

RUCKUS SmartZone and Cloudpath Network Segmentation Configuration Guide

Supporting SmartZone 7.0.0 and Cloudpath 6.0

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Contacting RUCKUS Customer Services and Support

The Customer Services and Support (CSS) organization is available to provide assistance to customers with active warranties on their RUCKUS products, and to customers and partners with active support contracts.

For product support information and details on contacting the Support Team, go directly to the RUCKUS Support Portal using <https://support.ruckuswireless.com>, or go to <https://www.ruckusnetworks.com> and select **Support**.

What Support Do I Need?

Technical issues are usually described in terms of priority (or severity). To determine if you need to call and open a case or access the self-service resources, use the following criteria:

- Priority 1 (P1)—Critical. Network or service is down and business is impacted. No known workaround. Go to the **Submit a Case** section.
- Priority 2 (P2)—High. Network or service is impacted, but not down. Business impact may be high. Workaround may be available. Go to the **Submit a Case** section.
- Priority 3 (P3)—Medium. Network or service is moderately impacted, but most business remains functional. Click the **CONTACT** tab at the top of the page and explore the **Self-Service Online Help** options.
- Priority 4 (P4)—Low. Requests for information, product documentation, or product enhancements. Click the **CONTACT** tab at the top of the page and explore the **Self-Service Online Help** options.

Open a Case

When your entire network is down (P1), or severely impacted (P2), call the appropriate telephone number listed below to get help:

- Continental United States: 1-855-782-5871
- Canada: 1-855-782-5871
- Europe, Middle East, Africa, Central and South America, and Asia Pacific, toll-free numbers are available at <https://support.ruckuswireless.com/contact-us> and Live Chat is also available.
- Worldwide toll number for our support organization. Phone charges will apply: +1-650-265-0903

We suggest that you keep a physical note of the appropriate support number in case you have an entire network outage.

Self-Service Resources

The RUCKUS Support Portal at <https://support.ruckuswireless.com> offers a number of tools to help you to research and resolve problems with your RUCKUS products, including:

- Technical Documentation—<https://support.ruckuswireless.com/documents>
- Community Forums—<https://community.ruckuswireless.com>
- Knowledge Base Articles—<https://support.ruckuswireless.com/answers>
- Software Downloads and Release Notes—https://support.ruckuswireless.com/#products_grid
- Security Bulletins—<https://support.ruckuswireless.com/security>

Using these resources will help you to resolve some issues, and will provide the Technical Assistance Center (TAC) with additional data from your troubleshooting analysis if you still require assistance through a support case or Return Merchandise Authorization (RMA). If you still require help, open and manage your case at https://support.ruckuswireless.com/case_management.

Document Feedback

RUCKUS is interested in improving its documentation and welcomes your comments and suggestions.

You can email your comments to RUCKUS at #Ruckus-Docs@commscope.com.

When contacting us, include the following information:

- Document title and release number
- Document part number (on the cover page)
- Page number (if appropriate)

For example:

- RUCKUS SmartZone Upgrade Guide, Release 5.0
- Part number: 800-71850-001 Rev A
- Page 7

RUCKUS Product Documentation Resources

Visit the RUCKUS website to locate related documentation for your product and additional RUCKUS resources.

Release Notes and other user documentation are available at <https://support.ruckuswireless.com/documents>. You can locate the documentation by product or perform a text search. Access to Release Notes requires an active support contract and a RUCKUS Support Portal user account. Other technical documentation content is available without logging in to the RUCKUS Support Portal.

White papers, data sheets, and other product documentation are available at <https://www.ruckusnetworks.com>.

Online Training Resources

To access a variety of online RUCKUS training modules, including free introductory courses to wireless networking essentials, site surveys, and products, visit the RUCKUS Training Portal at <https://commscopeuniversity.myabsorb.com/>. The registration is a two-step process described in this [video](#). Create a CommScope account and then register for, and request access for, CommScope University.

Document Conventions

The following table lists the text conventions that are used throughout this guide.

TABLE 1 Text Conventions

Convention	Description	Example
monospace	Identifies command syntax examples	<code>device(config)# interface ethernet 1/1/6</code>
bold	User interface (UI) components such as screen or page names, keyboard keys, software buttons, and field names	On the Start menu, click All Programs .
<i>italics</i>	Publication titles	Refer to the <i>RUCKUS Small Cell Release Notes</i> for more information.

Notes, Cautions, and Safety Warnings

Notes, cautions, and warning statements may be used in this document. They are listed in the order of increasing severity of potential hazards.

NOTE

A NOTE provides a tip, guidance, or advice, emphasizes important information, or provides a reference to related information.

ATTENTION

An ATTENTION statement indicates some information that you must read before continuing with the current action or task.



CAUTION

A CAUTION statement alerts you to situations that can be potentially hazardous to you or cause damage to hardware, firmware, software, or data.



DANGER

A DANGER statement indicates conditions or situations that can be potentially lethal or extremely hazardous to you. Safety labels are also attached directly to products to warn of these conditions or situations.

Command Syntax Conventions

Bold and italic text identify command syntax components. Delimiters and operators define groupings of parameters and their logical relationships.

Convention	Description
bold text	Identifies command names, keywords, and command options.
<i>italic text</i>	Identifies a variable.
[]	Syntax components displayed within square brackets are optional. Default responses to system prompts are enclosed in square brackets.
{x y z}	A choice of required parameters is enclosed in curly brackets separated by vertical bars. You must select one of the options.
x y	A vertical bar separates mutually exclusive elements.
< >	Nonprinting characters, for example, passwords, are enclosed in angle brackets.
...	Repeat the previous element, for example, <i>member[member...]</i> .
\	Indicates a "soft" line break in command examples. If a backslash separates two lines of a command input, enter the entire command at the prompt without the backslash.

About This Guide

- [New In This Document..... 9](#)

New In This Document

There are no changes in this release.

Prerequisites

This topic specifies the resources and systems required for configuring Network Segmentation.

System resources required:

- Minimum one Virtual SmartZone (vSZ) controller.
- Minimum one SmartZone Data Plane (vSZ-D) controller.
- Two or more Access Points (APs) which are compatible with the 6.1.1 controller.
- For switch usage in network segmentation:
 - One or more of the following switches as the distribution switch: RUCKUS ICX 7550, RUCKUS ICX 7650, or RUCKUS ICX 7850. (VxLAN is supported only on these models.)
 - One or more of the following switches as access switches (also called "edge switches"). Switches: RUCKUS ICX 7150, RUCKUS ICX 7250, RUCKUS ICX 7450, RUCKUS ICX 7550, RUCKUS ICX 7650, or RUCKUS ICX 7850.

NOTE

Also, see "ICX Switch Preparation for Network Segmentation" below.

Required systems:

- Cloudpath server installed.
- vSZ controller installed and the cluster is operational.
- Admin account required for Cloudpath and vSZ systems.
- vSZ-D installed and managed by vSZ.
- Operational APs installed and managed by vSZ.
- Cloudpath should be able to communicate with SmartZone management interface.
- Ensure that the Cloudpath server certificate is in the controller trust store. Otherwise, the Network Segmentation feature will not work since the controller will not be able to communicate with Cloudpath.
- Ensure that all ICX switches are upgraded to firmware version 09.0.10d (or any 09.0.10 patches that may become available after 09.0.10d).

NOTE

The 10.0.00 release branch does not currently support network segmentation.

- It is necessary that the customer has licenses set up for DHCP and NAT servers.

ICX Switch Preparation for Network Segmentation:

- Distribution switches:
 - The loopback interface must be able to communicate with, or be routeable to, the data interface of the data plane.
 - The data path between distribution switches and data planes must have an MTU size of at least 1568 bytes.
 - The ICX switches must be able to communicate with, or be routeable to, the SmartZone control plane.
- Access switches: All client ports must be added to the web-authentication VLAN.
 - Switches must be able to communicate with, or be routeable to, the Cloudpath server.
 - Switches must be able to communicate with, or be routeable to, the SmartZone control plane.
- Managing switches for network segmentation:
 - Configure the switches to be managed by SmartZone.
 - Add the switches to a switch group to participate in network segmentation.

Prerequisites

- Configure the AAA authentication server (must be a Cloudpath server) for the switch group.
- Enable flex-authentication on each of the access switches.

Main Configuration Steps

These are the major steps to follow to configure the Network Segmentation. There are some steps that must be performed in the Cloudpath UI and some steps that must be performed on the vSZ controller. Complete all the steps by following the instructions in the following sections:

1. [Configuring the Integrated System in the Cloudpath UI](#) on page 15.
2. [Configuring the vSZ Controller to Prepare for Network Segmentation](#) on page 17.
3. [Prerequisites](#) on page 11 - "ICX Switch Preparation for Network Segmentation" bullet point (if ICX switches are to be part of the network segmentation).

NOTE

All ICX switches must be upgraded to the firmware version 09010d or later.

4. [Creating Network Segmentation Profile on the vSZ Controller](#) on page 27.
5. [Configuring a Network Segmentation Group in the Cloudpath UI](#) on page 41.

Configuring the Integrated System in the Cloudpath UI

For configuring Network Segmentation, you must begin by adding your SmartZone system as an integrated system in the Cloudpath UI.

NOTE

You can configure only one integrated system. The integrated system must be a SmartZone cluster management interface.

Follow the steps below to configure SmartZone as an integrated system:

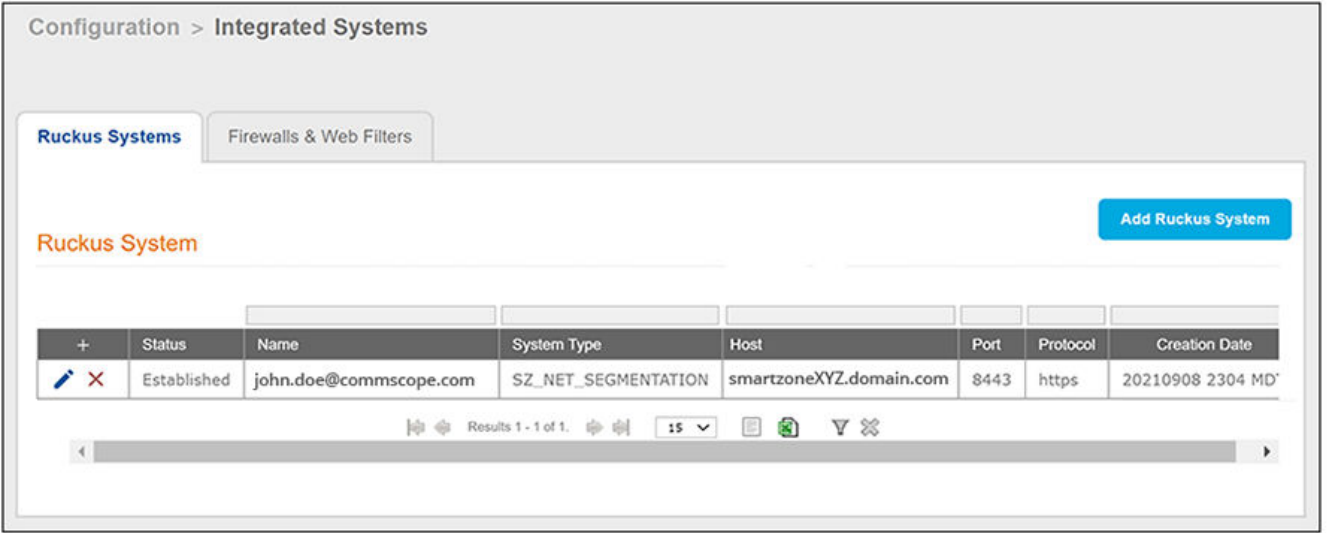
1. In the Cloudpath UI, navigate to **Configuration > Integrated Systems**, and click **Add Ruckus System**.
2. In the ensuing screen, do the following:
 - a. For **Display Name**, enter a meaningful name for the integrated system (visible only to you, as an administrator).
 - b. In the **System Type** section, click the **SmartZone Network Segmentation** button to expand the screen, and complete the configuration.

FIGURE 1 Configuring the Integrated System

The screenshot shows the 'Configuration > Integrated Systems > Create' screen. At the top right are 'Cancel' and 'Save' buttons. The main content is divided into two sections: 'Ruckus System' and 'System Type'. Under 'Ruckus System', there is a 'Display Name' field with the value 'john.doe@commscope.com' and a 'Description' text area. Under 'System Type', the 'SmartZone Network Segmentation' option is selected. This section contains four fields: 'Hostname' (smartzoneXYZ.domain.com), 'Port' (8443), 'Username to Integrated System' (admin), and 'Password to Integrated System' (masked with asterisks).

- **Hostname:** Host name (FQDN) or IP address of the integrated system.
 - **Port:** Port number for connecting the integrated system.
 - **Username to Integrated System:** Username to access the integrated system services.
 - **Password to Integrated System:** Password to access the integrated system services.
3. Click **Save**. You are taken to a list view that shows the newly configured integrated system.

FIGURE 2 Newly Configured Integrated System



Configuring the vSZ Controller to Prepare for Network Segmentation

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Configuring the DHCP/NAT License Assignment

License assignment specifies the capability of each Data Plane, which has the ability to assign IPs by DHCP feature and translate packets by NAT feature. Though these features already exist, starting 5.0, customers must purchase license to enable these features.

NOTE

This feature is supported only on virtual platform.

Creating Profile-based DHCP

DHCP profile can be applied to vSZ-D and the vSZ-D server can assign IP to the UE based on the profile rule. Different pools with the same subnet can be created without overlapping IP range.

NOTE

DHCP supports only access-side network.

- [Configuring Global Settings](#) on page 17
- [Configuring DHCP Pool Settings](#) on page 18

Configuring Global Settings

Complete the following steps to configure profile-based DHCP global settings.:

1. Go to **Services > DHCP & NAT > DHCP Profiles (DP)**.
2. Click **Create**, the **Create DHCP Profile** page appears.

Configuring the vSZ Controller to Prepare for Network Segmentation

Configuring DHCP Pool Settings

3. Configure the following:
 - **Profile Name:** Type a name for the DHCP profile you want to create. AP supports 32 bytes.
 - **Description:** Type a description of the settings you want to create.
 - **Domain Name:** Type the domain name address.
 - **Primary DNS Server:** Type the primary domain name server address.
 - **Secondary DNS Server:** Type the secondary domain name server address.
 - **Lease Time:** Type the duration in Hours, Minutes or Seconds. Range: 1 through 86400 seconds.
 - **DHCP Option43 Space:** Click **Create**, the **Create DHCP Option43 Space** form appears. Configure the following:
 - **Space Name:** Type a name for Option43 space.
 - **Description:** Type a description for Option43 space.
 - Under **Option43 Sub Option**, click **Create** and configure the following:
 - › **Sub Option Name:** Type a sub option name.
 - › **Type:** Select the required option from the list.
 - › **Code:** Enter a code. Range: 1 through 254.
 - › **Click OK**, you have created Option43 Sub Option.
 - Click **OK**, you have created Option43 Space.
 - **Hosts:** Click **Create**, the **Create Host Configuration** form appears. Configure the following:
 - **General Options**
 - › **Host:** Type a name for the host settings that you want to create.
 - › **Description:** Type a description for the host settings that you want to create.
 - **Policy Options**
 - › **Mac Address:** Type the MAC address of the DHCP host.
 - **Assigning Options**
 - › **Broadcast Address:** Type the broadcast IP address.
 - › **Fixed Address:** Type the fixed IP address of the host.
 - › **Gateway:** Type the gateway IP address.
 - › **DNS Server:** Type the IP address of the DNS server.
 - › **Domain Name:** Type the domain name.
 - › **Host Name:** Type the host name.
 - › **Lease Time:** Type the duration in Hours, Minutes and Seconds. Range: 1 through 86400 seconds.
 - Click **OK**, you have created DHCP Host configuration.
4. Click **OK**.

You have created DHCP Profile settings.

Configuring DHCP Pool Settings

Complete the following steps to configure DHCP pool settings:

1. Select **Services > DHCP & NAT > DHCP Profiles (DP)**.
2. Select the DHCP profile from the list for which you want to configure the pool settings.
3. Select the **Pools** tab page.

4. Click **Create** and configure the following:
 - **General Options**
 - **Pool Name:** Type a name for the pool configuration.
 - **Description:** Type a description for the pool configuration.
 - **Policy Options**
 - **Policy type:** Select VNI type for Network Segmentation.
 - **Assigning Options**
 - **Subnet:** Type the IP address.
 - **Subnet Mask:** Type the network address.
 - **Broadcast Address:** Type the broadcast IP address.
 - **Pool Range:** Type the address range for the pool.
 - **Exclude Pool:** Type the address range that must be excluded.
 - **Primary Gateway:** Type the primary gateway IP address.
 - **Secondary Gateway:** Type the secondary gateway IP address.
 - **Primary DNS Server:** Type the IP address of the primary DNS server.
 - **Secondary DNS Server:** Type the IP address of the secondary DNS server.
 - **Domain Name:** Type the domain name.
 - **Host Name:** Type the host name.
 - **Lease Time:** Type the duration in Hours, Minutes and Seconds. Range: 1 through 86400 seconds.
 - **Option43 Value**
 - Click **Create**, the **Create Option43 value** form appears. Configure the following:
 - › Choose the **Space** Name or click **Create** to configure Option 43 space name.
 - › Enter a description.
 - Click **OK**, you have configured Option43 value.
5. Click **OK**.

You have created DHCP pool configuration.

Creating Profile-based NAT

A NAT Profile could be applied to a vSZ-D. The NAT server settings work independently. You must configure the following settings to create a NAT profile:

NOTE

NAT does not support multiple public subnet/VLAN.

- [Configuring NAT Global Settings](#) on page 19
- [Configuring NAT Pool Setting](#) on page 20

Configuring NAT Global Settings

Complete the following steps to configure NAT global settings:

1. Go to **Services > DHCP & NAT > NAT Profiles (DP)**.
2. Click **Create**, the **Create NAT Profile** page appears.

Configuring the vSZ Controller to Prepare for Network Segmentation

Configuring NAT Pool Setting

3. Configure the following:
 - **Profile Name:** Type a name for the NAT profile that you want to create. AP supports 32 bytes.
 - **Description:** Type a description for the profile that you want to create.
 - **Subnet:** Type the IP address.
 - **Policy type :** Select VNI type for Network Segmentation.
 - **Prefix:** Type a prefix value. Maximum range: 31.
 - **Gateway:** Type the gateway IP address.
4. Click **OK**.

You have created a NAT Profile.

Configuring NAT Pool Setting

Complete the following steps to configure NAT pool settings:

1. Select **Services > DHCP & NAT > NAT Profiles (DP)**.
2. Select the **NAT profile** from the list and click the **Pools** tab.
3. Click **Create**, the Create Pool Configuration page appears.
4. Configure the following:
 - **General Options**
 - **Pool Name:** Type a name for the NAT pool settings that you want to create.
 - **Description:** Type a description for the pool settings that you want to create.
 - **Policy Options:**
 - **Policy Type:** Select VNI type for Network Segmentation.
 - **Translation Options**
 - **Port Range:** Type the port range. Range: 10000 through 65534. For example: 10000-20000.
 - **Public Address Range:** Type the public address range.

Note: This public address must not be duplicated with the other public addresses in the same subnet, which includes applied NAT profile, access and core interface address of vSZ-D.

5. Click **OK**.

You have created a NAT pool setting.

Creating an AP Group

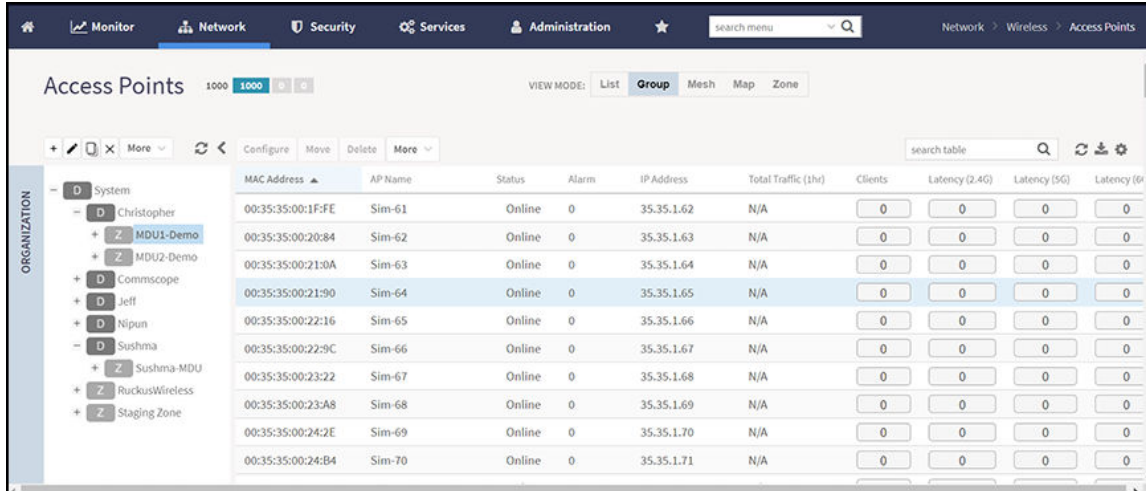
Creating an AP group means creating a configuration profile that defines channels, radio settings, Ethernet ports, network segmentation groups, and other configurable settings for all members of the group or for all APs of a specific model in the group.

Follow these steps to create an AP group.

1. On the main menu, click **Network > Access Point**.

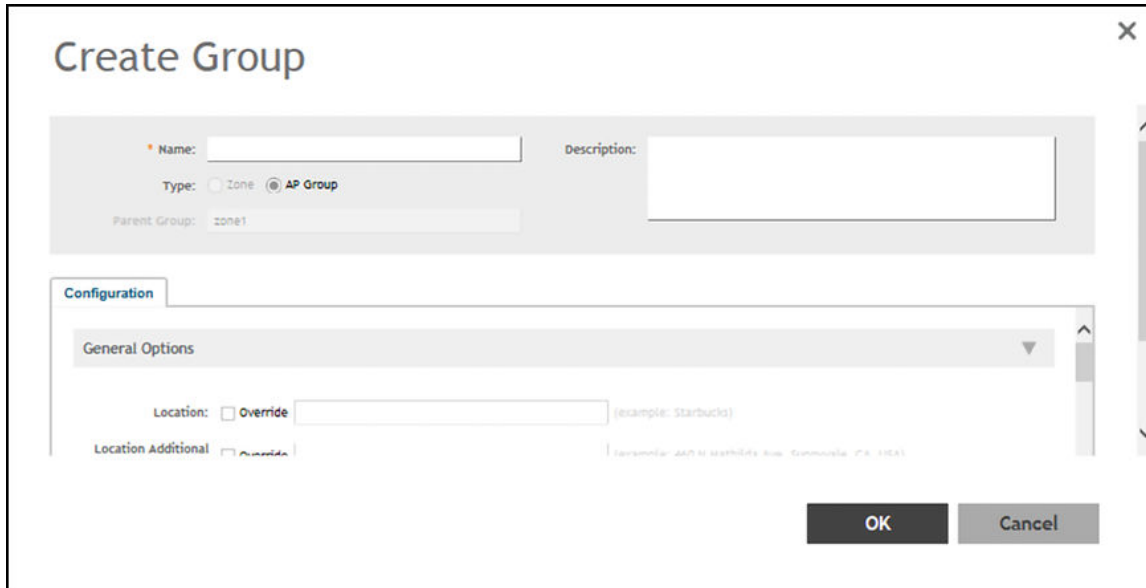
The **Access Point** page is displayed.

FIGURE 3 Access Point



- From the System tree hierarchy, select the location (for example: System, Domain, Zone) and click . The following figure appears.

FIGURE 4 Creating Groups



- Enter the details as explained in the following table.

NOTE

You can also edit the configuration of default AP group by selecting the default group and clicking the icon.

- Click **OK**.
- Select the APs that will be used in the Network Segmentation and move them into the created AP Group(s).

NOTE

You can also edit, clone, or delete an AP Group by selecting the options ,  or  respectively, from the **Access Points** page.

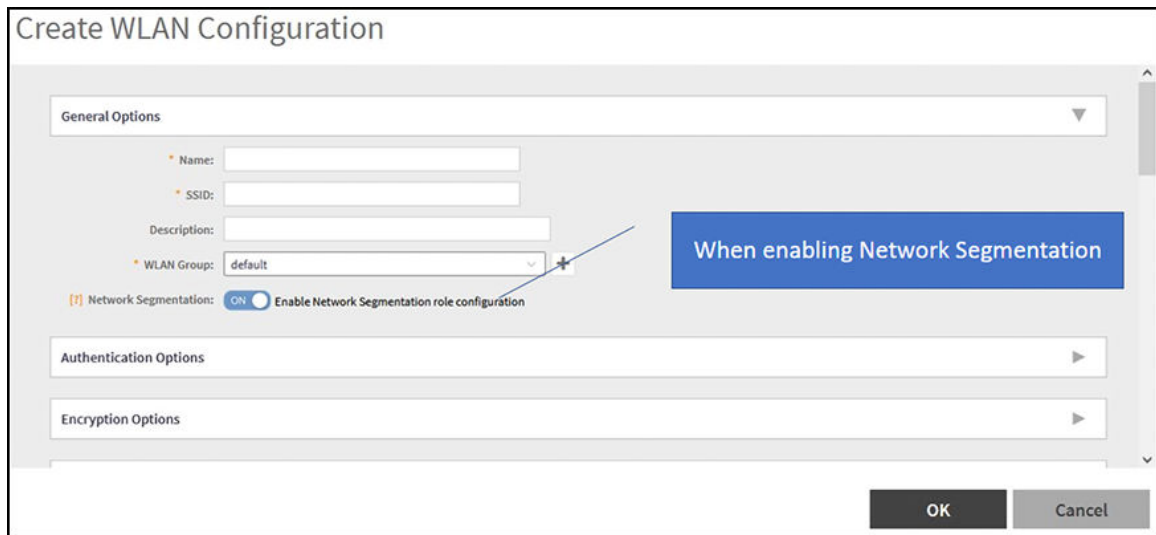
Creating WLAN for Network Segmentation

NOTE

Refer to the **RUCKUS SmartZone and Cloudpath Network Segmentation Configuration Guide** for details regarding the SmartZone and cloudpath connection establishment.

- Select the **ControllerNetwork> Wireless LAN System>AP Group**.
- Click **Create**.

FIGURE 5 Creating WLAN Configuration



- Under **General Options**, enter the "Name" and SSID in general options.

NOTE

When "Enable Network Segmentation role Configuration" is set to "ON", Authentication Options, Encryptions Options, Data Plane Options, and Authentication Server will be grayed-out with required settings as shown in the figure below.

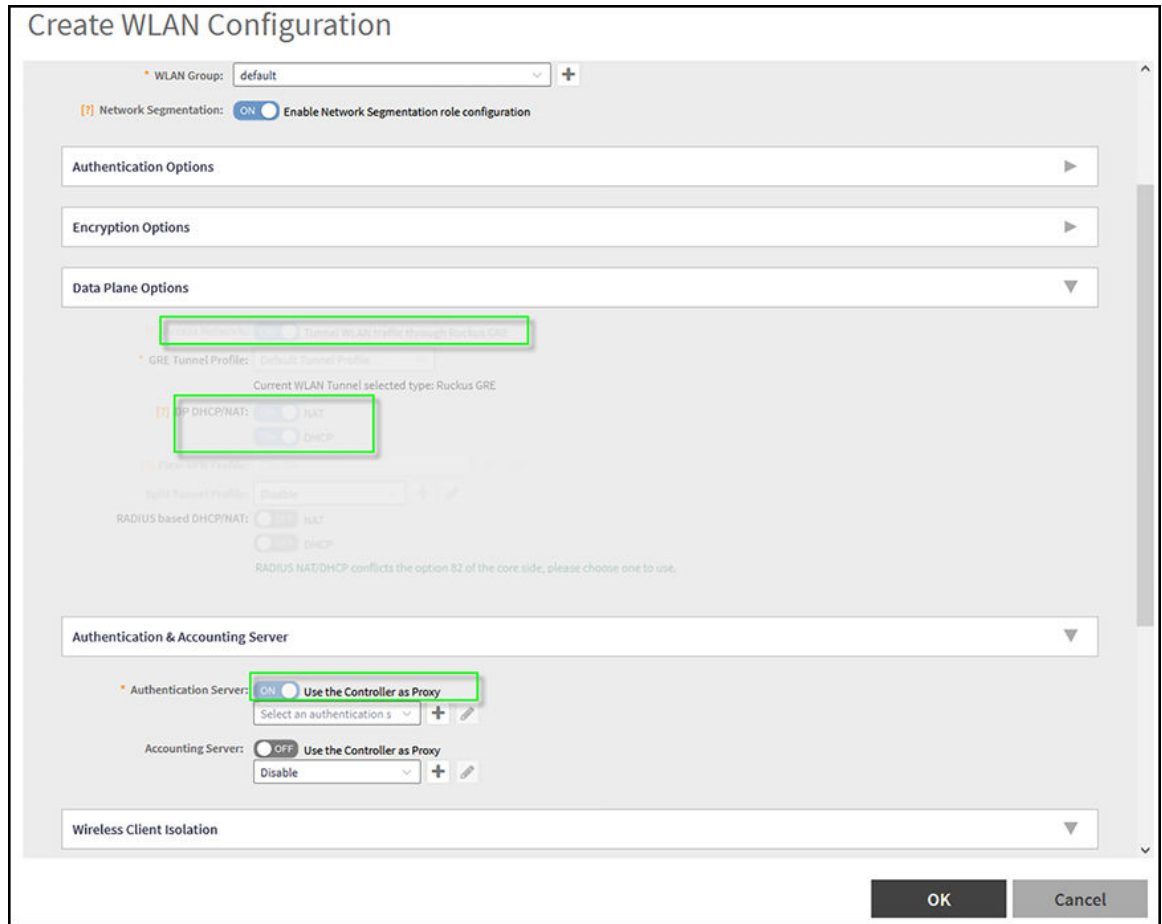
FIGURE 6 Enabling Network Segmentation Role Configuration

The screenshot shows the 'Create WLAN Configuration' dialog box with the following settings:

- General Options:**
 - Name: MDU WLAN
 - SSID: MDU WLAN
 - Description: (empty)
 - WLAN Group: default
 - Network Segmentation: **ON** (highlighted with a green box), Enable Network Segmentation role configuration
- Authentication Options:** (grayed out)
 - Authentication Type: Standard usage (For most regular wireless networks) (highlighted with a green box), Hotspot (WISPr), Guest Access, Web Authentication
 - Method: Open (highlighted with a green box), 802.1X EAP, MAC Address, 802.1X EAP & MAC
- Encryption Options:** (grayed out)
 - Method: WPA2, WPA3, WPA2/WPA3-Mixed, OWE, OWE-Transition, WPA-Mixed, WEP-64 (40 bits), WEP-128 (104 bits), None
 - Encryption methods other than WPA3 and OWE will not be supported on 6GHz radio.
 - Algorithms: AES, AUTO, AES-GCMP-256
 - 802.11w MFP: Disabled, Capable, Required
 - Dynamic PSK: Dynamic PSK (highlighted with a green box), Disable, Internal, External (highlighted with a green box)
 - Transition Disable Indication: ON, OFF
- Data Plane Options:** (grayed out)

At the bottom right, there are 'OK' and 'Cancel' buttons.

FIGURE 7 Data Plane Options



NOTE

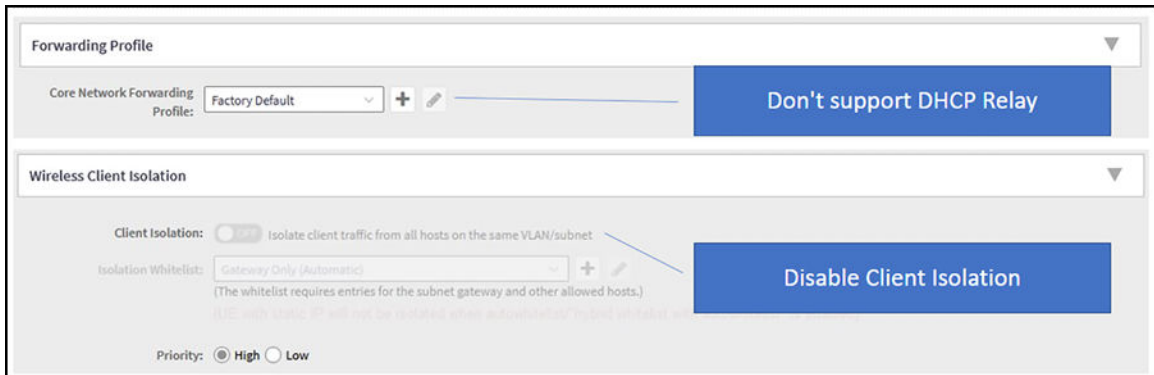
For **Authentication Server** and **Accounting** from SmartZone, the Authentication Service should match Cloudpath **RADIUS Server** settings,

NOTE

Refer to RUCKUS Traffic Management Guide and navigate to **Tunnels and Ports > Working with Tunnels and Ports**.

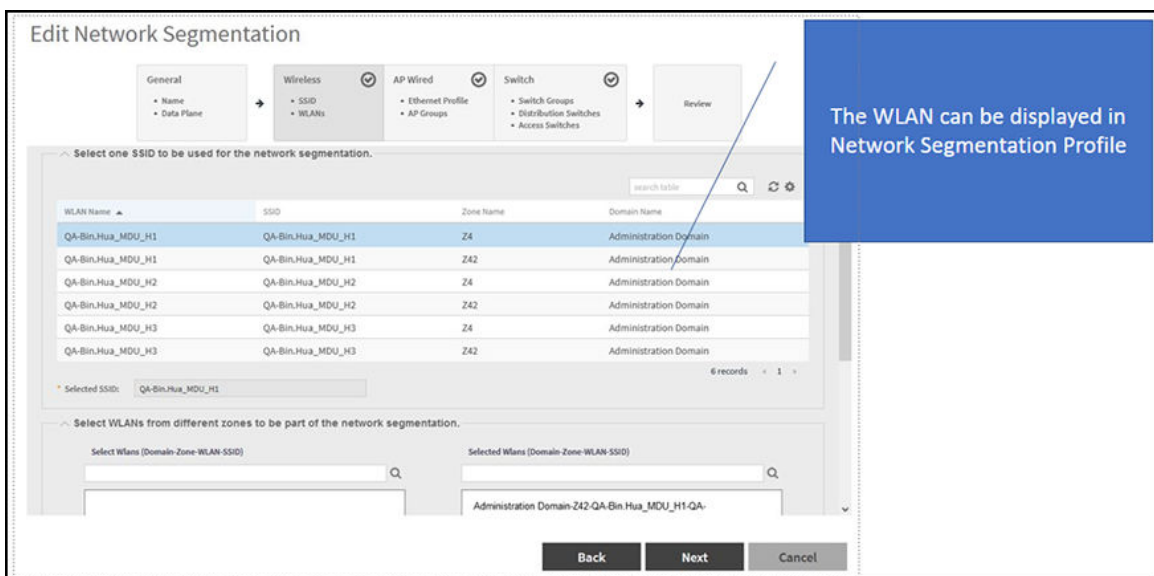
- The forwarding profile is set to "Factory default" and Wireless client Isolation is disabled as in the image below.

FIGURE 8 Forwarding Profile and Client Isolation



- The WLAN will be displayed in the Network Segmentation profile.

FIGURE 9 Editing network Segmentation



- **NOTE**
WLAN will not be displayed if Network Segmentation option is disabled.

Network Segmentation - SZ-DP - Data Plane Redundancy for VNIs, NAT, and DHCP

Data Plane Redundancy for Network Segmentation

When normal data plane is offline, redundant data plane takes charge of the same VNI range.

Configuring the vSZ Controller to Prepare for Network Segmentation

Network Segmentation - SZ-DP - Data Plane Redundancy for VNIs, NAT, and DHCP

The warning message "The Redundant DP's DHCP Profile will be overridden by Normal DP's DHCP Profile" will be displayed.

Edit Network Segmentation

Edit Data Plane Relation

The Redundant DP's DHCP Profile will be overridden by Normal DP's DHCP Profile

Normal Data Plane: vDP-7-113-Two

VNI Range: 1000-2000

DHCP Profile: MDU-Pool1

DHCP Pool: MDU-DHCP-Pool1

NAT Profile: NET3500-NAT-Profile

NAT Pool: NET3500-NAT-1

Enable Redundant Data Plane

Redundant Data Plane: No data available

DHCP Profile: MDU-Pool1

DHCP Pool: MDU-DHCP-Pool1

NAT Profile: No data available

NAT Pool: No data available

OK Cancel

- Each data plane establishes inter-tunnel and detects the "keep alive" to each other.
- The redundant data plane detects inter-tunnel keep alive, if normal data plane is idle for over 60 seconds. The redundant data plane takes charge of the VNI range, until the normal data plane is back online.

Creating Network Segmentation Profile on the vSZ Controller

Network Segmentation was designed specifically to target Multi Dwelling Unit (MDU) deployments. Network Segmentation is currently using external Dynamic Pre-shared Key (DPSK) to place a single tenant and their devices into their own individual VXLAN (iLAN).

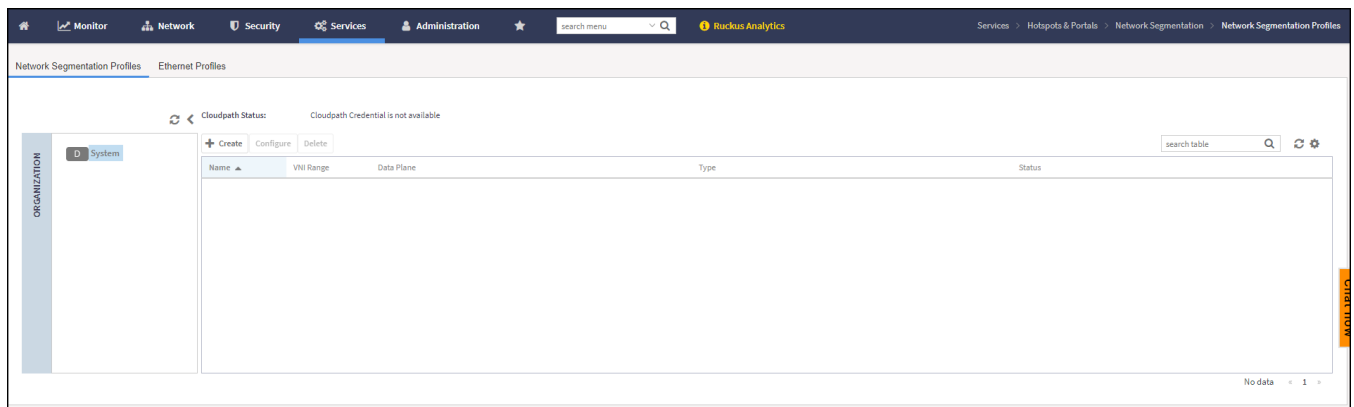
NOTE

For 6.1.1.5 Smartzone Release, Network Segmentation supports Rodan/ FastIron release 10.0.10 ICX.

Data Plane (DP) will play the role of Home DP or Partner DP. Each DP plays the home DP role and has its own VXLAN Network Identifier (VNI) range. Home DP facilitates MDU UE, connect with each other based on the same VNI number.

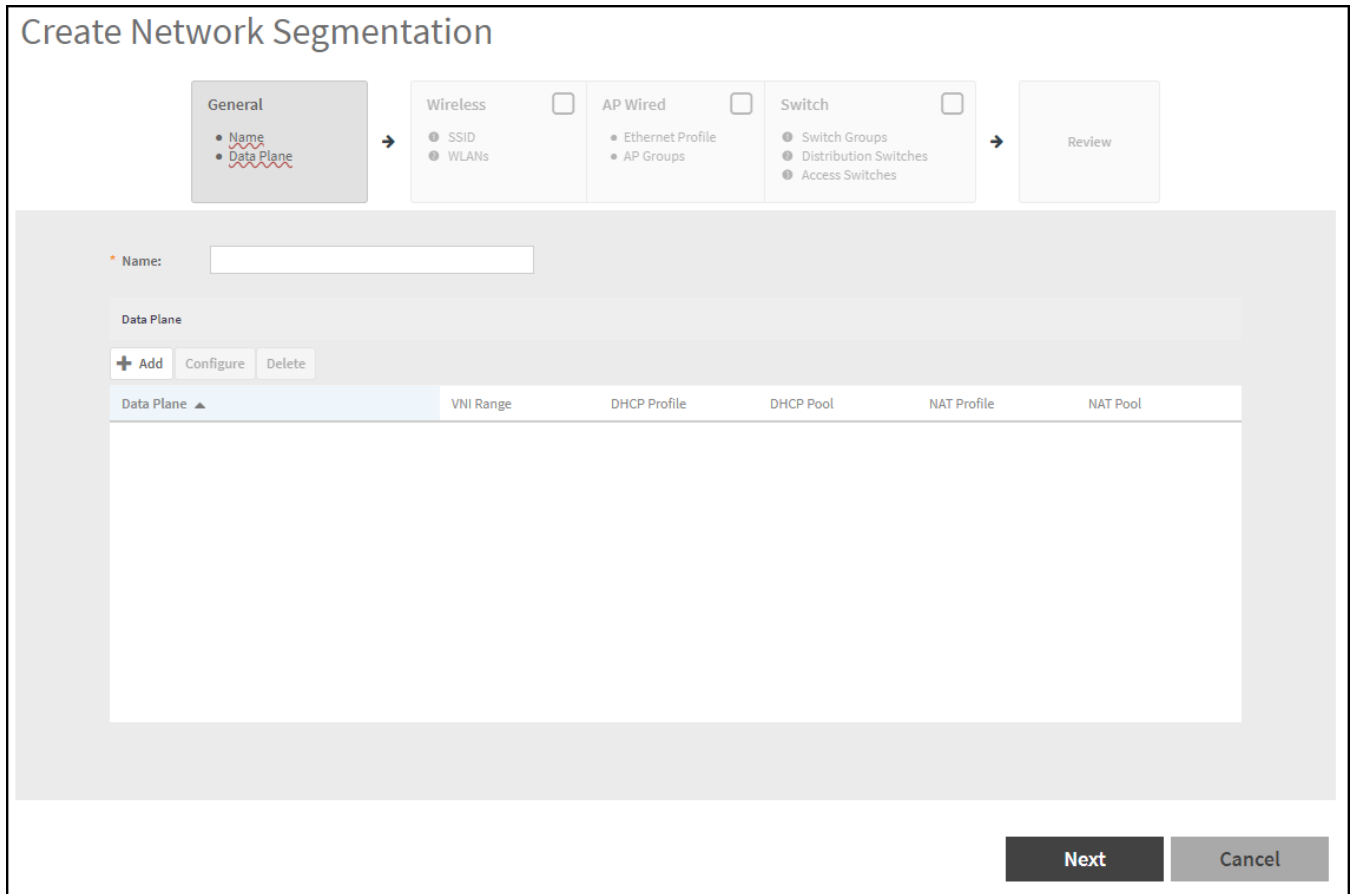
1. On the menu, click **Services > Hotspots & Portals > Network Segmentation > Network Segmentation Profiles** to display the **Network Segmentation Profiles**.

FIGURE 10 Network Segmentation Profiles



2. Click the  icon to display the **Create Network Segmentation** dialog box.

FIGURE 11 Editing Network Segmentation Groups in SmartZone User Interface



3. Complete the following fields under the **General** dialog box:


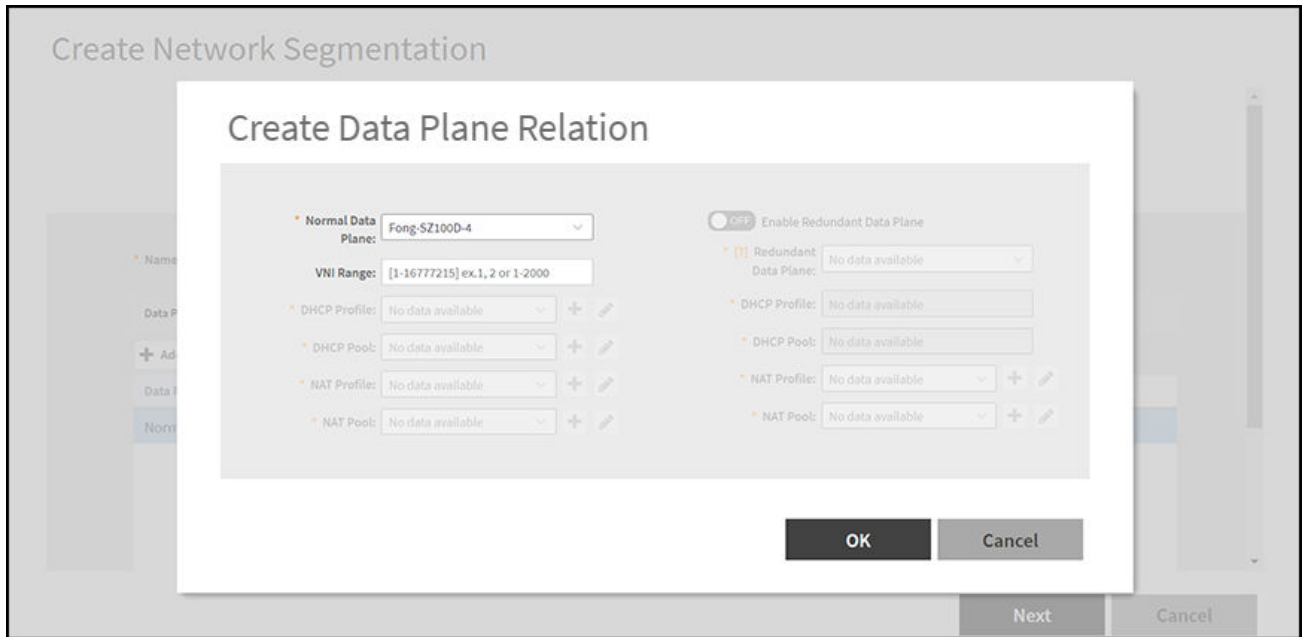
- **Name:** Enter a network segmentation profile name.
- **Data Plane:** Select the data plane from the table or create a data plane by clicking the  icon to display the **Create Data Plane Relation** dialog box.

FIGURE 12 Creating Data Plane Relation







Complete the following fields:

- **Normal Data Plane:** Select the data plane from the list.
- **VNI Range:** Enter the VNI range; ensure your VNI range is large enough to accommodate all units in the property. Each unit gets its own unique VNI.

NOTE

The VNI value can be mapped from the client data in *Troubleshooting* from the *Management Guide*, if user is having issues in selecting the VNI range.

- **DHCP Profile:** Select the DHCP profile from the drop down list or click the  to create a DHCP Profile. refer to *Creating Profile-based DHCP* from the RUCKUS Traffic Management Guide.
- **DHCP Pool:** Select the DHCP pool from the drop down list or click the  to create a DHCP pool. Refer to *Creating Profile-based DHCP* from the RUCKUS Traffic Management Guide.
- **NAT Profile:** Select the NAT profile from the drop down list or click the  to create a NAT profile. Refer to *Creating Profile-based NAT* from the RUCKUS Traffic Management Guide.
- **NAT Pool:** Select the NAT pool from the drop down list or click the  to create a NAT pool. Refer to *Creating Profile-based NAT* from the RUCKUS Traffic Management Guide.

NOTE

By default, the **Redundant Data Plane** is switched off. Switch it on to enable the **Redundant Data Plane**.

NOTE

You can also edit and delete a data plane by selecting the options **Configure** and **Delete** respectively, from the **Data Plane** tab.

4. Click **Next**.

Creating Network Segmentation Profile on the vSZ Controller

5. Complete the following fields under the **Wireless** dialog box:

By default, the **Wireless** option is disabled. Switch on to enable the **Wireless** option.

FIGURE 13 Selecting SSID (wireless) for Network Segmentation

The screenshot shows the 'Edit Network Segmentation' interface. At the top, there are four tabs: 'General', 'Wireless', 'AP Wired', and 'Switch'. The 'Wireless' tab is selected and has a checkmark. Below the tabs, there is an 'ON' toggle for 'Enable'. The main content area has two sections:

- Select one SSID to be used for the network segmentation.** This section contains a table with columns: WLAN Name, SSID, Zone Name, and Domain Name. The table has one row: MDU, MDU@NIPUN, Nipun-MDU, Nipun. Below the table, the 'Selected SSID' field contains 'MDU@NIPUN'.
- Select WLANs from different zones to be part of the network segmentation.** This section has two search boxes. The left one is empty. The right one contains 'Nipun-Nipun-MDU-MDU-MDU@NIPUN'.

At the bottom right, there are three buttons: 'Back', 'Next', and 'Cancel'.

- **SSID:** Select the **SSID** for Network Segmentation from the drop down list.
The selected **SSID** will be displayed in the **Selected SSID** field.

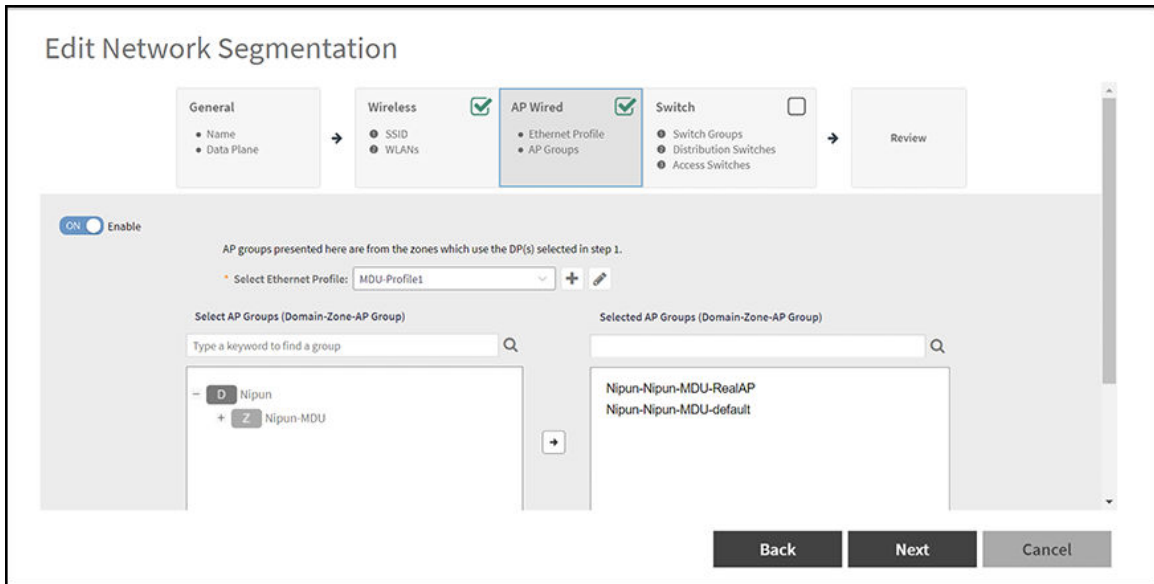
- **WLAN:** Select WLANs (wireless) for **Network Segmentation**.

6. Click **Next**.

7. Complete the following fields under the **AP Wired** dialog box:

By default, the **AP Wired** option is disabled. Switch on to enable the **AP Wired** option.

FIGURE 14 AP Wired Ethernet Profile




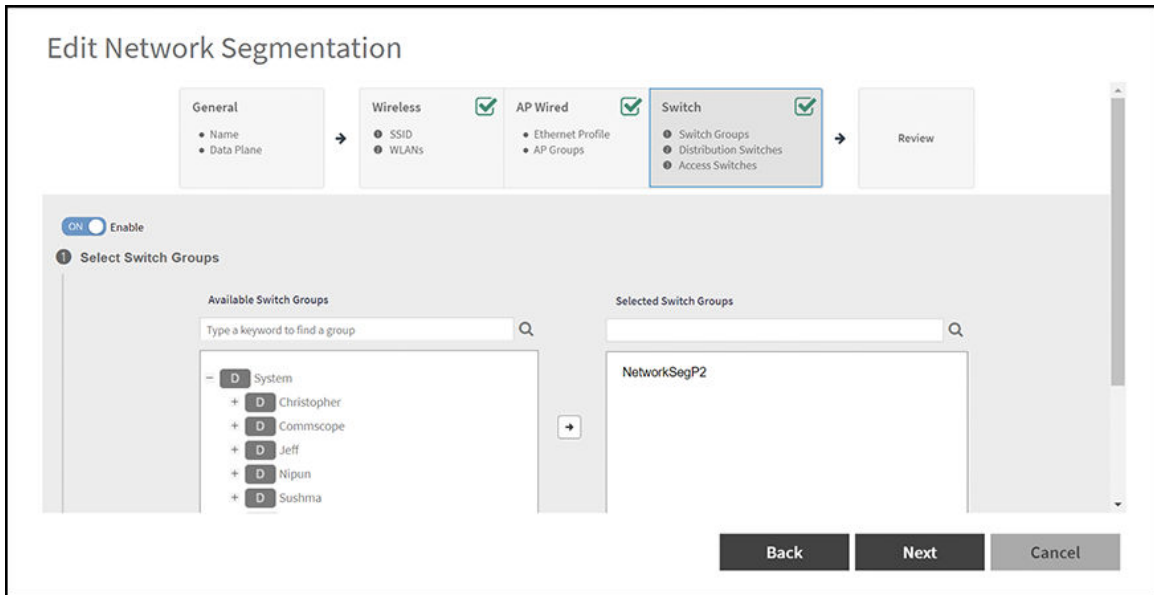
- Select the Ethernet profile: Select the ethernet profile from the drop down list or click the  icon to create an ethernet profile. The selected SSID will be displayed in the **Selected SSID** field.
 - Select the AP group: Select the AP group from the table.
8. Click **Next**.
 9. Complete the following fields under the **Switch** dialog box:
By default, the **Switch** option is disabled. Switch on to enable the **Switch** option.

FIGURE 15 Selecting Switch Groups



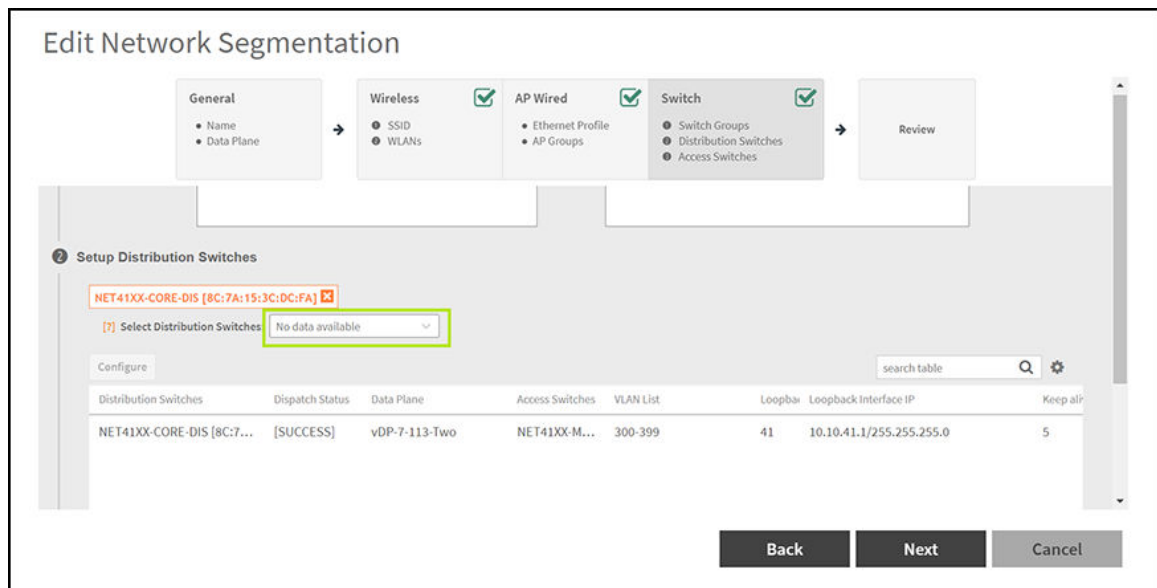
- Select the Switch Groups: From the table, select the switch group which is to be added to the Network Segmentation group.

NOTE

To select the participated Switch Group for the segment profile, administrator can utilize the search function to filter out the groups.

- Select Distribution Switches: Select the distribution switch from the drop down list which is to be added to the Network Segmentation group.

FIGURE 16 Select Distribution Switches

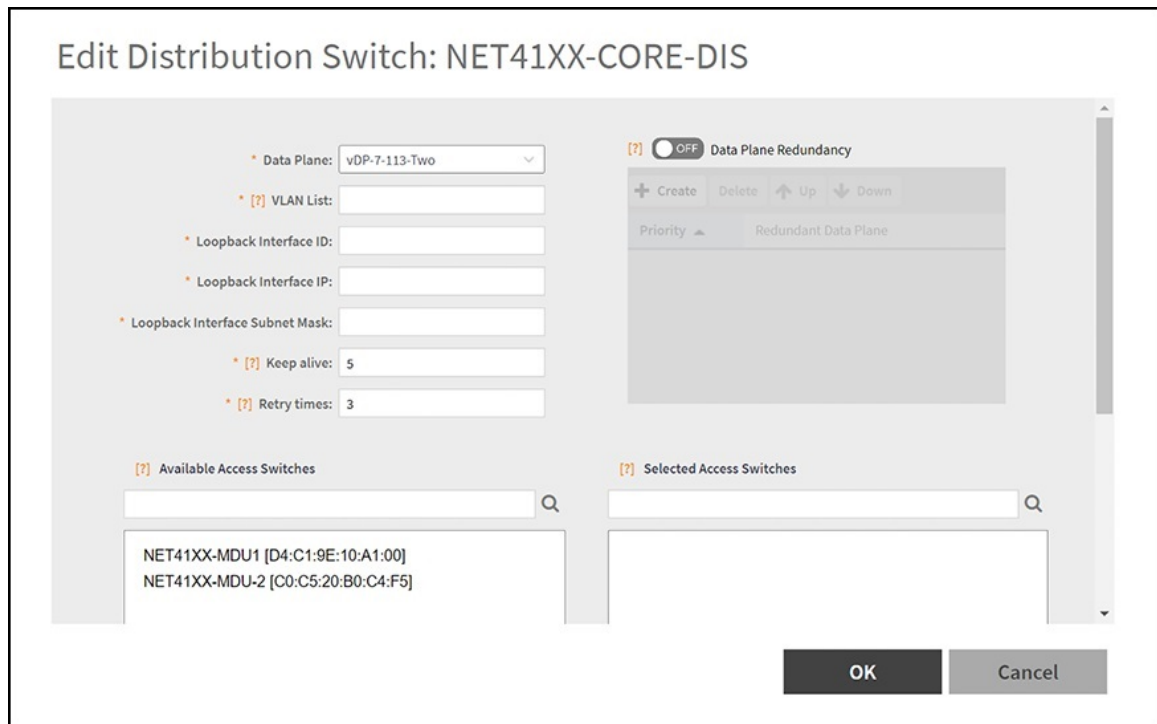


NOTE

VXLAN is supported only on higher end switches such as ICX 7850, 7650 and 7550 model with router image, so distribution switch should use the above mentioned ICX models.

To configure the distribution switches, select the switch from the table and click **Configure** Icon to display the **Edit Distribution Switch** dialog box.

FIGURE 17 Configure Distribution Switch



Complete the following fields:

- **Data Plane:** Select the data plane.
- **VLAN List:** Enter the VLAN List.
- **Loopback Interface ID:** Enter the Loopback Interface ID.
- **Loopback Interface IP:** Enter the Loopback Interface IP.
- **Loopback Interface Subnet Mask:** Enter the Loopback Interface Subnet Mask.
- **Keep alive:** Enter the keep alive time interval to enable data plane monitor status. This option is enabled, if the **Data Plane Redundancy** is switched on.

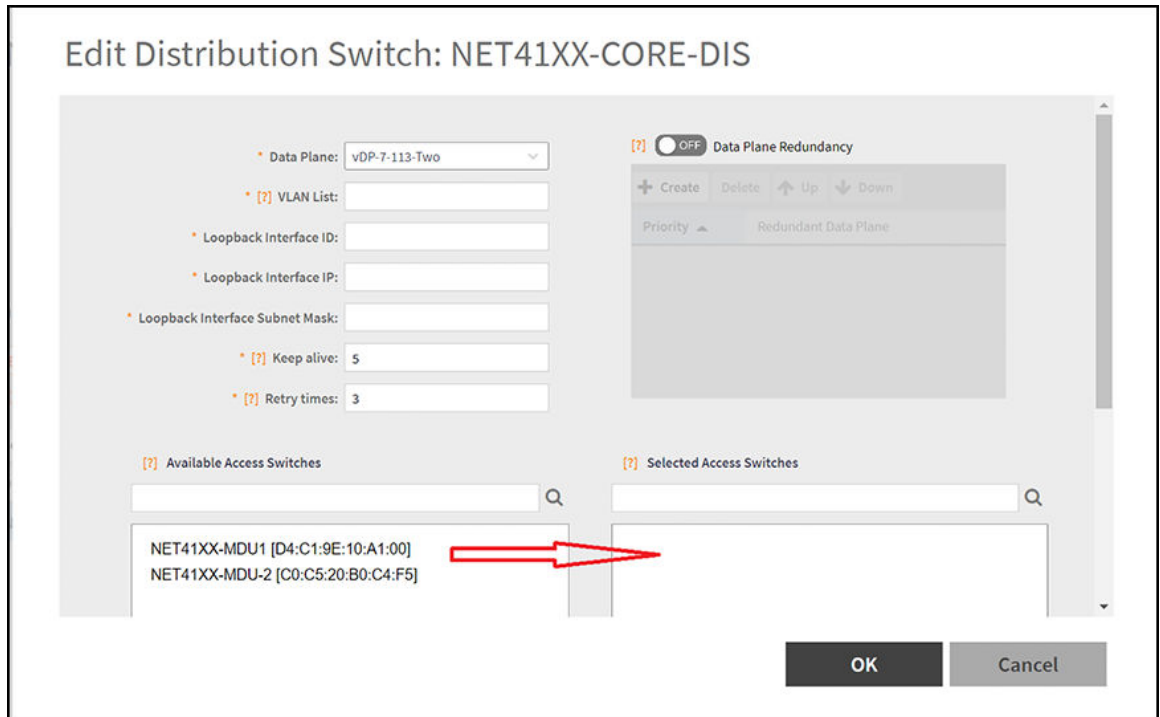
Keep alive value is restricted between the range of 1 - 20 seconds to check Data plane status by ICMP Ping.

- **Retry times:** Enter the retry time interval to enable data plane monitor status. This option is enabled, if the **Data Plane Redundancy** is switched on.

Retry times is restricted between the range of 1 - 5 to check Data plane status retry times if no response.

- **Available Access Switches:** The available access switches are displayed in the table.
- **Selected Access Switches:** Select the access switch from the interface.

FIGURE 18 Selected Access Switches



- **Data Plane Redundancy:** Administrator can disable/enable site redundancy.

NOTE

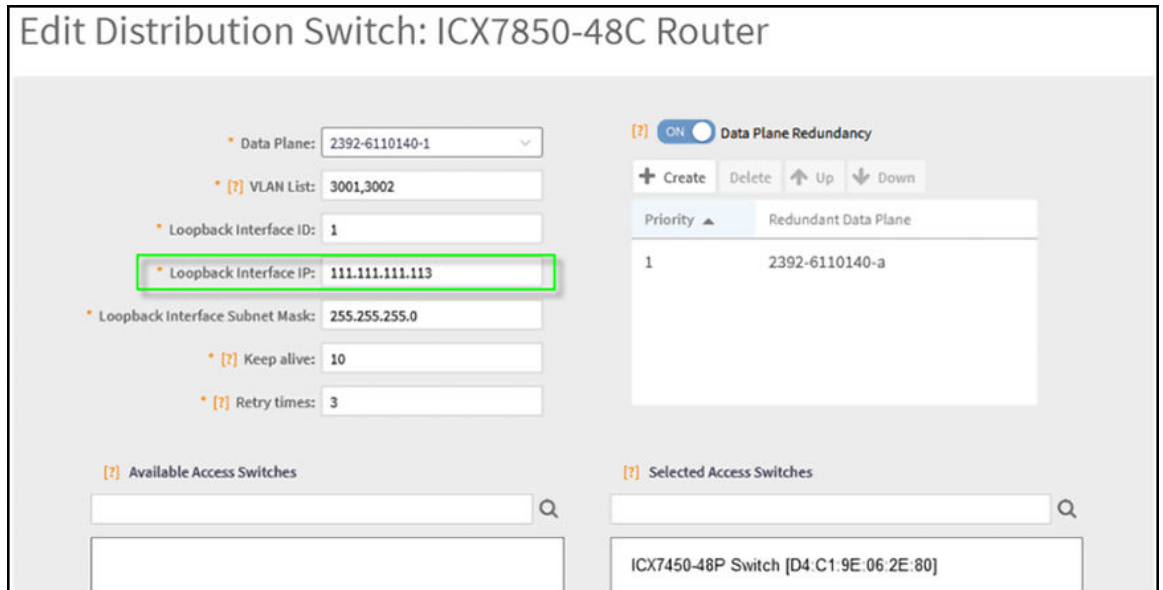
The maximum size of redundancy server is seven.

- Distribution Switch and Data Plane communicate client VNI information via VxLAN Tunnel as follows:
 - a. Switch Client connect to Access Switch.
 - b. Access Switch connect to the Distribution Switch.
 - c. Distribution Switch establish VxLAN tunnel to the Data Plane.

Switch Client management:

- a. Distribution Switch use loopback interface connect to Data Plane interface.

FIGURE 19 Loopback Interface Connect to Data Plane Interface



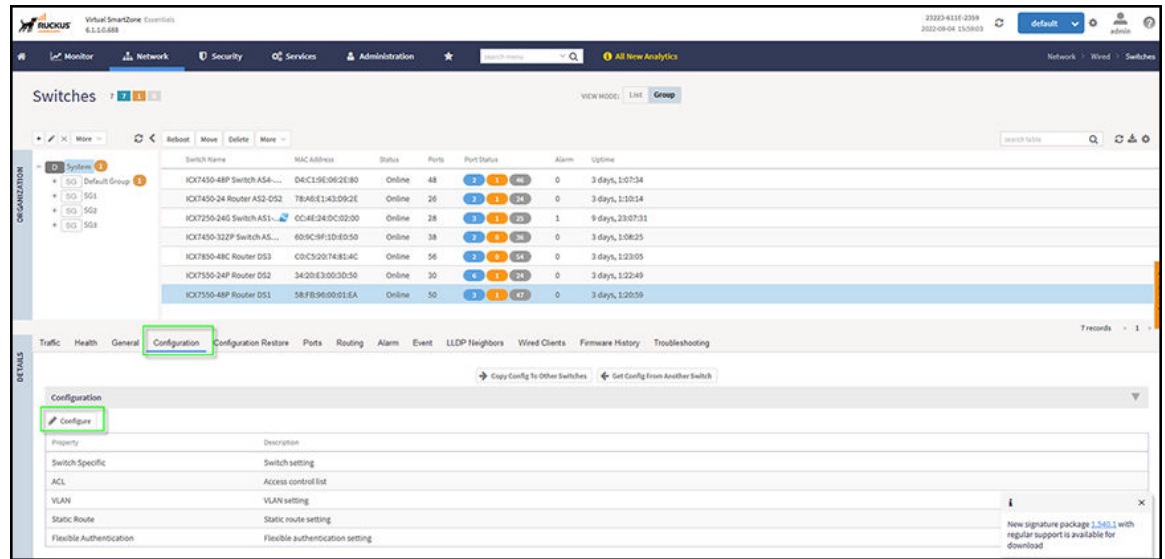
- b. Network Routing will be carried out between Distribution Switch loopback interface and Data Plane data interface.
- c. Switch Client belonging to Access Switch should authenticate VLAN network.
- d. Browser will re-direct to Web Authentication page.
- e. After the Switch Client pass web authentication, the Distribution Switch forward the client traffic to Data Plane.

For the Network Segmentation function of Switch part, all devices between Distribution Switch and Data Plane must enable the Jumbo mode. This includes the Distribution Switch itself and vSZ-D Data interface which belongs to the vSwitch on ESXi. Otherwise, switch client will not be able to access the internet connection.

To enable the Jumbo mode, do the following:

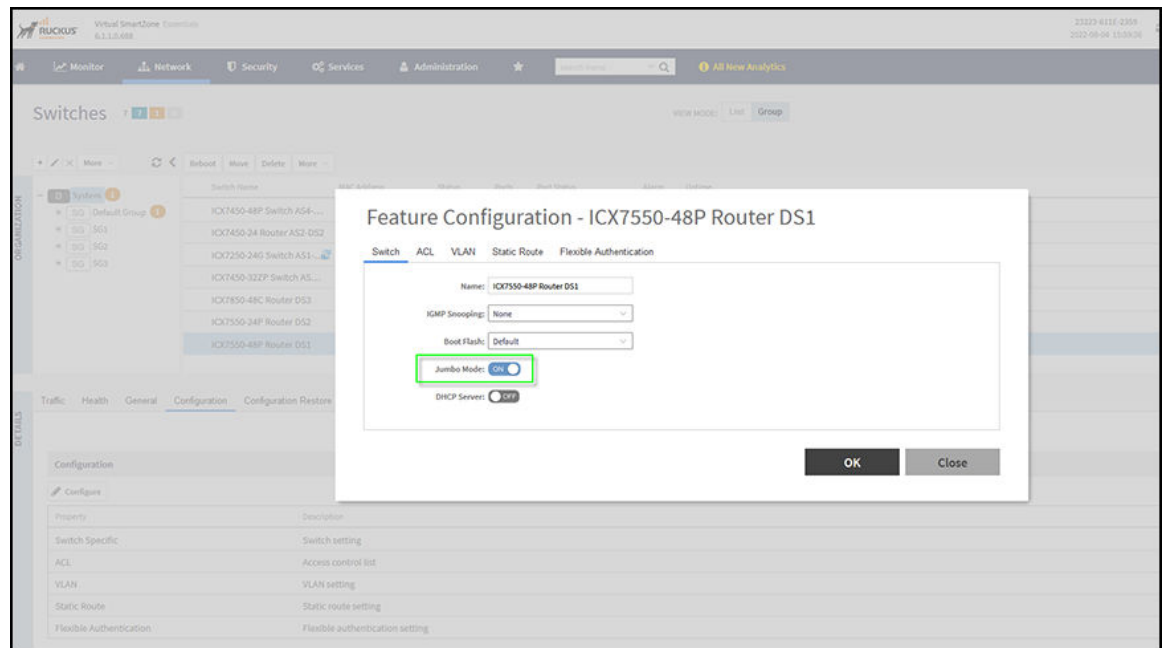
- › On the menu, click **Network > Wired > Switches** to display the **Switches** window.

FIGURE 20 Switches



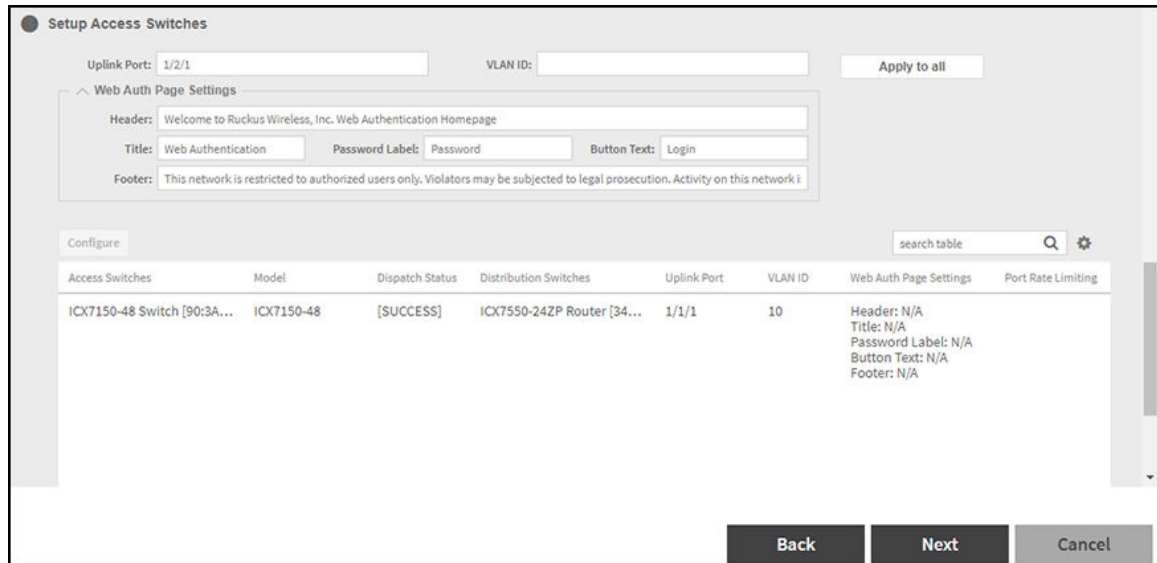
- › Click **Configuration > Configure** to display **Feature Configuration** dialog box.
- › Switch ON to enable the Jumbo mode.

FIGURE 21 Feature Configuration



- › Click **OK**.
- f. The data plane detects the VxLAN.
- g. Data Plane provide the DHCP/NAT service according to Switch Client VNI information.
- Setup Access Switches: Select the access switch and apply the setting.

FIGURE 22 Setup Access Switches



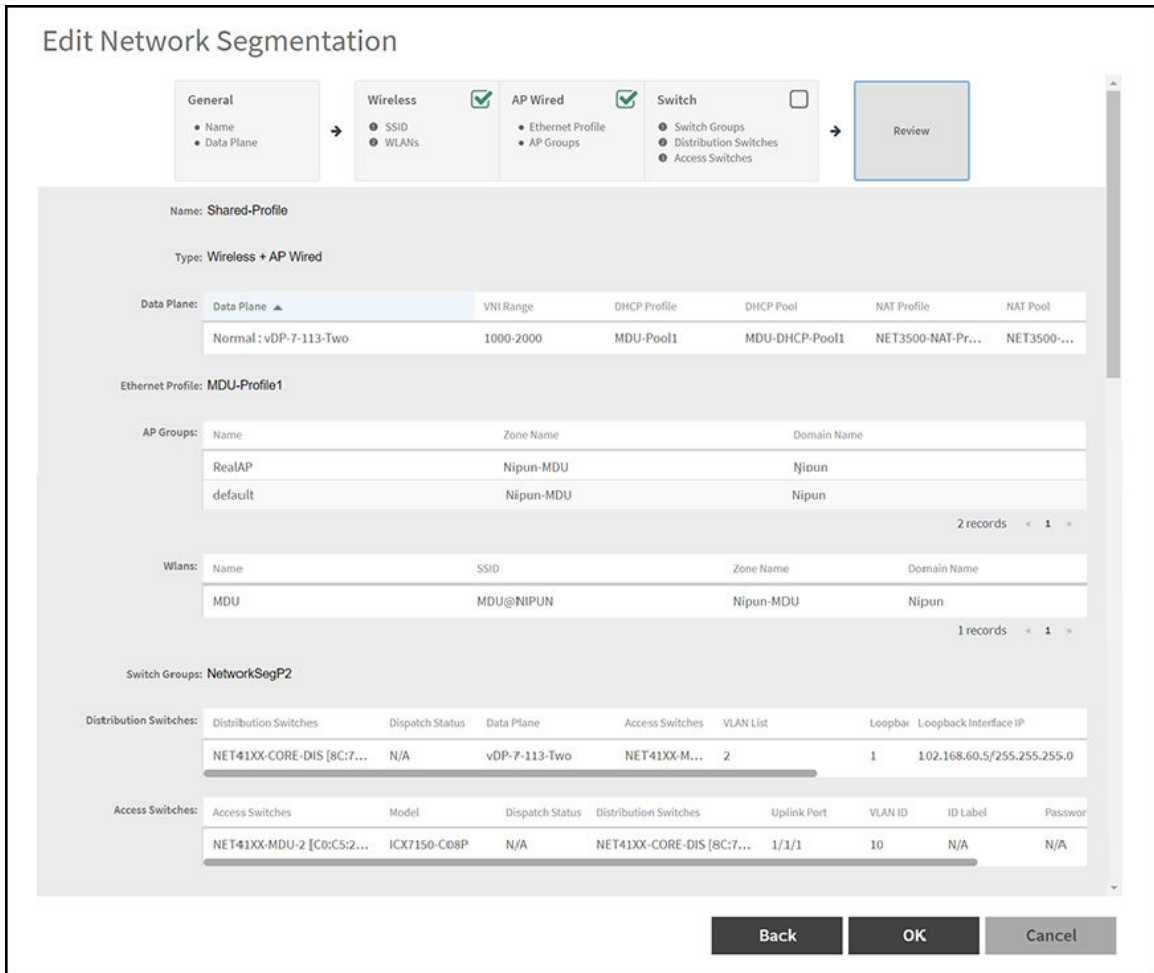
Complete the following fields:

- You can choose multiple switches as access switches, administrator can unify the **Web Auth Page** settings by clicking the **Apply to all**. The access switch will share the same configurations instead of configuring each switch manually.

10. Click **Next**.

11. Verify the data in the **Review Page**.

FIGURE 23 Review Page



12. Click **OK**.

From the table, select the network segmentation profile to view the profile settings details.

FIGURE 24 Network Segmentation Profile Settings

Name	66-2									
Type	Wireless - Switch									
Status	Completed									
Operation Result	N/A									
Data Plane										
Data Plane	VNI Range	DHCP Profile	DHCP Pool	NAT Profile	NAT Pool					
Normal : 2392-6110140-1	16777210-16777215	DHCP1	DHCP1-VNI-102	NAT1	NAT1-VNI-102					
Redundant : 2392-6110140-a		DHCP1	DHCP1-VNI-102	NATa	NATa-VNI-202					
Normal : 2392-6110140-2	N/A									
Normal : 2392-6110140-b	N/A									
WLANs										
Name	SSID	Zone Name		Domain Name						
QA-Bin.Hua_MDU_H2	QA-Bin.Hua_MDU_H2	381_Z4		Administration Domain						
QA-Bin.Hua_MDU_H2	QA-Bin.Hua_MDU_H2	Z4		Administration Domain						
Distribution Switches										
Distribution Switches	Dispatch Status	Data Plane	Access Switches	VLAN List	Loopba	Loopback Interface IP	Keep alive	Retry times	Data Plane Redundancy	
ICX7850-48C Router [C0:...	[SUCCESS]	2392-6110140-1	ICX7450-48P Switch [D4:C1:9E:06:2E:80]	3001,3002	1	111.111.111.113/255.255.255.0	10	3	2392-6110140-a	
Access Switches										
Access Switches	Model	Dispatch Status	Distribution Switches	Uplink Port	VLAN ID	ID Label	Password Label	Port Rate Limiting		
ICX7450-48P Switch [D4:...	ICX7450-48P	[SUCCESS]	ICX7850-48C Router [C0:C5:20:74:81:4C]	1/1/1	121	N/A	N/A			

Functions of switches are as follows:

- Access Switch provide Web Authentication Service and handles VLAN service.
- Distribution Switch handles VNI/VLAN mapping and forward the traffic to Data Plane.

The data plane handles VNI and DHCP/NAT services.

When Switch Client access the internet by browser, most packets come back from gateway to the Data Plane. The Data Plane must add VxLAN header and then forward to the Distribution Switch.

NOTE

The maximum packet length between Distribution Switch and Data Plane is 1564 (1514 general +50 VxLAN header)

NOTE

You can also edit and delete Network Segmentation Profiles by selecting the options **Configure** and **Delete** respectively, from the **Network Segmentation Profiles** window.

Configuring a Network Segmentation Group in the Cloudpath UI

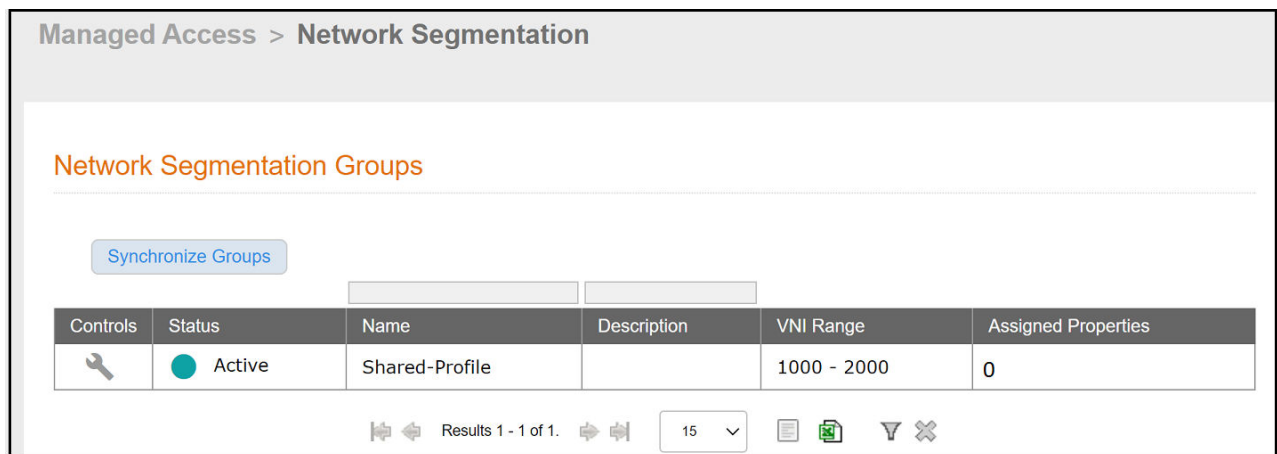
- Viewing the Network Segmentation Landing Page..... 41
- Creating an eDPSK Pool for a Property..... 45
- Creating a Property for a Network Segmentation Group..... 47
- Adding Units to a Property of a Network Segmentation Group..... 50
- How an Access Point or Access Switch Gets Assigned to a Unit..... 55
- Viewing or Changing Information for a Configured Unit..... 60
- Using the Access Points Tab to View or Change an Assignment..... 64
- Using the Edge Ports Tab to View or Remove a Switch Port Assignment..... 65
- Property Management Information..... 66
- Creating a Policy to Assign to eDPSK Pools (Optional)..... 66
- Troubleshooting..... 69

Viewing the Network Segmentation Landing Page

After you have configured the integrated system in the Cloudpath UI, and you have configured the Network Segmentation profile in SmartZone, a Network Segmentation group gets automatically created in Cloudpath.

To view the Network Segmentation group, go to **Managed Access > Network Segmentation**. The screen below shows the Network Segmentation group that is based on the Network Segmentation *profile* created in SmartZone. The VNI Range shown is the range that was configured in the Data Plane configuration in SmartZone for the Network Segmentation profile.

FIGURE 25 Network Segmentation Groups in Cloudpath UI



You can click on the wrench icon to invoke a four-tab view:

NOTE

The number of assigned properties gets updated as properties are created and assigned to the network segmentation group.

Configuring a Network Segmentation Group in the Cloudpath UI
Viewing the Network Segmentation Landing Page

FIGURE 26 Details-Tab-View of the Network Segmentation Group

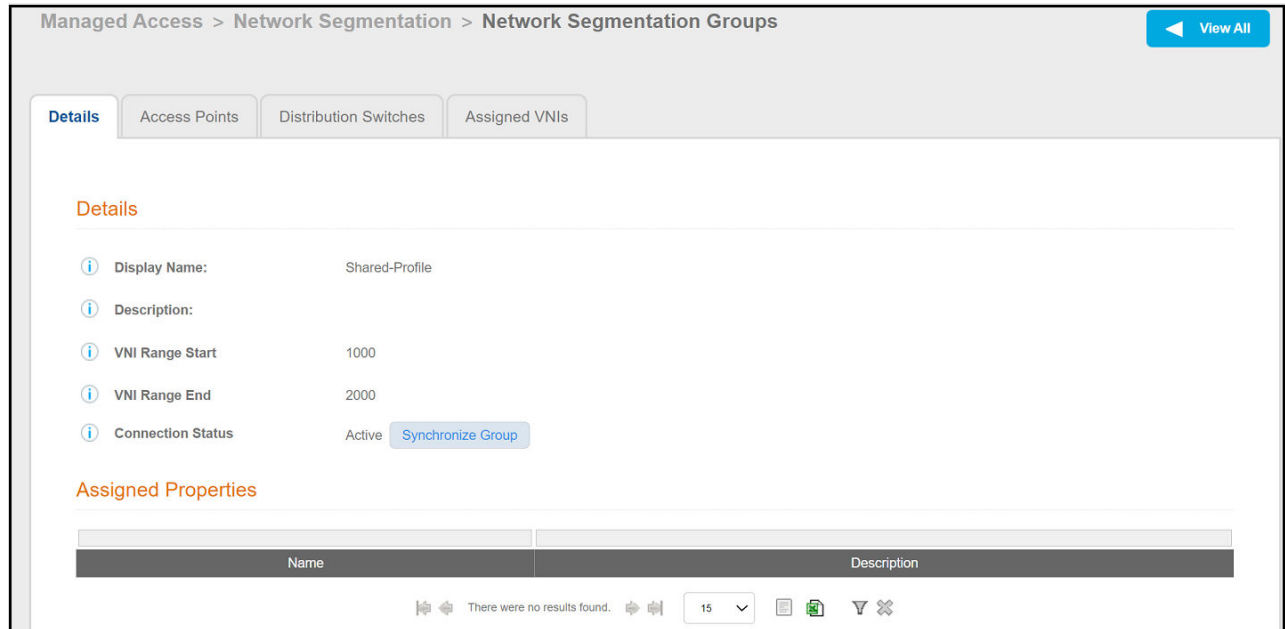
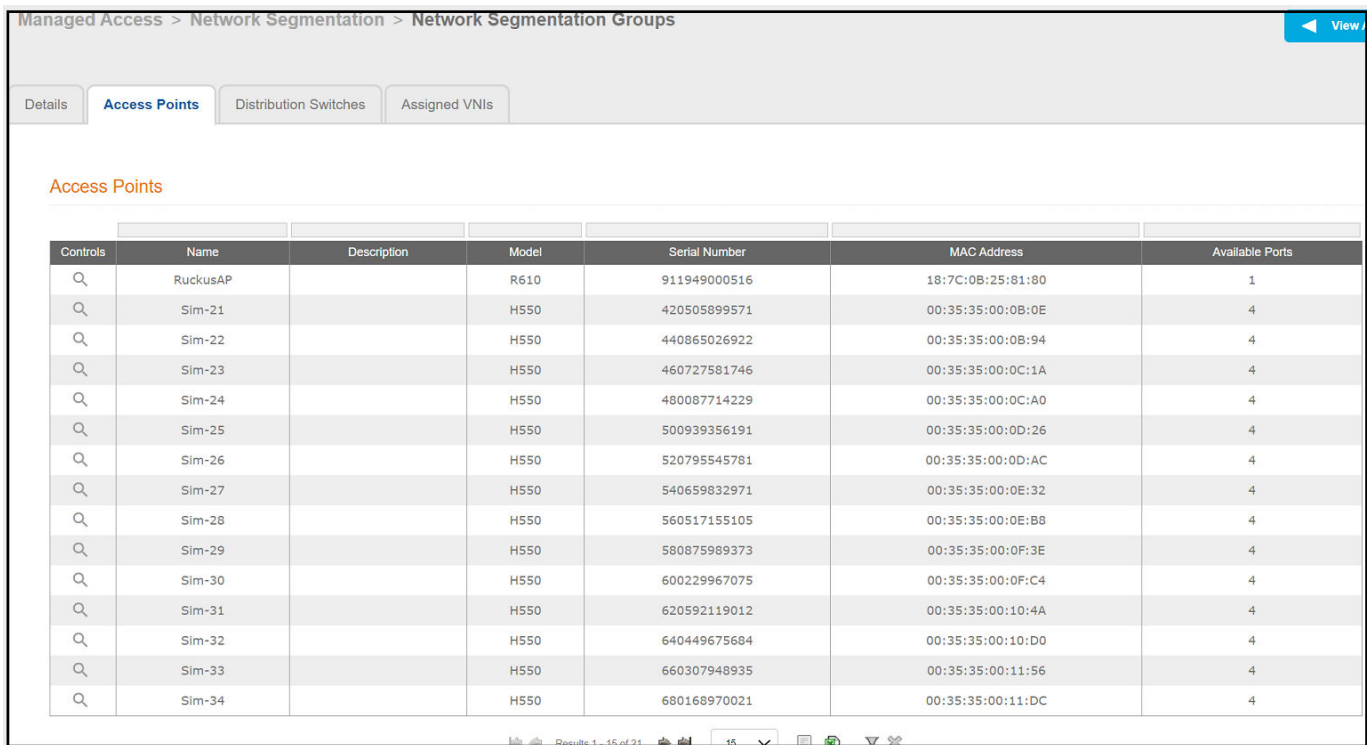


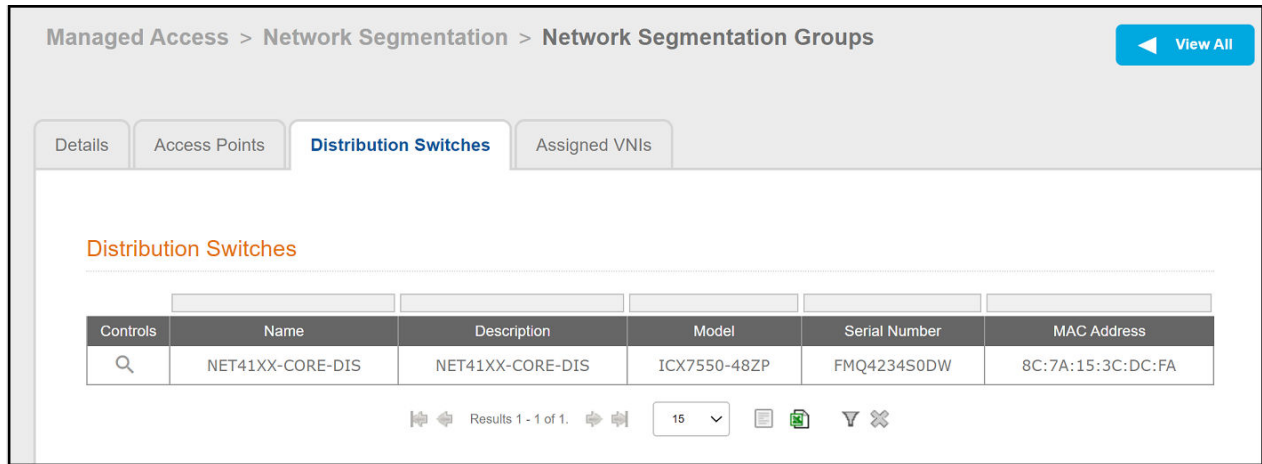
FIGURE 27 Access-Points-Tab View of the Network Segmentation Group



NOTE

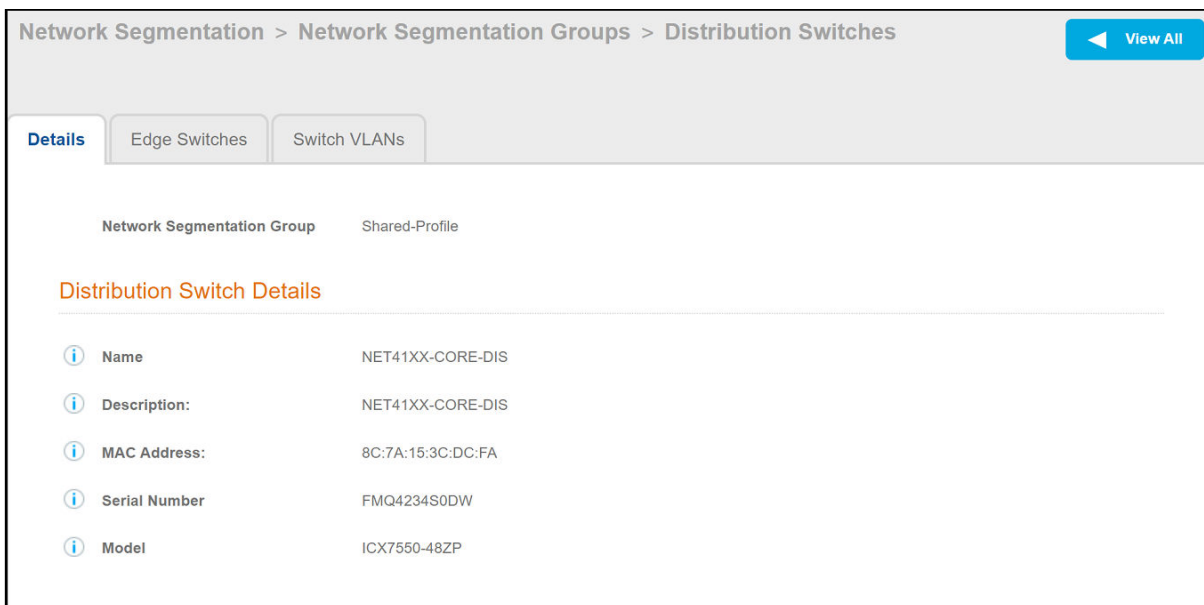
For more information, see [Using the Access Points Tab to View or Change an Assignment](#) on page 64.

FIGURE 28 Distribution-Switches-Tab View of the Network Segmentation Group



From the screen above, you can click the **View** icon under the "Controls" column to invoke a three-tab view, with the **Details** tab initially selected:

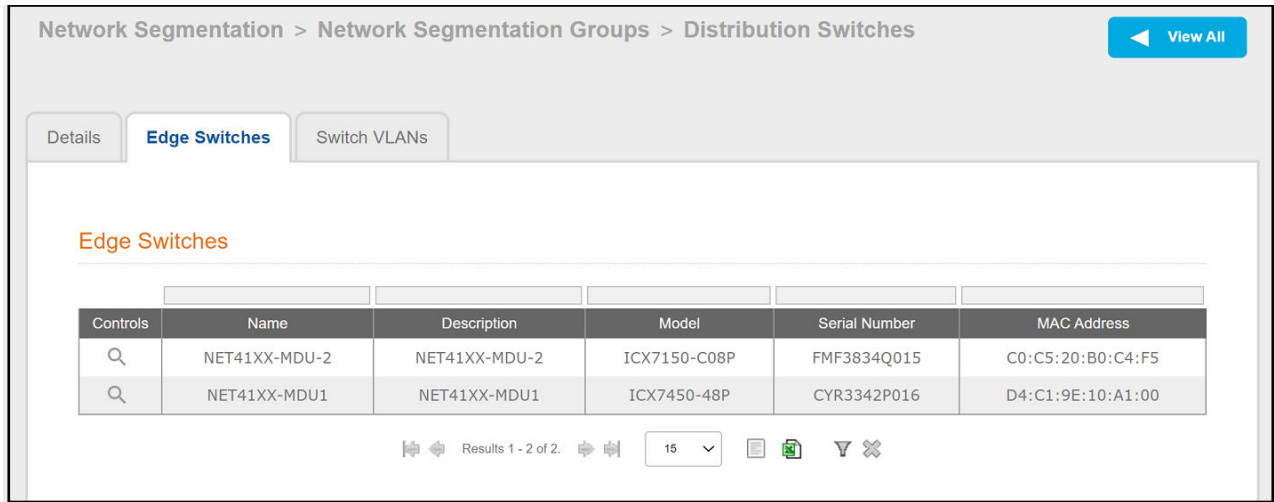
FIGURE 29 Network Segmentation Group Distribution Switch - Details Tab



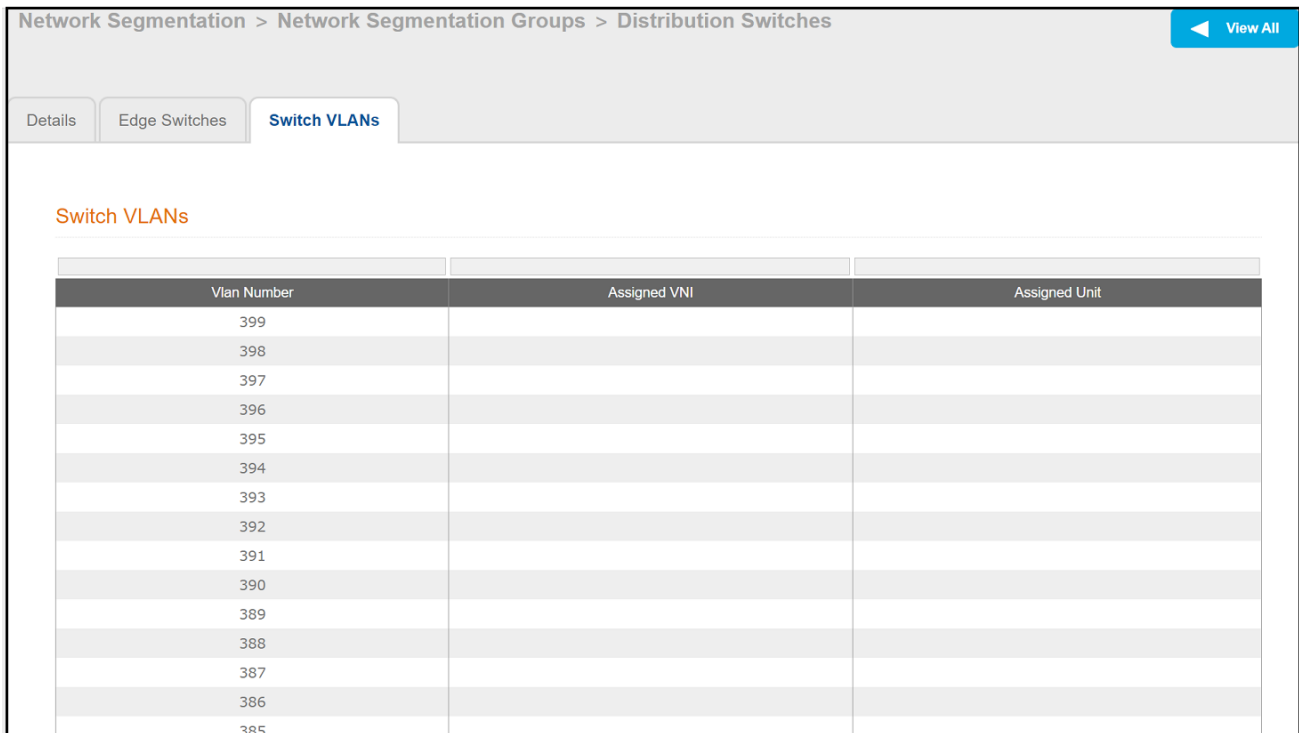
From the screen above, you can click the **Edge Switches** tab to view the edge switches that are controlled by the distribution switch, as shown in the example screen below:

Configuring a Network Segmentation Group in the Cloudpath UI
 Viewing the Network Segmentation Landing Page

FIGURE 30 Network Segmentation Group Distribution Switch - Edge Switches Tab



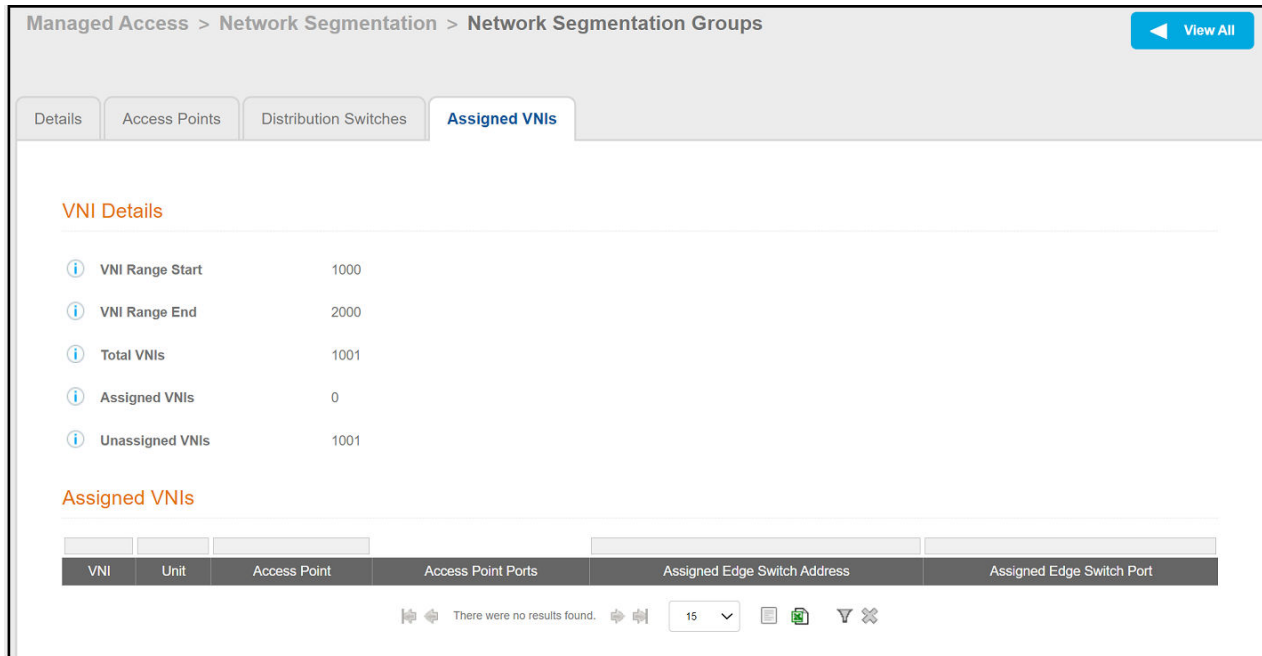
From the screen above, you can click the **Switch VLANs** tab to view VLANs assigned to units. (You can also click the magnifying glass for details of each edge switch. An edge switch is also referred to as an "access switch.") Initially, no Switch VLANs have been assigned yet, as shown in the example screen below.



NOTE

For an example of the Switch VLANs table after VLANs have been assigned, see [Figure 51](#) on page 59.

FIGURE 31 Assigned-VNIs-Tab View of the Network Segmentation Group



NOTE

A unique VNI is assigned to a unit once the unit is created. For an example of the Assigned VNIs tab after VNIs have been assigned, refer to [Figure 41](#) on page 54 and [Example of Assigned VNIs After APs and Switches Have Been Added](#) on page 60.

Next Steps:

Before you can create (and then assign) properties to a Network Segmentation group, you need to create an eDPSK pool for each property. Once you create one or more properties, you assign units to the properties, then you assign APs or switches to these units. You can assign multiple properties to a network segmentation group. Therefore, the remaining sequence to complete the Cloudpath portion of the Network Segmentation configuration is:

1. [Creating an eDPSK Pool for a Property](#) on page 45
2. [Creating a Property for a Network Segmentation Group](#) on page 47
3. [Adding Units to a Property of a Network Segmentation Group](#) on page 50
4. [How an Access Point or Access Switch Gets Assigned to a Unit](#) on page 55
5. [Creating a Policy to Assign to eDPSK Pools \(Optional\)](#) on page 66

Creating an eDPSK Pool for a Property

Before you can create a property to add to your Network Segmentation group, you need to create an eDPSK pool. One (and only one) eDPSK pool must be assigned to a property.

To create a new eDPSK pool, follow these steps:

1. In the Cloudpath UI, go to **Configuration > DPSK Pools**.
2. Click **Create DPSK Pool**.

Configuring a Network Segmentation Group in the Cloudpath UI

Creating an eDPSK Pool for a Property

3. In the ensuing Create Pool screen, enter the information to create the pool, then click **Save**. The following screen shows an example. For detailed steps, see the *Cloudpath Enrollment System External Dynamic Pre-Shared Key (eDPSK) Configuration Guide*.

NOTE

The SSID field value *must* match the SSID that you created in SmartZone. Also, if you assign more than one SSID to the pool, the tenant portal will not include a button that displays the QRCode for either the wi-fi passphrase or the guest wi-fi passphrase. (For more information about how the tenant portal is used, refer to the *Cloudpath Enrollment System Property Management Administration Guide*.)

FIGURE 32 Create eDPSK Pool Configuration Screen

Configuration > DPSK Pools > Create Pool

Cancel Save

DPSK Pool Information

Display Name: DPSK Pool 17 *

Description:

Enabled:

Property Count: 0

Generated Passphrase

Passphrase Length: 12

Characters: alphanumeric (Lowercase) v

Restrictions

SSID(s): Jeff eDPSK *

Enforce Expiration Date:

Enforce Device Count Limit:

Device Limit: 2

RADIUS Policies

Default Access(No Match): Accept v

No policies have been assigned to this pool

4. Create any additional pools you will need. For example, if you plan to create two properties for your network segmentation profile, you should create two pools - one for each property. The following example screen (in the UI, navigate to **Configuration > DPSK Pools**) shows the creation of two pools that will be used later as part of an example.

FIGURE 33 One DPSK Pool Created for Each Property to be Assigned to a Network Segmentation Profile

+	Sequence	Status	Name	Description	SSID's	DPSK Count	Policy Count	Default Access
	1	Enabled	DPSK Pool 18		ssid for pool 18	0	0	ACCEPT
	2	Enabled	DPSK Pool 17		Jeff eDPSK	0	0	ACCEPT

Creating a Property for a Network Segmentation Group

Once you have created an eDPSK pool, you can create a property that uses that pool, and you can assign the property to a network segmentation group. You can also create additional properties (one pool per property), and assign those properties to the same (or different) network segmentation group.

Follow the steps below to configure a property and assign it to a network segmentation group:

NOTE

For more information about configuring properties, refer to the *Cloudpath Enrollment System Property Management Administration Guide*.

1. In the Cloudpath UI, go to **Managed Access > Properties**.
2. Click **Add Property**.
3. Configure the property, as shown and described in the following example.

FIGURE 34 Creating a Property to Assign to Network Segmentation Group

Managed Access > Properties > Create Property

Cancel Save

Property Details

Display Name: Tech Pubs Building 1

Address: 001 Tech Pubs Road
Lake Town, CA

Description:

Pool: DPSK Pool 17

Network Segmentation Group: Shared-Profile

Limit Units:

Guest DPSK: Note: Adding a Guest DPSK will increase the DPSK license count.

Sends Email On Change:

Sends SMS On Change:

Property Management Detail

Name: Sushma A

Phone: 0005550100

Email: sushma@commscope.com

- Display Name: A meaningful name for the property (visible to you, as an administrator, and visible on the tenant portal).
- Address: Address of the property.
- Description (optional): Description of the property (visible only to you, as an administrator).
- Pool: The eDPSK pool assigned to this property (selected from the drop-down list).
- Network Segmentation Group: The name of the network segmentation group to assign to this property (selected from the drop-down list). All access points, switch ports, and VNI assignments on units (how to add units is described later) are derived from this network segmentation group. Once a unit has been assigned to the property, the group cannot be changed.
- Limit Units: You can check this box if you want to limit the number of units that can be assigned to this property. If you check the box, a "Max Units" pop-up field appears where you can enter the desired number.
- Guest DPSK: Checking this box assigns a guest DPSK to every unit that you add to the property. This field cannot be set on individual units, nor can this selection be changed once units have been assigned to the property.
- Sends Email On Change: Checking this box means that the contact person for a unit gets notified by email whenever the DPSK of the unit or the unit's guest DPSK (if guest DPSKs are being used) changes, or if the access token to the tenant portal is changed.

NOTE

If this box is checked, the contact person of the unit also gets notified by email as soon as you have added that unit to the property and saved the configuration.

- Sends SMS On Change: Checking this box means that the contact person for a unit gets notified by text whenever the DPSK of the unit or the unit's guest DPSK (if guest DPSKs are being used) changes, or if the access token to the tenant portal is changed.

NOTE

If this box is checked, the contact person of the unit also gets notified by text as soon as you have added that unit to the property and saved the configuration.

- Management Info section: As the property manager, this should be your contact information that you want displayed in all communications with your tenants.
4. Click **Save**. You are returned to the main Properties screen where your newly configured property is now displayed, as shown in the example below:

FIGURE 35 Main Properties Screen With Newly Created Property

The screenshot shows the 'Properties' screen with a table containing one entry. The table has columns for Name, Address, Manager Name, Num Units, Pool Name, and Allows Guest. A wrench icon is visible in the first column of the first row.

	Name	Address	Manager Name	Num Units	Pool Name	Allows Guest
+	Tech Pubs Building 1	001 Tech Pubs Road Lake Town, CA	Sushma A	0	DPSK Pool 17	true

Below the table, there are navigation icons, a pagination control showing 'Results 1 - 1 of 1.', a dropdown menu set to '15', and several utility icons.

5. (Optional) From the **Managed Access > Properties** area of the UI, click **Add Property** to add any additional properties you want by following the instructions in the preceding steps. The following screen shows an example of the main Properties screen after two properties have been created:

FIGURE 36 Main Properties Screen With Two Newly Created Properties

The screenshot shows the 'Managed Access > Properties' screen with a table containing two entries. The table has columns for Name, Address, Manager Name, Num Units, Pool Name, and Allows Guest. Wrench icons are visible in the first column of both rows. A blue 'Add Property' button is located in the top right corner.

	Name	Address	Manager Name	Num Units	Pool Name	Allows Guest
+	Tech Pubs Building 1	001 Tech Pubs Road Lake Town, CA	Sushma A	0	DPSK Pool 17	true
+	Tech Pubs Building 2	002 Tech Pubs Road Lake Town, CA	Jeff R	0	DPSK Pool 18	true

Below the table, there are navigation icons, a pagination control showing 'Results 1 - 2 of 2.', a dropdown menu set to '15', and several utility icons.

From the grid view of a property (see screen above), you can click the wrench icon to invoke four tabs that allow you to perform various action on the property.

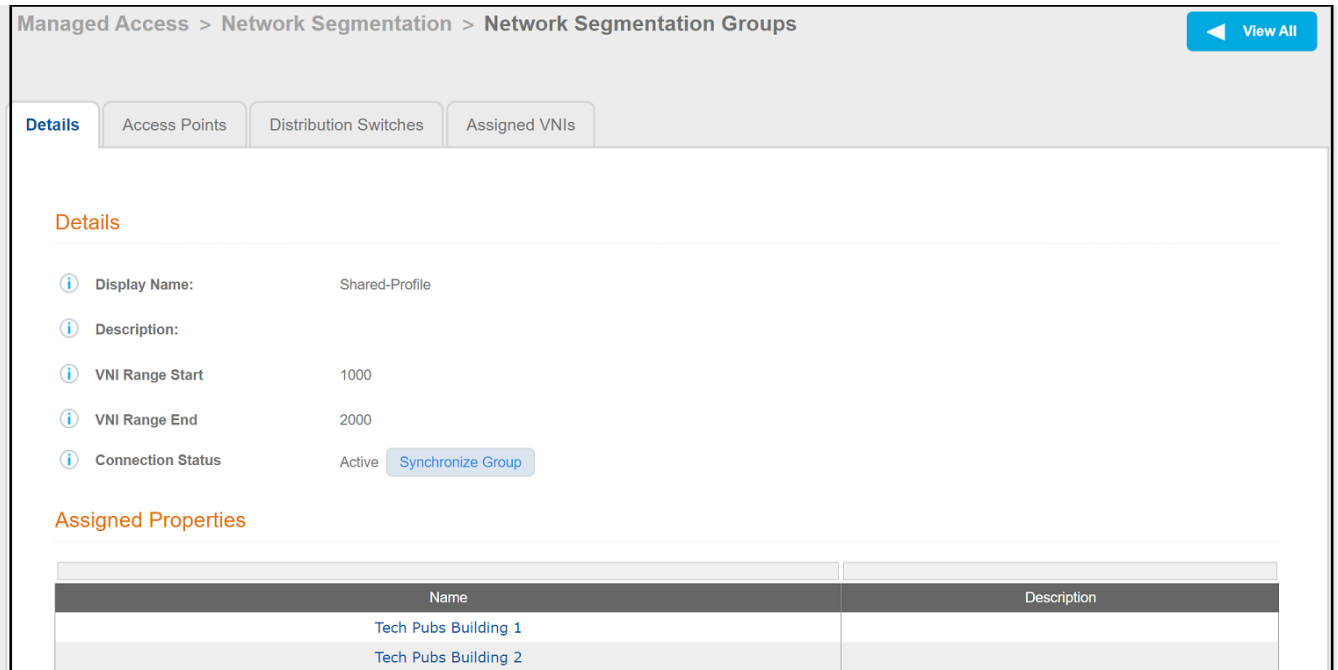
Configuring a Network Segmentation Group in the Cloudpath UI

Adding Units to a Property of a Network Segmentation Group

NOTE

If you return to the **Managed Access > Network Segmentation** portion of the UI, then click the wrench icon of the network segmentation group, the ensuing screen displays live links to any properties you have assigned to the group, as shown in the following example:

FIGURE 37 Network Segmentation Groups Screen Showing Assigned Properties



For information about adding units to a property that is part of a network segmentation group, proceed to [Adding Units to a Property of a Network Segmentation Group](#) on page 50.

Adding Units to a Property of a Network Segmentation Group

Once you have added a property to a network segmentation group, you can then add units to the property.

Procedure to Add Units

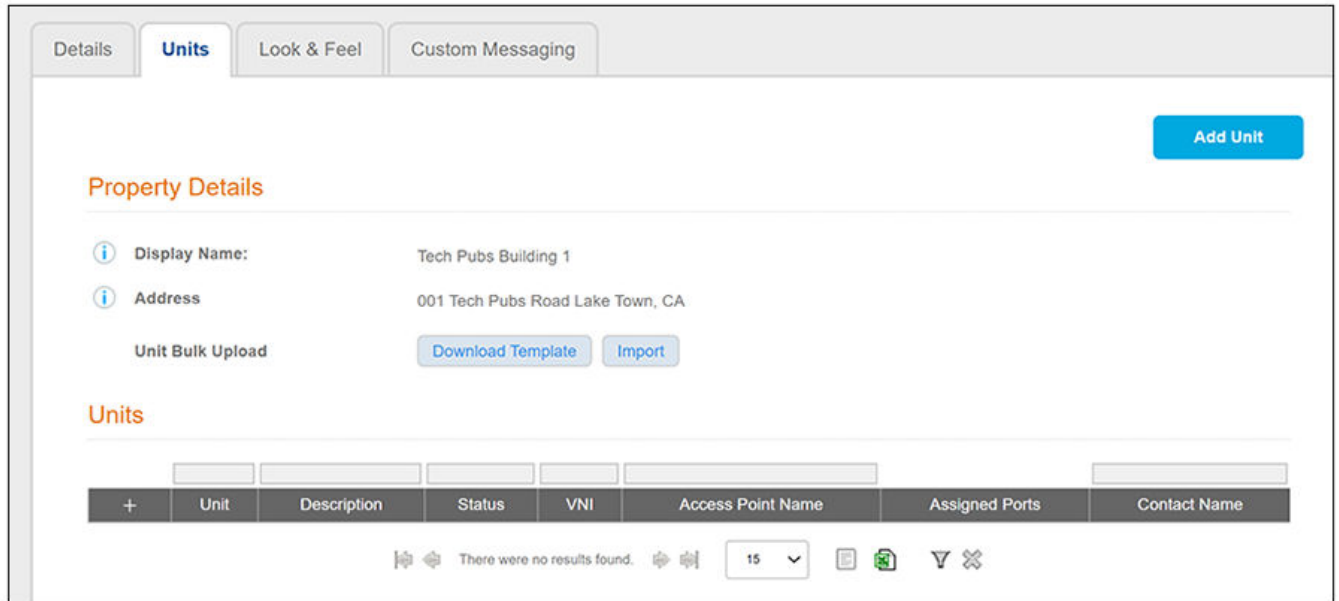
Follow the steps below to add units to the property:

NOTE

For information about how DPSKs get assigned, refer to the *Cloudpath Enrollment System Property Management Administration Guide*.

1. From the main Properties screen, click the wrench icon for the specific property.
2. On the ensuing screen, click the **Units** tab to invoke the following screen:

FIGURE 38 Adding Units By Bulk Upload or Individually



NOTE

If you have a lot of units to add, you can use the **Download Template** and **Import** buttons to add units by bulk (field descriptions are provided in the following steps). For more information about bulk uploads, refer to the "Bulk Upload Considerations" section of the *Cloudpath Enrollment System Property Management Administration Guide*. To add units individually, proceed to the next step.

3. Click **Add Unit** to add the first unit to your property, as shown and described in the following example:

FIGURE 39 Adding a Unit to Your Property

Managed Access > Properties > Units > Create Unit

Cancel Save

Unit Information

Unit Number: 1a *

Description:

DPSK Secret

Guest DPSK Secret

Network Segmentation

Assigned VNI: none assigned

Unit Contact Details

Name: John Washington *

Email: jw@washington.com

Phone Number: United S 555-000-0201

- Unit Number: Number or name of the unit you are adding.
- Description (optional): Description of the unit.
- DPSK Secret (optional): This is the secret that all devices connecting to this unit will need for wi-fi access. On the tenant portal, this secret is called the "Wi-Fi Passphrase." In the Cloudpath UI, you do not need to enter a value here because the secret is automatically generated. However, you can enter a value if you wish, and you can also change the unit secret at a later time.

NOTE

If, when you created the property, you checked the "Guest DPSK" box, a separate "Guest DPSK Secret" gets generated that all guest devices connecting to this unit will need for wi-fi access.

- Guest DPSK Secret (optional): This field is present in unit configuration only if you checked the "Guest DPSK" box when you configured the property. This is the secret that all *guest* devices connecting to this unit need for wi-fi access. On the tenant portal, this secret is called the "Guest Passphrase." In the Cloudpath UI, you do not need to enter a value here because the secret is automatically generated. However, you can enter a value if you wish, and you can also change the guest secret at a later time.
- Assigned VNI: The VNI number assigned to this unit on the Network Segmentation group associated with this property. By default, all units that belong to a property with a Network Segmentation group will have an assigned VNI, but this VNI can be removed by the administrator if desired.

NOTE

The VNI is assigned once you save the configuration. For example, you can see the VNIs assigned to two configured units in [Figure 40](#). If no VNIs are available when the unit is created, no VNI is assigned. However, as soon as a VNI becomes free (for example, if the range of VNIs is increased or if a unit is deleted), a newly available VNI is auto-assigned to the new unit.

- **Unit Contact Details:** Enter the contact information for the tenant of this unit. The email and mobile phone information that you enter will be used to notify the tenant about how to access the tenant portal and what the pass phrases are for unit and guest wi-fi access.

NOTE

The name you enter here will appear near the top of the home page on this person's tenant portal.

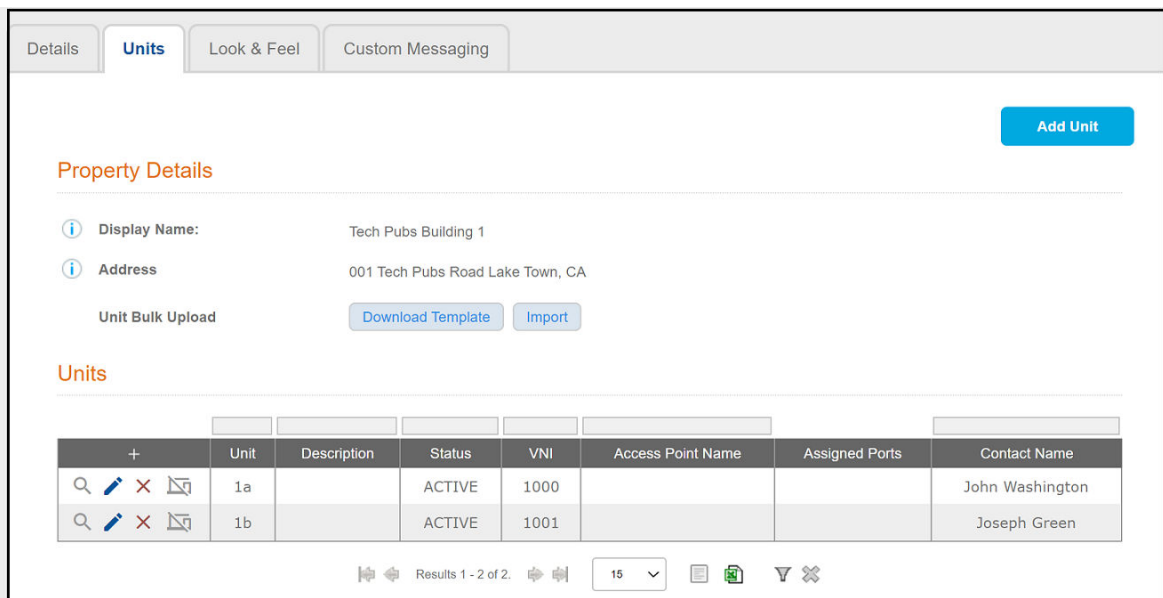
4. Click **Save**.

NOTE

Once you save the configuration of a new unit, you have the option of resending the assignment SMS/Email to the phone number and/or email defined for this unit, provided that sending SMS/Email has been enabled in the configuration of the applicable property. To resend this information (for example, if you have changed a wi-fi passphrase), you can enter edit mode for the unit, and enable the "Resend SMS/Email" check box in the "Unit Contact Details" section of the screen, then click **Save**. Another method of resending this information is to click the magnifying glass for the unit (in the grid view of all configured units), then click the **Resend Unit Assignment SMS/Email** button in the "Unit Contact Details" section of the screen (refer to [Figure 54](#) on page 62).

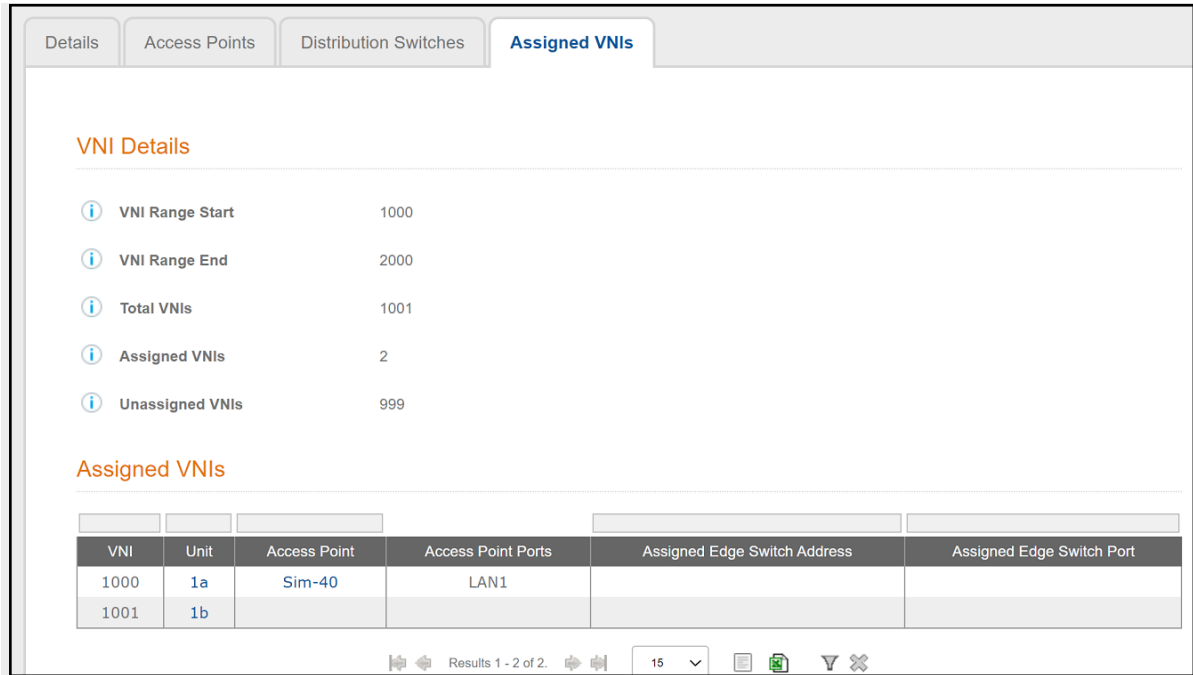
5. Using the **Add Unit** button (or the + button above the Units grid), continue to add as many units to the property as you want. The following screen shows two units have been added to the property:

FIGURE 40 Property Details Example After Adding Two Units



6. You can also return to the **Assigned VNIs** tab of the network segmentation group to view the updated list of assigned VNIs, as shown in the following example screen:

FIGURE 41 Assigned VNIs Tab Example After Two VNIs Have Been Assigned



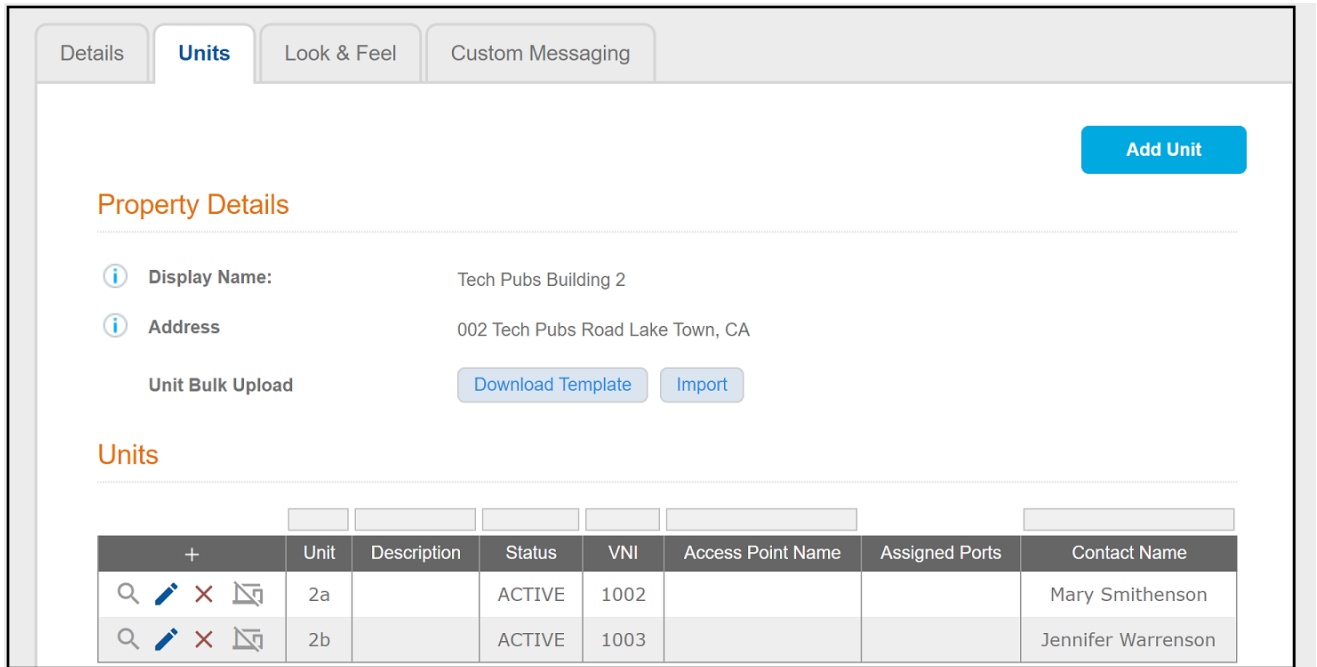
Example of Network Segmentation Group After Adding all Properties and Units

Continue to add the desired units to each property that you have already associated to the network segmentation profile.

For example:

- [Figure 37](#) on page 50 shows that two properties - named "Tech Pubs Building 1" and "Tech Pubs Building 2" - have been added to the network segmentation group named "Shared-Profile".
- [Figure 40](#) shows that the property "Tech Pubs Building 1" contains units called "1a" and "1b".
- The following screen shows that the property called "Tech Pubs Building 2" contains units called "2a" and "2b".

FIGURE 42 Property Called "Tech Pubs Building 2" with Two Units Added



After you have added all your units to all your properties in the network segmentation group, proceed to [How an Access Point or Access Switch Gets Assigned to a Unit](#) on page 55.

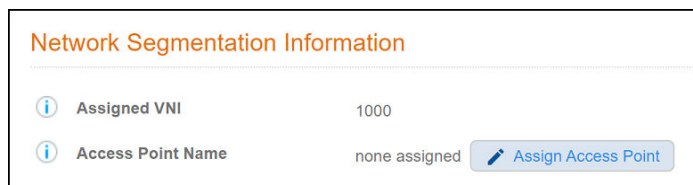
How an Access Point or Access Switch Gets Assigned to a Unit

Units that belong to properties that are part of a network segmentation group can be assigned either an access point (AP) or access switch (also referred to as an "edge switch") to provide network connectivity. With an AP, you also assign an ethernet port to the unit. With an access switch, you assign a port on the switch, then Cloudpath assigns a VLAN once the end user is authenticated.

Assigning an AP to a Unit

1. To assign an AP and an ethernet port, click the magnifying glass for a unit such as unit 1a in [Figure 40](#) on page 53.
2. In the "Network Segmentation Information" section of the ensuing screen, click **Assign Access Point**.

FIGURE 43 Using the Assign Access Point Button

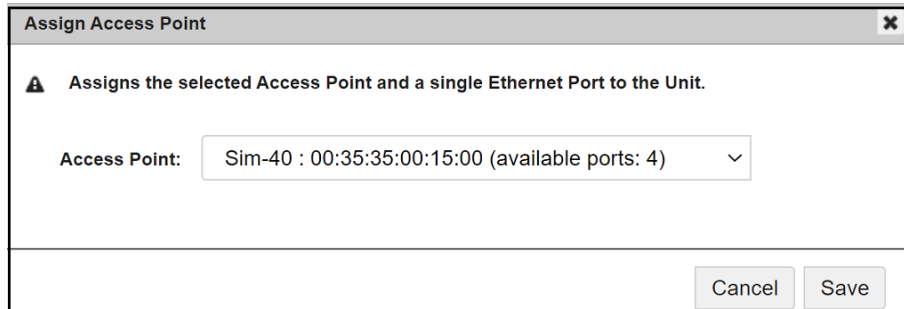


Configuring a Network Segmentation Group in the Cloudpath UI

How an Access Point or Access Switch Gets Assigned to a Unit

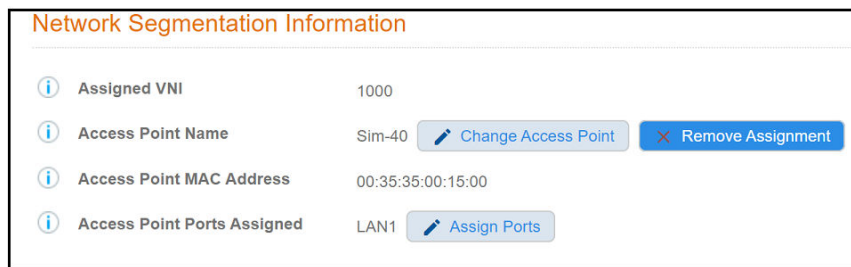
- From the Access Point drop-down (see screen below), select the AP and a single ethernet port to assign to the Unit, then click **Save**.

FIGURE 44 Access Point Selection



- After your selection is saved, you can check that the "Network Segmentation Information" on the screen reflects the selection, as shown in the following screen example:

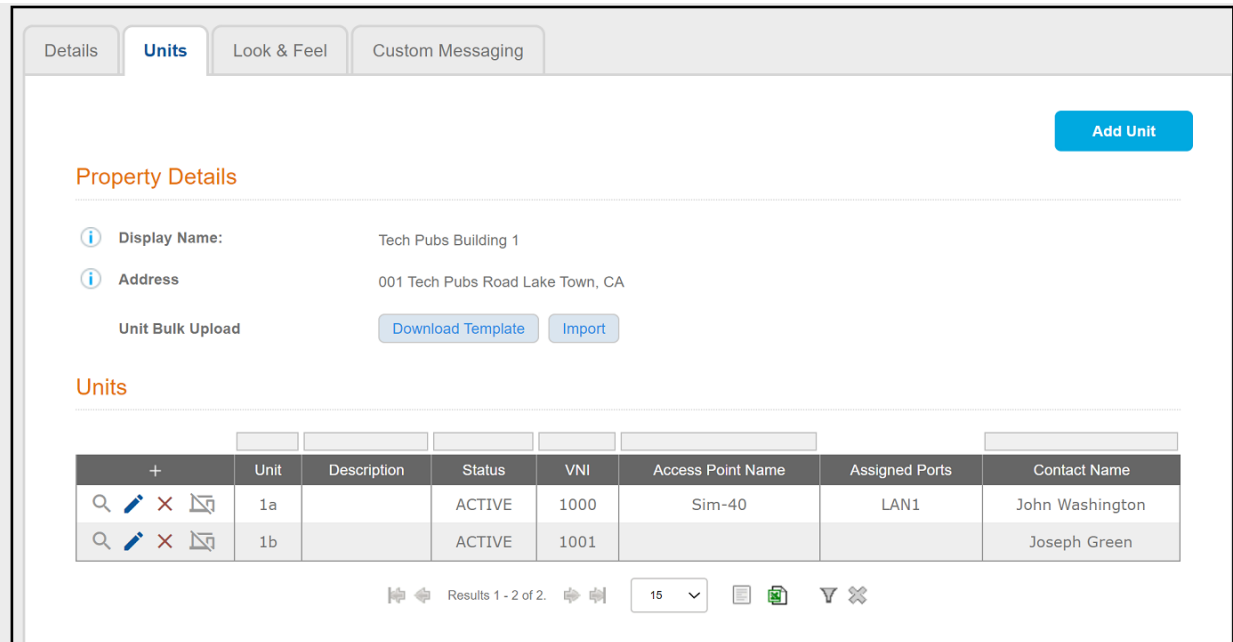
FIGURE 45 Network Segmentation Information For a Unit After Access Point Is Selected



You can use the buttons shown as follows:

- **Change Access Point:** This button allows you to change your selection from the Access Point drop-down list.
 - **Remove Assignment:** This button removes the access point and ethernet port assignments from the unit.
 - **Assign Ports:** This button invokes a popup screen that shows available ethernet ports you can select.
- Repeat the preceding steps to assign APs to other units in the property.
 - If you return to the **Units** tab view of the property, the access points and port selections you have made now appear:

FIGURE 46 Units Tab View of Property With AP and Port Assigned to Two Units in a Property



How an Access Switch and VLAN Get Assigned to a Unit

The port on the access switch (also called the "edge switch") that is physically connected to a specific unit is determined by the network administrator.

To complete the switch assignment, the end user must be authenticated. After authentication occurs, Cloudpath assigns a unique VLAN to the unit from a pool of VLANs configured on SmartZone for the network segmentation profile,

Therefore, the following steps must occur for the end user to be authenticated and the switch assignment to be completed.

1. The end user plugs their device into the switch port for their unit. This invokes a captive portal - the Web Authentication page - where the user logs in.

FIGURE 47 Web Authentication Page Example

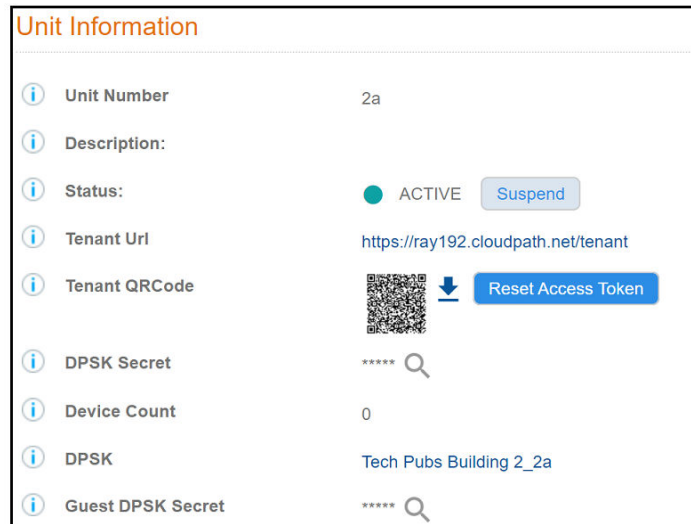


Configuring a Network Segmentation Group in the Cloudpath UI

How an Access Point or Access Switch Gets Assigned to a Unit

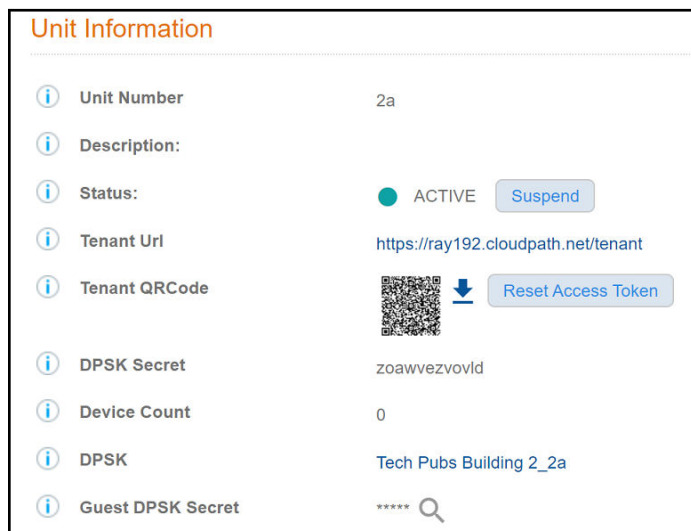
- In the "PassPhrase or DPSK Prompt" field (the exact name of this field is determined by the network administrator in [Figure 22](#) on page 37 in the "Password Label" field,) the DPSK secret for the unit (or the Guest DPSK, if applicable) must be entered. The DPSK secret must be provided by the network administrator to the end user. To find the DPSK secret, navigate to the following location in the Cloudpath UI: **Managed Access > Properties**, then click the wrench icon of the desired property, click the **Units** tab, then click the magnifying glass of the unit whose DPSK secret you need. The Unit Information portion of the Unit screen for Unit 2a is shown below:

FIGURE 48 Unit Information Screen Containing DPSK Secret



- Click the magnifying glass to reveal the DPSK secret, as shown in the example below:

FIGURE 49 DPSK Secret Unhidden



The key "zoawvezvovld" is the password that the unit 2a user would need to enter in the Web Auth page.

- As network administrator, you may want to check the "Network Segmentation Information" portion of the Unit screen for Unit 2a to make sure that the switch port and VLAN assignments are now reflected there, as shown in the example screen below:

FIGURE 50 Unit 2a Example After Switch Port and VLAN Assignment Has Occurred

Network Segmentation Information

Assigned VNI	1002	
Access Point Name	none assigned	Assign Access Point
Edge Switch Name	NET41XX-MDU-2	
Switch MAC Address	C0:C5:20:B0:C4:F5	
Switch Ports Assigned	1/1/9	Remove Assignment
Switch Port VLAN	400	

5. The preceding steps can be followed to assign switch ports and VLANs to other units in the property.
6. To view all VLAN assignments in the network segmentation group:
 - a. In the Cloudpath UI, navigate to **Managed Access > Network Segmentation**.
 - b. Click the wrench icon for the network segmentation group.
 - c. Click the **Distribution Switches** tab.
 - d. Click the magnifying glass icon for the distribution switch.
 - e. Click the **Switch VLANs** tab. The Switch VLANs table is displayed, as shown in the example below:

FIGURE 51 Switch VLANs Tab

Network Segmentation > Network Segmentation Groups > Distribution Switches View All

Details

Edge Switches

Switch VLANs

Switch VLANs

Vlan Number	Assigned VNI	Assigned Unit
409		
408		
407		
406		
405		
404		
403		
402		
401	1003	2b
400	1002	2a

Configuring a Network Segmentation Group in the Cloudpath UI

Viewing or Changing Information for a Configured Unit

The table shows all VLANs that have been assigned to units in the network segmentation group as well as their corresponding assigned VNIs. The available VLANs and available VNIs are based on the configuration on SmartZone for this network segmentation profile.

Example of Assigned VNIs After APs and Switches Have Been Added

The following example screen shows the information that the **Assigned VNIs** tab provides if your network segmentation group is currently using both APs and switches. Navigate in the Cloudpath UI to **Managed Access > Network Segmentation Groups**, then click the wrench icon for the group, then click the **Assigned VNIs** tab.

FIGURE 52 Example of Assigned VNIs Tab After APs and Switches Have Been Assigned

The screenshot shows the Cloudpath UI interface for a Network Segmentation Group. The breadcrumb trail is "Managed Access > Network Segmentation > Network Segmentation Groups". There is a "View All" button in the top right corner. Below the breadcrumb trail are four tabs: "Details", "Access Points", "Distribution Switches", and "Assigned VNIs". The "Assigned VNIs" tab is selected. Underneath, there is a "VNI Details" section with the following information:

- VNI Range Start: 1000
- VNI Range End: 2000
- Total VNIs: 1001
- Assigned VNIs: 4
- Unassigned VNIs: 997

Below the VNI details is an "Assigned VNIs" section containing a table with the following data:

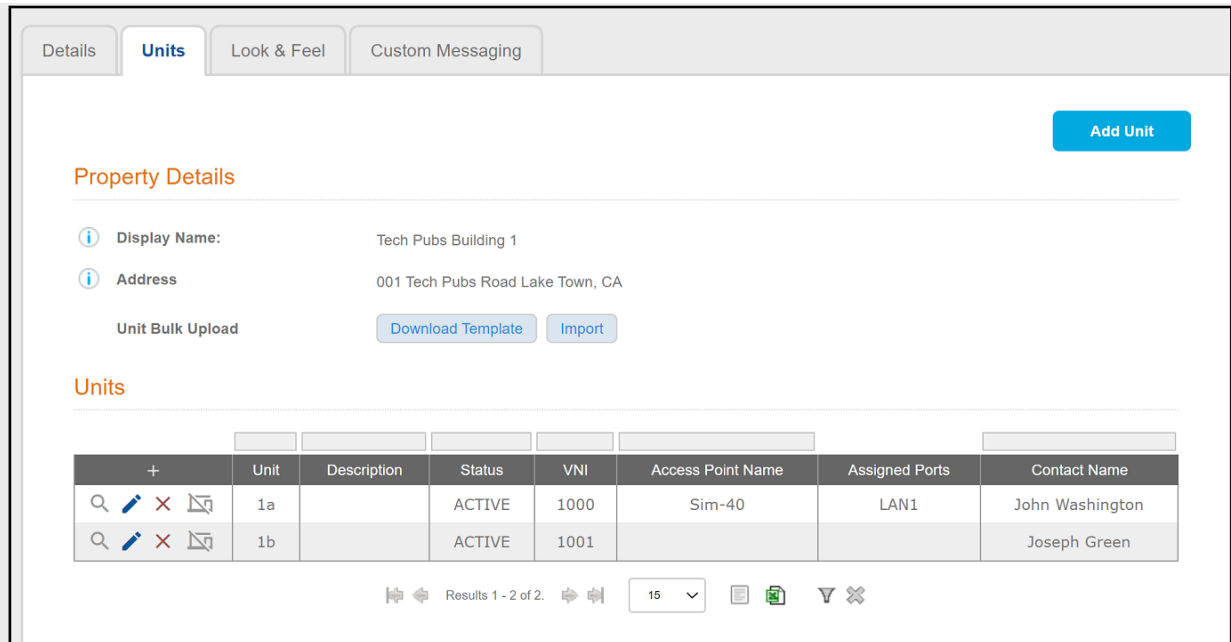
VNI	Unit	Access Point	Access Point Ports	Assigned Edge Switch Address	Assigned Edge Switch Port
1000	1a	Sim-40	LAN1		
1001	1b	Sim-25	LAN4		
1002	2a			C0:C5:20:B0:C4:F5	1/1/9
1003	2b			C0:C5:20:B0:C4:F5	1/1/10

Viewing or Changing Information for a Configured Unit

Once you have configured a unit, there is a lot of information about the unit that you can find useful.

If you go to the main Properties page (**Managed Access > Properties**) in the Cloudpath UI, click the wrench icon for the desired property, then click the **Units** tab, you get a view such as the one below:

FIGURE 53 View of All Units Within a Property




Then, you can click the magnifying glass icon to view all the settings of one of the units. The example below shows the information for the unit called 1a which is a unit that has been assigned to an access point (see the "Network Segmentation Information" section of the screen):

Configuring a Network Segmentation Group in the Cloudpath UI

Viewing or Changing Information for a Configured Unit

FIGURE 54 Unit-Specific Information for a Unit Assigned to an Access Point

The screenshot displays the 'Unit Information' page in the Cloudpath UI. It is organized into three main sections: Unit Information, Network Segmentation Information, and Unit Contact Details. Each section contains a list of attributes and their values, along with interactive buttons for management actions.

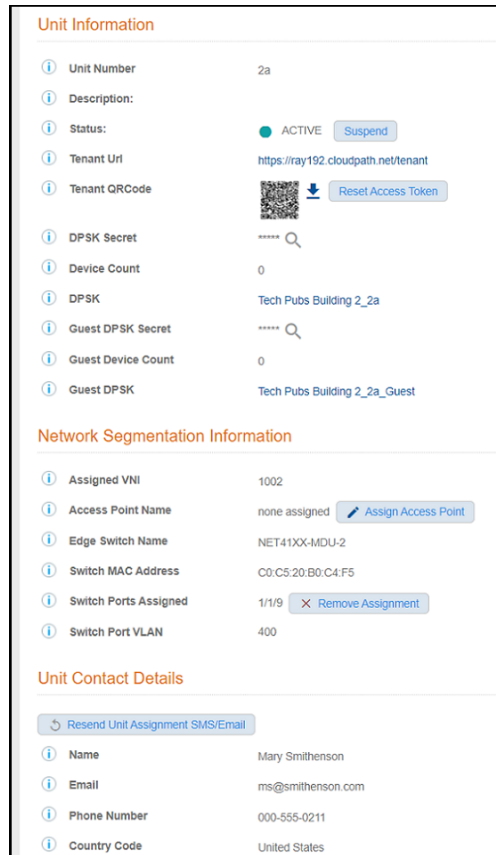
Unit Information	
Unit Number	1a
Description:	
Status:	ACTIVE Suspend
Tenant Url	https://ray192.cloudpath.net/tenant
Tenant QRCode	 Reset Access Token
DPSK Secret	***** View
Device Count	0
DPSK	Tech Pubs Building 1_1a
Guest DPSK Secret	***** View
Guest Device Count	0
Guest DPSK	Tech Pubs Building 1_1a_Guest

Network Segmentation Information	
Assigned VNI	1000
Access Point Name	Sim-40 Change Access Point Remove Assignment
Access Point MAC Address	00:35:35:00:15:00
Access Point Ports Assigned	LAN1 Assign Ports

Unit Contact Details	
Resend Unit Assignment SMS/Email	
Name	John Washington
Email	jw@washington.com
Phone Number	000-555-0201
Country Code	United States

The screen shot below shows the information for a unit from another property where this unit ("2a") has been assigned to a switch port (see the "Network Segmentation Information" section of the screen):

FIGURE 55 Unit-Specific Information for a Unit Assigned to a Switch Port



Some fields of interest include:

- **Status:** If for any reason you want to suspend this unit, you can do so from this field. This would revoke its associated DPSKs and prevent it from accessing the tenant portal and wi-fi network. You can re-activate the unit at anytime.
- **Tenant URL:** This is a live link that will take you directly to the tenant portal for this unit. For more information of using tenant portals, refer to the *Cloudpath Enrollment System Property Management Administration Guide*.
- **Tenant QRCode:** You can download the code and give it to the tenant as another option to provide them with access to the portal if they have QRCode-compatible devices. You can also reset the access token for any reason if you want to prevent the original code from working. Once you reset the code, the tenant receives a notification with the new access information.

NOTE

The tenant also has the ability to reset the access code from the tenant portal profile page if he or she thinks the code has been compromised. For more information, refer to *Cloudpath Enrollment System Property Management Administration Guide*. In this case too, the tenant receives a notification with the new access information as soon as the code has been reset.

- **DPSK Secret:** You can view the secret from here by clicking the magnifying glass. You can also change the secret from the UI by editing the unit configuration. This is described in more detail later.
- **DPSK:** The name of the DPSK is formed as: **name of the property_name of the unit**
- **Guest DPSK Secret:** You can view the secret from here by clicking the magnifying glass. You can also change the secret from the UI by editing the unit configuration. This is described in more detail later.
- **Guest DPSK:** The name of the Guest DPSK is formed as: **name of the property_name of the unit_Guest**

Configuring a Network Segmentation Group in the Cloudpath UI

Using the Access Points Tab to View or Change an Assignment

- Network Segmentation Information area: The available actions in this section of the screen depend on whether the unit is assigned to an AP or to a switch port.
 - If the unit is assigned, you can use the buttons to make changes to APs and ports, as desired.
 - If the unit is assigned to a switch port, you can remove the assignment. If the unit is later reconnected, and the user is re-authenticated, the port and VLAN are reassigned to the unit.
- Resend Unit Assignment SMS/Email: Clicking this button resends the assignment SMS/Email to the phone number and/or email defined for this unit, provided that sending SMS/Email has been enabled in the configuration of the applicable property.

Using the Access Points Tab to View or Change an Assignment

You can use the **Access Points** tab of the **Managed Access > Network Segmentation** portion of the Cloudpath UI to view assigned APs and ethernet ports, and to make any changes to these assignments.

Navigate to **Managed Access > Network Segmentation**, click the wrench icon for the Network Segmentation group, and go to the **Access Points** tab. A view like the one shown in [Figure 27](#) on page 42 is displayed.

You can then click the magnifying glass of an AP of interest. The screen below shows an AP that is already in use. Because it is in use, it contains a button you can use if you wish to remove the AP assignment. You can also remove any assigned ethernet ports by clicking the **X** next to the desired port.

FIGURE 56 Details of an Access Point Already Being Used

The screenshot displays the 'Access Point Details' for a unit named 'Sim-40'. The details include:

- Name: Sim-40
- Description:
- MAC Address: 00:35:35:00:15:00
- Serial Number: 800819422913
- Model: H550

Below the details is a button labeled 'Remove Access Point Assignments'.

The 'Ethernet Ports' section contains a table with the following data:

Controls	Port	Assigned VNI	Assigned Unit
X	LAN1	1000	1a
X	LAN2		None
X	LAN3		None
X	LAN4		None

At the bottom of the screen, there is a pagination bar showing 'Results 1 - 4 of 4', a dropdown menu set to '15', and icons for search and refresh.

Using the Edge Ports Tab to View or Remove a Switch Port Assignment

You can use the Edge Ports tab of the **Managed Access > Network Segmentation** portion of the Cloudpath UI to view switch port assignments to units or to remove a port assignment from a unit.

To navigate to the desired edge port in the Cloudpath UI:

1. Go to **Managed Access > Network Segmentation**.
2. Click the wrench icon for the network segmentation group.
3. Click the **Distribution Switches** tab.
4. Click the magnifying glass for the distribution switch.
5. Click the **Edge Switches** tab.
6. Click the magnifying glass for the desired edge switch. The screen for that edge switch is displayed, and includes information about its current port assignments, as shown in the example below:

FIGURE 57 Switch Ports Assignment for an Edge Switch

Network Segmentation Groups > Distribution Switches > Edge Switches Done

Network Segmentation Group Shared-Profile

Distribution Switch Name

Edge Switch Details

Name NET41XX-MDU-2

Description: NET41XX-MDU-2

MAC Address: C0:C5:20:B0:C4:F5

Serial Number FMF3834Q015

Model ICX7150-C08P

Switch Ports Assignment

Controls	Switch Port	Vlan Number	Assigned VNI	Assigned Unit
✗	1/1/10	401	1003	2b
✗	1/1/9	400	1002	2a

If you wish to remove a port assignment, you can do so either from here or from the Unit Information screen for the desired unit.

Property Management Information

Properties and units that belong to a network configuration group can be used in conjunction with the property management features that are described in the *Cloudpath Enrollment System Property Management Administration Guide*.

Refer to the following topics in the *Cloudpath Enrollment System Property Management Administration Guide* for additional information:

- "Generating an API Key"
- "Setting up the Look and Feel of the Tenant Portal"
- "Connecting to the Tenant Portal"
- "Connecting to the Wi-Fi Network"
- "Using the Tenant Portal"
- "Creating a Management Portal" and its subsections

NOTE

There are some differences in configuration and unit information displayed on the management portal between properties and units that belong to a network segmentation group and those that do not. The main differences are that network segmentation group units do not use VLAN, but instead use VNIs, AP names, AP MAC addresses, and Ethernet port assignments.

Creating a Policy to Assign to eDPSK Pools (Optional)

Before you create a DPSK pool for a property, you can configure policies that can be applied to eDPSK pools. Policies allow for mapping incoming successful RADIUS authentication requests to a set of RADIUS response attributes based on dynamic conditions of the request.

NOTE

When you create a DPSK pool, you can set the default behavior of whether to accept or reject a user who does not match the acceptance criteria of any policies. If you choose to use the "Accept" setting, a user is always accepted, and you do not need to configure a policy. However, if you use "Reject" as the default policy behavior, you need to configure at least one policy that is a match for each VNI (VXLAN) in the Network Segmentation group.

Each policy has an associated RADIUS attribute group which defines the RADIUS response attributes (such as filter ID, and class). Each authentication is matched against an assigned list of candidate policies in sequential order. Criteria of a policy can include dynamic conditions such as a user's physical location, username, or the time of day.

NOTE

"VLAN ID" is not applicable to network segmentation. Instead, a VXLAN is assigned to a unit that is part of the network segment. This VXLAN is the virtual network identifier (VNI); for an example refer to [Figure 40](#) on page 53.

The following procedure guides you first through creating RADIUS attribute groups for your policies, then creating the policies themselves. You must create at least one RADIUS attribute group before you can configure a policy because a policy needs to have at least one RADIUS attribute group available for selection.

1. In the Cloudpath UI, go to **Configuration > Policies**.
2. Select the **RADIUS Attribute Groups** tab, then click the **Add RADIUS Attribute Group** button.
3. In the ensuing Create Radius Attribute Group screen, enter the information to create the group, then click **Save**.

NOTE

You can configure as many RADIUS Attribute groups as you want. One RADIUS Attribute group will later be assigned to each policy you create.

An example screen is shown below. For detailed steps, refer to the "Configuring Policies" section of the *Cloudpath Enrollment System External Dynamic Pre-Shared Key (eDPSK) Configuration Guide*.

FIGURE 58 Create RADIUS Attribute Screen

Configuration > Policies > Create RADIUS Attribute Group

RADIUS Attribute Group Information

Display Name: Reauthentication time *

Description:

Assigned Policies:

Attributes

Certificate Reply Username: Certificate Common Name (Default) v

VLAN ID: [ex. 50 or BYOD]

Filter ID: [ex. BYOD]

Class: [ex. BYOD]

Reauthentication: 10000 Seconds

+ Add

4. Configure your policies:

- a. In the **Configuration > Policies** area of the UI, select the **Policies** tab, then click **Add Policies**.
- b. In the ensuing Create Policy screen, enter the information to create the policy, then click **Save**.

NOTE

You can configure as many policies as you want.

An example screen follows. For detailed steps, refer to the "Configuring Policies" section of the *Cloudpath Enrollment System External Dynamic Pre-Shared Key (eDPSK) Configuration Guide*.

FIGURE 59 Create Policy Screen

The following illustration shows the Policies tab after one policy has been added. The information shown in the table represents the policy configuration shown in the example in the Create Policy Screen. The attribute group name and its attributes come from the attribute group name selected in the Create Policy Screen drop-down list. (The "Certificate Reply Username" applies only to certificate-based authentications, and is therefore described in the Cloudpath documentation of certificate templates.) The RADIUS attribute information shown below comes from the example in the Create RADIUS Attribute Screen.

FIGURE 60 Policies Table Example After One Policy Is Configured

The screenshot shows the 'Policies' configuration page in the Cloudpath UI. The page has a breadcrumb 'Configuration > Policies' and two tabs: 'Policies' (selected) and 'RADIUS Attribute Groups'. A blue 'Add Policy' button is in the top right. Below the tabs is a table with the following data:

	Name	Policy	Attribute Group Name	Attributes	DPSK Rate	Call Template Rate	PLAP Rate
+	Building 1 on weekdays	NAS Id (Regex): 'Building 1 on weekdays', Weekdays Only From: 7:30 AM To: 6:00 PM	Reauthentication time	Reply Username: 'Certificate Common Name (Default)', Reauthentication: '10000'	0	0	0

At the bottom of the table, there is a pagination bar showing 'Results 1 - 1 of 1' and a dropdown menu set to '15'.

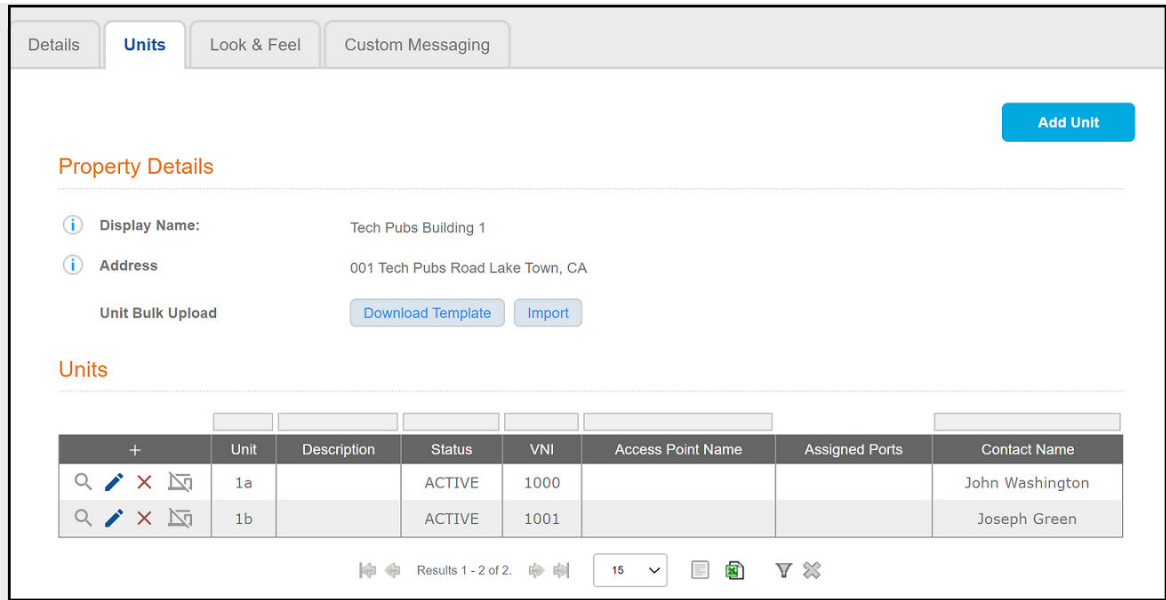
Troubleshooting

There are some basic troubleshooting steps you can try if the tenant of a unit that belongs to a network segmentation group is having difficulty connecting to the network.

Here are some steps to follow:

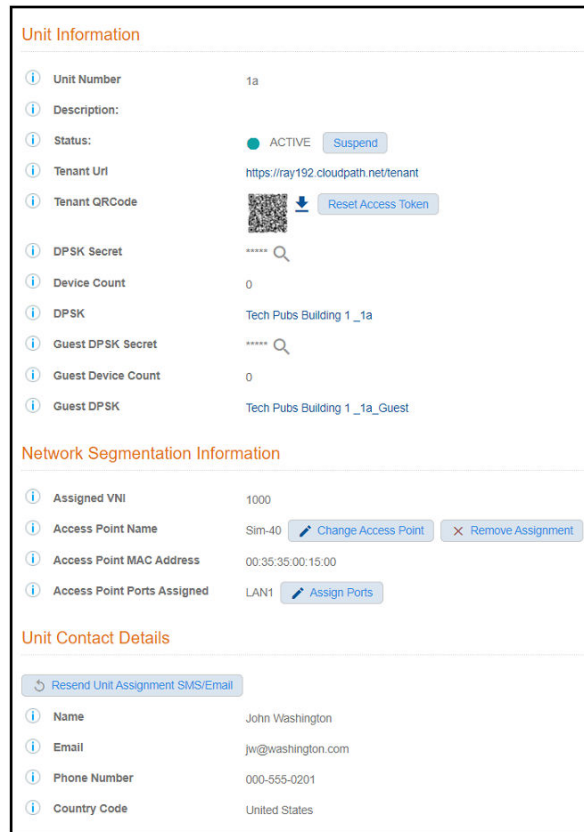
1. Make sure that the tenant's unit still exists in the Cloudpath UI property configuration (for illustrative purposes, the tenant is named John Washington and lives in unit 1a):
 - a. In the Cloudpath UI, go to **Managed Access > Network Segmentation**.
 - b. Click the wrench icon for the network segmentation group in which the unit belongs.
 - c. Under "Assigned Properties," click on the name of the property in which the unit belongs.
 - d. On the ensuing screen, click the **Units** tab to display all units that belong to this property, as shown in the screen below:

FIGURE 61 Units Tab View of Property in Network Segmentation Group

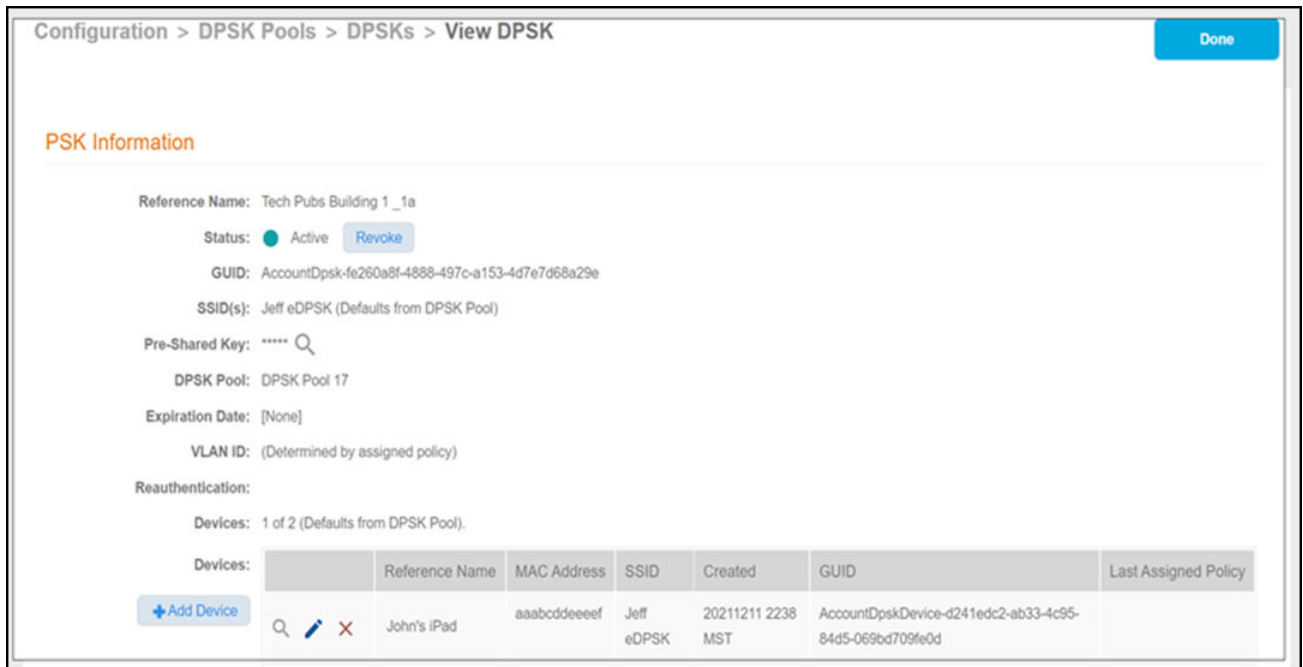


- e. The tenant in question and his unit are shown in the above screen, as expected.
2. Check the wireless configuration. Click on the magnifying glass for the unit to invoke the following screen:

FIGURE 62 Unit-Specific Information



- Check that the "Status" field is ACTIVE.
- Click the "DPSK Secret" magnifying glass to view the secret, then confirm with the tenant that the proper secret was entered. You could also change the secret or resend it by clicking the **Resend Unit Assignment SMS/Email** button in the Unit Contact Details section of the screen.
- Make sure there is a VNI assigned to the unit (Network Segmentation Information section of the screen).
- Click on the link of the currently assigned DPSK (**Tech Pubs Building 1_1a** in the screen example above). This invokes the PSK Information screen:



In the PSK information, you can check to see if any devices have connected to the network. In the example above, the device called "John's iPad" has successfully connected.

3. Check the wired configuration. Return to the unit-specific information screen for unit 1a and scroll down to the Network Segmentation Information area.
 - a. Check that the correct AP has been assigned to the unit.
 - b. Make sure that the correct ethernet port(s) are being used in the unit. (Verify that the Cloudpath and vSmartZone systems that compose the network segmentation group have the same ethernet port(s) activated.)
4. Check RADIUS logs and AUTH Logs. In the Cloudpath UI, go to **Configuration > RADIUS Server > Status** tab, scroll down to the RADIUS Logs section, and set the Log Level to **Debug**. When you check the log files, check for items such as the following:
 - Any policies that might be assigned to the eDPSK pool being used by the property that might not be allowing access to the user/unit in question.
 - VNI information
 - PSK information
5. If none of the preceding steps uncover the connection issue, the next steps would be for the vSmartZone administrator to perform troubleshooting steps on the vSmartZone controller that is being used in this network segmentation group.



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350 West Java Dr., Sunnyvale, CA 94089 USA
<https://www.commscope.com>