath system.
5. Leave the default values for the remaining fields, and click **Apply**.

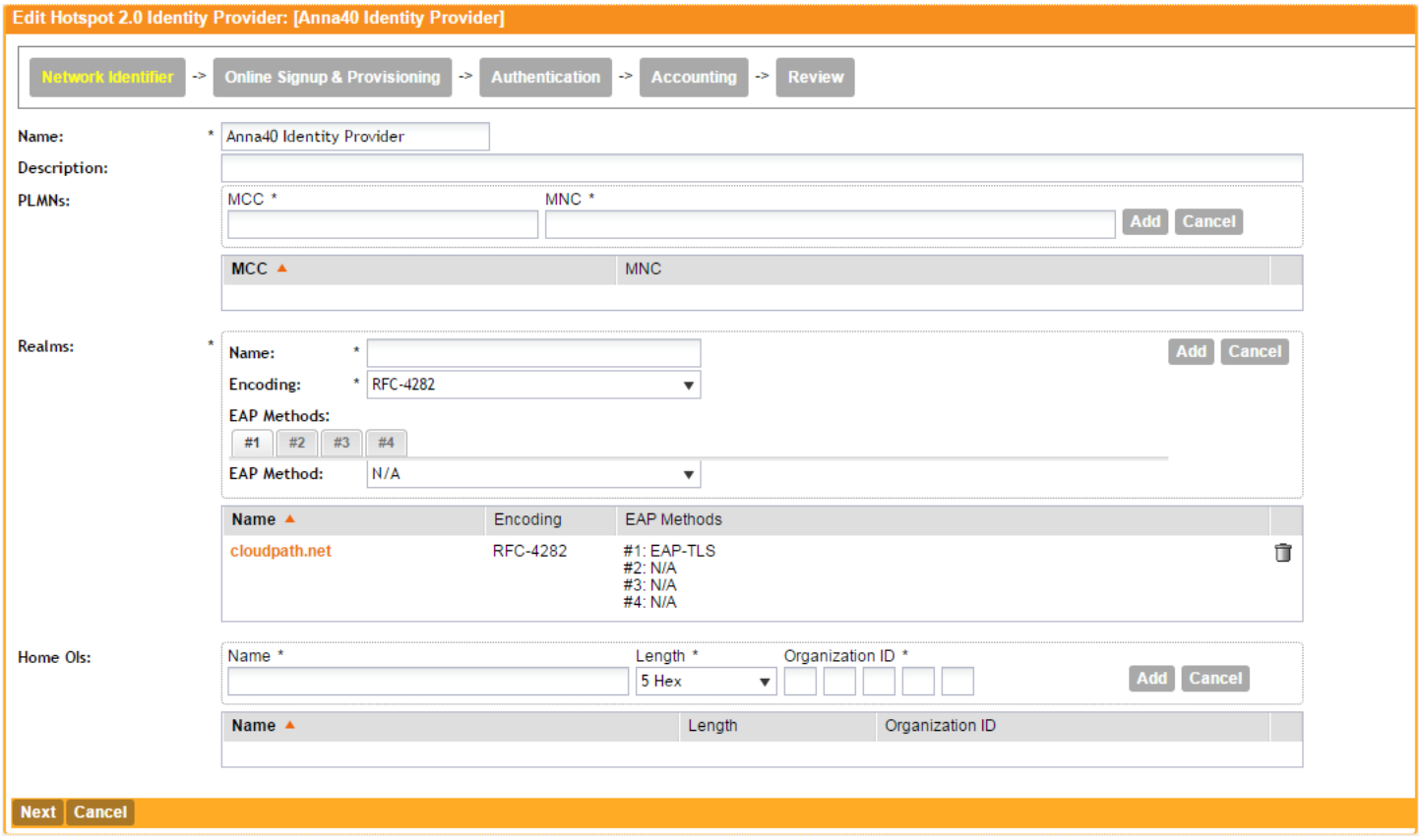
Configure Hotspot 2.0 Identity Provider

Navigate to **Configuration** > **Service and Profiles** > **Service Profiles** > **Hotspot 2.0 Identity Provider**. The Hotspot Identity Provider consists of the following information:

- Network Identifier
- Online Signup & Provisioning
- AAA Authentication
- AAA Accounting

Configure Network Identifier

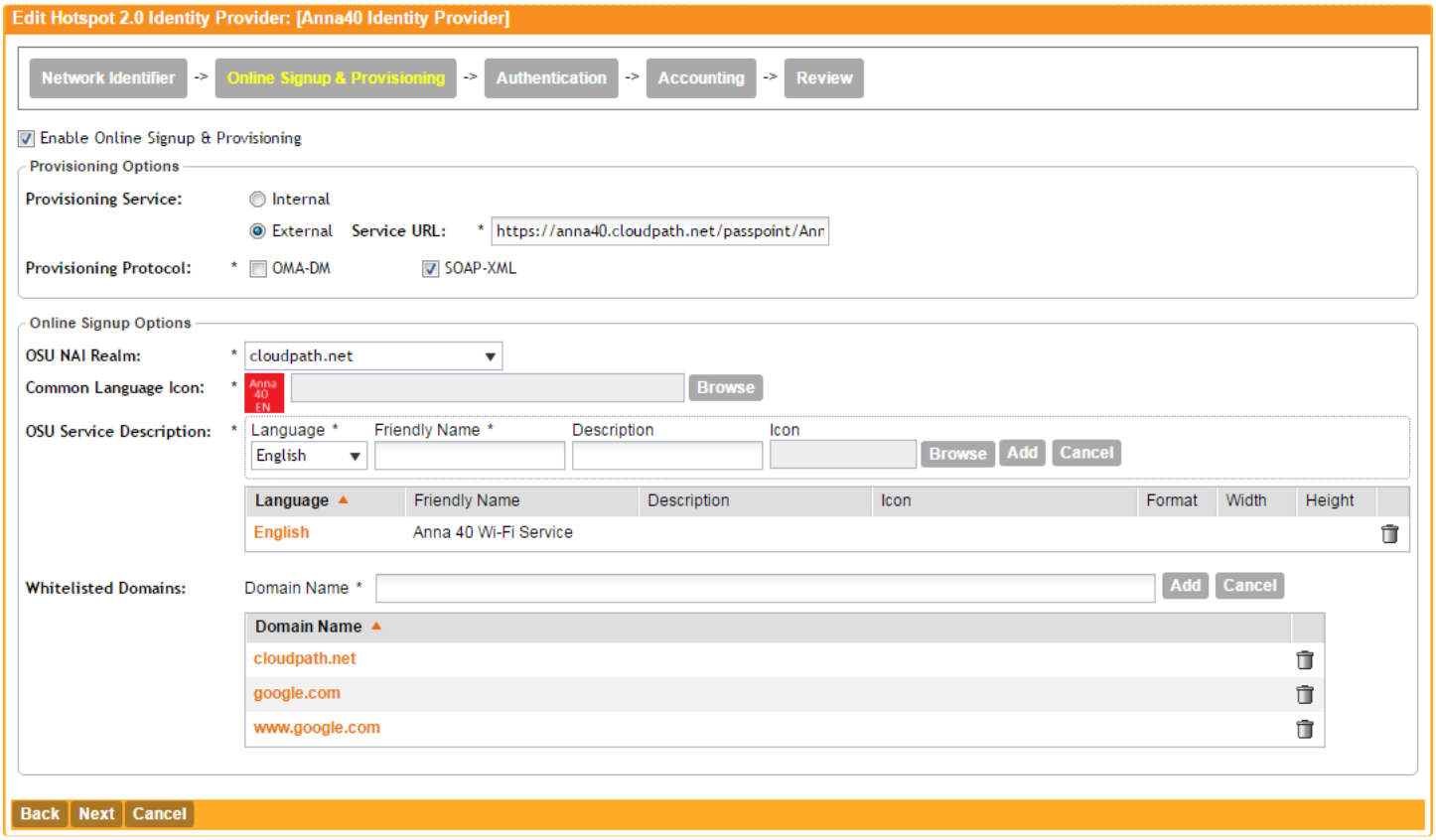
FIGURE 2 Configure Network Identifier



1. On the **Network Identifier** tab, Enter a **Name** for the Identity Provider.
2. Enter the **Realm** for the Cloudpath system, and **EAP Method** for the Identity Provider. You can enter multiple EAP Methods for the same Realm.
3. Leave the default values for the remaining fields, and click **Next** to apply changes and continue with Online Signup & Provisioning.

Configure Online Signup & Provisioning

FIGURE 3 Online Signup & Provisioning



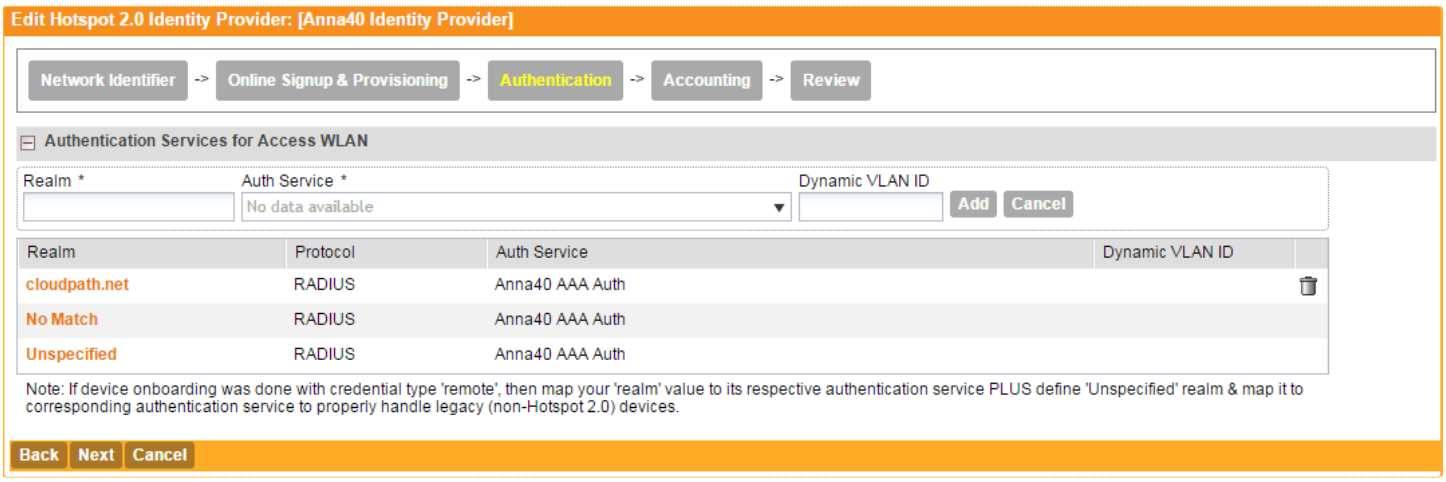
1. On the **Online Signup & Provisioning** tab, enable **Online Signup & Provisioning**.
2. Select **External Provisioning Service** and enter the **Service URL**. The Service URL on the controller must match the Passpoint OSU URL displayed on the Cloudpath system **Deploy** page (**Configuration** > **Deploy**).
3. Enter the **OSU NAI Realm** of the Cloudpath system.

   NOTE
   The Realm of the Cloudpath system should be consistent throughout the Identity Provider configuration.

4. Upload the **Common Language** Icon. This is the icon embedded in the Hotspot 2.0 WWW certificate on the Cloudpath system. Support file size = 64x64 pixels, file type = PNG.
5. Add one or more **Languages** for the **Friendly Name**. The Friendly Name must match the Friendly Name in the Hotspot 2.0 WWW certificate on the Cloudpath system.
6. Add one or more **Whitelisted Domains**. The domain of the Cloudpath system must be included.
7. Leave the default values for the remaining fields, and click **Next** to apply changes and continue with Authentication.

Authentication Services for Access WLAN

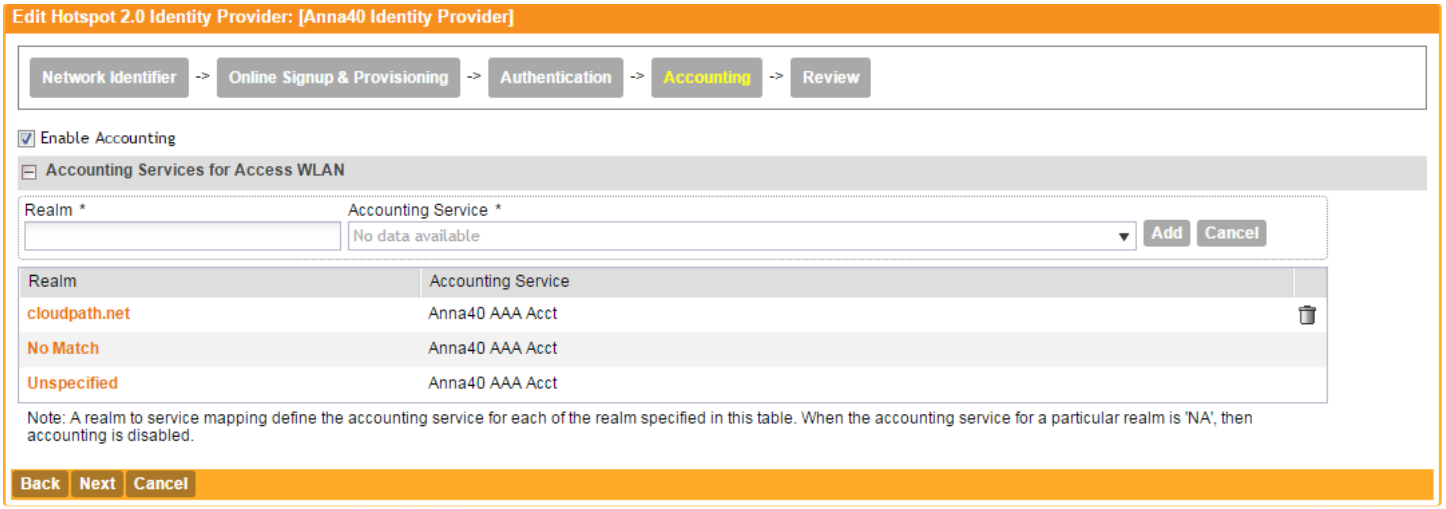
FIGURE 4 AAA Authentication Services



1. On the **Authentication** tab, add one or **Realms** for RADIUS authentication. Enter an authentication service for the Cloudpath system realm, for systems that do not match the Cloudpath realm, and for unspecified realms.
2. Specify the Authentication server previously configured in Authentication Services.
3. Specify the RADIUS protocol.
4. Leave the default values for the remaining fields, and click **Next** to apply changes and continue with Accounting.

Accounting Services for Access WLAN

FIGURE 5 AAA Acounting Services



1. On the Accounting tab, enable **Accounting**.
2. Add one or **Realms** for RADIUS accounting. Enter an accounting service for the Cloudpath system realm, for systems that do not match the Cloudpath realm, and for unspecified realms.

3. Specify the Accounting server previously configured in Accounting Services.
4. Leave the default values for the remaining fields, and click **Next** to apply changes and continue with Accounting.

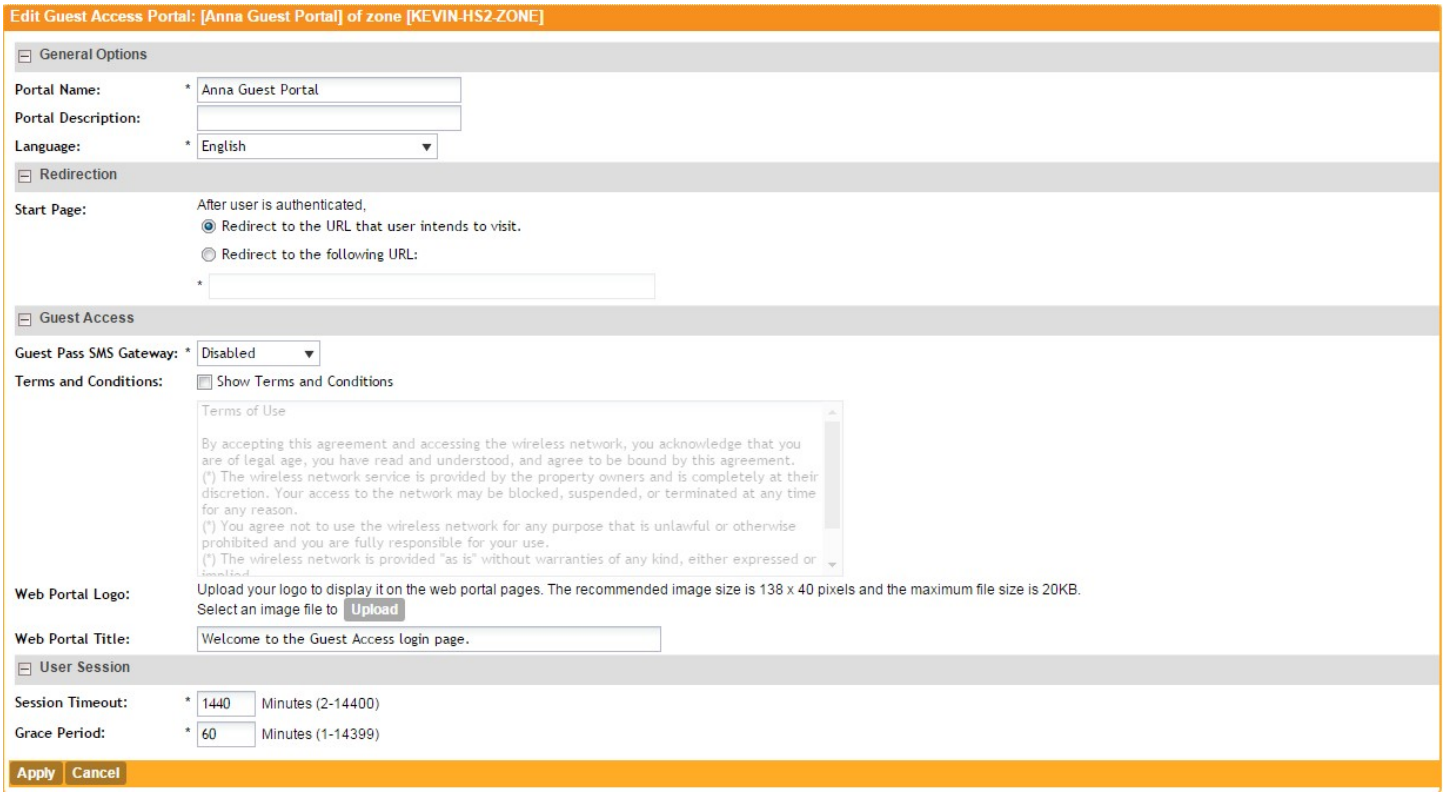
Review Identity Provider Configuration

On the **Review** tab, verify the Identity Provider configuration and **Apply** changes.

Configure Guest Access Portal

Navigate to your AP Zone for Zone Configuration. This the portal for iOS devices.

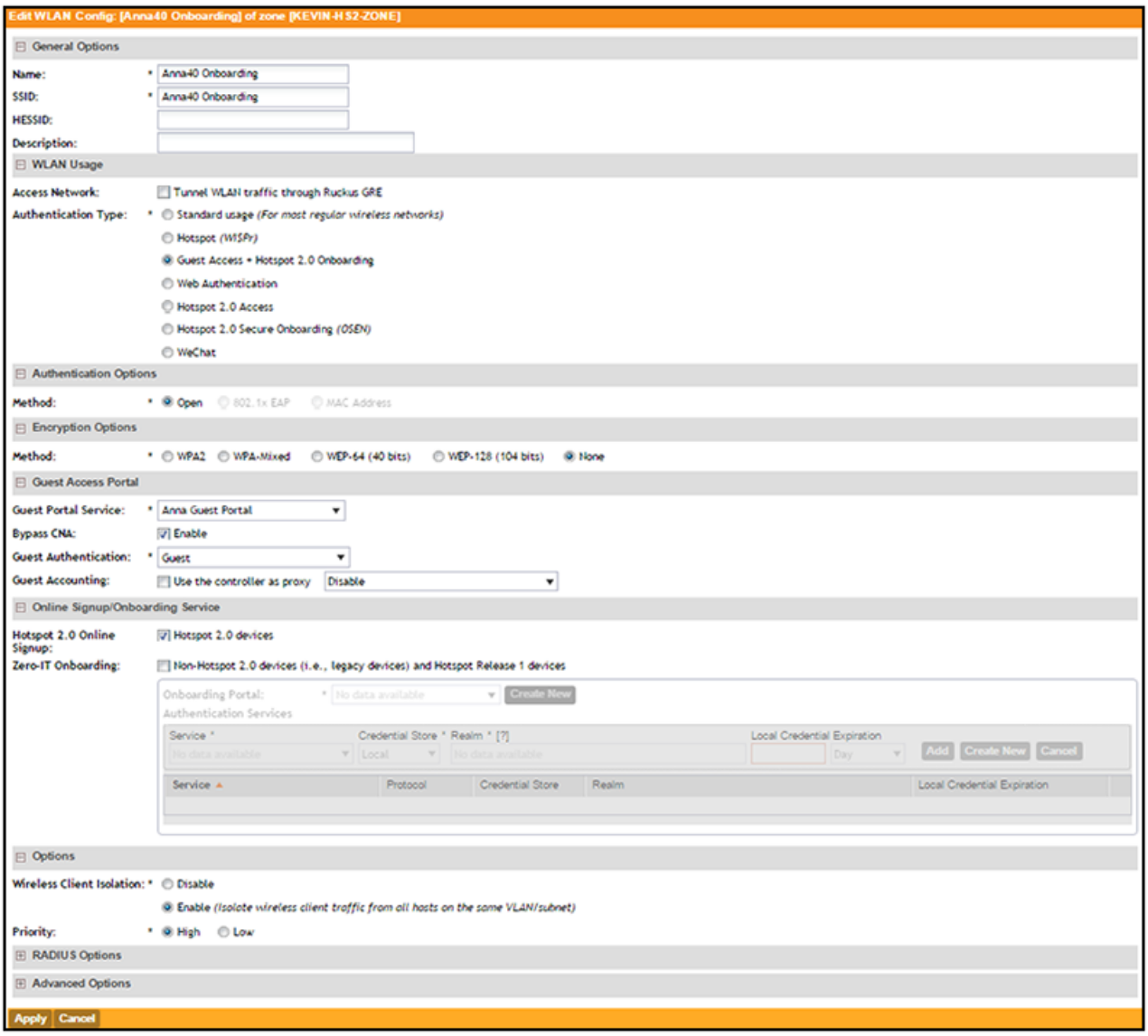
FIGURE 6 Guest Access Portal



1. Enter a **Portal Name** and **Description**.
2. The **Start Page** must be Redirect to the URL that the user intends to visit.
3. Disable **Guest Pass SMS Gateway**.
4. Optional. Enter a **Web Portal Logo**.
5. Enter a **Web Portal Title**.
6. Leave the default values for the remaining fields, and **Apply** changes.

Configure Onboarding SSID

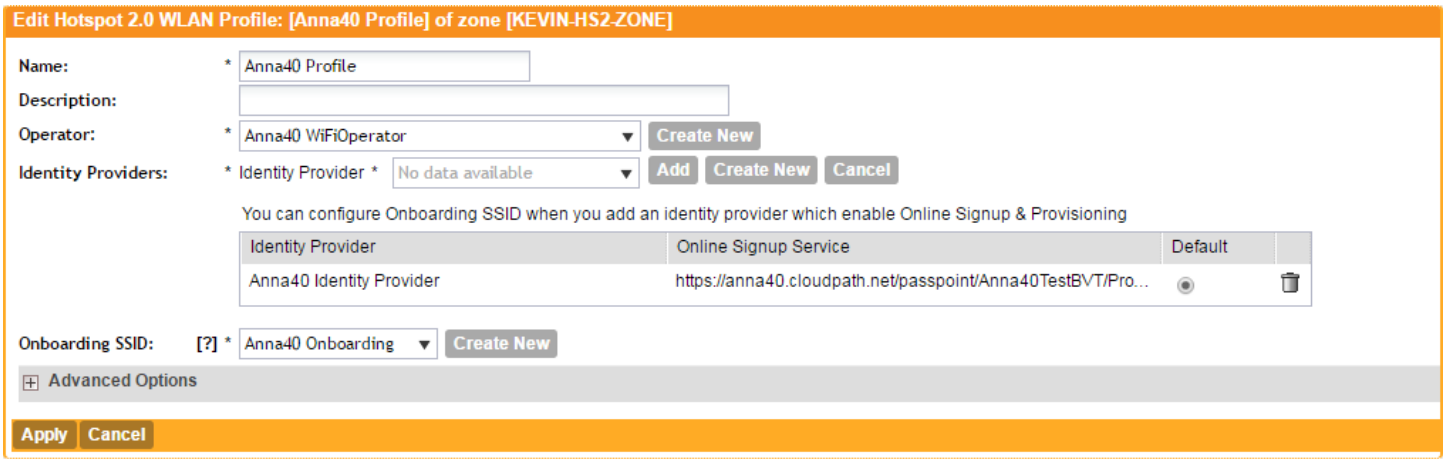
FIGURE 7 Onboarding SSID



1. **Name** the onboarding **SSID**.
2. Authentication Type must be **Guest Access + Hotspot 2.0 Onboarding**.
3. Authentication Method must be **Open**.
4. Encryption Method must be **None**.
5. Select the **Guest Portal Service** previously configured.
6. Enable **Bypass CNA**.
7. Select **Hotspot 2.0 devices**.
8. Leave the default values for the remaining fields, and **Apply** changes

Configure Hotspot 2.0 Profile

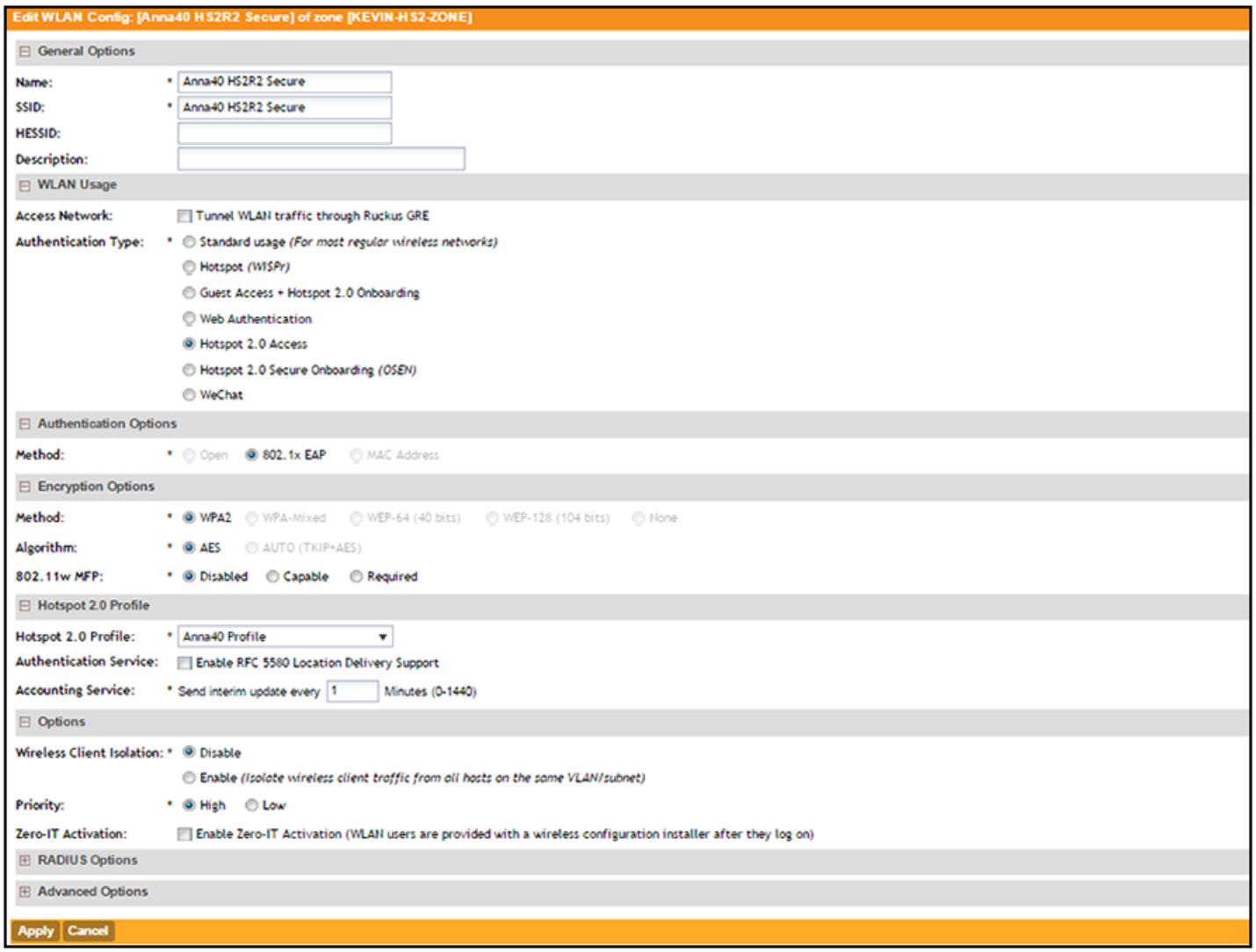
FIGURE 8 Hotspot 2.0



1. **Name** the Hotspot 2.0 profile.
2. Select the previously configured **Wi-Fi Operator**.
3. Add the previously configured Identity Provider.
4. Select the previously configured **Onboarding SSID**.
5. Leave the default values for the remaining fields, and **Apply** changes.

Configure Secure SSID

FIGURE 9 Secure SSID



1. **Name** the secure SSID.
2. Authentication Type must be **Hotspot 2.0 Access**.
3. Authentication Method must be **802.1x EAP**.
4. Encryption Method must be **WPA2**.
5. Select the previously configured **Hotspot 2.0 Profile**.
6. Leave the default values for the remaining fields, and **Apply** changes.

Cloudpath Configuration

The Cloudpath configuration for passpoint consists of setting up the workflow, device configuration settings, certificate settings, and home service provider, subscriber, and policy settings.

Prerequisites

- The web server certificate must be signed by a Hotspot 2.0 Root CA and must contain the Common Language Icon. Icon size = 64 x 64 pixels. Icon file type = PNG.
- The RADIUS server certificate must also be signed by the Hotspot 2.0 Root CA.

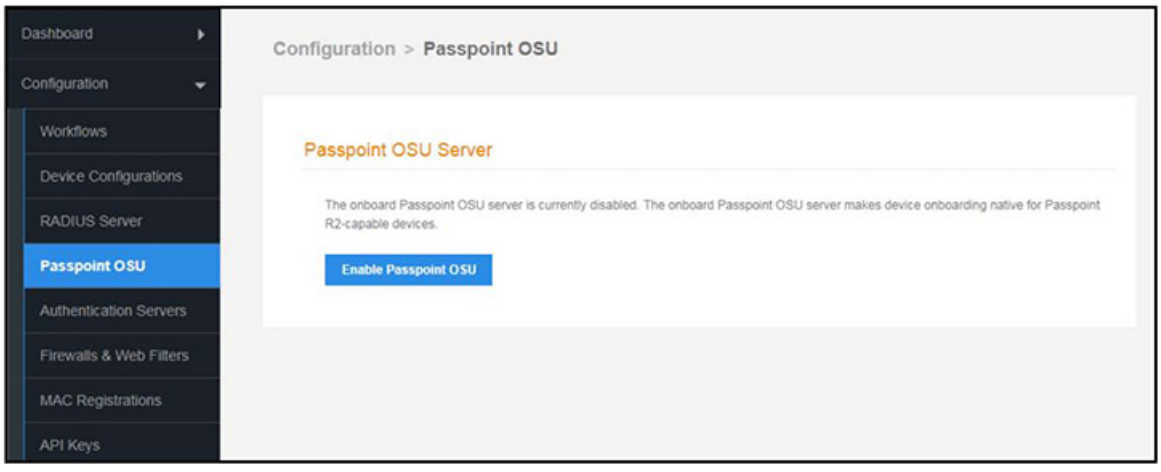
Cloudpath Configuration Summary

- Enable Passpoint on the Cloudpath System
- Workflow for Passpoint Configuration
- Device Configuration Passpoint Settings
- Additional Passpoint Settings

Enabling Passpoint on the Cloudpath System

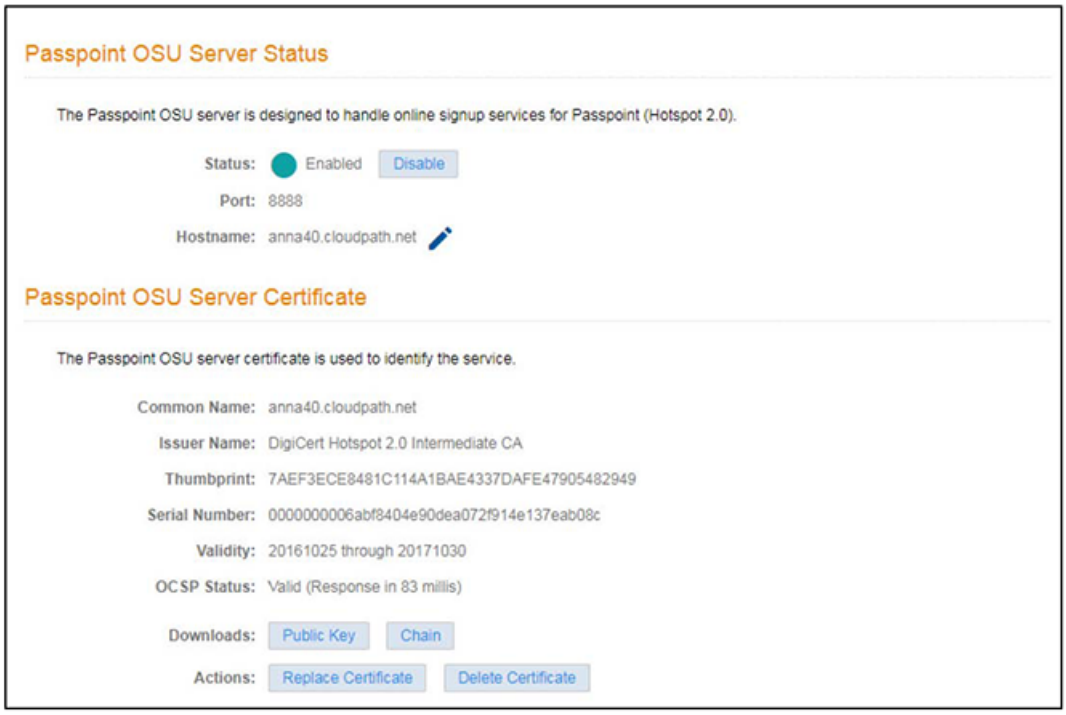
Enable Passpoint from the left menu by selecting the **Configure > Passpoint OSU** tab.

FIGURE 10 Enable Passpoint OSU



Enabling Passpoint restarts the web server and displays the Passpoint Configuration page, which allows you to upload the Hotspot 2.0 WWW certificate and configure the Passpoint hostname and port.

FIGURE 11 Configure Passpoint server and certificate



The web server restarts after the Hotspot 2.0 WWW certificate has been uploaded.

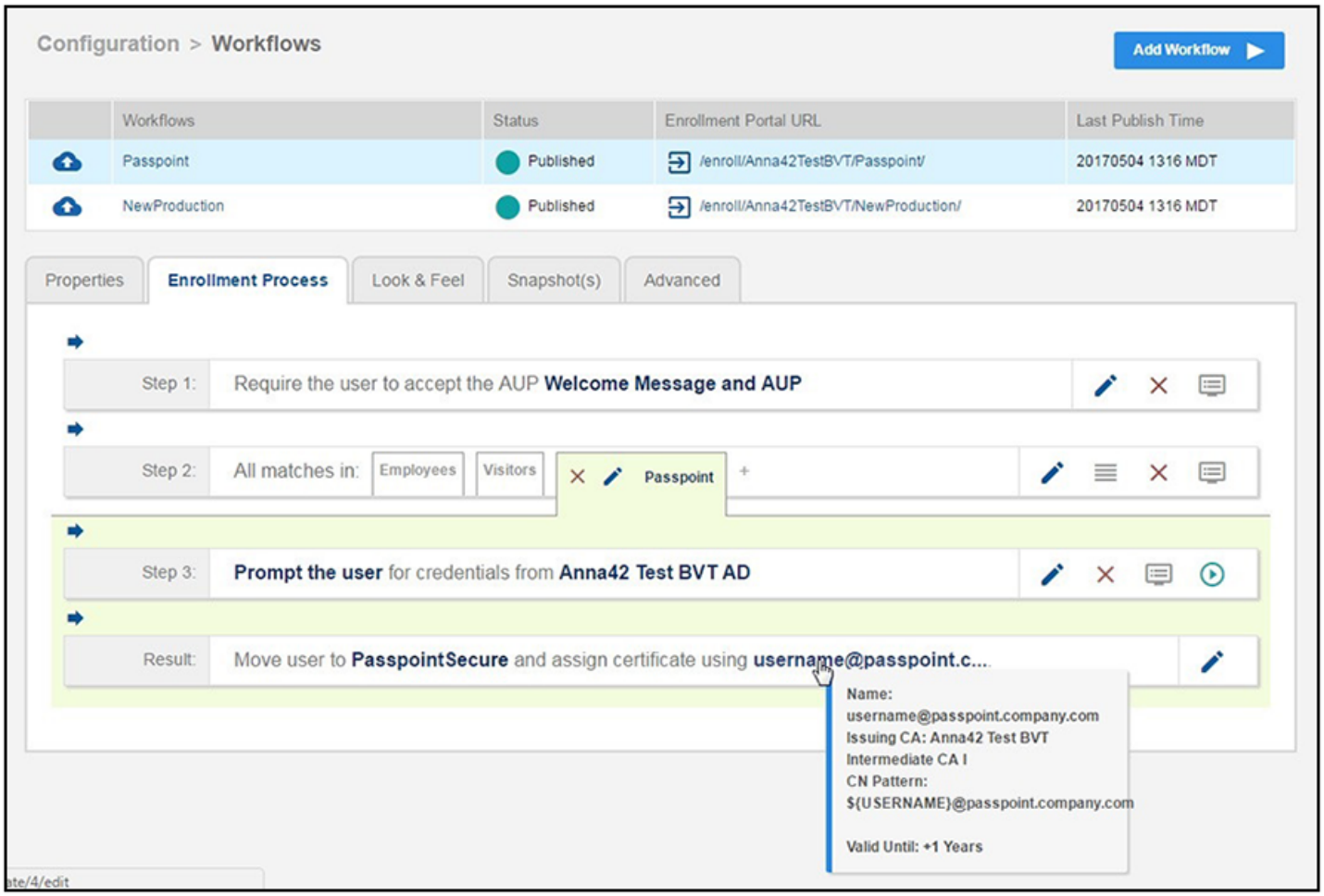
NOTE
Enabling Passpoint on the system allows you to configure the server and upload the Hotspot 2.0 WWW certificate. However, you must also enable Passpoint for any device configuration that supports Passpoint. See Device Configuration Passpoint Settings on page 16.

Workflow for Passpoint Configuration

Design a workflow for Passpoint.

The Result step must include a device configuration that includes the secure SSID configured on the controller, and the certificate template must include the Common Name Pattern with the same realm as configured in the controller.

FIGURE 12 Passpoint Workflow



Device Configuration Passpoint Settings

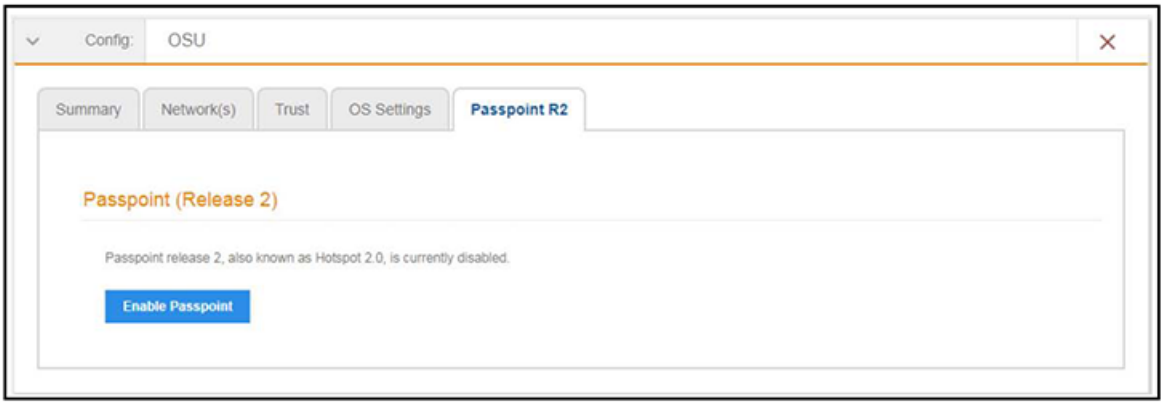
The passpoint settings include configuration for the Home Service Provider, the Subscription Server, and the Policy Server.

Enable Passpoint for the Device Configuration

When Passpoint is enabled on the system, a Passpoint R2 tab is added for each device configuration.

You can enable Passpoint for only the device configurations that will support Passpoint.

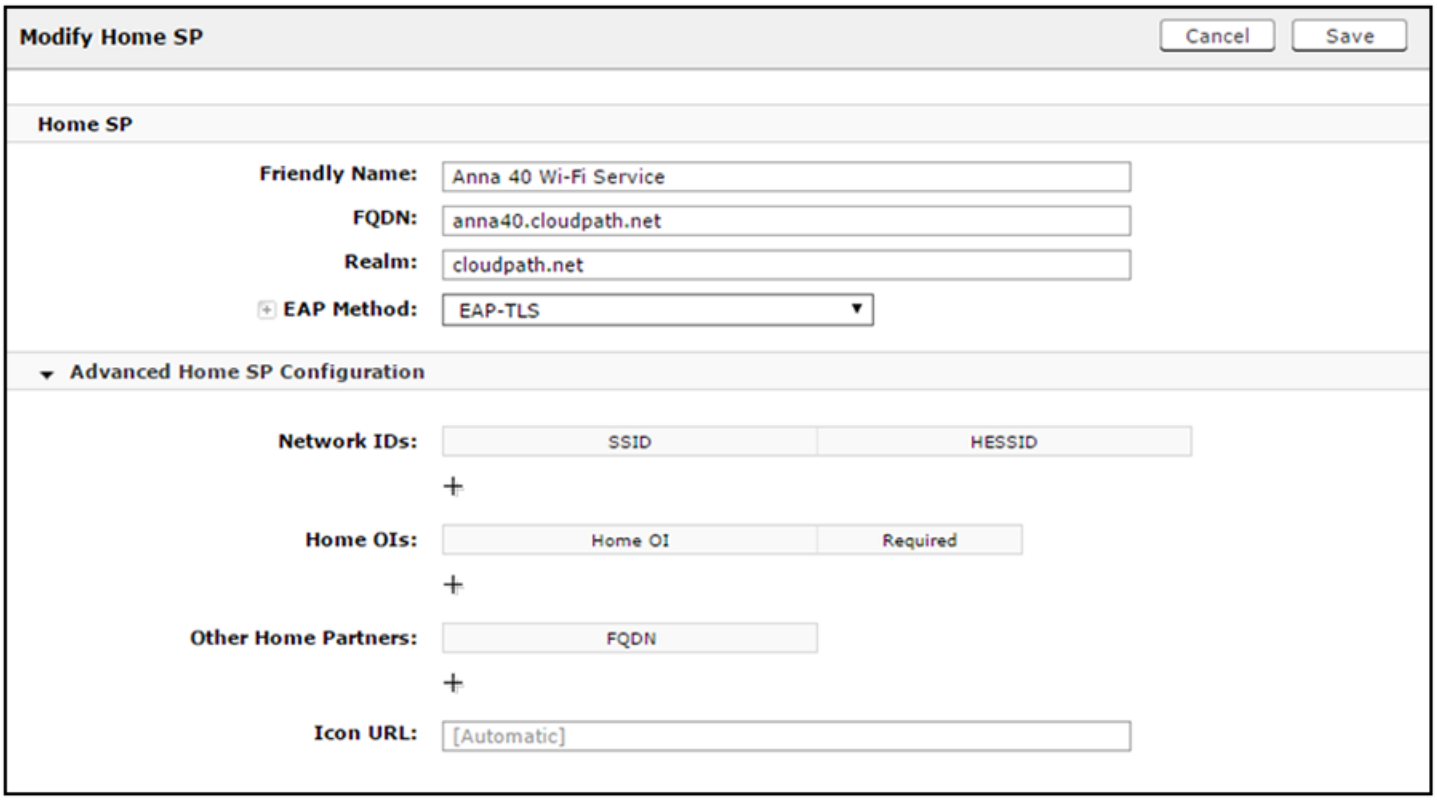
FIGURE 13 Enable Passpoint for the Device Configuration



Enabling Passpoint for the device configuration allows you to configure Home Server Provider, Subscription, Policy, and Certificate settings.

Configure Home Service Provider

FIGURE 14 Home Service Provider Settings

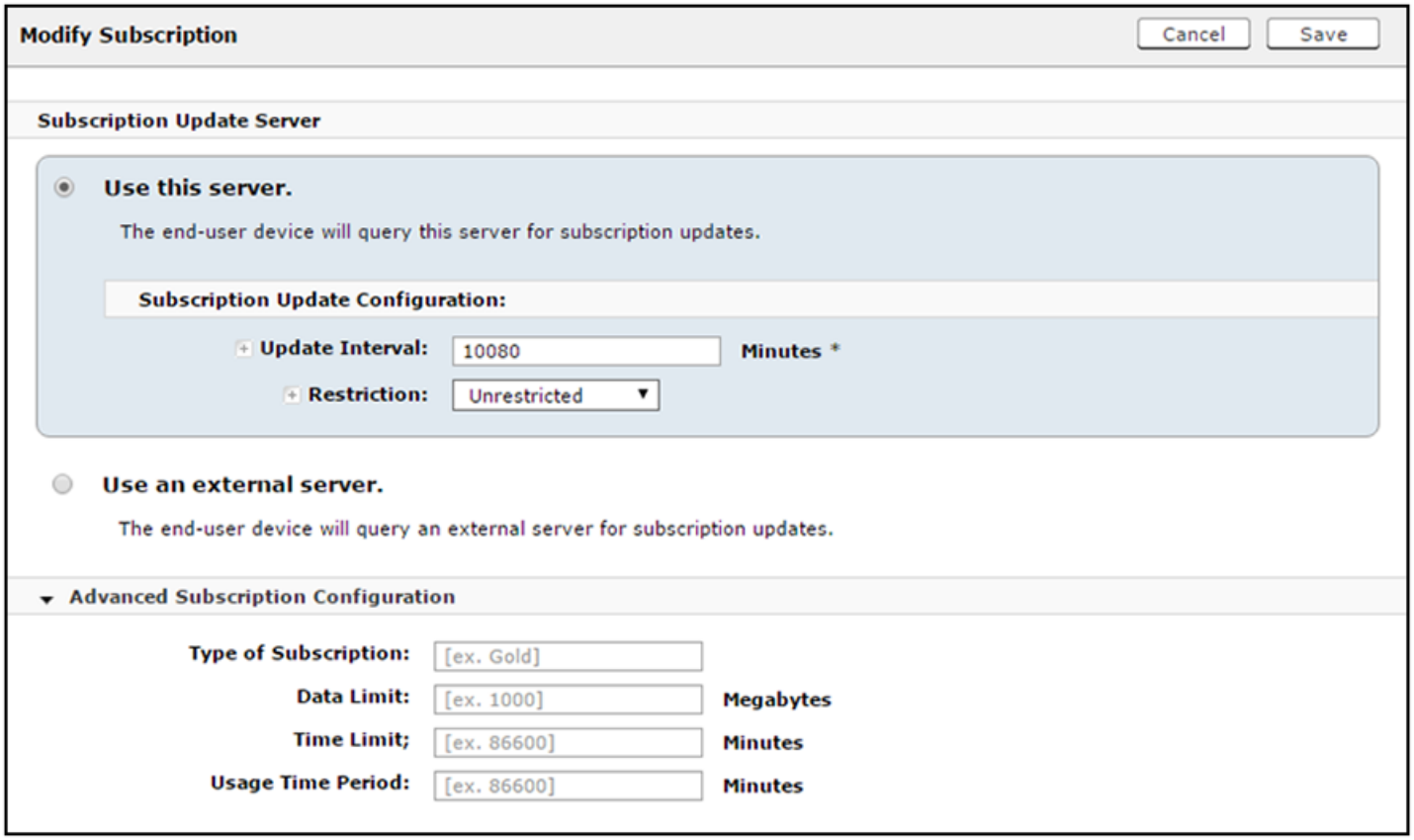


1. The **Friendly Name** must match the Friendly Name in the Hotspot 2.0 WWW certificate.
2. The **FQDN** of the Cloudpath system.

3. The **Realm** must match the realm of the Cloudpath system.
4. The **EAP Method** for the Hotspot 2.0 configuration.

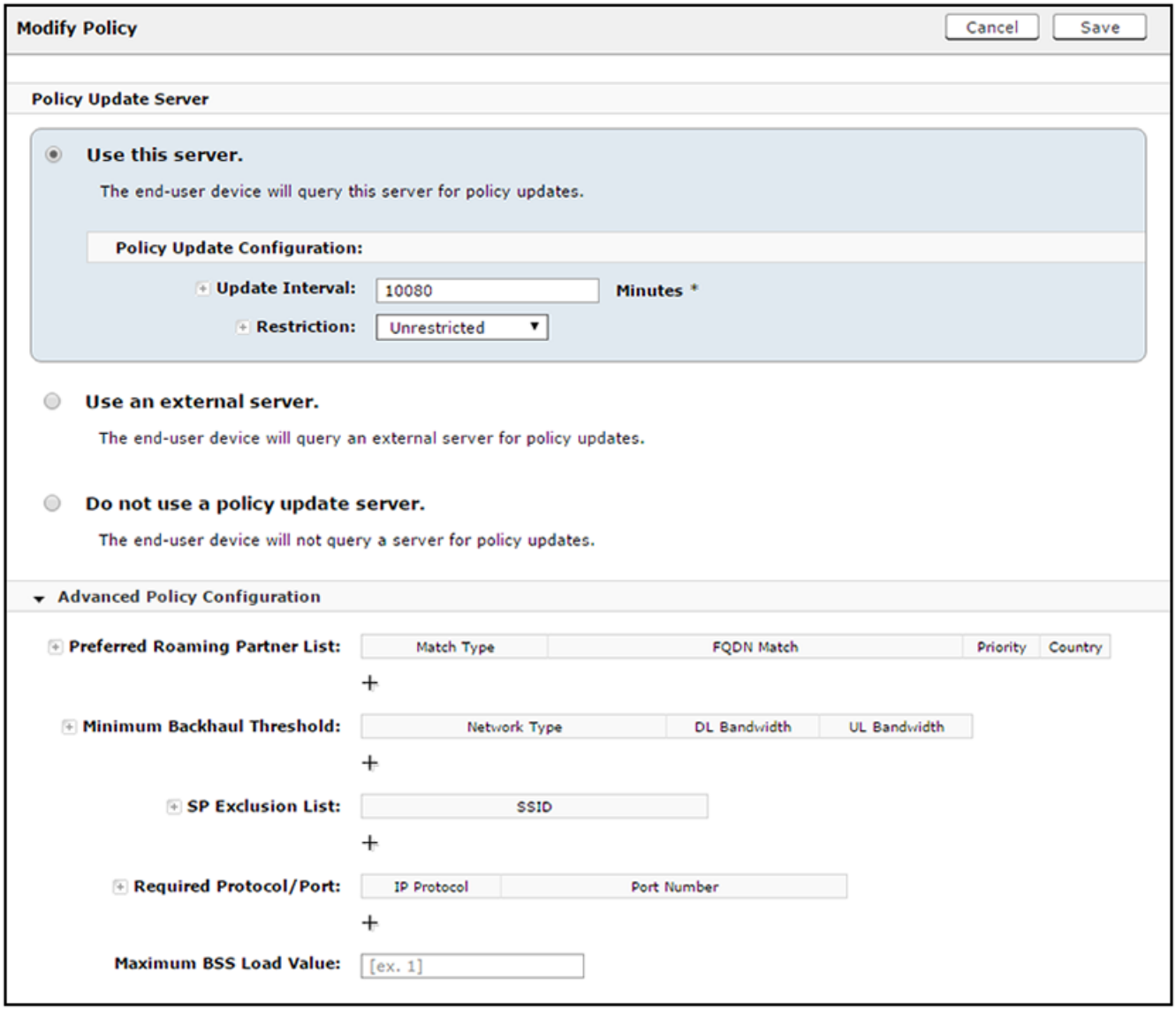
Configure Subscription Server

FIGURE 15 Subscription Server Settings



Configure Policy Server

FIGURE 16 Policy Server Settings



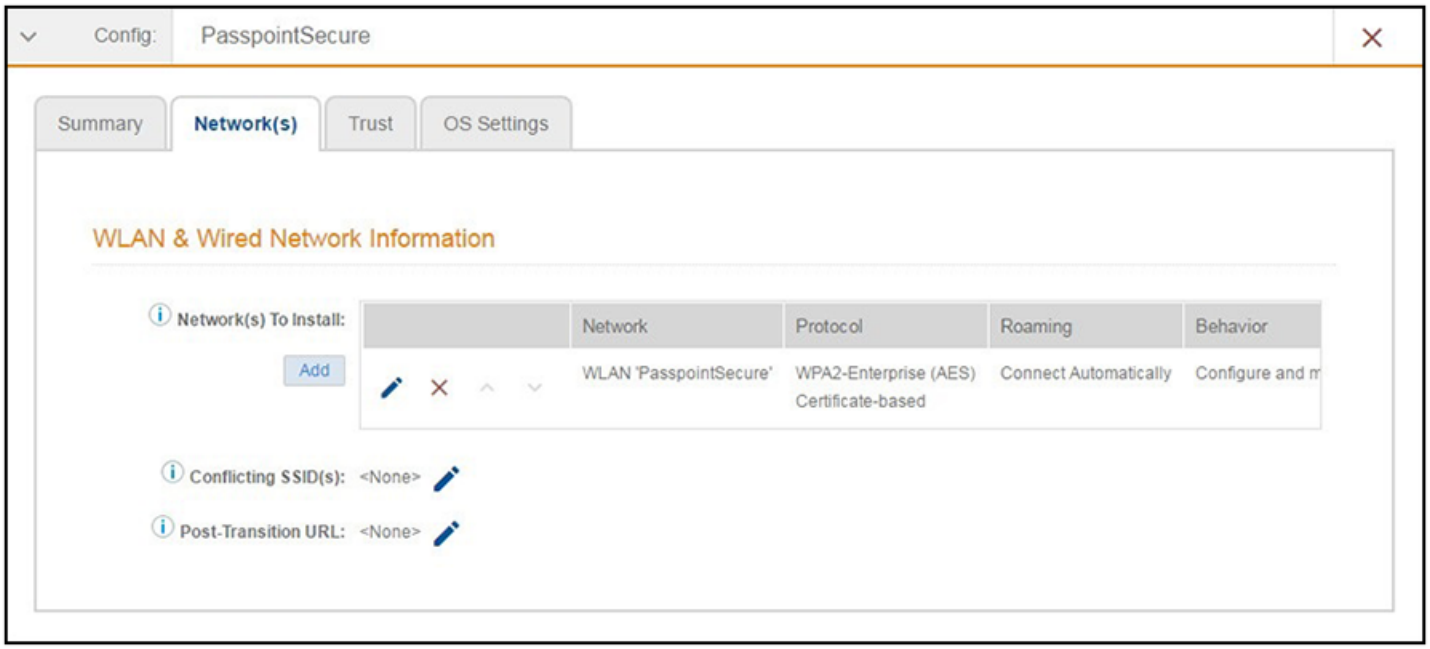
Additional Passpoint Settings

In addition to device configuration settings, you must specify the correct EAP Method in the WLAN settings, RADIUS server Trust settings, and Certificate Template settings.

WLAN Settings

The WLAN settings for the device configuration must match the EAP Method specified in the controller Identity Profile, and include a Traditional SSID Type.

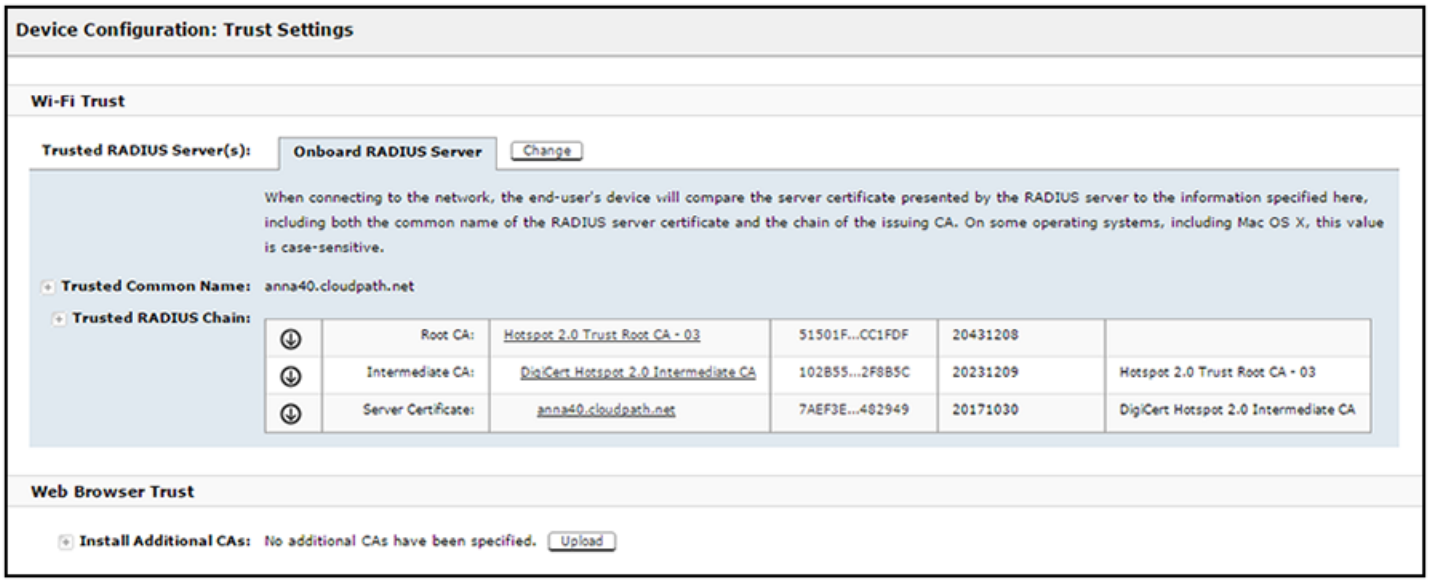
FIGURE 17 Device Configuration WLAN Settings



RADIUS Certificate Trust Settings

The RADIUS server certificate must be signed by the same Hotspot 2.0 Root CA that signs the web server certificate.

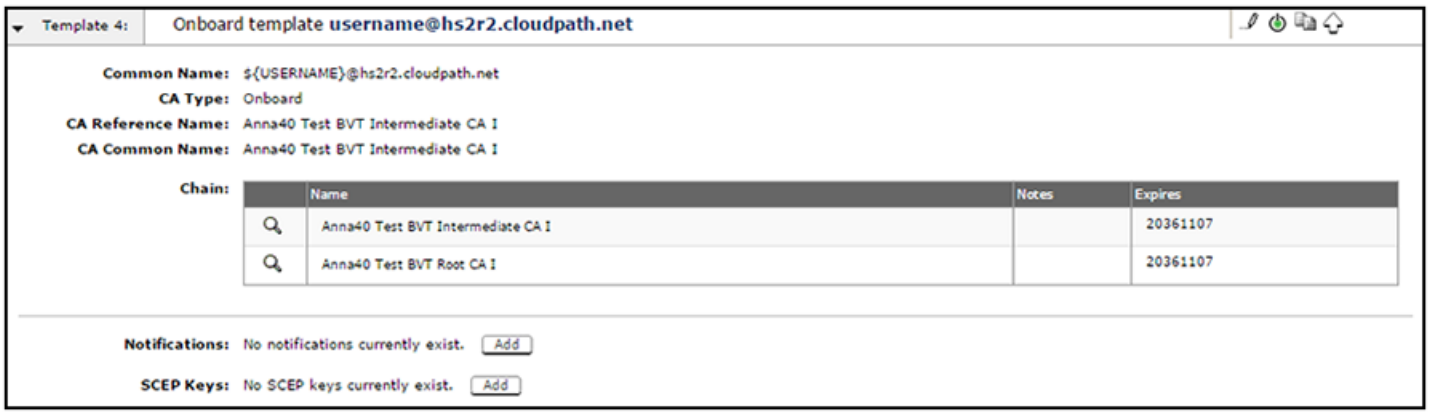
FIGURE 18 RADIUS Certificate Trust Settings



Certificate Template Settings

The certificate template Common Name must include the domain name that is specified in the Controller Realm setting.

FIGURE 19 Certificate Template Settings



Testing the Passpoint Configuration

This Hotspot 2.0 R2 configuration was tested on a Samsung Galaxy S5, running OS 4.4.2, kernel version 3.4.0-2727827eng, built number kltexx-eng 4.4.2 KOT49H G900FXXUTAMK6 test-keys.

To test your configuration, use these example enrollment steps:

1. Enable Passpoint on the device.

   The device should display **New Passpoint available. Click to subscribe**
2. Tap to subscribe. You should see the **Friendly Name** of the Cloudpath system previously configured.
3. Tap the Cloudpath system Friendly Name.

   The device connects to the onboarding SSID, which redirects to the Cloudpath enrollment portal.
4. Run through the enrollment process, which includes, in this example, an AD login step.

   The configuration is installed on the device, and the device connects to the secure SSID.

Troubleshooting the Cloudpath Passpoint Configuration

This section describes issues to consider when testing or troubleshooting Cloudpath servers that have been configured for Passpoint.

Hotspot 2.0 Root CA

Your Hotspot 2.0 root CA must be issued by one of the CAs authorized by Wi-Fi Alliance.

NOTE
Refer to the Wi-Fi Alliance website, `http://www.wi-fi.org/certification/certificate-authority-vendors`.

Each OSU Server has a certificate signed by a Certificate Authority whose root certificate is trusted by the connection manager of the mobile device. Passpoint Release 2 mobile devices possess the Trust Root certificates from all of the authorized Trust Root CAs. As such, mobile devices can properly validate an OSU server certificate and its metadata (friendly name and icon). This insures the integrity and security of the OSU process

Icon Embedded in the Certificate

The web server certificate for your Cloudpath system must use a Hotspot 2.0 WWW certificate with an embedded Common Language icon.

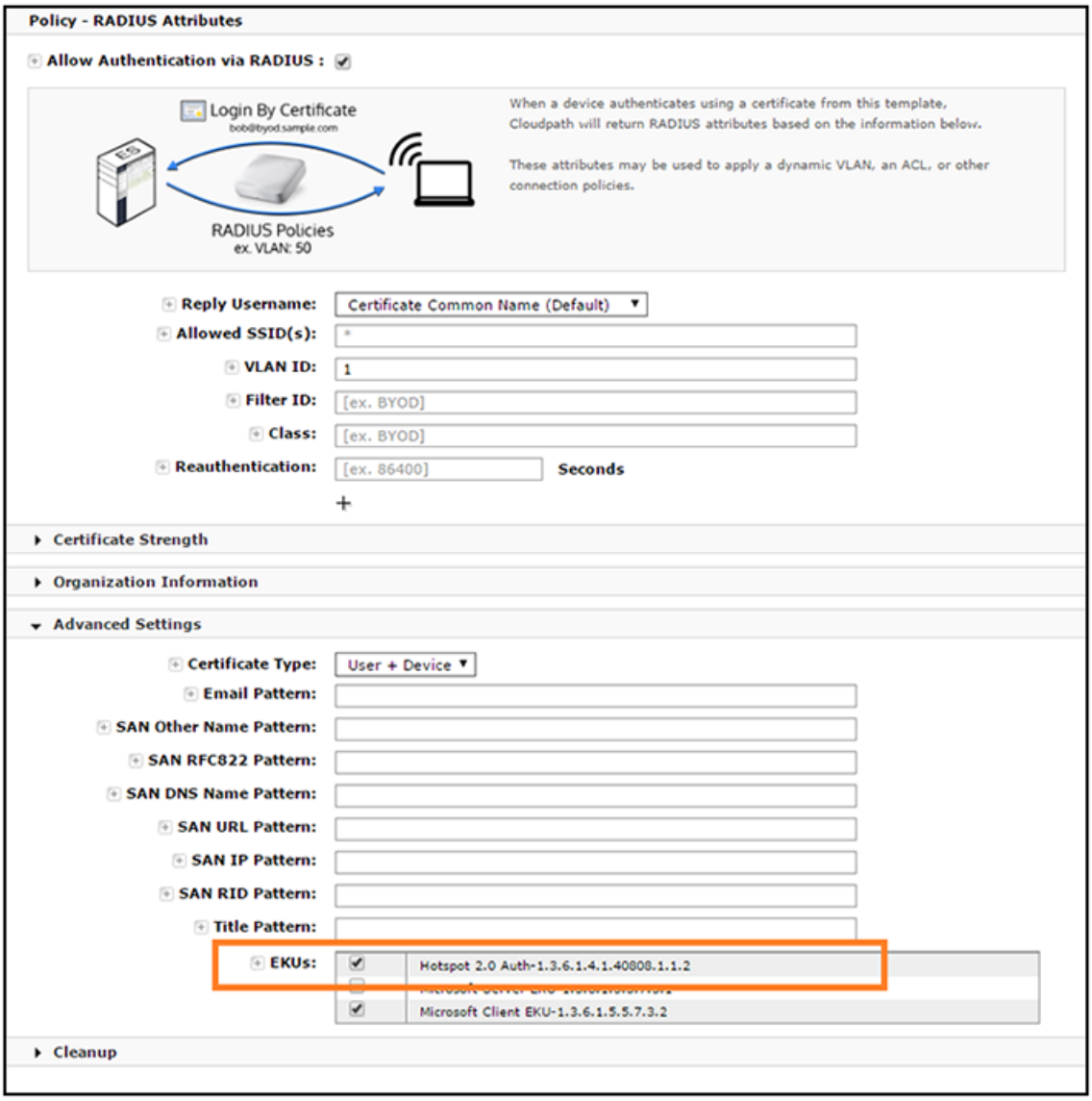
Use PNG-encoded icon images because the Hotspot 2.0 Release 2 specification mandates all mobile devices accept this format. Image sizes up to a maximum of 65,535 bytes are permitted, but we recommend using images having a small file size to conserve air time when delivering the image to a mobile device.

The exact same image file provided in the CSR is also provided to the Hotspot Operator. This is because the CA puts a hash of the icon file in the OSU server certificate and the mobile device computes the hash of the icon delivered by a Hotspot Operator's AP —if the hashes do not match exactly, the mobile device aborts the OSU process.

Certificate Template EKU

Be sure that the certificate template in your passpoint configuration has the Hotspot 2.0 Auth- 1.3.6.1.4.1.40808.1.1.2 EKU setting checked.

FIGURE 20 Modify Certificate Template



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