



# Bluesocket vWLAN

## Using APIs with vWLAN

Configuration Guide

6ABSCG0001-29G

*April 2021*



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# 1. Overview

This configuration guide describes the use of an application programming interface (API) with ADTRAN's Bluesocket virtual wireless local area network (vWLAN). The API can be used to create custom applications that can configure, manage, and monitor vWLAN and Bluesocket access points (BSAPs). This guide includes an overview of the API, parameters for use of the API, and sample API call configurations.

## vWLAN API Overview

The vWLAN API is a web-based service used to configure, manage, and monitor operations of the vWLAN and any configured BSAPs. The vWLAN API is used for management of the vWLAN system and integration of various components that make up the system, by providing an interface to create custom applications for system management. The vWLAN API provides a set of remote procedure call (RPC) functions that can be used between ADTRAN and third-party products to manage and configure those products.

The vWLAN API is a resource-based Representational State Transfer (REST)-ful API that uses the secure Hypertext Transfer Protocol (HTTPS). API requests are executed by sending HTTP requests to Uniform Resource Locators (URLs). The API is always enabled on the vWLAN system, but access to specific resources, or to specific operations on those resources, can be restricted through the granular administrator access functionality described below. HTTPS is used for API calls to prevent malevolent attackers from snooping the traffic. All API calls are authenticated using the HTTP basic authentication access scheme as summarized in RFC 2617.

The vWLAN API supports hypertext markup language (HTML), extensible markup language (XML), and JavaScript Object Notation (JSON) response formats. The response type is determined by the parameters in the HTTP accept header of the request. For example, to specify HTML as the response type, **text/html** is placed in the header, to specify XML as the response type, **application/xml** is placed in the header, and to specify JSON as the response type, **application/json** is placed in the header.

API requests use the HTTP verbs GET, POST, PUT, and DELETE to perform actions on the specified vWLAN resource. An HTTP GET is used to read resources, a POST is used to create resources, a PUT is used to update resources, and a DELETE is used to delete resources. These operations are performed on URLs composed of the vWLAN IP address, port number, Universal Resource Identifier (URI) for the resource on which the operation will take place, and a query parameter identifying the name of the domain in which to perform the operation. Care must be taken to URL encode all components of the URL as described in RFC 1738 if the URL contains characters outside of the US\_ASCII character set or any reserved characters. Resources include components of the vWLAN system, such as domains, roles, access points (APs), and service set identifiers (SSIDs). For example, to retrieve a list of alarms for the **Building 1** domain on the **172.20.29.100** vWLAN server, an HTTP GET request should be sent to the following URL:

**https://172.20.29.100:3000/alarms?active\_domain\_name=Building+1**. To update an AP in the **Building 2** domain, for example, an HTTP PUT request is sent to the following URL:

**https://172.20.29.100:3000/accesspoints/1?active\_domain\_name=Building+2** (the + sign is a result of encoding the space).

When creating an API request, you must use the correct HTTP verb, URL, and also have the correct permissions. [Table 1 on page 6](#) outlines the type of permissions, HTTP verb, and URL required for specific operations. In this table, all requests are for the vWLAN alarm resource. Refer to the [vWLAN Administrator Guide](#) for more information about configuring administrator permissions in vWLAN (available online at <https://supportforums.adtran.com>)

**Table 1. Operations, HTTP Verb, URL, and Permissions for API Calls**

Operation	HTTP Verb	URL (for alarm resource)	User Permission Required
Create	POST	/alarms	Create
Update	PUT	/alarms/ID	Update
Show	GET	/alarms/ID	Read
Destroy	DELETE	/alarms/ID	Destroy
Index	GET	/alarms	Read
Custom Action	PUT or POST or DELETE	/alarms/delete_all	Update, Create, or Destroy, depending on HTTP verb

## API Call Parameters

For correct API functionality, additional parameters must be added to the HTTP header of the API request. These parameters can include the name of the domain in which the operation is performed, the parameters needed to create a new resource, or the parameters needed to update an existing resource. Keep in mind the following when creating vWLAN API calls:

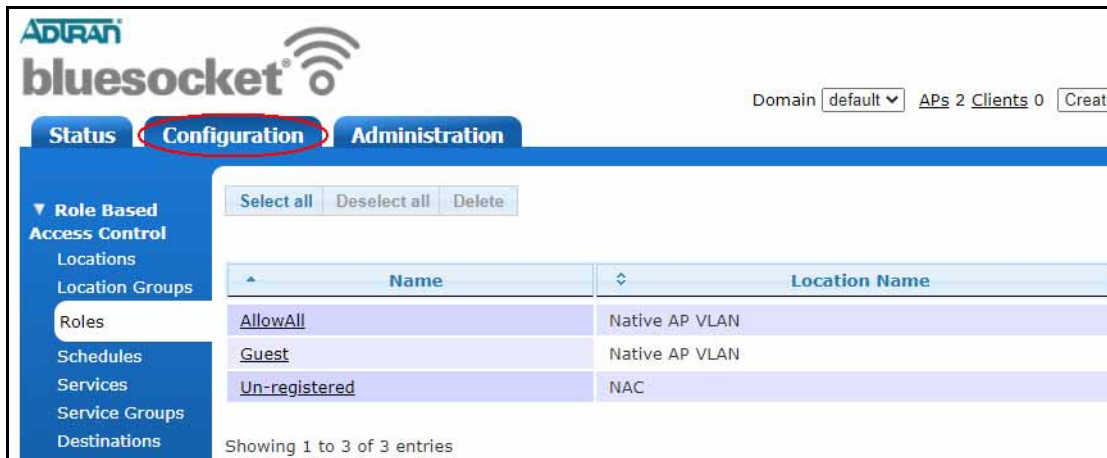
- When making an API call that is for a specific domain (and not the vWLAN platform), the **active\_domain\_name** or **active\_domain\_id** parameter must ALWAYS be included in the request. For a platform-level API call, do not include this parameter.
- If you are using HTML in the request, the parameters must be correctly encoded into an HTML form when doing a POST or PUT action. The HTML form can use an encoding type of either **application/x-www-form-urlencoded** or **multipart/form-data**. The **active\_domain\_name** parameter must be one of the encoded parameters. The **content\_type** in the request header must be specified as **text/html**.
- If you are using XML in the request, the parameters have to be correctly encoded into the XML document when doing a POST or PUT action. In addition, the **active\_domain\_name** has to be specified as a query parameter and URL encoded (in case it has non-alphanumeric URL characters in it). Lastly, the **content\_type** in the request header must be specified as **application/xml**.
- If you are using JSON in the request, the parameters have to be correctly encoded into the JSON body when executing a POST or PUT request. In this case, the **active\_domain\_name** parameter can either be specified as a query parameter or as part of the JSON body. The **content\_type** in the request header must be specified as **application/json**.
- The create and index API actions do not require an ID. A successful create action returns XML or JSON responses that contain all the parameters and the ID of the resource, and a successful index action returns the IDs of all the resources. Update, show, and destroy actions do require that the ID of the resource are included in the API request.

## Viewing JSON or XML Parameters in the vWLAN GUI

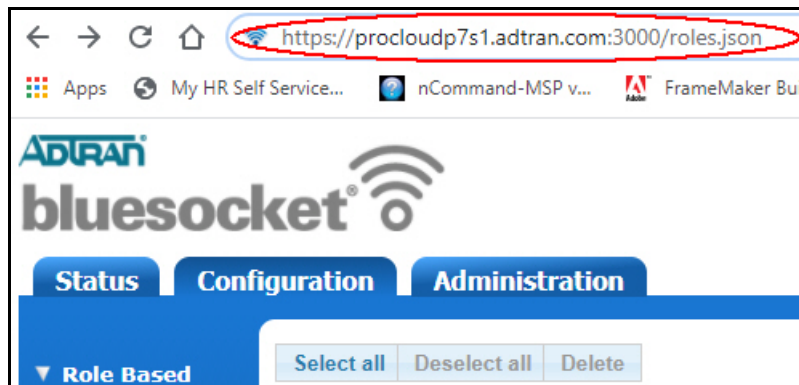
You can optionally view the JSON or XML parameters and values used by vWLAN by appending the **.json** or **.xml** extensions to the URL of the vWLAN GUI web page. This feature can be helpful in determining which JSON or XML parameters to use for API calls and configurations.

To view JSON or XML parameters via a browser using the vWLAN GUI, connect to the vWLAN instance and follow these steps:

1. In the vWLAN GUI, navigate to any configuration page (for example, **Configuration > Roles**).



2. In the URL address of the page, append the **.json** extension to the URL to view JSON parameters and values, or append the **.xml** extension to the URL to view XML parameters and values and select **Enter**.



3. The JSON or XML parameters and values used by the page are displayed.

```
[{"role":{"allow_client_to_client":false,"cos_priority_in":0,"cos_priority_in_override":0,"cos_priority_out":0,"cos_priority_out_override":0,"created_at":"2016-04-27T18:42:25Z","id":2,"locationable_id":0,"locationable_type":"Location","machine_auth_enabled":0,"mdm_id":0,"memory_interval":0,"name":"Guest","qos_per_role":false,"qos_rate_in":1,"qos_rate_in_qnt":1,"qos_rate_out":1,"qos_rate_out_qnt":1,"redirect":null,"schedulable_id":null,"schedulable_type":null,"thank_you":null,"unregistered_role":0,"updated_at":"2016-04-27T18:42:25Z","firewall_rules":[{"created_at":"2016-04-27T18:42:25Z","destinationable_id":1,"destinationable_type":"Destination","direction":1,"id":1,"permit":0,"position":1,"role_id":2,"serviceable_id":2,"serviceable_type":"Service","updated_at":"2016-04-27T18:42:25Z"},{"created_at":"2016-04-27T18:42:25Z","destinationable_id":1,"destinationable_type":"Destination","direction":1,"id":2,"permit":0,"position":2,"role_id":2,"serviceable_id":23,"serviceable_type":"Service","updated_at":"2016-04-27T18:42:25Z"},{"created_at":"2016-04-27T18:42:25Z","destinationable_id":1,"destinationable_type":"Destination","direction":0,"id":3,"permit":0,"position":3,"role_id":2,"serviceable_id":24,"serviceable_type":"Service","updated_at":"2016-04-27T18:42:25Z"},{"created_at":"2016-04-27T18:42:25Z","destinationable_id":1,"destinationable_type":"Group","direction":2,"id":4,"permit":1,"position":4,"role_id":2,"serviceable_id":1,"serviceable_type":"Service","updated_at":"2016-04-27T18:42:25Z"},{"created_at":"2016-04-27T18:42:25Z","destinationable_id":1,"destinationable_type":"Destination","direction":1,"id":5,"permit":0,"position":5,"role_id":2,"serviceable_id":3,"serviceable_type":"Service","updated_at":"2016-04-27T18:42:25Z"},{"created_at":"2016-04-27T18:42:25Z","destinationable_id":1,"destinationable_type":"Destination","direction":1,"id":6,"permit":0,"position":6,"role_id":2,"serviceable_id":4,"serviceable_type":"Service","updated_at":"2016-04-27T18:42:25Z"}]},{"role":{"allow_client_to_client":false,"cos_priority_in":0,"cos_priority_in_override":0,"cos_priority_out":0,"cos_priority_out_override":0,"created_at":"2016-04-27T18:42:25Z","id":0,"locationable_id":1,"locationable_type":"Location","machine_auth_enabled":0,"mdm_id":0,"memory_interval":0,"name":"Authenticate","qos_per_role":false,"qos_rate_in":0,"qos_rate_in_qnt":0,"qos_rate_out":0,"qos_rate_out_qnt":0,"redirect":null,"schedulable_id":null,"schedulable_type":null,"thank_you":null,"unregistered_role":0,"updated_at":"2016-04-27T18:42:25Z","firewall_rules":[]}},{"role":
```



#### NOTE

*When viewing JSON information via the web browser, it can be helpful to download a JSON viewing or formatting extension.*

For example, the following image displays the same JSON information as shown in the previous image except formatting has been applied by a browser extension.



```

1  [
2  {
3    "role": {
4      "allow_client_to_client": false,
5      "cos_priority_in": 0,
6      "cos_priority_in_override": 0,
7      "cos_priority_out": 0,
8      "cos_priority_out_override": 0,
9      "created_at": "2016-04-27T18:42:25Z",
10     "id": 2,
11     "locationable_id": 0,
12     "locationable_type": "Location",
13     "machine_auth_enabled": 0,
14     "mdm_id": 0,
15     "memory_interval": 0,
16     "name": "Guest",
17     "qos_per_role": false,
18     "qos_rate_in": 1,
19     "qos_rate_in_qnt": 1,
20     "qos_rate_out": 1,
21     "qos_rate_out_qnt": 1,
22     "redirect": null,
23     "schedulable_id": null,
24     "schedulable_type": null,
25     "thank_you": null,
26     "unregistered_role": 0,
27     "updated_at": "2016-04-27T18:42:25Z",
28   }
29 }

```

- To return to the vWLAN configuration page, remove the `.json` or `.xml` extension from the URL and select **Enter**.

## 2. Hardware and Software Requirements and Limitations

- The vWLAN API described in this document is for vWLAN systems running vWLAN firmware 2.2 or later.
- In vWLAN firmware release 2.5, the Active User API was expanded to include the AP status ID.
- In vWLAN firmware release 2.9, the Active User Status API was expanded to include the **search\_client** parameter. Searches can find clients based on IP or Medium Access Control (MAC) address.
- This guide assumes that you already have a basic understanding of the vWLAN system and of API functionality in general. For your convenience, detailed vWLAN API parameters are included at the end of this document (refer to [Detailed vWLAN API Parameters on page 20](#)). For more information about configuring vWLAN, refer to the [vWLAN Administrator Guide](#), available online at <https://supportforums.adtran.com>.
- Because the vWLAN API uses HTTP verbs for its functionality, standard HTTP error codes apply.

## 3. Sample vWLAN API Call

This sample call uses the Hypertext Transfer Protocol (HTTP) programming tool cURL to create an internal user with a user name of **tguser**, a password of **tgpass**, a role of **Guest**, and also specifies that only one user is allowed under this login and that the user never expires. The API call is sent to the vWLAN API server at **10.180.0.50**, and requests that the API response is given in XML.

```

curl -i -H "Accept:application/xml" -H "Content-Type:application/xml" -X POST -k -u
root@adtran.com:blueblue
https://10.180.0.50:3000/internalusers?active_domain_name=default -d
"<internaluser><name>"tguser"</name><password>"tgpass"
</password><password_confirmation>"tgpass"</password_confirmation><role_id>2
</role_id><max_num_login>1</max_num_login><never_expire>1</never_expire><enabled>1
</enabled></internaluser>"

```



The same call using JSON appears as follows:

```
curl -i -H "Accept:application/xml" -H "content-Type:application/json" -X POST -k -u
root@adtran.com:blueblue https://10.180.0.50:3000/internalusers-d
{"active_domain_name":"default","internaluser":{"name":"tguser","password":"\
"tgpas","password_confirmation":"tgpas","role_id":2,"max_num_login":1,\
"never_expire":1,"enabled":1}}
```

A possible response, in XML as requested and with the user ID of 1, might appear as follows:

```
<internaluser>
  <accounting-server-id type="integer" nil="true">
  <administrator-id type="integer" nil="true"/>
  <attempts-exceeded type="boolean">false</attempts-exceeded>
  <cleanup-time type="integer" nil="true"/>
  <created-at type="datetime">2014-07-16T15:01:47Z</created-at>
  <enabled type="boolean">true</enabled>
  <expiry-dt nil="true"/>
  <expiry-time type="integer" nil="true"/>
  <first-login-time type="datetime" nil="true"/>
  <guest-receipt-id type="integer" nil="true"/>
  <id type="integer">1</id>
  <login-attempts type="integer" nil="true"/>
  <login-attempts-orig type="integer" nil="true"/>
  <login-interval type="integer" nil="true"/>
  <login-reset nil="true"/>
  <max-num-login type="integer">1</max-num-login>
  <name>tguser</name>
  <never-expire type="boolean">true</never-expire>
  <password>tgpas</password>
  <password-expiration type="datetime" nil="true"/>
  <printable-password type="boolean">false</printable-password>
  <role-id type="integer">2</role-id>
  <updated-at type="datetime">2014-07-16T15:01:47Z</updated-at>
</internaluser>
```

## 4. Example Configurations

### Using the API to Create a New Domain

The following is an example configuration using the API to create a new vWLAN domain and populate the necessary information for the new vWLAN tenant on the domain. The configuration example follows these steps:

1. Create the domain and associate administrators with the domain. This action is performed at the vWLAN platform level, not at the domain level. Therefore, the API calls for this step are platform-specific (not domain-specific), and the administrator creating the calls must have Platform Read/Write permissions to both the domain and administrator resources.
2. Once the domain and administrator are configured, the new administrator can be used for the rest of the domain-specific configuration. Although there are many resources that can be used and configured, the minimum configuration to use captive portal requires configuring the captive portal login page, an SSID that uses the login page, and associating the SSID with an AP template.

Once this configuration is complete, the AP will broadcast the new SSID and redirect users to the specified self-service portal. The API requests and responses for captive portal configuration are included in the following sections.

## Step 1: Create the Domain and Associate Administrators with the Domain

### Creating the Domain

The following API request creates **Domain1**:

```
curl -i -H "Accept:application/xml" -H "Content-Type:application/xml" -X POST
-k -u
root@adtran.com:blueblue https://10.180.0.50:3000/platform/domains -d
"<domain><name>Domain1</name></domain>"
```

The following XML response shows the domain has been created, and includes the domain ID:

```
<domain>
  <created-at type="datetime">2013-01-26T18:44:39Z</created-at>
  <id type="integer">130</id>
  <name>Domain1</name>
  <updated-at type="datetime">2013-01-26T18:44:39Z</updated-at>
</domain>
```

### Creating the Administrator

In this example, a new administrator is created with an email address of **domain1@domain1.com**, and a password of **blueblue**. The password has to be confirmed in the request. The timezone is configured with any string value from the administrator interface. The **administrator\_scope** parameter is a sub-model that maps a domain to an administrator role. In this example, the **admin\_role\_id** of **1** indicates the administrator has full permissions to the domain (this value can be found with a GET request for **admin\_roles**, or by looking at the graphical user interface (GUI)). The **domain\_id** for this administrator matches the domain ID specified in the domain creation call (above). Multiple rules can be given in the list, if the administrator should have access to multiple domains.

The following API request creates the new administrator for Domain1:

```
curl -i -H "Accept:application/xml" -H "content-Type:application/xml" -X POST
-k -u
root@adtran.com:blueblue
https://10.180.0.50:3000/platform/administrators -d
"<administrator><email>domain1@domain1.com</email><password>blueblue
</password><password_confirmation>blueblue</password_confirmation>
<timezone>1</timezone><administrator_scopes_attributes>
<administrator_scopes_attribute><domain_id>14</domain_id><admin_role_id>
1</admin_role_id></administrator_scopes_attribute>
</administrator_scopes_attributes></administrator>"
```

The following XML response contains the ID field of the created administrator. This ID can then be used to update the administrator at a later time (for example, if a new domain was created to which this administrator required access).

```
<administrator>
  <active-domain-id type="integer" nil="true"/>
  <created-at type="datetime">2013-03-06T19:51:47Z</created-at>
  <email>domain1@domain1.com</email>
  <id type="integer">19</id>
  <provider type="integer">0</provider>
  <root type="boolean">>false</root>
  <timezone>Eastern Time (US & Canada)</timezone>
  <uid nil=:true:/>
  <updated-at type="datetime">2013-03-06T19:51:47Z</updated-at>
</administrator>
```

## Step 2: Configure the Domain

Once the domain and administrator are configured, at a minimum you must configure the following characteristics of the domain for captive portal operation:

- Configure (or update) the captive portal login page(s)
- Configure SSID(s) to use the login page(s)
- Add the SSID(s) to the default AP template. For captive portal authentication, you can configure the custom login page per AP template or per SSID. The SSID will take precedence if configured; otherwise, the value comes from the AP template.

## Configuring/Updating the Captive Portal Login Page

In the following API request example, the default login page (with an ID of 1) is updated to point to an external single sign-on server.

```
curl -i -H "Accept:application/xml" -H "content-Type:application/xml" -X PUT
-k -u
root@adtran.com:blueblue
https://10.180.0.50:3000/login_forms/1?active_domain_name=default -d
"<login_form><redirection_enabled>1</redirection_enabled>
<redirection_externaldestination>https://lab.customer.net/index.pl?behavi
or=Terms%38device_username=blue@adtran.com</redirection_externaldestinati
on></login_form>"
```



### NOTE

*This example, and any PUT request, returns a 204 No Content response.*

## Creating an SSID

In the following API request example, a new SSID is created using the same login form (ID 1) as the previous example.

```
curl -i -H "Accept:application/xml" -H "Content-Type:application/xml" -X POST
-k -u
```

```

root@adtran.com:blueblue
https://10.180.0.50:3000/ssids?active_domain_name=default -d
"<ssid><name>Customer-SSID</name><broadcast>1</broadcast>
<ssid_broadcast_to_unicast>0</ssid_broadcast_to_unicast><authentication>
0</authentication><login_form_id>1</login_form_id><role_id>1</role_id>
</ssid>"

```

The following XML response shows that the SSID has been created and displays the SSID ID (2):

```

<ssid>
  <accounting-server-id type="integer" nil=:true:><accounting-server-id>
  <authentication type="integer">0</authentication>
  <broadcast type="integer">1</broadcast>
  <cipher type="integer">0</cipher>
  <created-at type="datetime">2013-01-28T00:37:21Z</created-at>
  <default-wep-key type="integer" nil="true"></default-wep-key>
  <id type="integer">2</id>
  <login-form-id type="integer">1<login-form-id>
  <name>Customer-SSID</name>
  <preshared-key nil="true"></preshared-key>
  <radius1x-auth-server-id type="integer"
    nil="true"></radius1x-auth-server-id>
  <role-id type="integer">1</role-id>
  <ssid-broadcast-to-unicast type="integer">0</ssid-broadcast-to-unicast>
  <standby-mode type="integer">0</standby-mode>
  <standby-vlan-tag type="integer">0</standby-vlan-tag>
  <wep-key128 nil="true"></wep-key128>
  <wep-key64-0 nil="true"></wep-key64-0>
  <wep-key64-1 nil="true"></wep-key64-1>
  <wep-key64-2 nil="true"></wep-key64-2>
  <wep-key64-3 nil="true"></wep-key64-3>
  <wep-key-length type="integer" nil="true"></wep-key-length>
</ssid>

```

### Associating the SSID to the Default AP Template

In the following example API request, the SSID with the ID of 2 is associated with the default AP template (with an ID of 1):

```

curl -i -H "Accept:application/xml" -H "Content-Type:application/xml" -X PUT
-k -u
root@adtran.com:blueblue
https://10.180.0.50:3000/aptemplates/1?active_domain_name=default -d
"<aptemplate><ssids_bg_ids>2</ssids_bg_ids><ssids_a_ids>2</ssids_a_ids></
aptemplate>"

```

When the AP is connected, it broadcasts this SSID and redirects users to the specified portal.

### Using the API with Nested Resources

Some API resources include nested attributes, or resources that are contained within another resource. The following example is a sample call with nested attributes in which XML is used to create an administrator role

named **Admin1** with read permission for the **ap\_licenses** resource and read and write permissions for the **alarms** resource.

```
curl -i -H "Accept:application/xml" -H "Content-Type:application/xml" -X POST
-k -u
  root@adtran.com:blueblue
  https://10.180.0.50:3000/platform/admin_roles?active_domain_name=default
  -d
  "<admin_role><name>Admin1</name><permissions><ap_licenses><read>1</read>
  <ap_licenses><alarms><read>1</read><create>1</create></alarms>
  </permissions></admin_role>"
```

The following is a sample XML response:

```
<admin-role>
  <created-at type="datetime">2014-08-08T09:55:04Z</created-at>
  <id type="integer">28</id>
  <name>Admin1</name>
  <resource-id type="integer" nil="true"/>
  <resource-type nil="true"/>
  <updated-at type="datetime">2014-08-08T09:55:04Z</updated-at>
</admin-role>
```

In the second example below, XML is used to create an administrator in Hawaii with the email **aloha@hawaii.com** and the password **blueblue** using the newly created administrator role (**28**) in the default domain (**1**) and an existing role (**27**) in domain **2**:

```
curl -i -H "Accept:application/xml" -H "Content-Type:application/xml" -X POST
-k -u
  root@adtran.com:blueblue
  https://10.180.0.50:3000/platform/administrators?active_domain_name=default
  -d "<administrator><email>aloha@hawaii.com</email><password>blueblue
  </password><password_confirmation>blueblue</password_confirmation><timezo
  ne>Hawaii</timezone><administrator_scopes_attributes>
  <administrator_scopes_attribute><domain_id>1</domain_id><admin_role_id>28
  </admin_role_id></administrator_scopes_attribute>
  <administrator_scopes_attribute><domain_id>2</domain_id><admin_role_id>27
  </admin_role_id></administrator_scopes_attribute>
  </administrator_scopes_attributes></administrator>"
```

The following is a sample XML response:

```
<administrator>
  <active-domain-id type="integer" nil="true"/>
  <created-at type="datetime">2014-08-08T10:13:18Z</created-at>
  <email>aloha@hawaii.com</email>
  <id type="integer">15</id>
  <provider type="integer">0</provider>
  <root type="boolean">>false</root>
  <timezone>Hawaii</timezone>
  <uid nil="true"/>
  <updated-at type="datetime">2014-08-08T10:13:18Z</updated-at>
</administrator>
```

## Using the API to Schedule Jobs

In the following example, a restart of the vWLAN SNMP daemon is scheduled every 2 weeks, occurring on Monday and Friday at 10:30 AM CST:

```
curl -i -H "Accept:application/xml" -H "Content-Type:application/json" -X
POST -k --user
root@adtran.com:blueblue
http://10.17.130.22:3000/platform/vwlan_jobs -d
{"vwlan_job":{"name":"Test_API_Weekly","action":"56","reoccur
ring":2,"frequency":2,"job_type":true,
"weekly_config":"1,5","scheduled_hour":"10","scheduled_minute":
"30","scheduled_meridiem":"AM","timezone":"Central Time (US &
Canada)"}"}
```

## Using the API to Fetch and Flush Probe-Request Data Frames

When **Scan for Adjacent Wireless Clients** is enabled on the AP Template configuration page in the vWLAN GUI, the collected information can be fetched or flushed using API curl commands.



### NOTE

*This feature is currently only supported on the BSAP 2000 series.*

### Offset

An offset attribute can be included in the API calls to scale the number of entries in the response. Any valid offset number can be passed through the API call. Up to 1000 entries at a time are fetched or flushed from the offset benchmark. When specifying an offset, any number that is less than or equal to the offset number will not be displayed. Consider an example where the row count is 20,000. If the specified offset is 2300, then the fetched data range is between 2301 and 3,300.

### All Entries

In the following API request examples, all entries are fetched or flushed-out:

#### Fetch All Entries and Compute Row Count

```
curl -i -H "Accept: application/json" -H "Content-Type: application/json" -X
GET -k -u
root@adtran.com:blueblue
'https://10.49.203.105:3000/probe_data_frames/fetch?active_domain_id=1&rou
tine=all_entries&compute=row_count'
```

#### Fetch All Entries Associated with the Specified Offset

```
curl -i -H "Accept: application/json" -H "Content-Type: application/json" -X
GET -k -u
root@adtran.com:blueblue
'https://10.49.203.105:3000/probe_data_frames/fetch?active_domain_id=1&rou
tine=all_entries&offset=0'
```

#### Flush All Entries

```
curl -i -H "Accept: application/json" -H "Content-Type: application/json" -X
DELETE -k -u
  root@adtran.com:blueblue
  'https://10.49.203.105:3000/probe_data_frames/flush?active_domain_id=1&route=
  ine=all_entries'
```

### Flush All Entries Associated with the Specified Offset

```
curl -i -H "Accept: application/json" -H "Content-Type: application/json" -X
DELETE -k -u
  root@adtran.com:blueblue
  'https://10.49.203.105:3000/probe_data_frames/flush?active_domain_id=1&route=
  ine=all_entries&offset=0'
```

## All Entries Except One Day Old

In the following API request examples, all entries except those from the last 24 hours are fetched or flushed-out:

### Fetch All Entries Except One Day Old and Compute Row Count

```
curl -i -H "Accept: application/json" -H "Content-Type: application/json" -X
GET -k -u
  root@adtran.com:blueblue
  'https://10.49.203.105:3000/probe_data_frames/fetch?active_domain_id=1&route=
  ine=all_except_oneday_old&compute=row_count'
```

### Fetch All Entries Except One Day Old Associated with the Specified Offset

```
curl -i -H "Accept: application/json" -H "Content-Type: application/json" -X
GET -k -u
  root@adtran.com:blueblue
  'https://10.49.203.105:3000/probe_data_frames/fetch?active_domain_id=1&route=
  ine=all_except_oneday_old&offset=0'
```

### Flush All Entries Except One Day Old

```
curl -i -H "Accept: application/json" -H "Content-Type: application/json" -X
DELETE -k -u
  root@adtran.com:blueblue
  'https://10.49.203.105:3000/probe_data_frames/flush?active_domain_id=1&route=
  ine=all_except_oneday_old'
```

### Flush All Entries Except One Day Old Associated with the Specified Offset

```
curl -i -H "Accept: application/json" -H "Content-Type: application/json" -X
DELETE -k -u
  root@adtran.com:blueblue
  'https://10.49.203.105:3000/probe_data_frames/flush?active_domain_id=1&route=
  ine=all_except_oneday_old&offset=0'
```

## Entries that are One Day Old

In the following API request examples, only entries from the last 24 hours are fetched or flushed-out:

### Fetch All Entries Except One Day Old and Compute Row Count

```
curl -i -H "Accept: application/json" -H "Content-Type: application/json" -X
GET -k -u
  root@adtran.com:blueblue
```

```
'https://10.49.203.105:3000/probe_data_frames/fetch?active_domain_id=1&route=oneday_old&compute=row_count'
```

#### Fetch All Entries Except One Day Old Associated with the Specified Offset

```
curl -i -H "Accept: application/json" -H "Content-Type: application/json" -X
GET -k -u
root@adtran.com:blueblue
'https://10.49.203.105:3000/probe_data_frames/fetch?active_domain_id=1&route=oneday_old&&offset=0'
```

#### Flush All Entries Except One Day Old

```
curl -i -H "Accept: application/json" -H "Content-Type: application/json" -X
DELETE -k -u
root@adtran.com:blueblue
'https://10.49.203.105:3000/probe_data_frames/flush?active_domain_id=1&route=oneday_old'
```

#### Flush All Entries Except One Day Old Associated with the Specified Offset

```
curl -i -H "Accept: application/json" -H "Content-Type: application/json" -X
DELETE -k -u
root@adtran.com:blueblue
'https://10.49.203.105:3000/probe_data_frames/flush?active_domain_id=1&route=oneday_old&offset=0'
```

### Entries Matching a Specific Sensor Mac Attribute

In the following API request examples, entries matching a specific `sensor_mac` attribute are fetched or flushed-out:

#### Fetch All Entries Matching the Specific Sensor Mac Attribute and Compute Row Count

```
curl -i -H "Accept: application/json" -H "Content-Type: application/json" -X
GET -k -u
root@adtran.com:blueblue
'https://10.49.203.105:3000/probe_data_frames/fetch?active_domain_id=1&sensor_mac=00:19:92:37:77:40&compute=row_count'
```

#### Fetch All Entries Matching the Specific Sensor Mac Attribute with the Specified Offset

```
curl -i -H "Accept: application/json" -H "Content-Type: application/json" -X
GET -k -u
root@adtran.com:blueblue
'https://10.49.203.105:3000/probe_data_frames/fetch?active_domain_id=1&sensor_mac=00:19:92:37:77:40&offset=0'
```

#### Flush All Entries Matching the Specific Sensor Mac Attribute

```
curl -i -H "Accept: application/json" -H "Content-Type: application/json" -X
DELETE -k -u
root@adtran.com:blueblue
'https://10.49.203.105:3000/probe_data_frames/flush?active_domain_id=1&sensor_mac=00:19:92:37:77:40'
```

#### Flush All Entries Matching the Specific Sensor Mac Attribute Associated with the Specified Offset

```
curl -i -H "Accept: application/json" -H "Content-Type: application/json" -X
DELETE -k -u
root@adtran.com:blueblue
'https://10.49.203.105:3000/probe_data_frames/flush?active_domain_id=1&sensor_mac=00:19:92:37:77:40&offset=0'
```



```
or_mac=00:19:92:37:77:40&offset=0'
```

## Entries Matching a Specific Station Mac Attribute

In the following API request examples, entries matching a specific `station_mac` attribute are fetched or flushed-out:

### Fetch All Entries Matching the Specific Station Mac Attribute and Compute Row Count

```
curl -i -H "Accept: application/json" -H "Content-Type: application/json" -X
GET -k -u
root@adtran.com:blueblue
'https://10.49.203.105:3000/probe_data_frames/fetch?active_domain_id=1&stat
ion_mac=17:dc:2d:21:16:c2&compute=row_count'
```

### Fetch All Entries Matching the Specific Station Mac Attribute with the Specified Offset

```
curl -i -H "Accept: application/json" -H "Content-Type: application/json" -X
GET -k -u
root@adtran.com:blueblue
'https://10.49.203.105:3000/probe_data_frames/fetch?active_domain_id=1&stat
ion_mac=17:dc:2d:21:16:c2&offset=0'
```

### Flush All Entries Matching the Specific Station Mac Attribute

```
curl -i -H "Accept: application/json" -H "Content-Type: application/json" -X
DELETE -k -u
root@adtran.com:blueblue
'https://10.49.203.105:3000/probe_data_frames/flush?active_domain_id=1&stat
ion_mac=17:dc:2d:21:16:c2'
```

### Flush All Entries Matching the Specific Station Mac Attribute Associated with the Specified Offset

```
curl -i -H "Accept: application/json" -H "Content-Type: application/json" -X
DELETE -k -u
root@adtran.com:blueblue
'https://10.49.203.105:3000/probe_data_frames/flush?active_domain_id=1&stat
ion_mac=17:dc:2d:21:16:c2&offset=0'
```

## Using the API to Fetch Actively Connected Clients to ADTRAN APs Within the vWLAN Controller

The following API request example fetches clients actively connected to ADTRAN APs within the vWLAN controller:

```
curl -i -H "Accept: application/json" -H "Content-Type: application/json" -X
GET -k -u
root@adtran.com:blueblue
'https://10.49.203.105:3000/probe_data_frames/connected_devices?active_doma
in_id=1'
```

**NOTE**

The IP is any valid IP address of a vWLAN Controller UI (in the example above it is 10.49.203.105). In this example, the Domain ID is any valid Domain ID visible at <https://10.49.203.105:3000/platform/domains> page. After selecting a specific domain-name hyperlink,, the Domain ID is visible in the hyperlink. For example:

- If the url is <https://10.49.203.105:3000/platform/domains/1/edit>, the corresponding Domain ID is 1
- If the url is <https://10.49.203.105:3000/platform/domains/6/edit>, the corresponding Domain-ID is 6

## 5. vWLAN Resources Available for API Configuration

There are specific resources that can be specified using the API when configuring the vWLAN. Resources are divided in vWLAN by their association with a domain or a platform. For domain resources, the **active\_domain\_name** parameter must be specified when making the API request. For resources that are platform-only resources, the resource can be directly addressed with the **/platform** parameter prepended to the URL, for example, **/platform/administrators**. For resources that apply to both a domain and a platform, a platform or domain resource address are included in the request. For example, a POST request used to generate a platform-level report is addressed as **/platform/reports**, but the **/reports** address is used for a specific domain report (specified by the **active\_domain\_name** parameter).

[Table 2](#) outlines the various vWLAN resources that can be configured using the API, and whether they apply only to a domain, to the platform, or to both. This table can be used when addressing specific API requests.

**Table 2. vWLAN API Resources**

Domain Only	Platform Only	Both Domain and Platform
access_groups	admin_auth_servers	ap_licenses
accesspoints	admin_roles	ap_licenses_upload
access_point_statuses	administrators	email_configurations
access_group_statuses	ap_firmwares	info_messages
accounting_servers	domains	notification_templates
active_user_statuses	network_interfaces	reports
aptemplates	root_settings	snmp_trap_configurations
auth_servers		syslog_configurations
available_ap_firmwares		
client_certificates		
destination_groups		
destinations		
domain_settings		
external_firmware_servers		
guest_receipts		

**Table 2. (Continued) vWLAN API Resources**

Domain Only	Platform Only	Both Domain and Platform
guest_users		
hotspot_accounts		
hotspot_plans		
internalusers		
languages		
location_groups		
locations		
location_statuses		
login_forms		
login_items		
macdevices		
maps		
roles		
service_groups		
services		
ssids		
storage_settings		
trusted_cas		
trusted_server_certificates		

## Detailed vWLAN API Parameters

[Table 3](#) outlines specific vWLAN resources and the parameters that can be read or written to each resource. The table includes the attribute and type for each resource.

**Table 3. vWLAN API Parameters by Resource**

Resource	Attribute	Type
<b>access_groups</b>	name	character varying (32)
	roaming_ssid	character varying (32)
	dhcp	integer
	vlan	character varying (255)
	role_id	integer
	login_form_id	integer
	accounting_server_id	integer
<b>access_group_statuses</b> (Read Only)	name	character varying (255)
	state	text
	ap_name	character varying (255)
	roaming_ssid	character varying (255)
	segment	text
	utv	text
<b>accesspoints</b>	name	character varying (255)
	wan_mac	character varying (255)
	serial_number	character varying (255)
	channel_bg	integer
	channel_a	integer
	txpower_bg	integer (0 to 10) 0: 100% 1: 50% 2: 32% 3: 20% 4: 13% 5: 8% 6: 6% 7: 4% 8: 2% 9: 1% 10: 0%

**Table 3. (Continued) vWLAN API Parameters by Resource**

Resource	Attribute	Type
	txpower_a	integer (0 to 10) 0: 100% 1: 50% 2: 32% 3: 20% 4: 13% 5: 8% 6: 6% 7: 4% 8: 2% 9: 1% 10: 0%
	country	integer
	aptemplate_id	integer
	location_id	integer
	x_coord	numeric (8, 4)
	y_coord	numeric (8, 4)
	map_id	integer
	ap_license_id	integer
	calibration_end_time	timestamp without time zone
	sys_location	character varying (255)
	is_indoor	integer (1 if true, 0 if false)
	reset_lan2_api	boolean
<b>access_point_job</b>	name	string (max of 32)
	action	integer 0: Apply config 1: Reboot AP 5: Background scan 6: Activate firmware 8: Accept DynamicRF suggestions
	job_type	boolean true: sceduled false: on-demand
	frequency	integer (1 to 4) 1: Daily 2: Weekly 3: Monthly 4: One-time

**Table 3. (Continued) vWLAN API Parameters by Resource**

Resource	Attribute	Type
	recurrence	integer (1 to 4) Repeat of frequency; for example, if frequency is daily, 1 is once a day, 2 is every two days, 3 is every three days, 4 is every four days. 1: Every time 2: Every two 3: Every three 4: Every fourth
	week_of_the_month	integer (1 to 5) Used only if frequency is <b>monthly</b> 1: First week 2: Second week 3: Third week 4: Fourth week 5: Last week
	day_of_the_week	integer (0 to 6) Used only if frequency is <b>monthly</b> 0: Sunday 1: Monday 2: Tuesday 3: Wednesday 4: Thursday 5: Friday 6: Saturday
	weekly_config	comma separated string of integers (0 to 6) Used only if frequency is <b>weekly</b> Example: Monday, Wednesday, and Friday is represented as "1,3,5" 0: Sunday 1: Monday 2: Tuesday 3: Wednesday 4: Thursday 5: Friday 6: Saturday
	scheduled_date	string (YYY-MM-DD) Used only when frequency is <b>one-time</b>
	scheduled_hour	string (HH) Used when frequency is <b>daily, weekly, or monthly</b>
	scheduled_minute	string (MM) Used when frequency is <b>daily, weekly, or monthly</b>

**Table 3. (Continued) vWLAN API Parameters by Resource**

Resource	Attribute	Type
	scheduled_meridiem	Must be <b>AM</b> or <b>PM</b> Used when when frequency is <b>daily, weekly, or monthly</b>
	callibration_duration	integer (15 to 1440) Used only if action is <b>background scan</b>
	accesspoint_selector	integer (0 to 6) Only values <b>0</b> and <b>4</b> are valid if job_type is <b>true</b> 0: All APs 1: All modified APs 2: All APs with errors 4: APs using templates 5: Selected APs 6: APs with pending firmware upgrades
	aptemplate_id	integer
	accept_drf_suggestion	boolean
<b>access_point_statuses</b> (Read only)	ap_id	integer
	serial_number	character varying (255)
	ap_name	character varying (255)
	name	character varying (255)
	ipaddr	character varying (255)
	sys_location	text
	configured_external_firmware_server	character varying (255)
	running_firmware	integer
	state	text
	error	character varying (255)
	message	character varying (255)
	channel	integer
	txpower	integer
	last calibration	character varying (255)
	locations	character varying (255)
	active users	integer
<b>accounting_servers</b>	name	character varying (255)
	enabled	boolean
	ipaddr	valid IPv4 address

**Table 3. (Continued) vWLAN API Parameters by Resource**

Resource	Attribute	Type
	port	integer
	shared_secret	character varying (255)
	shared_secret_confirmation	character varying (255). Must match shared_secret.
	timeout	integer
	retries	integer
	interim_enabled	boolean
	interim_interval	integer
<b>active_user_statuses</b> (Read Only)	state	character varying (255)
	name	character varying (255)
	macaddr	character varying (255)
	ap_name	character varying (255)
	role_name	character varying (255)
	ssid	character varying (255)
	start_time	timestamp without time zone
	login_time	timestamp without time zone
	ap_macaddr	character varying (255)
	ap_ipaddr	character varying (255)
	ap_name	character varying (255)
	bytes_in	integer
	bytes_out	integer
	untrusted_vlan	character varying (255)
	access_group_name	character varying (255)
	location_name	character varying (255)
	auth_type	string
	access_point_status_id	character varying (255)
	device_type	character varying (255)
	device_os	character varying (255)
	ownership	corporate-owned or other
	host_name	character varying (255)
	oui_vendor	character varying (255)
	search_client	valid IP (ipaddr) or MAC (macaddr) address



**Table 3. (Continued) vWLAN API Parameters by Resource**

Resource	Attribute	Type
<b>admin_auth_servers</b>	name	character varying (255)
	type	RadiusAdminAuthServer
	address	character varying (255)
	port	integer
	password	character varying (255)
	password_confirmation	character varying (255)
	timeout	integer
	retries	integer
	administrator_id	integer
	position_choice	integer (1, 2, or 3) 1: Highest 2: Lowest 3: Fixed
<b>admin_roles</b>	name	character varying (255)
	permissions	Permissions can contain multiple <b>Resource</b> subsets, each of which can also have multiple <b>permission</b> values. Refer to <a href="#">Using the API with Nested Resources on page 12</a> for more information.
		<b>Resource</b> is one of the following: "ap_licenses", "aptemplates", "ap_traffic_captures", "access_point_jobs", "access_point_statuses", "accesspoints", "accounting_servers", "active_user_statuses", "admin_tasks", "alarms", "available_ap_firmwares", "client_certificates", "dashboard_logos", "dashboard_tabs", "dashboard_widgets", "destination_groups", "destinations", "diagnostics", "domain_settings", "email_configurations", "auth_servers", "external_firmware_servers", "guest_receipts", "guest_users", "hotspot_accounts", "hotspot_plans", "info_messages", "internalusers", "languages", "location_groups", "location_statuses", "locations", "login_forms", "login_items", "logs", "macdevices", "maps", "notification_templates", "roles", "ssids", "sensor_alerts", "sensor_stations", "service_groups", "services", "snmp_trap_configurations", "syslog_configurations", "trusted_cas", "trusted_server_certificates", "access_group_statuses", "access_groups", "alert_types"
	Each <b>permission</b> value should either be 0 for disable or 1 for enable.	

**Table 3. (Continued) vWLAN API Parameters by Resource**

Resource	Attribute	Type
	type	character varying (255)
<b>administrators</b>	administrator_scope_attributes	Nested with multiple administrator_scopes_attribute subsets which contain domain_id and admin_role_id. Refer to <a href="#">Using the API with Nested Resources on page 12</a> .
	email	character varying (255)
	password	character varying (255)
	password_confirmation	character varying (255)
	active_domain_id (Read Only)	integer

**Table 3. (Continued) vWLAN API Parameters by Resource**

Resource	Attribute	Type
	timezone	Must be one of the following: International Date Line West Midway Island Hawaii Alaska Pacific Time (US & Canada) Arizona Mountain Time (US & Canada) Central America Central Time (US & Canada) Indiana (East) Eastern Time (US & Canada) Atlantic Time (Canada) Caracas Newfoundland Greenland Buenos Aires Mid-Atlantic Azores Cape Verde Is. Casablanca Dublin Rome West Central Africa Athens Harare Baghdad Kuwait Tehran Muscat Baku Kabul Ekaterinburg Islamabad Chennai Kathmandu Astana Almaty Rangoon Krasnoyarsk Bangkok Beijing Irkutsk Yakutsk Seoul Darwin Adelaide Brisbane Canberra Magadan Auckland Fiji Nuku'alofa
ap_firmwares	filename	character varying (255)

**Table 3. (Continued) vWLAN API Parameters by Resource**

Resource	Attribute	Type
	domain_ids	integer
	use_this_firmware	integer (0 to 2) 0: Keep the current AP template configuration 1: Apply this firmware to the default template only 2: Apply this firmware to all templates
<b>ap_licenses</b>	serial_number	character varying (255)
	domain_id	integer
<b>aptemplates</b>	name	character varying (32)
	access_group_ids	integer
	ssh_password	character varying (16)
	ssh_password_confirmation	character varying (16). Must match ssh_password.
	radio_mode_bg	integer (-1 through 2) -1: Disabled 0: AP Mode 1: Sensor Mode 2: AP/Sensor Mode
	dynamicrf_mode_bg	integer (0 through 2) 0: Disabled 1: Set Once and Hold 2: Continuous
	wireless_mode_bg	integer Must be one of the following: 2-802.11b 4-802.11g 12-802.11g/n 14-802.11b/g/n

**Table 3. (Continued) vWLAN API Parameters by Resource**

Resource	Attribute	Type
	min_tx_rate_bg	integer Must be one of the following: 0: No Minimum 1000: 1 Mbps 2000: 2 Mbps 5500: 5.5 Mbps 6000: 6 Mbps 9000: 9 Mbps 11000: 11 Mbps 12000: 12 Mbps 18000: 18 Mbps 24000: 24 Mbps 36000: 36 Mbps 48000: 48 Mbps 54000: 54 Mbps
	beacon_interval_bg	integer
	channel_width_bg	integer
	packet_aggregation_bg	boolean
	ap_load_bg	integer
	antenna_type_bg	integer
	fragmentation_threshold_bg	integer (between 1 and 255)
	rts_threshold_bg	integer (between 256 and 2346)
	dtim_bg	integer (between 1 and 255)
	ssid_bg_ids	integer
	radio_mode_a	integer (-1 through 4) -1: Disabled 0: AP Mode 1: Sensor Mode 2: AP/Sensor Mode 4: Mesh Mode
	dynamicrf_mode_a	integer (0 through 2) 0: Disabled 1: Set Once and Hold 2: Continuous
	wireless_mode_a	integer Must be one of the following: 1-802.11a 17-802.11a/n 49-802/11a/n/ac

**Table 3. (Continued) vWLAN API Parameters by Resource**

Resource	Attribute	Type
	min_tx_rate_a	integer Must be one of the following: 0: No Minimum 6000: 6 Mbps 9000: 9 Mbps 12000: 12 Mbps 18000: 18 Mbps 24000: 24 Mbps 36000: 36 Mbps 48000: 48 Mbps 54000: 54 Mbps
	beacon_interval_a	integer
	channel_width_a	integer
	packet_aggregation_a	boolean
	ap_load_bg	integer
	antenna_type_bg	integer
	fragmentation_threshold_bg	integer (between 1 and 255)
	rts_threshold_bg	integer (between 256 and 2346)
	dtim_bg	integer (between 1 and 255)
	ssid_bg_ids	integer
	radio_mode_a	integer (-1 through 4) -1: Disabled 0: AP Mode 1: Sensor Mode 2: AP/Sensor Mode 4: Mesh Mode
	dynamicrf_mode_a	integer (0 through 2) 0: Disabled 1: Set Once and Hold 2: Continuous
	wireless_mode_a	integer Must be one of the following: 1-802.11a 17-802.11a/n 49-802/11a/n/ac

**Table 3. (Continued) vWLAN API Parameters by Resource**

Resource	Attribute	Type
	min_tx_rate_a	integer Must be one of the following: 0: No Minimum 6000: 6 Mbps 9000: 9 Mbps 12000: 12 Mbps 18000: 18 Mbps 24000: 24 Mbps 36000: 36 Mbps 48000: 48 Mbps 54000: 54 Mbps
	beacon_interval_a	integer
	channel_width_a	integer
	packet_aggregation_a	boolean
	ap_load_a	integer
	antenna_type_a	integer
	dtim_a	integer (between 1 and 255)
	rts_threshold_a	integer
	ssids_a_ids	integer
	fragmentation_threshold_a	integer (between 256 and 2346)
	login_form_id	integer
	apfirmware1800_id	integer
	apfirmware1840_id	integer
	apfirmware1920_id	integer
	apfirmware1930_id	integer
	apfirmware2030_id	integer
	apfirmware1800_server_id	integer
	apfirmware1840_server_id	integer
	apfirmware1920_server_id	integer
	apfirmware1930_server_id	integer
	apfirmware2030_server_id	integer
	dns_server	character varying (255)
	enable_cna	boolean
	block_list	comma separated list of blocked DFS channels

**Table 3. (Continued) vWLAN API Parameters by Resource**

Resource	Attribute	Type
	enable_dfs	1 for true, 0 for false
<b>auth_rules</b>	auth_server_id	integer
	position	integer
	compareattr	character varying (255)
	operator	integer
	compareto	character varying (255)
	role_id	integer
<b>auth_servers</b>	name	character varying (255)
	address	IP address
	port	integer
	password	character varying (255)
	password_confirmation	character varying (255)
	timeout	double precision
	ldap_base	character varying (255)
	ldap_uid	character varying (255)
	ldap_filters	character varying (255)
	role_id	integer
	type	Must be one of the following: Radius1xAuthServer RadiusWebAuthServer LdapAuthServer Sip2AuthServer
	backup_address	IP address
	ldap_binduser	character varying (255)
	require_ssl	integer
	max_num_login	integer
	ldap_bindmethod	integer
	position_choice	integer (1 or 2) 1: Highest 2: Lowest
	backup_password	character varying (255)
	backup_password_confirmation	character varying (255)
backup_port	integer	



**Table 3. (Continued) vWLAN API Parameters by Resource**

Resource	Attribute	Type
	accounting_server_id	integer
	sip2_admin	character varying (255)
	sip2_validate_pin	boolean
	sip2_empty_ao_inst_id	boolean
	sip2_cp_location_code	character varying (255)
	trusted_server_certificate_id	integer
	client_certificate_id	integer
	timeout_weight	integer
	trusted_ca_ids	integer
<b>available_ap_firmwares</b>	filename	character varying (255)
	domain_ids	integer
	use_this_firmware	integer (0 to 2) 0: Keep the current AP template configuration 1: Apply this firmware to the default template only 2: Apply this firmware to all templates
<b>client_certificates</b>	name	character varying (255)
	cert_text	text
	key	text
<b>destination_groups</b>	name	character varying (255)
	destination_ids	integer
<b>destinations</b>	name	character varying (255)
	type	Must be one of the following: Host Hostname Network
	address	IP address
	netmask	character varying (255)
	invert	boolean
	notes	text
<b>domain_settings</b> (Update/Read Only)	name (Read Only)	One of the following: "aggressive_dhcp_lease_time_enabled", "timeout_interval", "update_interval", "redirect_https", "default_url", "auto_redirect", "control_channel_timeout", or "redirect_to_hostname"

**Table 3. (Continued) vWLAN API Parameters by Resource**

Resource	Attribute	Type
	value	If name value is: <b>aggressive_dhcp_lease_time_enabled</b> , <b>auto_redirect</b> , or <b>redirect_https</b> , then value is either 0 (Disabled) or 1 (Enabled) <b>control_channel_timeout</b> or <b>timeout_interval</b> , then value is an integer (in seconds) <b>update_interval</b> , then value is an integer of at least 15 (in minutes) <b>default_url</b> then value is text string (URL) <b>setup_wizard_flag</b> , then value is either 0 (do not launch wizard) or 1 (launch wizard)
<b>domains</b>	name	character varying (255)
	max-storage	integer
<b>email_configurations</b>	ip_address	character varying (255)
	port	integer
	user_name	character varying (255)
	password	character varying (255)
	password_confirmation	character varying (255) Must match password.
	authentication	integer (0 or 1) 0: None 1: Login
	return_address	character varying (255)
	name	character varying (255)
	verify_certificate	boolean
	email_security	integer (0 or 1) 0: None 1: TLS
<b>external_firmware_servers</b>	name	character varying (255)
	server_ip_address	character varying (255)
	server_port_number	integer
	scp_username	character varying (255)
	scp_password	character varying (255)
	scp_password_confirmation	character varying (255)
	firmware_file_path	Valid file URL
<b>guest_receipts</b>	name	character varying (255)
	header	text

**Table 3. (Continued) vWLAN API Parameters by Resource**

Resource	Attribute	Type
	body	text
	logo_image	character varying (255)
	icon_image	character varying (255)
	logo_img_file_name	character varying (255)
	logo_img_content_type	character varying (255)
	logo_img_file_size	integer
	logo_img_updated_at	timestamp without time zone
	icon_img_file_name	character varying (255)
	icon_img_content_type	character varying (255)
	icon_img_file_size	integer
	icon_img_updated_at	timestamp without time zone
<b>guest_users</b>	number_users	integer (1 to 500)
	user_prefix	string
	password_generation_method	string ("Default Password" or "Unique Password")
	default_password_or_password_length	If password generation method is "Default Password," type is character varying (255). If password generation method is "Unique Password," type is integer.
	guest_receipt_id	integer
	hotspot_plan_id	integer (1 to 5) 1: Minute Plan 2: Hourly Plan 3: Daily Plan 4: Weekly Plan 5: Monthly Plan
	expiry_time	integer (one of the following): If hot spot plan ID is 1, then integer is 1 to 120 minutes. If hot spot plan ID is 2, then integer is 1 to 24 hours. If hot spot plan ID is 3, then integer is 1 to 31 days. If hot spot plan ID is 4, then integer is 1 to 52 weeks. If hot spot plan ID is 5, then integer is 1 to 12 in months.
<b>hotspot_accounts</b>	auth_server_id	integer
	name	character varying (255)

**Table 3. (Continued) vWLAN API Parameters by Resource**

Resource	Attribute	Type
	account_type	One of the following: Friends and Family Free Spot DNA
	merchant_name	character varying (255) Option is available only if account type is Friends and Family or DNA.
	merchant_address	character varying (255)
	reply_to	character varying (255)
	subject	character varying (255)
	message	character varying (255)
	email_configuration_id	integer
	hotspot_plan_ids	integer
	login_form_ids	integer
<b>hotspot_plans</b>	time_unit_id	integer (1 through 5) 1: Minute 2: Hour 3: Day 4: Week 5: Month
	name	character varying (255)
	min_unit	integer
	max_unit	integer
	role_id	integer
	description	character varying (255)
	accounting_server_id	integer
	active_sessions	integer (0 for unlimited)
	cleanup_time	integer
	login_interval	integer
	total_time	integer
	login_attempts	integer
	login_attempts_orig	integer
	unlimited_attempts	boolean
<b>info_messages</b>	category	character varying (255)
	msg_type	character varying (255)

**Table 3. (Continued) vWLAN API Parameters by Resource**

Resource	Attribute	Type
	notification_template_id	integer
<b>internalusers</b>	enabled	boolean
	name	character varying (255)
	password	character varying (255)
	password_confirmation	character varying (255)
	printable-password	1 for true, 0 for false
	role_id	integer
	max_num_login	integer
	accounting_server_id	integer
	expiry_dt	date in format "YYYY-MM-DD hour:min"
	expiry_time	integer (in minutes)
	login_reset	character varying (255)
	login_interval	integer
	login_attempts	integer
	login_attempts_orig	integer
	attempts_exceeded	boolean
<b>languages</b>	name	character varying (255)
	enabled	boolean
	lc	character varying (255)
	charset	character varying (255)
	native	character varying (255)
	unicode	character varying (255)
	login_registered_users	character varying (255)
	login_as_choice	character varying (255)
	login_username	character varying (255)
	login_registered_password	character varying (255)
	login_new_password	character varying (255)
	login_reenter_new_password	character varying (255)
	login_registered_secure_id	character varying (255)
	login_registered_language	character varying (255)

**Table 3. (Continued) vWLAN API Parameters by Resource**

Resource	Attribute	Type
	login_registered_button	character varying (255)
	login_guests	character varying (255)
	login_guest_email	character varying (255)
	login_guest_button	character varying (255)
	login_change_password	character varying (255)
	login_change_language	character varying (255)
	login_create_user	character varying (255)
	login_personal	character varying (255)
	login_install_ca	character varying (255)
	login_software_download	character varying (255)
	login_localize	character varying (255)
	login_help	character varying (255)
	logout_alert	character varying (255)
	logout_page	character varying (255)
	logout_link	character varying (255)
	hotspot_signup_for	character varying (255)
	hotspot_hours	character varying (255)
	hotspot_days	character varying (255)
	hotspot_weeks	character varying (255)
	hotspot_months	character varying (255)
	hotspot_firstname	character varying (255)
	hotspot_lastname	character varying (255)
	hotspot_address	character varying (255)
	hotspot_city	character varying (255)
	hotspot_state	character varying (255)
	hotspot_country	character varying (255)
	hotspot_zipcode	character varying (255)
	hotspot_zipcode_hint	character varying (255)
	hotspot_proceed_button	character varying (255)

**Table 3. (Continued) vWLAN API Parameters by Resource**

Resource	Attribute	Type
	hotspot_checkout_button	character varying (255)
	hotspot_cancel_button	character varying (255)
	hotspot_confirm_name	character varying (255)
	hotspot_confirm_email	character varying (255)
	hotspot_confirm_description	character varying (255)
	notes	text
	hotspot_sponsor_name	character varying (255)
	hotspot_sponsor_password	character varying (255)
<b>location_groups</b>	name	character varying (255)
	location_ids	integer
<b>locations</b>	name	character varying (255)
	vlan	Must be 0 for Native VLAN or an integer between 2 and 4094
	cidr	<subnet/mask> i.e., 10.180.0.0/24
<b>location_statuses</b> (Read Only)	name	character varying (255)
	state	text
	ap_macaddr	character varying (255)
	romaing_ssid	character varying (255)
	segment	integer
	utv	text
<b>login_forms</b>	name	character varying (255)
	allow_user	boolean
	allow_guest	boolean
	terms_text	text
	terms_url	valid URL
	role_id	integer
	login_attempts_max_count	integer
	login_attempts_minutes	integer

**Table 3. (Continued) vWLAN API Parameters by Resource**

Resource	Attribute	Type
	alink	Six characters of numbers and lower-case letters
	bgcolor	Six characters of numbers and lower-case letters
	l_bgcolor	character varying (255)
	l_d_bgcolor	character varying (255)
	l_g_bgcolor	character varying (255)
	l_g_fgcolor	character varying (255)
	l_h_bgcolor	character varying (255)
	l_h_fgcolor	character varying (255)
	link	Six characters of numbers and lower-case letters
	l_1_padding	integer
	l_r_bgcolor	character varying (255)
	l_registered_top	Either "Guests" or "Users"
	l_r_fgcolor	character varying (255)
	l_r_showline	integer (0 or 1) 0: Don't show line between the two sides 1: Show line between the two sides
	l_t_padding	integer (number of pixels above top left logo)
	l_width	integer
	noleft	integer
	powered_by	Either "loginPower-black.gif" or "loginPower-white.gif"
	r_adv	text
	r_html	text
	r_1_padding	integer (number of pixels between the form and the customized HTML)
	r_t_padding	integer (number of pixels between the top and the customized HTML)
	r_width	integer (for fixed width) * for maximum width
	size	"Small" "Medium" "Large"
	text	character varying (255)



**Table 3. (Continued) vWLAN API Parameters by Resource**

Resource	Attribute	Type
	title	character varying (255)
	vlink	character varying (255)
	redirection_enabled	integer (0 or 1)
	redirection_ap	character varying (255)
	redirection_ap_name	character varying (255)
	redirection_controller	character varying (255)
	redirection_destination	character varying (255)
	redirection_externaldestination	character varying (255)
	redirection_mac	character varying (255)
	redirection_source	character varying (255)
	redirection_ssid	character varying (255)
	redirection_vlan	character varying (255)
	enable_tos	boolean
	language_id	integer
	hotspot_account_id	integer
	login_image	character varying (255)
<b>login_items</b>	item_file_name	character varying (255)
<b>macdevices</b>	name	character varying (255)
	address	character varying (255)
	role_id	integer, 0 for authenticate
	accounting_server_id	integer
	corporate_owned	1 for corporate owned, 0 for other
<b>maps</b>	name	character varying (255)
	unit	M: meters F: feet
	floor	integer
	width	numeric (8, 4)
	length	numeric (8, 4)
	floormap_file_name	character varying (255)
	calibrate	boolean
	accesspoint_ids	integer
<b>network_interfaces</b>	name	character varying (255)

**Table 3. (Continued) vWLAN API Parameters by Resource**

Resource	Attribute	Type
	dhcp	integer (1 or 0) 1: check box 0: do not check box
	address	character varying (255) IP address format
	netmask	character varying (255) IP address format
	gateway	character varying (255) IP address format
	dns_1	character varying (255) IP address format
	dns_2	character varying (255) IP address format
	hostname	character varying (255) IP address format
	current_address	character varying (255) IP address format
	current_netmask	character varying (255) IP address format
	current_gateway	character varying (255) IP address format
<b>notification_templates</b>	name	character varying (255)
	email_configuration_id	integer
	email_addresses	character varying (255) Separate multiple email addresses using commas.
	snmp_trap_severity_id	integer (1 to 8) 1: Emergency 2: Alerts 3: Critical 4: Errors 5: Warnings 6: Notification 7: Information 8: Debug
	syslog_severity_id	integer (9 to 16) 9: Emergency 10: Alerts 11: Critical 12: Errors 13: Warnings 14: Notification 15: Information 16: Debug
	snmp_trap_configuration_ids	integer
	syslog_configuration_ids	integer
<b>reports</b>	name	character varying (255)

**Table 3. (Continued) vWLAN API Parameters by Resource**

Resource	Attribute	Type
	creator	integer
	report_type_id	integer
	reportable_type	character varying (255)
	report_type	character varying (255)
	timezone	character varying (255)
	over_the_air_fairness	integer (0 to 4) 0: No bias 1: Slightly negative bias 2: Moderate negative bias 3: High negative bias 4: Extreme negative bias
	cos_priority_in	integer (0 to 63) 0: 0/0; 1: 1/0; 2: 2/0; 3: 3/0; 4: 4/0; 5: 5/0; 6: 6/0; 7: 7/0; 8: 8/1; 9: 9/1; 10: 10/1; 11: 11/1; 12: 12/1; 13: 12/1; 14: 14/1; 15: 15/1; 16: 16/2; 17: 17/2; 18: 18/2; 19: 19/2; 20: 20/2; 21: 21/2; 22: 22/2; 23: 23/2; 24: 24/3; 25: 25/3; 26: 26/3; 27: 27/3; 28: 28/3; 29: 29/3; 30: 30/3; 31: 31/3; 32: 32/4; 33: 33/4; 34: 34/4; 35: 35/4; 36: 36/4; 37: 37/4; 38: 38/4; 39: 39/4; 40: 40/5; 41: 41/5; 42: 42/5; 43: 43/5; 44: 44/5; 46: 46/5; 47: 47/5; 48: 48/6; 49: 49/6; 50: 50/6; 51: 51/6; 52: 52/6; 53: 53/6; 54: 54/6; 55: 55/6; 56: 56/7; 57: 57/7; 58: 58/7; 59: 59/7; 60: 60/7; 61: 61/7; 62: 62/7; 63: 63/7
	cos_priority_in_override	integer (0 to 6) 0: DSCP 1: 802.1p 2: Highest priority (DSCP or 802.1p) 3: Static value
	cos_priority_out	integer (0 to 63) 0: 0/0; 1: 1/0; 2: 2/0; 3: 3/0; 4: 4/0; 5: 5/0; 6: 6/0; 7: 7/0; 8: 8/1; 9: 9/1; 10: 10/1; 11: 11/1; 12: 12/1; 13: 12/1; 14: 14/1; 15: 15/1; 16: 16/2; 17: 17/2; 18: 18/2; 19: 19/2; 20: 20/2; 21: 21/2; 22: 22/2; 23: 23/2; 24: 24/3; 25: 25/3; 26: 26/3; 27: 27/3; 28: 28/3; 29: 29/3; 30: 30/3; 31: 31/3; 32: 32/4; 33: 33/4; 34: 34/4; 35: 35/4; 36: 36/4; 37: 37/4; 38: 38/4; 39: 39/4; 40: 40/5; 41: 41/5; 42: 42/5; 43: 43/5; 44: 44/5; 46: 46/5; 47: 47/5; 48: 48/6; 49: 49/6; 50: 50/6; 51: 51/6; 52: 52/6; 53: 53/6; 54: 54/6; 55: 55/6; 56: 56/7; 57: 57/7; 58: 58/7; 59: 59/7; 60: 60/7; 61: 61/7; 62: 62/7; 63: 63/7

**Table 3. (Continued) vWLAN API Parameters by Resource**

Resource	Attribute	Type
	cos_priority_out_override	integer (0 to 6) 0: No remark 1: DSCP from 802.11 2: 802.1p from 802.11 3: DSCP and 802.1p from 802.11 4: DSCP static value 5: 802.1p static value 6: DSCP and 802.1p static value
	qos_rate_in	integer
	qos_rate_in_qnt	integer (0 to 3) 0: Kbits/second 1: Mbits/second 2: KBytes/second 3: MBytes/second
	qos_rate_out	integer
	qos_rate_out_qnt	integer (0 to 3) 0: Kbits/second 1: Mbits/second 2: KBytes/second 3: MBytes/second
	qos_per_role	boolean
	locationable_id	integer
	locationable_type	Location or Group
	redirect	valid URL
	thank_you	text
	machine_auth_enabled	integer
	memory_interval	integer
	allow_client_to_client	boolean

**Table 3. (Continued) vWLAN API Parameters by Resource**

Resource	Attribute	Type
<b>root_settings</b> (Update/Read Only)	name (Read Only)	One of the following: "ntp_servers", "ntp_update", "nat_ip_address", "second_nat_ip_address", "default_url", "snmp_enabled", "ro_community_string", "rw_community_string", "bap_autof_use_ stored_ channels", "bap_autof_iterations", "minimum_b- sap_rf_signal", "minimum_ovap_rf_signal", "bap_am_bully", "bap_am_channel_bully", "bap_signal_inertia", "bap_autotx_beacon", "http_hostname", "admin_root_ca_url", "ssl_csr", "ssl_key", "ssl_cert", "ssl_key2", "ssl_cert2", "ssl_csr2", "ssl_chain", "ssl_chain2", "ssl_selection", "syslocation", "syscontact", "sysdescr", "sysname", "cli- ent_percentage_ac", "web_server_timeout"

**Table 3. (Continued) vWLAN API Parameters by Resource**

Resource	Attribute	Type
	value	<p>If name is one of the following:</p> <p><b>ntp_servers</b> then value is text of IP addresses of FQDNs (comma separated list)</p> <p><b>ntp_update</b> then value is hourly, daily, weekly, or monthly</p> <p><b>nat_ip_address</b> or <b>second_nat_ip_address</b> then value is text for public IP address for vWLAN standalone or high availability master</p> <p><b>default_url</b> then value is URL</p> <p><b>snmp_enabled</b> then value is 0 (Disabled) or 1 (Enabled)</p> <p><b>ro_community_string</b> or <b>rw_community_string</b>, then value is character string (6 to 20 characters)</p> <p><b>bap_sutorf_use_stored_channels</b>, then value is 0 (Disabled) or 1 (Enabled)</p> <p><b>bap_sutorf_iterations</b>, then value is an integer (1 to 9)</p> <p><b>minimum_bsap_rf_signal</b> or <b>minimum_ovap_rf_signal</b>, then value is an integer (0 to 60)</p> <p><b>bap_am_bully</b> or <b>bap_am_channel_bully</b>, then value is 0 (Disabled) or 1 (Enabled)</p> <p><b>bap_signal_inertia</b>, then value is an integer (1 to 99)</p> <p><b>bap_autotx_beacon</b>, then value is an integer (1 to 99)</p> <p><b>http_hostname</b>, then value is 0 (Disabled) or 1 (Enabled)</p> <p><b>admin_root_ca_url</b>, then value is URL link string</p> <p><b>ssl_csr</b>, <b>ssl_key</b>, <b>ssl_cert</b>, <b>ssl_key2</b>, <b>ssl_cert2</b>, or <b>ssl_csr2</b> then value is text</p> <p><b>ssl_chain</b> or <b>ssl_chain2</b>, then value is text of certificates</p> <p><b>ssl_selection</b>, then value is true or false</p> <p><b>syslocation</b>, <b>syscontact</b>, <b>sysdescr</b>, or <b>sysname</b>, then value is character varying (255)</p> <p><b>client_percentage_ac</b> then value is an integer (0 to 100)</p> <p><b>web_server_timeout</b>, then value is a positive number</p>
<b>service_groups</b>	name	character varying (255)
	service_ids	integer
<b>services</b>	name	character varying (255)
	port	character varying (255)

**Table 3. (Continued) vWLAN API Parameters by Resource**

Resource	Attribute	Type
	notes	text
	protocol	integer Must be one of the following: 0: Any; 1: ICMP; 2: IGMP; 3: GGP; 4: IP-ENCAP; 5: ST; 6: TCP; 8: EGP; 9: IGP; 12: PUP; 17: UDP; 20: HMP; 22: XNS-IDP; 27: RDP; 29: ISO-TP4; 36: STP; 37: DDP; 38: IDPR-CMTP; 41: IPv6; 43: IPv6-Route; 44: IPv6-Frag; 45: IDRP; 46: RSVP; 47: GRE; 50: IPSEC-ESP; 51: IPSEC-AH; 57: SKIP; 58: IPv6-ICMP; 59: IPv6NoNxt; 60: IPv6-Opts; 73: RSPF; 81: VMTP; 88: EIGRP; 89: OSPFIGP; 93: AX.25; 94: IPIP; 97: ETHERIP; 98: ENCAP; 103: PIM; 108: IPCOMP; 112: VRRP; 115: L2TP; 124: ISIS; 132: SCTP; 133: FC; 136: UDPLite; 137:MPLS-in-IP; 138: MANET; 139:HIP; 255: TCP + UDP
<b>snmp_trap_configurations</b>	ip_address	character varying (255)
	community_string	character varying (255)
	notification_template_ids	integer
<b>ssids</b>	name	character varying (255)
	role_id	integer
	radius1x_auth_server_id	integer
	broadcast	integer (0 or 1) 0: Do not broadcast SSID 1: Broadcast SSID
	preshared_key	character varying (at least 8 characters long)
	preshared_key_confirmation	character varying (must match preshared_key)
	authentication	integer (0, 1, 5, 6, 7, or 8) 0: Open system 1: Shared key 5: WPA2 6: WPA2-PSK 7: WPA+WPA2 8: WPA-PSK+WPA2-PSK

**Table 3. (Continued) vWLAN API Parameters by Resource**

Resource	Attribute	Type
	cipher	integer (0, 1, 3, or 6) 0: Disabled (only allowed with open system authentication) 1: WEP (only allowed with open system or shared key authentication) 3: AES_CCM (allowed with any authentication that uses WPA2) 6: TKIP or AES_CCM (allowed with WPA+WPA2 or WPA-PSK+WPA2-PSK authentication)
	login_form_id	integer
	standby_vlan_tag	integer
	standby_mode	integer (0 or 1) 0: Not a standby SSID 1: Is a standby SSID
	accounting_server_id	integer
	wep_key_length	integer (either 64 or 128)
	wep_key64_0	10 hexadecimal characters; only used when wep_key_length is 64
	wep_key64_1	10 hexadecimal characters; only used when wep_key_length is 64
	wep_key64_2	10 hexadecimal characters; only used when wep_key_length is 64
	wep_key64_3	10 hexadecimal characters; only used when wep_key_length is 64
	default_wep_key	integer (0 through 3) 0: WEP key #1 1: WEP key #2 2: WEP key #3 3: WEP key #4 Only used with WEP cipher and when wep_key_length is 64
	wep_key128	25 hexadecimal characters; only used when wep_key_length is 128
	ssid_broadcast_to_unicast	integer (0 to 3) 0: Disable 1: Convert broadcast to unicast 2: Convert multicast to unicast 3: Convert broadcast and multicast to unicast
<b>storage_settings</b>	setting_type	character varying (255)
	option	character varying (255)



**Table 3. (Continued) vWLAN API Parameters by Resource**

Resource	Attribute	Type
	value	character varying (255)
<b>syslog_configurations</b>	ip_address	character varying (255) Must be one of the following: local0 local1 local2 local3 local4 local5 local6 local7
	facility	character varying (255)
	notification_template_ids	integer
<b>trusted_cas</b>	name	character varying (255)
	cert_text	text
<b>trusted_server_certificates</b>	name	character varying (255)
	cert_text	text
<b>vwlan_job</b>	name	string (max 32)

**Table 3. (Continued) vWLAN API Parameters by Resource**

Resource	Attribute	Type
	action	integer (50 to 71) 50: Reboot vWLAN 51: Restart vWLAN 52: Restart network 53: Restart network static routes 54: Restart web authorization server 55: Restart firewall 56: Restart SNMP daemon 57: Restart notification daemon 58: Restart interprocess communication daemon 59: Restart vWLAN AP config daemon 60: Restart vWLAN AP user manager 61: Restart vWLAN AP control service 62: Restart vWLAN AP control channel 63: Restart vWLAN AP manager 64: Restart wireless IDS service 65: Restart database status 66: Restart high availability synchronization 67: Restart reporting daemon 68: Restart bulk update daemon 69: Restart user account monitor 70: Restart security daemon 71: Switch partitions
	job_type	Boolean true: scheduled false: on-demand
	frequency	integer (1 to 4) Used only if job_type is <b>scheduled</b> 1: Daily 2: Weekly 3: Monthly 4: One-time
	reoccurring	integer (1 to 4) Repetition of frequency; for example, if frequency is daily, 1 is once a day, 2 is every two days, 3 is every three days, 4 is every four days. 1: Every time 2: Every two 3: Every three 4: Every fourth

**Table 3. (Continued) vWLAN API Parameters by Resource**

Resource	Attribute	Type
	week_of_month	integer (1 to 5) Used only if frequency is <b>monthly</b> 1: First week 2: Second week 3: Third week 4: Fourth week 5: Last week
	day_of_week	integer (0 to 6) Used only if frequency is <b>monthly</b> 0: Sunday 1: Monday 2: Tuesday 3: Wednesday 4: Thursday 5: Friday 6: Saturday
	weekly_config	comma separated string of integers (0 to 6) Used only if frequency is <b>weekly</b> Example: Monday, Wednesday, and Friday is represented as "1,3,5" 0: Sunday 1: Monday 2: Tuesday 3: Wednesday 4: Thursday 5: Friday 6: Saturday
	scheduled_date	string (YYY-MM-DD) Used only when frequency is <b>one-time</b>
	scheduled_hour	string (HH) Used when frequency is <b>daily, weekly, or monthly</b>
	scheduled_minute	string (MM) Used when frequency is <b>daily, weekly, or monthly</b>
	scheduled_meridiem	Must be <b>AM</b> or <b>PM</b> Used when when frequency is <b>daily, weekly, or monthly</b>

**Table 3. (Continued) vWLAN API Parameters by Resource**

Resource	Attribute	Type
	timezone	Must be one of the following: International Date Line West Midway Island Hawaii Alaska Pacific Time (US & Canada) Arizona Mountain Time (US & Canada) Central America Central Time (US & Canada) Indiana (East) Eastern Time (US & Canada) Atlantic Time (Canada) Caracas Newfoundland Greenland Buenos Aires Mid-Atlantic Azores Cape Verde Is. Casablanca Dublin Rome West Central Africa Athens Harare Baghdad Kuwait Tehran Muscat Baku Kabul Ekaterinburg Islamabad Chennai Kathmandu Astana Almaty Rangoon Krasnoyarsk Bangkok Beijing Irkutsk Yakutsk Seoul Darwin Adelaide Brisbane Canberra Magadan Auckland Fiji Noku'alofa