

# Ruckus SmartZone GPB/MQTT Interface Getting Started Guide, 5.1.2

Supporting SmartZone 5.1.2

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## 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>
<b>bold</b>	User interface (UI) components such as screen or page names, keyboard keys, software buttons, and field names	On the <b>Start</b> menu, click <b>All Programs</b> .
<i>italics</i>	Publication titles	Refer to the <i>Ruckus Small Cell Release Notes</i> for more information.

## Notes, Cautions, and 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
<b>bold text</b>	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.
{ <b>x</b>   <b>y</b>   <b>z</b> }	A choice of required parameters is enclosed in curly brackets separated by vertical bars. You must select one of the options.
<b>x</b>   <b>y</b>	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.

## 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](mailto:#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.ruckuswireless.com>.

## Online Training Resources

To access a variety of online Ruckus training modules, including free introductory courses to wireless networking essentials, site surveys, and Ruckus products, visit the Ruckus Training Portal at <https://training.ruckuswireless.com>.

## 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 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.ruckuswireless.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 **Open 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 **Open a Case** section.
- Priority 3 (P3)—Medium. Network or service is moderately impacted, but most business remains functional. Go to the **Self-Service Resources** section.
- Priority 4 (P4)—Low. Requests for information, product documentation, or product enhancements. Go to the **Self-Service Resources** section.

### 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>

## Preface

### Contacting Ruckus Customer Services and Support

- Community Forums—<https://forums.ruckuswireless.com/ruckuswireless/categories>
- Knowledge Base Articles—<https://support.ruckuswireless.com/answers>
- Software Downloads and Release Notes—[https://support.ruckuswireless.com/#products\\_grid](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 TAC with additional data from your troubleshooting analysis if you still require assistance through a support case or RMA. If you still require help, open and manage your case at [https://support.ruckuswireless.com/case\\_management](https://support.ruckuswireless.com/case_management).



# What's New in This Document

**TABLE 2** Summary of Enhancements in SmartZone Release 5.1.2

Feature	Description	Location
cpeMac	For AP client info message.	Refer to <a href="#">ap_client.proto</a> on page 26 for more information.
isMonitoringEnabled	For AP report stats message.	Refer to <a href="#">ap_report.proto</a> on page 38 for more information.
switchConfigurationMessage realtimeSwitchStatus	For SCI message .	Refer to <a href="#">sci-message.proto</a> on page 88 for more information.
switchClientVisibility	For switch message.	Refer to <a href="#">switch_all.proto</a> on page 93 for more information.
<b>PowerSupplyGroup</b>	Power supply group message.	Refer to <a href="#">switches.proto</a> on page 94 for more information.
<b>FanGroup</b>	Fan group message.	Refer to <a href="#">switches.proto</a> on page 94 for more information.
cloudPort domainName switchGroupLevelOneName switchGroupLevelTwoName powerSupplyGroups fanGroups ipAddress	For switch status message.	Refer to <a href="#">switches.proto</a> on page 94 for more information.
domainName switchGroupLevelOneName switchGroupLevelTwoName	For switch stats message.	Refer to <a href="#">switches.proto</a> on page 94 for more information.
domainName switchGroupLevelOneName switchGroupLevelTwoName	For port stats message.	Refer to <a href="#">switches.proto</a> on page 94 for more information.
domainName switchGroupLevelOneName switchGroupLevelTwoName	For port status message.	Refer to <a href="#">switches.proto</a> on page 94 for more information.
domainId switchGroupLevelOneId switchGroupLevelTwoId domainName switchGroupLevelOneName switchGroupLevelTwoName unitState unitName	For switch unit status message.	Refer to <a href="#">switches.proto</a> on page 94 for more information.
domainName switchGroupLevelOneName switchGroupLevelTwoName	For connected device status message.	Refer to <a href="#">switches.proto</a> on page 94 for more information.
<b>SwitchClientVisibility</b>	Switch client visibility message.	Refer to <a href="#">switches.proto</a> on page 94 for more information.
<b>SwitchConfigurationMessage</b>	Switch configuration message.	Refer to <a href="#">switches.proto</a> on page 94 for more information.
<b>SwitchClusterMessage</b>	Switch cluster message .	Refer to <a href="#">switches.proto</a> on page 94 for more information.
<b>TenantMessage</b>	Tenant message.	Refer to <a href="#">switches.proto</a> on page 94 for more information.
<b>DomainMessage</b>	Domain message.	Refer to <a href="#">switches.proto</a> on page 94 for more information.
<b>SwitchGroupMessage</b>	Switch group message .	Refer to <a href="#">switches.proto</a> on page 94 for more information.

**TABLE 2** Summary of Enhancements in SmartZone Release 5.1.2 (continued)

Feature	Description	Location
<b>RealtimeSwitchStatus</b>	Realtime switch status message.	Refer to <a href="#">switches.proto</a> on page 94 for more information.

# GPB-MQTT Interface Implementation

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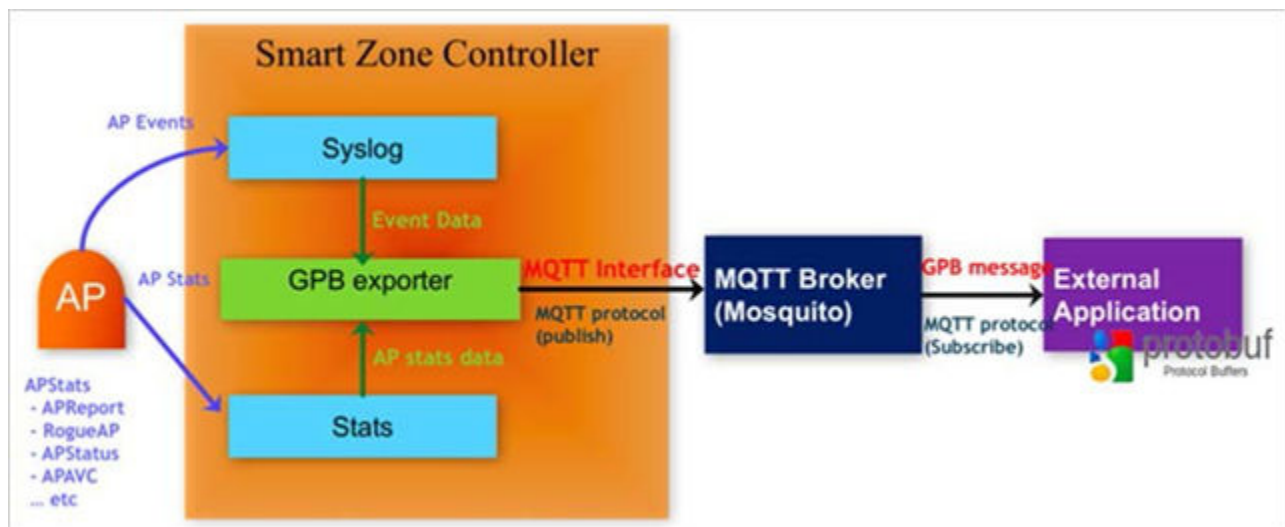
## GPB-MQTT Overview

The Smart Zone (SZ) controller GPB/MQTT interface is an interface that allows an external application to receive the statistical data from an Access Point (AP) managed by an SZ controller.

The statistical data includes device information, event records, access point statistics, client statistics, wireless radio/network statistics and rogue AP data. The streaming data is presented in GPB (Google Protocol buffer) format. The external application can use the program library compiled with GPB data structure to read the data.

MQTT stands for MQ Telemetry Transport. It is a publish/subscribe, extremely simple and lightweight messaging protocol. It was designed as an extremely lightweight publish/subscribe messaging transport. It is useful for connections with remote locations where a small code footprint is required and/or network bandwidth is at a premium.

FIGURE 1 GPB/MQTT Interface Diagram



## Prerequisite Task

Before implementing the GPB/MQTT interface, some background infrastructure must be installed and configured.

**NOTE**

Installation steps are provided for CentOS-6 and Ubuntu users. If you have different platform requirements, refer to the Mosquitto website for other installation guides: <https://www.mosquitto.org>

1. Use a Unix compatible Operating System (for example: DebianWheezy, DebianJessie, CentOS 6.6, Mac OSX 10.10, Mac OSX 10.11)
2. Download and install a compatible JDK version 1.8 (OpenJDK8, OracleJDK (Java SE 8u161/8u162)). You can also use JDK8.

If you are using a Linux OS, use OpenJDK 8 and download it from <http://openjdk.java.net/install/>. If you are working on Mac OX or Windows, please refer to Oracle for downloading the latest JDK 8 from <http://www.oracle.com/technetwork/java/javase/overview/index.html>

3. Download and install gradle version 2.9.x.  
Download from here: <https://gradle.org/>
4. Download and install Mosquitto 1.4.x broker and client and requisite libraries.  
Download from here: <http://mosquitto.org/download/>

5. If you are running Centos-6, follow these steps:

- a) Run the following command:

```
$ cd /etc/yum/yum.repos.d
```

- b) Add the following content into filehome-oojah-mqtt.repo.

```
[home_oojah_mqtt]
name=mqtt (CentOS_CentOS-6) type=rpm-md
baseurl=http://download.opensuse.org/repositories/home:/oojah:/mqtt/ CentOS_CentOS-6/
gpgcheck=1 gpgkey=http://download.opensuse.org/repositories/home:/oojah:/mqtt/C entOS_CentOS-6//
repdata/repomd.xml.key
enabled=1
```

- c) Run the following command:

```
$ sudo yum update
```

- d) Run the following command:

```
$ sudo yum install mosquito mosquito-clients
```

6. If you are running Ubuntu, install Mosquitto MQTT broker with the following commands:

```
$sudo apt-add-respoitory ppa:mosquitto-dev/mosquitto-ppa
$sudo apt-get update
$sudo apt-get install mosquito mosquito-clients
```

7. Open the firewall to ports 1883 and 8883.
8. Start the mosquito broker on an instance which can be reached from the instance where the sample client is executed.
9. Configure the SZ with Mosquitto IP and port for it to transfer SCI data.  
*Refer to the SZ technical documentation to achieve this.*
10. Enable SCI in the MQTT broker.  
Refer to the "Working with the GPB/MQTT Interface" task.

## Working with the GPB/MQTT Interface

To work with the GPB/MQTT interface use the following steps.

1. Set the MQTT broker to receive GPB data.
2. Configure the MQTT broker IP on the SmartZone (SZ) web user interface to publish to GPB data to MQTT broker.
3. Use the GPB compiler to get the library for reading the data with SZ data structure (.proto files).
4. The external application implements the MQTT protocol and subscribes the topic to MQTT broker.
5. The external application receives the GPB data from MQTT broker and then uses the GPB library to read the streaming data.
6. The external application converts the GPB data and saves it to its local system.

## Enabling Authentication in the MQTT Broker

The current implementation of SmartZone (SZ) needs authentication to the MQTT Broker.

Perform the following steps to create a create a profile used in the authentication process with MQTT.

### NOTE

Ruckus recommends that you do not start the Mosquitto MQTT broker by user root. If you startup Mosquitto MQTT broker by user root or with sudo, it will result in an incorrect startup environment or other error.

1. Startup MQTT broker with security enabled.
  - a) After you install the mosquitto MQTT broker, you can start it up by the following command:

```
mosquitto -c /home/user/mosquitto.conf -p 1883
```

- b) Create a mosquitto configuration file, mosquitto.conf. Refer to the examples below.

```
listener 8883
psk_file /etc/mosquitto/pskfile
psk_hint hint
tls_version tlsv1.2
```

- c) According to the pskfile configuration of mosquitto.conf you need another pskfile to store the authentication pre-shared key. Here is another example for the pskfile:

```
testuser:7465737475736572
```

The value before the colon, “:,” sign represents the username which in this example is testuser. The value after the colon refers to the password phrase which is converted to hex representation. The original password text before converting is testuser.

The password has to match with the setting configured on controller SZ web interface.

### NOTE

You can terminate the MQTT broker by pressing Ctrl + C on the MQTT broker console.

2. After starting one MQTT subscriber, you can start another MQTT subscriber to connect to the MQTT broker via an un-authenticated port 1883 or authenticated port 8883.

a) Here is an example to connect to the MQTT broker with un-authenticated version:

```
mosquitto_sub -h <mosquitto_ip> -p 1883 -t 'sci-topic'
```

b) Here is an example to connect to the MQTT broker via an authenticated security channel:

```
mosquitto_sub -h <mosquitto_ip> -p 8883 -t 'sci-topic' --psk-identity testuser --psk  
7465737475736572
```

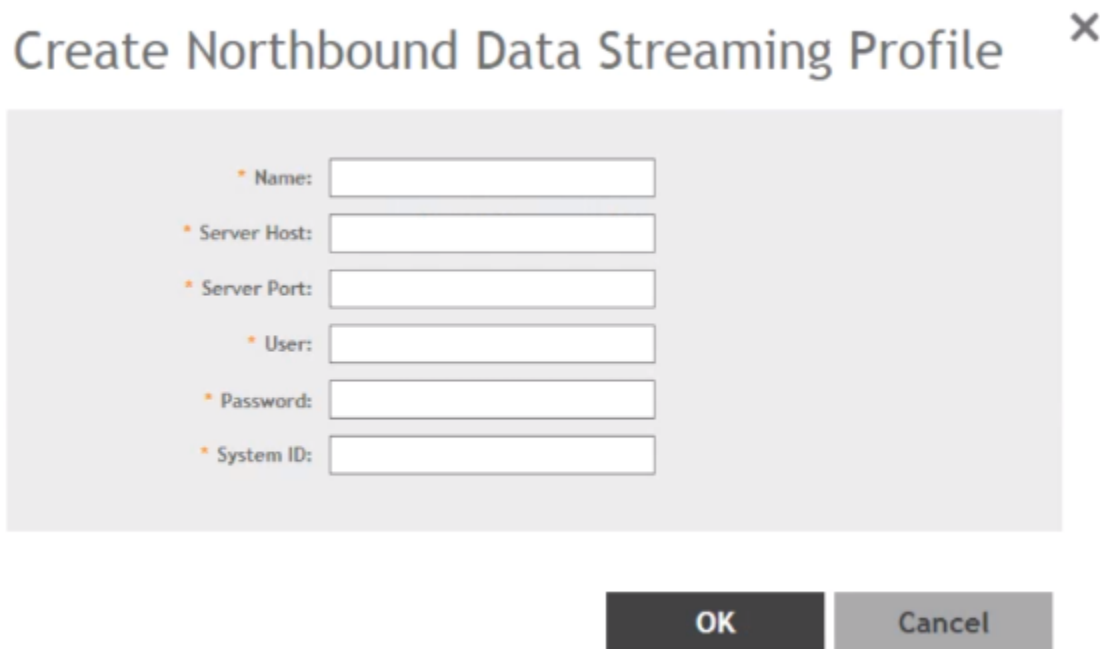
You can find the difference between the un-authenticated and authenticated version of the mosquitto\_sub function, where the psk-identity and psk attribute is connected to MQTT broker via port number 8883.

3. Use the content in the following steps to create or configure the MQTT connection profile :

- a) MQTT server name.
- b) MQTT server host / IP address.
- c) MQTT server port number.
- d) System ID—The backend system collects data from multiple SZs. The system identifier is used to distinguish the data source.
- e) User credentials of login name and password.

In the authenticated mode of SCI profile you must provide the user name and password for TLSv1.2 with pre-shared key exchange standard. See the following figure.

**FIGURE 2** Setting SCI Profile - Authenticated



The SCI profile setting is used for allowing SZ to get the MQTT connection information. For example, IP address, port, user credential and so on. It does not mean that you must have a SCI setup to receive the GPB streaming data.

4. Save the SCI profile.
5. Configure the Northbound data streaming as explained in [Configuring Northbound Data Streaming Settings](#) on page 15.

## Configuring Northbound Data Streaming Settings

SmartCell Insight (SCI) and other third-party GPB listeners use data from the controller to analyze performance and generate reports about the WiFi network. Configuring the Northbound Data Streaming settings in the controller enables data transfer from the controller to the Northbound Data Streaming server using the MQTT protocol.

Follow these steps to configure the Northbound Data Streaming server settings:

1. Go to **System > General Settings > Northbound Data Streaming**.
2. Select the **Enable Northbound Data Streaming** check-box to configure the Northbound Data Streaming server settings.
3. Click **Create**, the Create Northbound Data Streaming Profile form appears.

Enter the following details:

- Name—Profile name.
- Server Host—IP address to the Northbound Data Streaming host server.

### NOTE

SCI profile supports only the IPv4 format.

- Server Port—Port number over which the Northbound Data Streaming server and controller can communicate and transfer data.
  - User—Name for the user.
  - Password—password for the respective user.
  - System ID—ID of the Northbound Data Streaming system that should be accessed.
4. Click **OK**.
  5. Select **All** or **Stream GPB data by Domain/Zone**.

Selecting **All** sends all the KPIs or stats for all zones or domains to SCI or other third-party GPB listeners.

Selecting **Stream GPB data by Domain/Zone** allows you to set any one of the nodes (Domain or Zone), and the AP message of that node is bypassed.

6. From **Settings**, select the domain or zone and enable **Stream GPB data in this node**. This will selectively send KPIs or stats for certain zones or domains to SCI or other third-party GPB listeners.

### NOTE

You can also edit or delete an Northbound Data Streaming profile. To do so, select the Northbound Data Streaming profile from the list and click **Configure** or **Delete** as required.

# Compiling Google Protobuf Binding Classes

Protocol Buffers, referred to as Protobuf, is widely used at Google for storing and interchanging all kinds of structured information.

Perform the following steps to compile the Google Protobuf (GPB) binding class.

1. Download the latest SmartZone (SZ) GPB .proto files from the Ruckus support site at: [Ruckus Support](#).
2. Follow the compiling instructions for getting the binding classes for different language. For more information, refer to <https://developers.google.com/protocol-buffers/>.

We can use ap\_client.proto as an example for this task. The following steps will refer to the ap\_client.proto as the example; you can substitute any .proto file.

3. If you have not installed the compiler, [download the protoc compiler version 2.6.1](#), and follow the instructions in the README file.
4. Run the compiler, specifying the source directory where your application's source code lives (the current directory is used if you do not provide a value), the destination directory where you want the generated code to go (usually the same as SRC\_DIR), and the path to your .proto.

In this example, use ap\_client.proto.

5. Now that you have ap\_client.proto file, the next step is to generate the classes for reading and writing the AP Client GPB messages. To do this, you need to run the protocol buffer compiler protoc on your .proto file by:
  - a) Java—Run the following script using the *java\_out* option for Java classes. Similar options are provided for other supported languages .

```
protoc -I=$SRC_DIR --java_out=$DST_DIR $SRC_DIR/ap_client.proto
```

This generates *com/ruckuswireless/scg/protobuf/APClient.java* in your specified destination directory.

- b) Python—Run the following script using the *python\_out* option for Python classes. Similar options are provided for other supported languages.

```
protoc -I=$SRC_DIR --python_out=$DST_DIR $SRC_DIR/ap_client.proto
```

This generates *apclient\_pb2.py* in your specified destination directory.

- c) C++—Run the following script using the *cpp\_out* option for C++ classes. Similar options are provided for other supported languages .

```
protoc -I=$SRC_DIR --cpp_out=$DST_DIR $SRC_DIR/ap_client.proto
```

This generates the following files in your specified destination directory:

- apclient.pb.h—The header which declares your generated classes.
- apclient.pb.cc—Contains the implementation of your classes.

6. Copy the requisite technology stack GPB binding classes or source files to your project, which will be used for receiving SZ's GPB streaming data. It can be used to decode and parse the content of GPB message data.

## Executing the Test Subscriber

The test subscriber is a utility provided by Ruckus to receive the GPB streaming data from SmartZone (SZ).

The test subscriber utility is written in Java. It uses the Java classes, which is compiled with Ruckus GPB .proto to read the content of GPB message.



**NOTE**

The test subscriber utility is designed only for test purposes and not for integrating with your application of SZ GPB/MQTT interface.

## Execution Script to Start Mosquitto MQTT

Execute the following command to start the Mosquitto MQTT broker .

```
mosquitto -c /etc/mosquitto/mosquitto.conf -p 1883 &
```

## Execution Script Before Installing Release 5.0

Execute the following script to write all received messages to the SciTlsMessages folder in the program execution directory.

```
/execute-normal.sh <mqtt broker IP address> <mqtt port number of security channel> <s/n>
```

The option s/n refers to:

- s—Scaling mode which shows the statistical counter result.
- n— Normal mode which writes to the receiving file from the MQTT broker.

The following example shows where the script connects to a MQTT broker on 172.17.18.144:8883 in scaling mode.

```
./execute-normal.sh 172.17.18.144 8883 s
```

Download the subscriber software from <https://support.ruckuswireless.com/software/2169-smartzone-5-1-2-mr2-gpb-protocol-google-protobuf-image-for-gpb-mqtt>.

## Execution Script After Installing Release 5.0

Start the Mock SCI using the below scripts for different types of topic service subscriber.

- For SCI topic service, execute the below startup command with the arguments of MQTT broker IP address, port number and enable (true) or disable (false) the scaling mode.

```
# Execute in Normal Mode
./execute-sci.sh 172.17.18.144 8883 false
```

```
# Execute in Scaling Mode
./execute-sci.sh 172.17.18.144 8883 true
```

- For GStation topic service, execute the below startup command with the arguments of MQTT broker IP address, port number and enable (true) or disable (false) the scaling mode.

```
# Execute in Normal Mode
./execute-gstation.sh 172.17.18.144 8883 false
```

```
# Execute in Scaling Mode
./execute-gstation.sh 172.17.18.144 8883 true
```

## Exit from the Test subscriber

Type **EXIT** and click on the **Enter** key to leave the test subscriber.

## Execution Result

All receiving GPB messages from MQTT's publisher (example, SmartZone) will be saved to the SciTlsMessages folder.

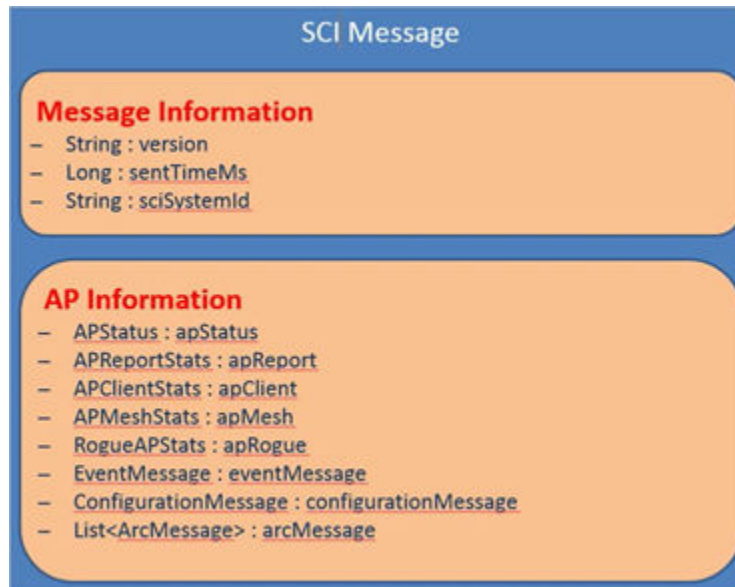
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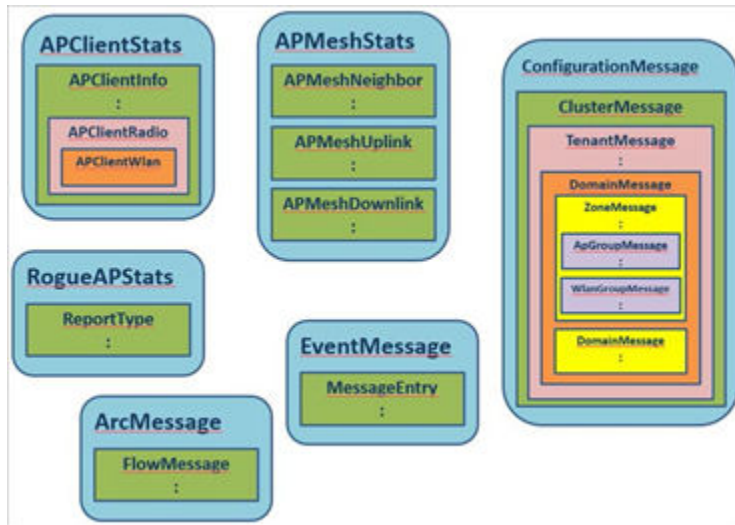
## AP Message Hierarchy and Information

The following diagrams indicate the GPB status hierarchy, along with each protocol file and field descriptions.

**FIGURE 3** GPB Message Hierarchy



**FIGURE 4 AP Information**



# ap\_avc.proto

```
/**
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 * copyright and trade secret laws. You may not view, use, disclose, copy, or distribute this file or any
 * information contained herein except pursuant to a valid license from Ruckus.
 */
option java_package = "com.ruckuswireless.scg.protobuf";

message FlowMessage {
  required string app = 1;
  required uint32 port = 2;
  required string client_mac = 3;
  required string ap_mac = 4;
  required string ssid = 5;
  required uint64 uplink = 6;
  required uint64 downlink = 7;
  required uint64 total = 8;
  optional string category = 9;
  optional string wlangroup_id = 10;
  optional uint32 wsgwlan_id = 11;
  optional string wlantenant_id = 12;
  optional uint32 apradiotype_id = 13;
  optional string wlangroup_name = 14;
  optional string wlantenant_name = 15;
  optional uint32 radio_id = 16;
  optional string client_ipv4 = 17;
  optional string client_ipv6 = 18;
  optional string client_hostname = 19;
}

message UrlFilteringMsg {
  optional string url = 1;
  optional uint32 cat_id = 2;
  optional string cat_name = 3;
  optional uint32 num_hits = 4;
  optional string client_mac = 5;
  optional string ap_mac = 6;
  optional string ssid = 7;
  optional uint64 uplink = 8;
  optional uint64 downlink = 9;
  optional uint64 total = 10;
  optional string wlangroup_id = 11;
  optional uint32 wsgwlan_id = 12;
  optional string wlantenant_id = 13;
  optional uint32 apradiotype_id = 14;
  optional string wlangroup_name = 15;
  optional string wlantenant_name = 16;
  optional uint32 radio_id = 17;
  optional string client_ipv4 = 18;
  optional string client_ipv6 = 19;
  optional string client_hostname = 20;
  optional uint64 session_start = 21;
  optional uint64 session_stop = 22;
}

message ArcMessage {
  optional string ver = 1;
  optional string zone_id = 2;
  optional string apgroup_id = 3;
  repeated FlowMessage rep_flow = 4;
  optional uint64 timestamp = 5;
  optional string cluster_id = 6;
  optional string domain_id = 7;
  optional string aptenant_id = 8;
  optional string map_id = 9;
  optional string aptenant_name = 10;
  optional string zone_name = 11;
}
```

```

optional string apgroup_name = 12;
optional string domain_name = 13;
optional uint64 sampleTime = 14;
optional uint32 aggregationInterval = 15;
optional string apMac = 16
repeated UrlFilteringMsg url_info = 17;
}

```

## Field Description

**TABLE 3** Flow message descriptions

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
app	string	snapshot	NULL	Application name
port	uint32	snapshot	NULL	Application destination port number
client_mac	string	snapshot	NULL	Destination MAC address
ap_mac	string	snapshot	NULL	AP MAC address
ssid	string	snapshot	NULL	WLAN SSID
uplink	uint64	snapshot	SUM	Rx bytes for this application
downlink	uint64	snapshot	SUM	Tx bytes for this application
total	uint64	snapshot	SUM	Tx + Rx bytes for the application
category	string	snapshot	NULL	Application category
wlangroup_id	string	snapshot	NULL	WLAN group identifier
wsgwlan_id	uint32	snapshot	NULL	WSG WLAN identifier
apradiotype_id	uint32	snapshot	NULL	Radio mode for the radio interface
wlangroup_name	string	snapshot	NULL	WLAN group name
wlantenant_name	string	snapshot	NULL	WLAN tenant name
radio_id	uint32	snapshot	NULL	WLAN radio ID
client_ipv4	string	snapshot	NULL	Client's IPv4 address
client_ipv6	string	snapshot	NULL	Client's IPv6 address
client_hostname	string	snapshot	NULL	Client host name

**TABLE 4** UrlFilteringMsg descriptions

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
url	string	snapshot	NULL	Client access URL
cat_id	uint32	snapshot	NULL	Category identifier of the URL
cat_name	string	snapshot	NULL	Category name of the URL
num_hits	uint32	snapshot	SUM	Number of client counts that access the URL
client_mac	string	snapshot	NULL	Client's MAC address
ap_mac	string	snapshot	NULL	AP MAC address
ssid	string	snapshot	NULL	WLAN SSID where client is connected

**TABLE 4** UriFilteringMsg descriptions (continued)

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
uplink	uint64	snapshot	SUM	Uplink bytes sent from client
downlink	uint64	snapshot	SUM	Downlink bytes received by client
total	uint64	snapshot	SUM	Total of sent and received bytes by the client
wlangroup_id	string	snapshot	NULL	WLAN group identifier
wsgwlan_id	uint32	snapshot	NULL	WSG WLAN identifier
wlantenant_id	uint32	snapshot	NULL	WLAN tenant identifier
apradiotype_id	uint32	snapshot	NULL	Radio mode for the radio interface
wlangroup_name	string	snapshot	NULL	WLAN group name
wlantenant_name	string	snapshot	NULL	WLAN tenant name
radio_id	uint32	snapshot	NULL	Radio interface identifier
client_ipv4	string	snapshot	NULL	Client's IPv4 address
client_ipv6	string	snapshot	NULL	Client's IPv6 address
client_hostname	string	snapshot	NULL	Client host name
session_start	uint64	snapshot	NULL	URL Filtering session start timestamp
session_stop	uint64	snapshot	NULL	URL Filtering session start timestamp

**TABLE 5** WifiCallingMsg descriptions

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
operator_name	string	snapshot	NULL	Operator name
priority	uint32	snapshot	NULL	Call priority
timestamp_start	uint64	snapshot	NULL	Date and time at the start of the WiFi call
timestamp_end	uint64	snapshot	NULL	Date and time at the end of the WiFi call
client_mac	string	snapshot	NULL	Client's MAC address
ap_mac	string	snapshot	NULL	AP MAC address
ssid	string	snapshot	NULL	WLAN SSID where client is connected
uplink	uint64	snapshot	SUM	Uplink bytes sent from client
downlink	uint64	snapshot	SUM	Downlink bytes received by client
total	uint64	snapshot	SUM	Total of sent and received bytes by the client
wlangroup_id	string	snapshot	NULL	WLAN group identifier
wsgwlan_id	uint32	snapshot	NULL	WSG WLAN identifier
wlantenant_id	uint32	snapshot	NULL	WLAN tenant identifier
apradiotype_id	uint32	snapshot	NULL	AP Radio mode
wlangroup_name	string	snapshot	NULL	WLAN group name

**TABLE 5** WifiCallingMsg descriptions (continued)

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
wlantenant_name	string	snapshot	NULL	WLAN tenant name
radio_id	uint32	snapshot	NULL	Radio interface identifier
client_ipv4	string	snapshot	NULL	Client's IPv4 address
client_ipv6	string	snapshot	NULL	Client's IPv6 address
client_hostname	string	snapshot	NULL	Client host name
epdg_fqdn	string	snapshot	NULL	FQDN of operator epdg gateway

**TABLE 6** ArcMessage descriptions

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
version	string	snapshot	NULL	Arc data version number
zone_ID	string	snapshot	NULL	Zone UUID
apgroup_ID	string	snapshot	NULL	AP group UUID
rep_flow	.FlowMessage	snapshot	NULL	ARC stats message type
timestamp	uint64	snapshot	NULL	Timestamp for the message reported
cluster_id	string	snapshot	NULL	Cluster identifier
domain_id	string	snapshot	NULL	Domain identifier
aptenant_id	string	snapshot	NULL	AP tenant identifier
map_id	string	snapshot	NULL	MAP identifier
aptenant_name	string	snapshot	NULL	AP tenant name
zone_name	string	snapshot	NULL	Zone name
apgroup_name	string	snapshot	NULL	AP group name
domain_name	string	snapshot	NULL	Domain name
sampleTime	uint64	snapshot	NULL	AVC data sampling timestamp
aggregationInterval	uint32	snapshot	NULL	Stats aggregation interval
apMac	string	snapshot	NULL	AP MAC address
url_info	.UrlFilteringMsg	snapshot	NULL	URL Filtering Stats message type
wfc_info	.WifiCallingMsg	snapshot	NULL	WiFi Calling stats message type



## ap\_avc\_all.proto

```

/**
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 * copyright and trade secret laws. You may not view, use, disclose, copy, or distribute this file or any
 * information contained herein except pursuant to a valid license from Ruckus.
 */
option java_package = "com.ruckuswireless.scg.protobuf";

message APAVCStats {
    required uint32 version = 1;
    required .ArcMessage arc_message = 2;
}

```

## Field Description

**TABLE 7** APAVCStats descriptions

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
version	uint32			
arc_message	.ArcMessage			

## ap\_client.proto

```
/**
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 * copyright and trade secret laws. You may not view, use, disclose, copy, or distribute this file or any
 * information contained herein except pursuant to a valid license from Ruckus.
 */
option java_package = "com.ruckuswireless.scg.protobuf";

message APClientInfo {
  required string clientMac = 1;
  optional string ipAddress = 2;
  optional string ipv6Address = 3;
  optional int32 wlanId = 4;
  optional int32 rssi = 5;
  optional int32 receiveSignalStrength = 6;
  optional int32 noiseFloor = 7;
  optional int32 vlan = 8;
  optional uint64 rxFrames = 9;
  optional uint64 rxBytes = 10;
  optional uint64 txFrames = 11;
  optional uint64 txBytes = 12;
  optional uint64 txMgmtFrames = 13;
  optional uint64 rxMgmtFrames = 14;
  optional uint32 throughputEst = 15;
  optional uint64 txDropDataFrames = 16;
  optional uint64 txDropMgmtFrames = 17;
  optional uint32 rxCRCErrFrames = 18;
  optional uint32 txRetry = 19;
  optional string osType = 20;
  optional APClientRadio radio = 21;
  repeated TCWithQuota tcWithQuota = 22;
  optional string cpeMac = 23;
  /* jump to index 1000, for new requirement from SNMP and SCI */
  optional string ConnectMode = 1001;
  optional string Username = 1002;
  optional string SessionId = 1003;
  optional string MultipleSessionId = 1004;
  optional string AuthMode = 1005;
  optional uint64 DiscTimestamp = 1006;
  optional uint32 RxByteRate = 1007;
  optional uint32 TxByteRate = 1008;
  optional uint32 RxAvgByteRate = 1009;
  optional uint32 TxAvgByteRate = 1010;
  optional uint32 RxError = 1011;
  optional uint32 TxError = 1012;
  optional uint32 ReassocCount = 1013;
  optional uint32 TxRetryBytes = 1014;
  optional uint32 RxDropPkts = 1015;
}

message APClientWlan {
  required string ssid = 1;
  optional string bssid = 2;
  optional int32 vlan = 3;
  optional int32 wsgWlanId = 4;
  optional int32 wlanId = 5;
  optional string wlangroup_id = 6;
  optional string wlantenant_id = 7;
  optional string wlangroup_name = 8;
  optional string wlantenant_name = 9;
}

message APClientRadio {
  required int32 radioId = 1;
  optional string mode = 2;
  optional string radioMode = 3;
  optional int32 channel = 4;
  optional uint32 channelWidth = 5;
}
```

```

    optional APClientWlan wlan = 6;
}
message APClientStats {
    required uint32 version = 1;
    optional string ap = 2;
    optional uint64 timestamp = 3;
    optional uint64 seqNumber = 4;
    optional string zone_id = 5;
    repeated APClientInfo clients = 6;
    optional string apgroup_id = 7;
    optional string cluster_id = 8;
    optional string domain_id = 9;
    optional string aptenant_id = 10;
    optional string map_id = 11;
    optional string aptenant_name = 12;
    optional string zone_name = 13;
    optional string apgroup_name = 14;
    optional string domain_name = 15;
    optional uint64 sampleTime = 16;
    optional uint32 aggregationInterval = 17;
    optional string dataplane_name = 18;
}

```

## Field Description

**TABLE 8 AP Client information**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
clientMac	string	snapshot	NULL	MAC address of the client
ipAddress	string	snapshot	NULL	IP address of the client
ipv6Address	string	snapshot	NULL	IPv6 address of the AP
wlanId	int	snapshot	NULL	WLAN interface ID
rssi	int	snapshot	AVG	Last recorded RSSI/SNR
receiveSignalStrength	int	snapshot	AVG	Last recorded signal strength received.
noiseFloor	int	snapshot	AVG	Last recorded noise floor
vlan	uint64	snapshot	NULL	Client VLAN ID
rxFrames	uint64	delta	SUM	Data frames received
rxBytes	uint64	delta	SUM	Data count received (in bytes)
txFrames	uint64	delta	SUM	Data frames transmitted
txBytes	uint64	delta	SUM	Data count transmitted (in bytes)
txMgmtFrames	uint64	snapshot	SUM	Accumulated number of transmitted packets
rxMgmtFrames	uint64	snapshot	SUM	Accumulated number of received packets
throughputEst	uint32	snapshot	AVG	Current throughput
txDropDataFrames	uint64	snapshot	SUM	Total Tx data frames dropped or dropped by MQ. In AP internal design, it has a messages queue (MQ) to queue all packets that AP plans to forward to clients. The AP transmit packets to clients according to the priority and scheduling. The MQ is Ruckus proprietary.

**TABLE 8 AP Client information (continued)**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
txDropMgmtFrames	uint64	snapshot	SUM	Total transaction management frames dropped (or dropped by MQ)
rxCRCErrFrames	uint32	snapshot	SUM	Number of Rx frames with CRC errors
txRetry	uint32	snapshot	SUM	Number of retried frames
osType	string	snapshot	NULL	Client OS type, such as Windows7/Vista, Android.
radio	.APClientRadio	serialization	NULL	Radio information
ConnectMode	string	snapshot	NULL	Client wireless connection mode.
Username	string	snapshot	NULL	Client authorization username.
SessionId	string	snapshot	NULL	Client accounting session ID.
MultipleSessionId	string	snapshot	NULL	Client accounting multiple session ID.
AuthMode	string	snapshot	NULL	Client authentication mode.
DiscTimestamp	uint64	snapshot	NULL	Client disconnection timestamp.
RxAvgByteRate	uint32	snapshot	AVG	Client average receive data rate
TxAvgByteRate	uint32	snapshot	AVG	Client average transmission data rate
RxError	uint32	snapshot	Snapshot	Client RX CRC error count.
TxRetryBytes	uint32	snapshot	Snapshot	Client current TX retry count.
tcWithQuota	.APClientInfo.TCWithQuota	serialization	NULL	Traffic class with quota.
cpeMac	string	snapshot	NULL	Mac address for the client connected behind CPE.

**TABLE 9 AP Client Info .TCWithQuota**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
tcName	string	snapshot	NULL	Name of the traffic class.
tcMaxQuota	string	snapshot	NULL	Amount of quota assigned(x) in bytes, received during access accept.
tcRemainingQuota	string	snapshot	NULL	Bytes remaining for the client after consuming n bytes (x-n).

**TABLE 10 AP Client WLAN**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
ssid	string	snapshot	NULL	SSID of the WLAN
bssid	string	snapshot	NULL	BSSID of the WLAN
vlan	uint64	snapshot	NULL	Client VLAN ID

**TABLE 10 AP Client WLAN (continued)**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
wsgWlanId	int	snapshot	NULL	Unique WLAN ID assigned by the controller
wlanId	int	snapshot	NULL	WLAN interface ID
wlangroup_id	string	snapshot	NULL	WLAN Group identifier
wlantenant_id	string	snapshot	NULL	WLAN tenant identifier
wlangroup_name	string	snapshot	NULL	WLAN Group name
wlantenant_name	string	snapshot	NULL	WLAN tenant name

**TABLE 11 AP Client Radio**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
radioid	int32	snapshot	NULL	Radio ID number used by the AP
mode	string	snapshot	NULL	Radio mode used by the AP's wireless interface
80211RadioMode	string	snapshot	NULL	Radio mode used by the AP
channel	int32	snapshot	NULL	Current radio channel used by the AP
channelWidth	uint32	snapshot	NULL	Channel width used by the AP's radio
wlan	.APClientWlan	snapshot	NULL	WLAN information for this client

**TABLE 12 AP Client Stats**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
version	uint32	snapshot	NULL	GPB version
ap	string	snapshot	NULL	MAC address of the AP
timeStamp	string	snapshot	NULL	Date and time this report was generated
seqNumber	uint64_t	snapshot	NULL	Counter for generating mesh statistics. The count increases by one whenever the AP generates mesh statistics. When the AP restarts, the counter also resets to zero(0).
zoneUUID	string	snapshot	NULL	Unique zone ID (for example, b381206b-2e5d-43dc-b249-e36ffae9855c) assigned by the controller
clients	.APClientInfo	Serialization	NULL	AP current client list
apgroup_id	string	snapshot	NULL	AP group UUID
cluster_id	string	snapshot	NULL	Cluster UUID
domain_id	string	snapshot	NULL	Domain UUID
aptenant_id	string	snapshot	NULL	AP tenant UUID

**TABLE 12 AP Client Stats (continued)**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
map_id	string	snapshot	NULL	Map UUID
aptenant_name	string	snapshot	NULL	AP tenant name
zone_name	string	snapshot	NULL	Zone name
apgroup_name	string	snapshot	NULL	AP group name
domain_name	string	snapshot	NULL	Domain name
sampleTime	uint64	snapshot	NULL	Timestamp for this stats report generation
aggregationInterval	uint32	snapshot	NULL	Interval time for data aggregation
deviceName	string	snapshot	NULL	AP device name
serialNumber	string	snapshot	NULL	The serial number in AP board data

# ap\_hccd\_report.proto

```

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 */
option java_package = "com.ruckuswireless.scg.protobuf";
import "nanopb.proto";

message ApHccdClientReportConnection {
  optional string client_mac = 1;
  optional uint64 timestamp = 2;
  optional int32 connection_status = 3;
  optional int32 failed_msg_id = 4;
  repeated int32 message_ids = 5;
  optional uint32 wlan_id = 6;
  optional uint32 radio_id = 7;
  optional string ssid = 8;
  optional string wlanType = 9;
  optional float snr = 10;
  optional int32 failure_type = 11;
  optional int32 vlan = 12;
  optional int32 reason_code = 13;
  optional string info = 14;
  optional uint64 TT = 15;
  optional int32 isRoaming = 16;
}

message ApHccdReportMessage {
  optional uint32 version = 1;
  optional string ap_mac = 2;
  optional uint64 timestamp = 3;
  optional uint64 seqNumber = 4;
  optional string zone_id = 5;
  optional string apgroup_id = 6;
  optional string cluster_id = 7;
  optional string domain_id = 8;
  optional string aptenant_id = 9;
  optional string map_id = 10;
  optional string deviceName = 11;
  optional string aptenant_name = 12;
  optional string zone_name = 13;
  optional string apgroup_name = 14;
  optional string domain_name = 15;
  optional uint64 sampleTime = 16;
  optional uint32 aggregationInterval = 17;
  optional string apIpAddress = 18;
  optional string apIpv6Address = 19;
  repeated ApHccdClientReportConnection apHccdClients = 20 [(nanopb).type = FT_POINTER];
}

```

## Field Description

**TABLE 13 AP HCCD Client Report Connection information**

Attribute Name	ValueType (size)	Property(Snapsh ot/Delta/ Serialization)	ValueAggregation Type(SUM,MAX,M IN,AVG,NULL)	Description
client_mac	string	snapshot	NULL	Client MAC address
timestamp	uint64	snapshot	NULL	Timestamp for starting to record this client session

**TABLE 13 AP HCCD Client Report Connection information (continued)**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
connection_status	int32	snapshot	NULL	Client session connection status (success or failure)
failed_msg_id	int32	snapshot	NULL	Message ID to indicate what failures step in whole connection
message_ids	int32	Serialization	NULL	A sequence of message ID are recorded for this client session
wlan_id	uint32	snapshot	NULL	WLAN Id that is connected by client
radio_id	uint32	snapshot	NULL	Radio Id that is connected by client
ssid	string	snapshot	NULL	SSID that is connected by client
failure_type	uint32	snapshot	NULL	Classify this failure client session belong to which failure case (auth, assoc, eap, radio, dhcp)
vlan	uint32	snapshot	NULL	Vlan ID is used by client
reason_code	uint32	snapshot	NULL	Reason code for deauth/disassoc frame
info	string	snapshot	NULL	Client session disconnection description
TTF	uint64	snapshot	NULL	Time spent for this failure connection
isRoaming	int32	snapshot	NULL	Flag to indicate this connection session is roaming or new join

**TABLE 14 AP HCCD Report information**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
version	uint32	snapshot	NULL	AP HCCD version
ap_mac	string	snapshot	NULL	AP MAC address
timestamp	uint64	snapshot	NULL	Timestamp to generate this stats report
seqNumber	uint64	snapshot	NULL	Sequence number to identify this stats report
zone_id	string	snapshot	NULL	Zone UUID
apgroup_id	string	snapshot	NULL	AP gorup UUID
cluster_id	string	snapshot	NULL	Cluster UUID
domain_id	string	snapshot	NULL	Domain UUID
aptenant_id	string	snapshot	NULL	AP tenant UUID
map_id	string	snapshot	NULL	MAP UUID
deviceName	string	snapshot	NULL	AP device name
aptenant_name	string	snapshot	NULL	AP tenant name
zone_name	string	snapshot	NULL	Zone name
apgroup_name	string	snapshot	NULL	AP group name



**TABLE 14 AP HCCD Report information (continued)**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
domain_name	string	snapshot	NULL	Domain name
sampleTime	uint64	snapshot	NULL	Timestamp for generating this report
aggregationInterval	uint32	snapshot	NULL	Interval time for aggregating stats data
apIpAddress	string	snapshot	NULL	AP IPv4 address
apIpv6Address	string	snapshot	NULL	AP IPv6 address
apHccdClients	.ApHccdClientReportConnection	Serialization	NULL	Serialization data for failure client session record

## ap\_mesh.proto

```
/**
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 * information contained herein except pursuant to a valid license from Ruckus.
 */
option java_package = "com.ruckuswireless.scg.protobuf";

message APMeshDownlink {
    required string downMac = 1;
    optional uint32 type = 2;
    optional int32 rssi = 3;
    optional uint64 txBytes = 4;
    optional uint64 txFrames = 5;
    optional uint64 rxBytes = 6;
    optional uint64 rxFrames = 7;
}

message APMeshUplink {
    required string upMac = 1;
    optional uint32 type = 2;
    optional int32 rssi = 3;
    optional uint64 txBytes = 4;
    optional uint64 txFrames = 5;
    optional uint64 rxBytes = 6;
    optional uint64 rxFrames = 7;
}

message APMeshNeighbor {
    required string mac = 1;
    optional int32 rssi = 2;
}

message APMeshStats {
    required uint32 version = 1;
    required string ap = 2;
    optional uint64 timestamp = 3;
    optional uint64 seqNumber = 4;
    optional string zone_id = 5;
    optional int32 meshRole = 6;
    optional string meshSSID = 7;
    optional string meshPassphraseMD5 = 8;
    optional int32 hops = 9;
    repeated APMeshNeighbor neighbor = 10;
    repeated APMeshUplink uplink = 11;
    repeated APMeshDownlink downlink = 12;
    optional string apgroup_id = 13;
    optional string cluster_id = 14;
    optional string domain_id = 15;
    optional string aptenant_id = 16;
    optional string map_id = 17;
    optional string aptenant_name = 18;
    optional string zone_name = 19;
    optional string apgroup_name = 20;
    optional string domain_name = 21;
    optional uint64 sampleTime = 22;
    optional uint32 aggregationInterval = 23;
    optional bool isMeshEnable = 24;
    optional string serialNumber = 25;
}
```

## Field Description

**TABLE 15 AP Mesh Downlink information**

Attribute Name	ValueType (size)	Property(Snapshot /Delta/ Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
downMac	string	snapshot	NULL	MAC address of the mesh downlink AP
type	uint32	snapshot	NULL	Link status of the mesh downlink AP
rssI	int32	snapshot	AVG	RSSI of the mesh downlink AP
txBytes	uint64	snapshot	SUM	Total size of data and management packets transmitted since the last AP restart
txFrams	uint64	snapshot	SUM	Total number of data and management packets transmitted since the last AP restart
rxBytes	uint64	snapshot	SUM	Total size of data and management packets received since the last AP restart
rxFrames	uint64	snapshot	SUM	Total number of data and management packets received since the last AP restart

**TABLE 16 AP Mesh Uplink Information**

Attribute Name	ValueType (size)	Property(Snapshot /Delta/ Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
upMac	string	snapshot	NULL	MAC address of the mesh uplink AP
type	uint32	snapshot	NULL	Link status of the mesh uplink AP
rssI	int32	snapshot	AVG	RSSI of the mesh uplink AP
txBytes	uint64	snapshot	SUM	Total size of data and management packets transmitted since the last AP restart
txFrams	uint64	snapshot	SUM	Total number of data and management packets transmitted since the last AP restart
rxBytes	uint64	snapshot	SUM	Total size of data and management packets received since the last AP restart
rxFrames	uint64	snapshot	SUM	Total number of data and management packets received since the last AP restart

**TABLE 17 AP Mesh Neighbor Information**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
mac	string	snapshot	NULL	MAC address of the neighboring AP
rssi	int32	snapshot	NULL	RSSI of the neighboring AP

**TABLE 18 AP Mesh Statistics Information**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
version	uint32	snapshot	NULL	Mesh stats version
ap	string	snapshot	NULL	MAC address of theAP
timeStamp	string	snapshot	NULL	Date and time these statistics were generated
seqNumber	uint64	snapshot	NULL	Counter for generating mesh statistics.The count increases by one whenever the AP generates mesh statistics.When the AP restarts,the counter also resets to zero(0).
zoneUUID	string	snapshot	NULL	Unique zone ID (for example, b381206b-2e5d-43dc-b249-e36ffae9855c) assigned by the controller
meshRole	int	snapshot	NULL	Role of the AP on the mesh network (if mesh networking is enabled). Possible values include: <ul style="list-style-type: none"> <li>• 0: MESH_DISABLED</li> <li>• 1: MESH_RAP</li> <li>• 2: MESH_MAP</li> <li>• 3: MESH_EAP</li> <li>• 4: MESH_DOWN</li> <li>• 5: MESH_UNDEFINED</li> </ul>
meshSSID	int	snapshot	NULL	SSID of the mesh network
meshPassphraseMD5	int	snapshot	NULL	Passphrase required for the AP to join the mesh network
hops	int	snapshot	NULL	Depth or number of hops between this AP and its parent root AP
neighbor	.APMeshNeighbor	Serialization	NULL	Serialization neighbors data
uplink	.APMeshUplink	Serialization	NULL	Serialization mesh uplink data
downlink	.APMeshDownlink	Serialization	NULL	serialization mesh downlink data
apgroup_id	string	snapshot	NULL	AP group UUID
cluster_id	string	snapshot	NULL	Cluster UUID
domain_id	string	snapshot	NULL	Domain UUID
aptenant_id	string	snapshot	NULL	AP tenant UUID
map_id	string	snapshot	NULL	MAP UUID

**TABLE 18 AP Mesh Statistics Information (continued)**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
aptenant_name	string	snapshot	NULL	AP tenant name
zone_name	string	snapshot	NULL	Zone name
apgroup_name	string	snapshot	NULL	AP group name
domain_name	string	snapshot	NULL	Domain name
sampleTime	uint64	snapshot	NULL	Timestamp for generating this stats report
aggregationInterval	uint32	snapshot	NULL	Interval time to aggregate data
isMeshEnable	boolean	snapshot	NULL	An indicate for mesh status
serialNumber	string	snapshot	NULL	The serial number in AP board data

## ap\_report.proto

```
/**
 * Copyright 2016 Ruckus Wireless, Inc. All rights reserved.
 * RUCKUS WIRELESS, INC. CONFIDENTIAL -
 * This is an unpublished, proprietary work of Ruckus Wireless, Inc., and is fully protected under
 * copyright and trade secret laws. You may not view, use, disclose, copy, or distribute this file or any
 * information contained herein except pursuant to a valid license from Ruckus.
 */
option java_package = "com.ruckuswireless.scg.protobuf";

message APReportPerDnsServer {
    required string ipAddress = 1;
    optional uint64 req_cnt = 2;
    optional uint64 resp_cnt = 3;
}

message APReportDnsStats {
    required int32 server_cnt = 1;
    optional .APReportPerDnsServer perDnsServer = 2;
}

message APReportBinWlan {
    optional string ap_mac = 1;
    optional uint64 time = 2;
    optional uint64 binStartTime = 3;
    optional string radioMode = 4;
    optional string mode = 5;
    optional int32 channel = 6;
    optional string ssid = 7;
    optional string bssid = 8;
    optional int32 wsgWlanId = 9;
    optional int32 wlanId = 10;
    optional uint32 maxNumClients = 11;
    optional uint32 minNumClients = 12;
    optional int32 avgNumClients = 13;
    optional uint64 rxBytes_r = 14;
    optional uint64 txBytes_r = 15;
    optional uint64 rxFrames_r = 16;
    optional uint64 txFrames_r = 17;
    optional uint64 txFail_r = 18;
    optional uint64 rxRateKbps = 19;
    optional uint64 txRateKbps = 20;
    optional uint32 newAssoc = 21;
    optional uint32 failedAssoc = 22;
    optional uint32 rxFail_r = 23;
    optional uint64 peakRx_r = 24;
    optional uint64 peakTx_r = 25;
    optional uint64 rxDataFrames_r = 26;
    optional uint64 rxDataBytes_r = 27;
    optional uint64 rxMgmtFrames_r = 28;
    optional uint64 rxMgmtBytes_r = 29;
    optional uint64 txDataFrames_r = 30;
    optional uint64 txDataBytes_r = 31;
    optional uint64 txMgmtFrames_r = 32;
    optional uint64 txMgmtBytes_r = 33;
    optional uint64 rxBcastFrames_r = 34;
    optional uint64 rxMcastFrames_r = 35;
    optional uint64 rxUcastFrames_r = 36;
    optional uint64 txBcastFrames_r = 37;
    optional uint64 txMcastFrames_r = 38;
    optional uint64 txUcastFrames_r = 39;
    optional uint64 txDropDataFrames_r = 40;
    optional string wlangroup_id = 42;
    optional string wlantenant_id = 43;
    optional string wlangroup_name = 44;
    optional string wlantenant_name = 45;
    optional string wlanName = 46;
    optional uint32 authFailureCount = 47;
    optional uint32 authSuccessCount = 48;
}
```

```

optional uint32 assocFailureCount = 49;
optional uint32 assocSuccessCount = 50;
optional uint32 eapFailureCount = 51;
optional uint32 eapSuccessCount = 52;
optional uint32 radiusFailureCount = 53;
optional uint32 radiusSuccessCount = 54;
optional uint32 dhcpFailureCount = 55;
optional uint32 dhcpSuccessCount = 56;
optional uint64 txDropMgmtFrames_r = 57;
optional uint32 staSmartRoamDisconCnt = 58;
optional uint32 staIdleDisconCnt = 59;
optional uint32 staLeaveDisconCnt = 60;
optional uint32 staInvalidDisconCnt = 61;
optional uint32 staRadioFailDisconCnt = 62;
optional uint32 staAPKickDisconCnt = 63;
optional uint64 rxDataBytesSplitTunnel = 64;
optional uint64 txDataBytesSplitTunnel = 65;
optional uint64 rxDataFramesSplitTunnel = 66;
optional uint64 txDataFramesSplitTunnel = 67;
optional .APReportDnsStats dnsStats = 68;
optional uint32 roamingFailureCount = 69;
optional uint32 L3authFailureCount = 70;
optional uint32 L3authSuccessCount = 71;
}

message APReportBinRadio {
  optional uint32 radioId = 1;
  optional uint32 airtime = 2;
  optional uint32 airtimeB = 3;
  optional uint32 airtimeRx = 4;
  optional uint32 airtimeTx = 5;
  optional uint32 phyError = 6;
  optional uint64 rxBytes_r = 7;
  optional uint64 txBytes_r = 8;
  optional uint64 rxFrames_r = 9;
  optional uint64 txFrames_r = 10;
  optional int32 noiseFloor = 11;
  optional uint64 retry = 12;
  repeated APReportBinWlan binWlan = 13;
  optional uint32 latency = 14;
  optional uint32 capacity = 15;
  optional float connectionFailure = 16;
  optional uint32 connectionAuthFailureCount = 17;
  optional uint32 connectionAssocFailureCount = 18;
  optional uint32 connectionTotalCount = 19;
  optional uint32 connectionAuthSuccessCount = 20;
  optional uint32 connectionAssocSuccessCount = 21;
  optional uint32 connectionEAPFailureCount = 22;
  optional uint32 connectionEAPSuccessCount = 23;
  optional uint32 connectionRadiusFailureCount = 24;
  optional uint32 connectionRadiusSuccessCount = 25;
  optional uint32 connectionDHCFFailureCount = 26;
  optional uint32 connectionDHCPSuccessCount = 27;
  optional uint32 connectionTotalSuccess = 28;
  optional uint32 connectionTotalFailure = 29;
  optional uint32 medianTxRadioMCSRate = 30;
  optional uint32 medianRxRadioMCSRate = 31;
  optional uint32 connectionL3AuthFailureCount = 32;
  optional uint32 connectionL3AuthSuccessCount = 33;
}

message APReportBinTunnel {
  required string gw = 1;
  optional int32 index = 2;
  optional int32 isActive = 3;
  optional uint64 cICMP = 4;
  optional uint64 cNonICMP = 5;
  optional uint64 cDisconnect = 6;
  optional uint64 rxBytes = 7;
  optional uint64 rxPkts = 8;
  optional uint64 rxDropPkts = 9;
  optional uint64 rxErrPkts = 10;
}

```

```
    optional uint64 txBytes = 11;
    optional uint64 txPkts = 12;
    optional uint64 txDropPkts = 13;
    optional uint64 txErrPkts = 14;
    optional uint64 txFragPkts = 15;
    optional int32 type = 16;
    optional string apIpAddress = 17;
}

message APReportBinIPSec {
    required uint64 ipsecSessionTime = 1;
    optional uint64 ipsecTxPkts = 2;
    optional uint64 ipsecRxPkts = 3;
    optional uint64 ipsecTxBytes = 4;
    optional uint64 ipsecRxBytes = 5;
    optional uint64 ipsecTxDropPkts = 6;
    optional uint64 ipsecRxDropPkts = 7;
    optional uint64 ipsecTxIdleTime = 8;
    optional uint64 ipsecRxIdleTime = 9;
    optional string apIpAddress = 10;
    optional string gw = 11;
}

message APReportBinClient {
    required string ap = 1;
    optional uint64 time = 2;
    optional uint64 binStartTime = 3;
    optional string radioMode = 4;
    optional string ap80211RadioMode = 5;
    optional string auth = 6;
    optional string encryption = 7;
    optional string clientMac = 8;
    optional string bssid = 9;
    optional string ssid = 10;
    optional string username = 11;
    optional string clientIP = 12;
    optional uint64 clientVlan = 13;
    optional string osType = 14;
    optional string hostname = 15;
    optional int32 channel = 16;
    optional uint32 channelWidth = 17;
    optional int32 rssi = 18;
    optional int32 maxRssi = 19;
    optional int32 minRssi = 20;
    optional int32 firstRssi = 21;
    optional int32 receiveSignalStrength = 22;
    optional int32 firstReceiveSignalStrength = 23;
    optional int32 maxReceiveSignalStrength = 24;
    optional int32 minReceiveSignalStrength = 25;
    optional int32 noiseFloor = 26;
    optional string location = 27;
    optional uint64 rxBytes_r = 28;
    optional uint64 txBytes_r = 29;
    optional uint64 rxFrames_r = 30;
    optional uint64 txFrames_r = 31;
    optional uint32 throughputEst = 32;
    optional uint64 firstSampleTime = 33;
    optional uint64 txDropDataFrames_r = 35;
    optional uint64 rxCRCErrFrames_r = 36;
    optional string sessionId = 37;
    optional string multiSessionId = 38;
    optional uint64 firstConnection = 39;
    optional uint64 firstAuth = 40;
    optional uint64 ipAssignTime = 41;
    optional uint64 disconnectTime = 42;
    optional uint64 sessionTime = 43;
    optional uint32 radioId = 44;
    optional int32 wsgWlanId = 45;
    optional string wlangroup_id = 46;
    optional string wlangroup_name = 47;
    optional uint32 disconnectReason = 48;
    optional string wlanName = 49;
}
```



```
optional string wlantenant_id = 50;
optional string wlantenant_name = 51;
optional uint64 rxBytes = 52;
optional uint64 txBytes = 53;
optional uint64 rxRatebps = 54;
optional uint64 txRatebps = 55;
optional uint32 medianTxMCSRate = 56;
optional uint32 medianRxMCSRate = 57;
optional uint64 clientAuthTTC = 58;
optional uint64 clientAssocTTC = 59;
optional uint64 clientEapTTC = 60;
optional uint64 clientRadiusTTC = 61;
optional uint64 clientDhcpTTC = 62;
}

message HccdConnMessage {
  optional uint64 timestamp = 1;
  optional int32 message_id = 2;
  optional int32 source = 3;
  optional int32 destination = 4;
  optional int32 status_code = 5;
}

message HccdClientConnection {
  optional string client_mac = 1;
  optional uint64 timestamp = 2;
  optional int32 connection_status = 3;
  /* remove client_sm_map */
  optional int32 failed_msg_id = 5;
  repeated HccdConnMessage hccdConnMessages = 6;
  optional uint32 wlan_id = 7;
  optional uint32 radio_id = 8;
  optional string ssid = 9;
  optional string wlanType = 10;
  optional float snr = 11;
  optional int32 failure_type = 12;
  optional int32 vlan = 13;
  optional int32 reason_code = 14;
  optional string info = 15;
}

message APReportBin {
  required int32 bin = 1;
  optional int32 uptime_r = 2;
}

message APReportStats {
  required uint32 version = 1;
  optional string ap = 2;
  optional uint64 timestamp = 3;
  optional uint64 seqNumber = 4;
  optional string zone_id = 5;
  repeated APReportBin binCount = 6;
  repeated APReportBinClient binClient = 7;
  repeated APReportBinIPSec binIPSec = 8;
  repeated APReportBinTunnel binTunnel = 9;
  repeated APReportBinRadio binRadio = 10;
  optional string deviceName = 11;
  optional string apgroup_id = 12;
  optional string cluster_id = 13;
  optional string domain_id = 14;
  optional string aptenant_id = 15;
  optional string map_id = 16;
  optional string aptenant_name = 17;
  optional string zone_name = 18;
  optional string apgroup_name = 19;
  optional string domain_name = 20;
  optional uint64 sampleTime = 21;
  optional uint32 aggregationInterval = 22;
  optional string apIpAddress = 23;
  optional string apIpv6Address = 24;
  repeated HccdClientConnection hccdClientConnections = 25;
```

```

        optional bool isMonitoringEnabled = 29;
    }

```

## Field Description

**TABLE 19 AP Report Per Dns Server Information**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
ipAddress	string	snapshot	NULL	DNS IP address
req_cnt	uint64	snapshot	NULL	DNS Request Counter
resp_cnt	uint64	snapshot	NULL	DNS Response Counter

**TABLE 20 AP Report Dns Stats Information**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
ipsecSessionTime	uint32	snapshot	NULL	DNS Server Count per wlan
ipsecTxPkts	.APReportPerDnsServer	snapshot	MAXNULL	Per DNS Server Statistics

**TABLE 21 AP Report Bin WLAN Information**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
ap_mac	string	snapshot	NULL	MAC address of the AP
time	uint64_t	snapshot	NULL	First sample time in this bin. The AP samples stats every 90 seconds internally, when AP boots up. So if AP boots up at 10:08:00, then AP gets stats at 10:09:30, 10:11:00, 10:12:30, 10:14:00, 10:15:30. So the time is 10:09:30 in Bin (10:00~10:15), and the time is 10:15:30 in Bin (10:15~10:30)
binStartTime	uint64	snapshot	NULL	Bin start time. The start timestamp of each Bin. For example it is 00:00:00 in Bin1 (00:00~00:15), and it is 00:15:00 in Bin2(00:15~00:30)...
80211RadioMode	string	snapshot	NULL	Radio mode used by the AP
mode	string	snapshot	NULL	Radio mode used by the AP
channel	int	snapshot	NULL	Radio channel used by the AP
ssid	string	snapshot	NULL	SSID of the WLAN
bssid	string	snapshot	NULL	BSSID of the WLAN
wsgWlanId	int	snapshot	NULL	WLAN ID assigned by the controller
wlanId	int	snapshot	NULL	WLAN interface ID

**TABLE 21 AP Report Bin WLAN Information (continued)**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
maxNumClients	uint32	snapshot	MAX	Highest number of clients during this sampling period
minNumClients	uint32	snapshot	MIN	Lowest number of clients during this sampling period
avgNumClients	int	snapshot	AVG	Average number of clients during this sampling period
rxBytes_r	uint64	delta	SUM	Total size of data and management packets received
rxFrames_r	uint64	delta	SUM	Total size of data and management frames received
txFrames_r	uint64	delta	SUM	Total size of data and management frames transmitted
txFail_r	uint64	snapshot	SUM	Total number of Tx errors
rxRateKbps	uint64	delta	SUM	Rx rate
txRateKbps	uint64	delta	SUM	Tx rate
newAssoc	uint32	Delta	AVG	Number of new client associations during this sampling period
failedAssoc	uint32	Delta	SUM	Failed associate number in bin period
rxFail_r	uint32	snapshot	SUM	No space in Linux buffers
peakRx_r	uint64	Delta	SUM	Total delta bytes in one bin period for RX data and mgmt. frame
peakTx_r	uint64	Delta	SUM	Total delta bytes in one bin period for TX data and mgmt.frame
rxDataFrames_r	uint64	snapshot	SUM	Accumulate Rx packet number
rxDataBytes_r	uint64	snapshot	SUM	Accumulate Rx data bytes
rxMgmtFrames_r	uint64	snapshot	SUM	Accumulate Rx packet number
rxMgmtBytes_r	uint64	snapshot	SUM	Accumulate Rx mgmt. bytes
txDataFrames_r	uint64	snapshot	SUM	Accumulate Tx packet number
txDataBytes_r	uint64	snapshot	SUM	Accumulate Tx data bytes
txMgmtFrames_r	uint64	snapshot	SUM	Accumulate Tx packet number
txMgmtBytes_r	uint64	snapshot	SUM	Accumulate Tx mgmt. bytes
rxBcastFrames_r	uint64	snapshot	SUM	Broadcast packets received
rxMcastFrames_r	uint64	snapshot	SUM	Multicast packets received
rxUcastFrames_r	uint64	snapshot	SUM	Received data packets that does not include bcast and multicast
txBcastFrames_r	uint64	snapshot	SUM	Broadcast packets transmitted
txMcastFrames_r	uint64	snapshot	SUM	Multicast packets transmitted
txUcastFrames_r	uint64	snapshot	SUM	Transmit data packets that does not include bcast and multicast
txDropDataFrames_r	uint64	snapshot	SUM	Tx data frames that are dropped or dropped by MQ

**TABLE 21 AP Report Bin WLAN Information (continued)**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
txDropMgmtFrames_r	uint64	snapshot	SUM	Total Tx data frames dropped (or dropped by MQ. In AP internal design, it has a messages queue (MQ)to queue all packets that AP plans to forward to clients. Then AP transmit packets to clients as per the priority scheduling. The MQ is Ruckus proprietary internal design.
wlangroup_id	string	snapshot	NULL	WLAN Group identifier.
wlantenant_id	string	snapshot	NULL	WLAN tenant identifier.
wlangroup_name	string	snapshot	NULL	WLAN Group name.
wlantenant_name	string	snapshot	NULL	WLAN tenant name.
wlaneName	string	snapshot	NULL	WLAN name.
authFailureCount	uint32	Delta	SUM	802.11 authentication failure count on WLAN (delta value)
authSuccessCount	uint32	Delta	SUM	802.11 authentication success count on WLAN (delta value)
assocFailureCount	uint32		SUM	802.11 association failure count on WLAN (delta value)
assocSuccessCount	uint32	Delta	SUM	802.11 association success count on WLAN (delta value)
eapFailureCount	uint32	Delta	SUM	EAP authentication failure count on WLAN (delta value)
eapSuccessCount	uint32	Delta	SUM	EAP authentication success count on WLAN (delta value)
radiusFailureCount	uint32	Delta	SUM	Radio failure count on WLAN (delta value)
radiusSuccessCount	uint32	Delta	SUM	Radio success count on WLAN (delta value)
dhcpFailureCount	uint32	Delta	SUM	DHCP failure count on WLAN (delta value)
dhcpSuccessCount	uint32	Delta	SUM	DHCP success count on WLAN (delta value)
staSmartRoamDisconCnt	uint32	Delta	SUM	Client disconnect count with smart-roaming reason
staldleDisconCnt	uint32	Delta	SUM	Client disconnect count with idle reason
staLeaveDisconCnt	uint32	Delta	SUM	Client disconnect count with client active leave bss reason
stalinvalidDisconCnt	uint32	Delta	SUM	Client disconnect count with client's invalid frame contents reason
staRadioFailDisconCnt	uint32	Delta	SUM	Client disconnect count with AP radio related reason
staAPKickDisconCnt	uint32	Delta	SUM	Client disconnect count with AP active kick out reason

**TABLE 21 AP Report Bin WLAN Information (continued)**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
rxDataBytesSplitTunnel	uint64	snapshot	SUM	Split-tunnel total data Bytes received
txDataBytesSplitTunnel	uint64	snapshot	SUM	Split-tunnel total data Bytes transmitted
rxDataFramesSplitTunnel	uint64	snapshot	SUM	Split-tunnel total data-frames received
txDataFramesSplitTunnel	uint64	snapshot	SUM	Split-tunnel total data-frames transmitted
dnsStats	.APReportDnsStats	snapshot	NULL	DNS statistics
roamingFailureCount	uint32	Delta	SUM	roaming failure count on wlan(delta value)
L3authFailureCount	uint32	Delta	SUM	L3 auth failure count on wlan(delta value)
L3authSuccessCount	uint32	Delta	SUM	L3 auth success count on wlan(delta value)

**TABLE 22 AP Report Bin Radio Information**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
airtime	uint32	snapshot	AVG	Exponential average of total channel utilization
airtimeB	uint32	snapshot	AVG	Exponential average percentage of channel busy time
airtimeRx	uint32	snapshot	AVG	Exponential average of channel availability for receiving
airtimeTx	uint32	snapshot	AVG	Exponential average of channel availability for transmitting
phyError	uint32	snapshot	SUM	Accumulated number of Rx physical errors
rxBytes_r	uint64	Delta	SUM	Total data bytes received on radio
txBytes_r	uint64	Delta	SUM	Total data bytes transmitted on radio
rxFrames_r	uint64	Delta	SUM	Total number of data frames received
txFrames_r	uint64	Delta	SUM	Total number of data frames transmitted
noiseFloor	int	snapshot	AVG	Last recorded noise floor
radioid	uint32	snapshot	snapshot	Radio ID (0: 2.4G 1: 5G)
binWlan	.APReportBinWlan	Serialization	snapshot	Serialization data for all of wlan information
txRatebps	uint64	Delta	AVG	Radio average transmission rate
retry	uint64	SUM	NULL	Number of transmission retries

**TABLE 22 AP Report Bin Radio Information (continued)**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
latency	uint32	snapshot	SUM	The time taken by a packet from Ethernet ingress to Radio egress or Tx complete
capacity	uint32	snapshot	SUM	The saturated throughput estimate of a link
connectionFailure	float	snapshot	SUM	The rate of client connection failure
connectionAuthFailureCount	uint32	Delta	SUM	802.11 authentication failure count on radio (delta value)
connectionAssocFailureCount	uint32	Delta	SUM	802.11 association failure count on radio (delta value)
connectionTotalCount	uint32	Delta	SUM	total client connection on radio, include success and failure counts(delta value)
connectionAuthSuccessCount	uint32	Delta	SUM	802.11 authentication success count on radio (delta value)
connectionAssocSuccessCount	uint32	Delta	SUM	802.11 association success count on radio (delta value)
connectionEAPFailureCount	uint32	Delta	SUM	EAP authentication failure count on radio (delta value)
connectionEAPSuccessCount	uint32	Delta	SUM	EAP authentication success count on radio (delta value)
connectionRadiusFailureCount	uint32	Delta	SUM	Radio failure count on radio (delta value)
connectionRadiusSuccessCount	uint32	Delta	SUM	Radio success count on radio (delta value)
connectionDHCPFailureCount	uint32	Delta	SUM	DHCP failure count on radio (delta value)
connectionDHCPSuccessCount	uint32	Delta	SUM	DHCP success count on radio (delta value)
connectionTotalSuccess	uint32	Delta	SUM	Total count for success connection (delta value)
connectionTotalFailure	uint32	Delta	SUM	Total count for failure connection (delta value)
medianTxRadioMCSRate	uint32	Delta	NULL	Radio median TX MCS rate in this bin
medianRxRadioMCSRate	uint32	Delta	NULL	Radio median RX MCS rate in this bin
connectionL3AuthFailureCount	uint32	Delta	SUM	L3 auth failure count on radio(delta value)
connectionL3AuthSuccessCount	uint32	Delta	SUM	L3 auth success count on radio(delta value)

**TABLE 23 AP Report Bin Tunnel Information**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
gw	string	snapshot	NULL	Tunnel gateway address list
index	int	snapshot	NULL	Current tunnel index
isActive	int	snapshot	NULL	Current tunnel state (active or inactive)
cICMP	uint64	snapshot	MAX	Number of keepalive packets sent
cNonICMP	uint64	snapshot	MAX	Number of keepalive packets lost
cDisconnect	uint64	snapshot	MAX	Number of SoftGRE sessions terminated
rxBytes	uint64	snapshot	SUM	Total bytes received
rxPkts	uint64	snapshot	SUM	Total packets received
rxDropPkts	uint64	snapshot	SUM	No space in Linux buffers (frame equal to packet). The AP received a frame completely, and AP has to allocate a memory for this frame. Then pass to next handler who is interested in this frame. The AP drops the frame if it has not enough memory. The counter is plus one if this case happen.
rxErrPkts	uint64	snapshot	SUM	Number of bad packets received
txBytes	uint64	snapshot	SUM	Total bytes transmitted
txPkts	uint64	snapshot	SUM	Total packets transmitted
txDropPkts	uint64	snapshot	SUM	No space available in Linux. AP has to allocate a memory to store the packet that AP plans to transmit to client. The AP may drop it if AP has not enough memory. Then the counter is plus one.
txErrPkts	uint64	snapshot	SUM	Packet transmit problems. The AP plans to transmit packet to client. But somehow AP can't transmit to client successfully, and AP drops the packets at the end. Then the counter is plus one.
txFragPkts	uint64	snapshot	SUM	Total fragmented Tx packets
type	int	snapshot	NULL	Tunnel type: 0: rks_gre 1: soft_gre
apIPAddress	string	snapshot	NULL	AP IP address

**TABLE 24 AP Report Bin IPsec Information**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
ipsecSessionTime	uint64	snapshot	MAX	Session time
ipsecTxPkts	uint64	snapshot	MAX	Total packets transmitted
ipsecRxPkts	uint64	snapshot	MAX	Total packets received
ipsecTxBytes	uint64	snapshot	MAX	Total bytes transmitted
ipsecRxBytes	uint64	snapshot	MAX	Total bytes received
ipsecTxDropPkts	uint64	snapshot	MAX	Total Tx packets dropped
ipsecRxDropPkts	uint64	snapshot	MAX	Total Rx packets dropped
ipsecTxIdleTime	uint64	snapshot	MAX	Tx idle time
ipsecRxIdleTime	uint64	snapshot	MAX	Rx idle time
apIPAddress	string	snapshot	NULL	AP IP address
gw	string	snapshot	NULL	Tunnel gateway address list

**TABLE 25 AP Report Bin Client Information**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
ap	string	snapshot	NULL	MAC address of the AP
time	uint64	snapshot	NULL	Timestamp for data sampling time
binStartTime	uint64	snapshot	NULL	Bin start time The start timestamp of each Bin. For example it is 00:00:00 in Bin1 (00:00~00:15), and it is 00:15:00 in Bin2 (00:15~00:30)...
radioMode	string	snapshot	NULL	Radio mode that is used by this client connection
ap80211RadioMode	string	snapshot	NULL	Radio mode used by the AP. Possible values are "b", "b/g", "b/g/n", "g", "g/n", "a", "a/n", "a/n/ac", "n", "n/ac", "ac"
auth	string	snapshot	NULL	Authorization mode used by the AP xxx what are the possible values?
encryption	string	snapshot	NULL	Encryption method used by the AP
clientMac	string	snapshot	NULL	MAC address of the client
bssid	string	snapshot	NULL	BSSID
ssid	string	snapshot	NULL	SSID
username	string	snapshot	NULL	User name
clientIP	string	snapshot	NULL	IP address assigned to the client
clientVlan	uint64	snapshot	NULL	VLAN ID used by the client
osType	string	snapshot	NULL	Operating system used by the client
hostname	string	snapshot	NULL	Host name of the client



**TABLE 25 AP Report Bin Client Information (continued)**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
channel	int	snapshot	NULL	Current radio channel
channelWidth	uint32	snapshot	NULL	Channel width used by the WLAN
rssI	int	snapshot	AVG	Last recorded RSSI/SNR
maxRssi	int	snapshot	MAX	Highest RSSI ever recorded
minRssi	int	snapshot	MIN	Lowest RSSI ever recorded
firstRssi	int	snapshot	AVG	Initial RSSI recorded
receiveSignalStrength	int	snapshot	AVG	Last received signal strength
firstReceiveSignalStrength	int	snapshot	MAX	Initial received signal strength
maxReceiveSignalStrength	int	snapshot	MIN	Highest received signal strength
minReceiveSignalStrength	int	snapshot	AVG	Lowest received signal strength
noiseFloor	int	snapshot	AVG	Last recorded noise floor
location	int	snapshot	NULL	Location of the AP
rxBytes_r	uint64	delta	SUM	Total bytes received
txBytes_r	uint64	delta	SUM	Total bytes transmitted
rxFrames_r	uint64	delta	SUM	Data frames received
txFrames_r	uint64	delta	SUM	Data frames transmitted
throughputEst	uint64	delta	SUM	Average of non-zero throughput estimate $\text{avg\_throughput\_estimate} = \frac{\text{sum\_throughput\_estimate}}{\text{count\_non\_zero\_throughput\_estimate}}$ For example AP has client's throughput estimation of 10Mbps, 9Mbps, 9Mbps, 10Mbps, 0, 0, 0, 0, 0, 0. Then AP come out $(10+9+9+10)/4 = 9.5$ Mbps for throughput Est.
firstSampleTime	uint64	snapshot	NULL	First sample time in this bin. The AP samples stats every 90 seconds internally, when AP boots up. So if AP boots up at 10:08:00. Then AP gets stats at 10:09:30, 10:11:00, 10:12:30, 10:14:00, 10:15:30. So the time is 10:09:30 in Bin(10:00~10:15), and the time is 10:15:30 in Bin(10:15~10:30)
txDropMgmtFrames_r	uint64	snapshot	SUM	Total Tx data frames dropped (or dropped by MQ. In AP internal design, it has a messages queue (MQ) to queue all packets that AP plans to forward to clients. Then AP transmit packets to clients as per the priority/scheduling/... The MQ is Ruckus proprietary internal design.
txDropDataFrames_r	uint64	snapshot	SUM	Total Tx management frames dropped (or dropped by MQ. In AP internal design, it has a

**TABLE 25 AP Report Bin Client Information (continued)**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
				messages queue (MQ)to queue all packets that AP plans to forward to clients. Then AP transmit packets to clients as per the priority/scheduling/... The MQ is Ruckus proprietary internal design.
rxCRCErrFrames_r	uint64	snapshot	SUM	CRC error for Rx data frame. Each 802.11 frame has 4 bytes FCS at tail. The AP recalculate the value when it received a frame completely. Then compare to the FCS in the frame. AP drops the frame if they are different. Then counter plus 1.
sessionId	string	snapshot	NULL	Session ID string
multiSessionId	string	snapshot	NULL	Multi-session ID string
firstConnection	uint64	snapshot	NULL	Date and time of initial connection
firstAuth	uint64	snapshot	NULL	Date and time of initial authorization
ipAssignTime	uint64	snapshot	NULL	Date and time client IP address was assigned
disconnectTime	uint64	snapshot	NULL	Date and time client was disconnected
sessionTime	uint64	snapshot	NULL	Duration of client session
radioId	uint32	snapshot	NULL	Radio interface identifier (0: 2.4G, 1 5G)
wsgWlanId	int	snapshot	NULL	WLAN ID assigned by the controller
wlangroup_id	string	snapshot	NULL	WLAN Group identifier
wlangroup_name	string	snapshot	NULL	WLAN Group name
disconnectReason	uint64	snapshot	NULL	Reason for disconnect from the controller.
wlanName	string	snapshot	NULL	WLAN name
wlantenant_id	string	snapshot	NULL	WLAN tenant identifier
wlantenant_name	string	snapshot	NULL	WLAN tenant name
rxBytes	uint64	snapshot	SUM	Total data bytes received for this client
txBytes	uint64	snapshot	SUM	Total data bytes transmitted by this client
rxRatebps	uint64	snapshot	AVG	Client receiving data rate in bin period
txRatebps	uint64	snapshot	AVG	Client transmitted data rate in bin period
medianTxMCSRate	uint32	delta	NULL	Client median TX MCS rate in this bin

**TABLE 25 AP Report Bin Client Information (continued)**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
medianRxMCSRate	uint32	delta	NULL	Client median RX MCS rate in this bin
clientAuthTTC	uint64	snapshot	NULL	Client auth TTC latest value in this bin
clientAssocTTC	uint64	snapshot	NULL	Client assoc TTC latest value in this bin
clientEapTTC	uint64	snapshot	NULL	Client EAP TTC latest value in this bin
clientRadiusTTC	uint64	snapshot	NULL	Client Radius TTC latest value in this bin
clientDhcpTTC	uint64	snapshot	NULL	Client DHCP TTC latest value in this bin

**TABLE 26 Hccd Connection Message Information**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
timestamp	uint64	snapshot	NULL	The time for each message(packet) observed
message_id	int32	snapshot	NULL	Message identity for each packet
source	int32	snapshot	NULL	Message(packet) source module (like as client, AP, Cblade,...etc)
destination	int32	snapshot	NULL	Message(packet) destination module
status_code	int32	snapshot	NULL	Message status (success or failure)

**TABLE 27 Hccd Client Connection Message Information**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
client_mac	string	snapshot	NULL	Client mac for each connection
timestamp	uint64	snapshot	NULL	The time that each connection started
connection_status	int32	snapshot	NULL	This connection session status - success or failure
failed_msg_id	int32	snapshot	NULL	The failure message identifier for this connection
hccdConnMessages	.HccdConnMessage	Serialization	NULL	Serialization data for all of message ID in this client session
wlan_id	uint32	snapshot	NULL	WLAN identifier for this client association
radio_id	uint32	snapshot	NULL	Radio identifier for this client association
ssid	string	snapshot	NULL	SSID for this client association
wlanType	string	snapshot	NULL	WLAN type used

**TABLE 27 Hccid Client Connection Message Information (continued)**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
failure_type	int32	snapshot	NULL	Category for the connection failure (auth/assoc/eap/radius/dhcp failure)
vlan	int32	snapshot	NULL	VLAN identifier value for this client
reason_code	int32	snapshot	NULL	Reason code for disconnection
info	string	snapshot	NULL	Reason for disconnect

**TABLE 28 AP Report Bin Information**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
bin	int	snapshot	NULL	Bin data number xxx AP divides 24 hours into 96 bins, - 1 bin is 15 minutes. Bin1 time period is 00:00~00:15, Bin2 time period is 00:15~00:30 and so on. It is a number from 1 to 96. Then one can see the stats time period according to this value.
uptime_r	int	snapshot	NULL	Uptime in one report duration Example: AP boots up at 10:08, so the uptime_r is 420 seconds(10:15 - 10:08) in Bin (10:00~10:15). If AP keeps work well, and now is 11:02, then uptime_r is 900 seconds in Bin (10:45~11:00)

**TABLE 29 AP Report Stats Information**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
version	uint32	snapshot	NULL	GPB version
ap	string	snapshot	NULL	AP MAC address
timestamp	uint64	snapshot	NULL	Timestamp for this report
seqNumber	uint64	snapshot	NULL	Sequence record number for AP report.
zone_id	string	snapshot	NULL	Zone UUID
binCount	Struct APReportBin	Serialization	NULL	Total number of bin data.
binClient	Struct APReportBinClient	Serialization	NULL	Total number of Client bin data.
binIPSec	Struct APReportBinIPSec	Serialization	NULL	The number of IPSec tunnel.
binTunnel	Struct APReportBinTunnel	Serialization	NULL	The number of tunnel data.

**TABLE 29 AP Report Stats Information (continued)**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
binRadio	Struct APReportBinRadio	Serialization	NULL	The number of radio data.
deviceName	string	snapshot	NULL	AP devices configured by the administrator.
apgroup_id	string	snapshot	NULL	AP Group UUID
cluster_id	string	snapshot	NULL	Cluster UUID.
domain_id	string	snapshot	NULL	Domain UUID.
aptenant_id	string	snapshot	NULL	AP tenant UUID
map_id	string	snapshot	NULL	MAP UUID
aptenant_name	string	snapshot	NULL	AP tenant name.
zone_name	string	snapshot	NULL	Zone name.
apgroup_name	string	snapshot	NULL	AP Group name
domain_name	string	snapshot	NULL	Domain name
sampleTime	uint64	snapshot	NULL	The timestamp for sampling stats data
aggregationInterval	uint32	snapshot	NULL	The interval time to aggregate stats together
apIpAddress	string	snapshot	NULL	IP address of the AP
apIpv6Address	string	snapshot	NULL	IPv6 address of the AP
hccdClientConnections	.HccdClientConnection	Serialization	NULL	Serialization data for HCCD connection data
HeartbeatLatency	float	snapshot	AVG	Average latency that is measured by heartbeat lost
PingLatency	float	snapshot	AVG	Average latency that is measured by ping
PingLossCount	uint32	snapshot	NULL	Count for ping lost
isMonitoringEnabled	BOOL	snapshot	NULL	Is a monitoring AP or not

## ap\_rogue.proto

```
/**
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 * copyright and trade secret laws. You may not view, use, disclose, copy, or distribute this file or any
 * information contained herein except pursuant to a valid license from Ruckus.
 */
option java_package = "com.ruckuswireless.scg.protobuf";

message ReportType {
    enum RogueType {
        DISCOVERY = 0;
        UPDATE = 1;
        DISAPPEAR = 2;
    }

    optional string rogueMac = 1;
    optional uint32 rssi = 2;
    optional string encryption = 3;
    optional string radio = 4;
    optional uint32 channel = 5;
    optional uint64 timeStamp = 6;
    optional string ssid = 7;
    optional int32 wlanId = 8;
    optional string rogueAPMac = 9;
    optional int32 isSendEvent = 10;
    optional string type = 11;
    optional uint32 prevReportChannel = 12;
    optional string prevReportType = 13;
    optional RogueType rogueType = 14;
    optional uint32 rogueTypeInfo = 15;
}

message RogueAPStats {
    required uint32 version = 1;
    optional string apMac = 2;
    optional string apName = 3;
    optional string zone_id = 4;
    optional string protect = 5;
    repeated ReportType apRogueUpdate = 6;
    optional string apgroup_id = 7;
    optional string cluster_id = 8;
    optional string domain_id = 9;
    optional string aptenant_id = 10;
    optional string map_id = 11;
    optional string aptenant_name = 12;
    optional string zone_name = 13;
    optional string apgroup_name = 14;
    optional string domain_name = 15;
    optional int32 controllerShouldFlush = 16;
    optional uint64 sampleTime = 17;
    optional uint32 aggregationInterval = 18;
    optional uint64 timestamp = 19;
}
```

## Field Description

**TABLE 30 Enum Rogue Report**

Name	Value	Description
Discovery	0	Rogue type possible value
Update	1	Rogue type possible value

**TABLE 30 Enum Rogue Report (continued)**

Name	Value	Description
Disappear	2	Rogue type possible value

**TABLE 31 AP Rogue Report Type Information**

Attribute Name	ValueType (size)	Property(Snapshot /Delta/ Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
rogueMac	string	snapshot	NULL	Mac address of rogue AP
rsssi	uint32	snapshot	NULL	peer node rssi value
encryption	string	snapshot	NULL	is encryption or not (encrypted or open)
radio	string	snapshot	NULL	peer node radio type
channel	uint32	snapshot	NULL	peer node channel used
timeStamp	uint64	snapshot	NULL	last detected time for this peer node
ssid	string	snapshot	NULL	peer node ssid
wlanId	int32	snapshot	NULL	peer node wlanId
rogueAPMac	string	snapshot	NULL	peer node mac address
isSendEvent	int32	snapshot	NULL	is event send out for this peer node
type	string	snapshot	NULL	current rouge type for this peer node
prevReportChannel	string	snapshot	NULL	previous channel is used by peer node
prevReportType	int32	snapshot	NULL	previous rogue type for this peer node
rogueType	RogueType	snapshot	NULL	this peer node rogue type status(discover, update, disappear)
rogueTypeInfo	uint32	snapshot	NULL	current rouge type for this peer node

**TABLE 32 Rogue AP Stats Information**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
version	uint32	snapshot	NULL	Version number for this stats report
apMac	string	snapshot	NULL	AP mac address
apName	string	snapshot	NULL	AP name
zone_id	string	snapshot	NULL	Zone UUID
protect	char	snapshot	NULL	Is malicious protected or not
apRogueUpdate	.ReportType	Serialization	NULL	Serialization data for all of rouge entry
apgroup_id	string	snapshot	NULL	AP group UUID
cluster_id	string	snapshot	NULL	Cluster UUID
domain_id	string	snapshot	NULL	Domain UUID

**TABLE 32** Rogue AP Stats Information (continued)

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
aptenant_id	string	snapshot	NULL	AP tenant UUID
map_id	string	snapshot	NULL	MAP uuid
aptenant_name	string	snapshot	NULL	AP tenant name
zone_name	string	snapshot	NULL	Zone name
apgroup_name	string	snapshot	NULL	AP group name
domain_name	string	snapshot	NULL	Domain name
controllerShouldFlush	int32	snapshot	NULL	An indication to flush all rouge stats when first report
sampleTime	uint64	snapshot	NULL	Timestamp for generating this stats report
aggregationInterval	uint32	snapshot	NULL	Interval time for aggregating data
timestamp	uint64	snapshot	NULL	Timestamp for generating this stats report
operation_type	uint32	snapshot	NULL	1: new rogue report, 2: full rogue listing report



# ap\_status.proto

```
/**
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 * copyright and trade secret laws. You may not view, use, disclose, copy, or distribute this file or any
 * information contained herein except pursuant to a valid license from Ruckus.
 */
option java_package = "com.ruckuswireless.scg.protobuf";

message APStatusTunnel {
  optional string gw = 1;
  optional int32 index = 2;
  optional int32 type = 3;
  optional int32 isActive = 4;
  optional uint64 cICMP = 5;
  optional uint64 cNonICMP = 6;
  optional uint64 cDisconnect = 7;
  optional uint64 rxBytes = 8;
  optional uint64 rxPkts = 9;
  optional uint64 rxDropPkts = 10;
  optional uint64 rxErrPkts = 11;
  optional uint64 txBytes = 12;
  optional uint64 txPkts = 13;
  optional uint64 txDropPkts = 14;
  optional uint64 txErrPkts = 15;
  optional uint64 txFragPkts = 16;
  optional string uptime = 10;
  optional uint64 reEstablishment = 18;
  optional uint64 kaRetryCnt = 19;
  optional uint64 kaSentCnt = 20;
  optional uint64 kaLostCnt = 21;
  optional string reason = 22;
  optional string suggest = 23;
}

message APStatusIPSecStats {
  optional uint64 ipsecSessionTime = 1;
  optional uint64 ipsecTxPkts = 2;
  optional uint64 ipsecRxPkts = 3;
  optional uint64 ipsecTxBytes = 4;
  optional uint64 ipsecRxBytes = 5;
  optional uint64 ipsecTxDropPkts = 6;
  optional uint64 ipsecRxDropPkts = 7;
  optional uint64 ipsecTxIdleTime = 8;
  optional uint64 ipsecRxIdleTime = 9;
}

message APStatusWlan {
  optional string ssid = 1;
  optional string bssid = 2;
  optional string ap = 3;
  optional string radioMode = 4;
  optional string ap80211RadioMode = 5;
  optional int32 channel = 6;
  optional uint64 rxBytes = 7;
  optional uint64 txBytes = 8;
  optional uint64 rxFrames = 9;
  optional uint64 txFrames = 10;
  optional uint64 txBcastFrames = 11;
  optional uint64 txMcastFrames = 12;
  optional uint64 txDataFrames = 13;
  optional uint64 txDataBytes = 14;
  optional uint64 txMgmtFrames = 15;
  optional uint64 txMgmtBytes = 16;
  optional uint64 txDropDataFrames = 17;
  optional uint64 txDropMgmtFrames = 18;
  optional uint64 rxBcastFrames = 19;
  optional uint64 rxMcastFrames = 20;
}
```

```
optional uint64 rxDataFrames = 21;
optional uint64 rxDataBytes = 22;
optional uint64 rxMgmtFrames = 23;
optional uint64 rxMgmtBytes = 24;
optional int32 totalNumClients = 25;
optional int32 vlan = 26;
optional int32 wsgWlanId = 27;
optional int32 wlanId = 28;
optional string wlangroup_name = 29;
optional string wlangroup_id = 30;
optional string wlantenant_id = 31;
optional string wlantenant_name = 32;
optional uint32 ftassoc_success = 33;
optional uint32 ftassoc_failure = 34;
optional uint32 is_probe_withheld = 35;
optional uint32 is_auth_withheld = 36;
/* jump to index 1000, for new requirement from SNMP and SCI */
optional string WlanName = 1001;
optional string AuthMethod = 1002;
optional string EncryptMethod = 1003;
optional uint32 IsGuest = 1004;
optional uint32 IsBcastDisable = 1005;
optional uint32 UpRateLimit = 1006;
optional uint32 DownRateLimit = 1007;
optional uint32 IsTunnel = 1008;
optional uint32 RxByteRate = 1009;
optional uint32 TxByteRate = 1010;
optional uint64 RxDropDataBytes = 1011;
optional uint64 TxDropDataBytes = 1012;
optional uint64 RxDropDataPkts = 1013;
optional uint64 TxDropDataPkts = 1014;
optional uint64 TxRetryBytes = 1015;
optional uint64 TxRetryPkts = 1016;
optional uint64 RxErrorPkts = 1017;
optional uint64 TxErrorPkts = 1018;
optional uint32 RxPktErrorRate = 1019;
optional uint32 TxPktErrorRate = 1020;
optional uint32 NumAuthClients = 1021;
optional uint32 NumAssocReq = 1022;
optional uint32 NumAssocResp = 1023;
optional uint32 NumReassocReq = 1024;
optional uint32 NumReassocResp = 1025;
optional uint32 NumAssocFail = 1026;
optional uint32 NumAssocDeny = 1027;
optional uint32 DisssocAbnormal = 1028;
optional uint32 NumDisssocCapacity = 1029;
optional uint32 MumDisssocLeave = 1030;
optional uint32 NumDisssocMisc = 1031;
optional uint32 AssocSuccessRate = 1032;
optional uint32 AssocFailRate = 1033;
optional uint32 NumAuthReq = 1034;
optional uint32 NumAuthResp = 1035;
optional uint32 NumAuthSuccess = 1036;
optional uint32 NumAuthFail = 1037;
optional uint32 AuthFailRate = 1038;
optional uint32 RtsThreshold = 1039;
}

message APStatusRadio {
  optional int32 radioId = 1;
  optional int32 channel = 2;
  optional string mode = 3;
  optional string band = 4;
  optional string radioMode = 5;
  optional string txPower = 6;
  optional uint32 phyError = 7;
  optional string channelBlacklist = 8;
  optional int32 noiseFloor = 9;
  optional uint64 rxBytes = 10;
  optional uint64 rxFrames = 11;
  optional uint64 rxRadioBytes = 12;
  optional uint64 rxRadioFrames = 13;
}
```

```

optional uint64 txBytes = 14;
optional uint64 txFrames = 15;
optional uint64 txRadioBytes = 16;
optional uint64 txRadioFrames = 17;
optional uint64 retry = 18;
optional uint32 drop = 19;
optional uint64 rxMulticast = 20;
optional uint64 txMulticast = 21;
optional uint32 total = 22;
optional uint32 busy = 23;
optional uint32 rx = 24;
optional uint32 tx = 25;
optional uint32 channelWidth = 26;
repeated APStatusWlan wlans = 27;
optional string ap = 28;
optional uint32 latency = 29;
optional uint32 capacity = 30;
optional float connectionFailure = 31;
optional uint32 connectionAuthFailureCount = 32;
optional uint32 connectionAssocFailureCount = 33;
optional uint32 connectionTotalCount = 34;
optional uint32 numOfChannelChange = 35;
optional bool isLatencyFlagged = 36;
optional bool isCapacityFlagged = 37;
optional bool isConnectionFailureFlagged = 38;
optional bool isAirtimeFlagged = 39;
optional bool isRadioEnabled = 40;
optional uint32 secondaryChannel = 41;
optional int32 eirp = 42;
optional uint32 connectionTotalFailureCount = 43;
/* jump to index 1000, for new requirement from SNMP and SCI */
optional int32 PowerMgmtEnable = 1001;
optional int32 MeshEnable = 1002;
optional uint64 RxErrorPkts = 1003;
optional uint64 TxErrorPkts = 1004;
optional uint32 RxPktErrorRate = 1005;
optional uint32 TxPktErrorRate = 1006;
optional uint32 TxPktRetryRate = 1007;
optional uint64 TxRetryBytes = 1008;
optional uint64 RxDropBytes = 1009;
optional uint64 TxDropBytes = 1010;
optional uint64 RxDropPkts = 1011;
optional uint64 TotalAssocTime = 1012;
optional uint32 NumAuthClients = 1013;
optional uint32 NumMaxClients = 1014;
optional uint32 NumAuthReqs = 1015;
optional uint32 NumAuthResps = 1016;
optional uint32 NumAuthSuccess = 1017;
optional uint32 NumAuthFail = 1018;
optional uint32 AuthFailRate = 1019;
optional uint32 NumAssocReq = 1020;
optional uint32 NumAssocResp = 1021;
optional uint32 NumReassocReq = 1022;
optional uint32 NumReassocResp = 1023;
optional uint32 NumAssocSuccess = 1024;
optional uint32 NumAssocFail = 1025;
optional uint32 NumAssocDeny = 1026;
optional uint32 AssocSuccessRate = 1027;
optional uint32 AssocFailRate = 1028;
optional uint32 ResourceUtil = 1029;
optional uint64 RxSignalPkts = 1030;
optional uint64 TxSignalPkts = 1031;
optional uint64 TotalSignalPkts = 1032;
optional uint32 AntennaGain = 1033;
optional uint32 BeaconPeriod = 1034;
optional uint32 RtsThreshold = 1035;
optional uint32 FragThreshold = 1036;
optional uint32 RxWepFail = 1037;
optional uint32 RxDecryptCrcError = 1038;
optional uint32 RxMicError = 1039;
optional uint32 Rssi = 1040;
optional uint32 totalFailureClientCount = 1041;

```

Appendix  
ap\_status.proto

```
    optional uint32 totalClientCnts = 1042;
}

message APStatusBrownout {
    optional uint64    timestamp = 1;
    optional int32    events = 2;
    optional int32    pwrType = 3;
}

message APStatusIPSec {
    optional string    ipsecActiveServerIP = 1;
    optional string    ipsecVirtualIPv4 = 2;
    optional string    ipsecVirtualIPv6 = 3;
    optional string    ipsecEffectiveIKESA = 4;
    optional string    ipsecEffectiveESPSA = 5;
}

message APStatusSystem {
    enum APState {
        Online = 1;
        Flagged = 2;
    }
    optional string    ap = 1;
    optional string    usbDeviceVersion = 2;
    optional string    usbDeviceVID = 3;
    optional string    usbDevicePID = 4;
    optional string    gpsInfo = 5;
    optional string    countryCode = 6;
    optional uint64    timestamp = 7;
    optional uint64    seqNumber = 8;
    optional string    zone_id = 9;
    optional string    zoneName = 10;
    optional string    timeZone = 11;
    optional string    gatewayIp = 12;
    optional string    lastRebootReason = 13;
    optional uint32    totalBootCount = 14;
    optional uint32    mtuSize = 15;
    optional uint32    rejoinCount = 16;
    optional string    rejoinReason = 17;
    optional string    oops = 18;
    optional uint32    lossConnectBootCnt = 19;
    optional string    deviceName = 20;
    optional string    location = 21;
    optional string    fwVersion = 22;
    optional int32    devSupportUsb = 23;
    optional int32    deviceIpMode = 24;
    optional string    ip = 25;
    optional string    ipv6 = 26;
    optional string    ipsecIp = 27;
    optional string    apConnectedIp = 28;
    optional int32    uptime = 29;
    optional string    mountState = 30;
    optional int32    currentTemperature = 31;
    optional int32    lifeMaxTemperature = 32;
    optional int32    lifeMinTemperature = 33;
    optional string    dnatInfo = 34;
    optional string    rksDpIp = 35;
    optional string    rksDpIpOnly = 36;
    optional string    ipType = 37;
    optional uint32    isIpTypeChanged = 38;
    optional uint32    managementVlan = 39;
    optional APState  apState = 40;
    optional bool    isConnectionTotalCountFlagged = 41;
    optional uint32    totalConnectedClient = 42;
    optional uint32    crashDump = 43;
    optional string    altitudeUnit = 44;
    optional uint32    altitudeValue = 45;
    optional uint32    poeMode = 46;
    optional uint32    poeModeSetting = 47;
    optional string    ipv6Type = 48;
    /* jump to index 1000, for new requirement from SNMP and SCI */
    optional double    cpuPercentage = 1001;
}
```

```

optional uint64 totalMemory = 1002;
optional uint64 freeMemory = 1003;
optional string model = 1004;
optional string serialNumber = 1005;
optional string desc = 1006;
optional int32 numRadio = 1007;
optional string szConnCpIp = 1008;
optional string szConnCpIpv6 = 1009;
optional string szConnDpIp = 1010;
optional string szConnDpIpv6 = 1011;
optional string netmask = 1012;
optional string IpDnsSvr1 = 1013;
optional string IpDnsSvr2 = 1014;
optional string Ipv6DnsSvr1 = 1015;
optional string Ipv6DnsSvr2 = 1016;
optional int32 ApStatus = 1017;
optional uint64 firstJoinTime = 1018;
optional uint64 lastBootTime = 1019;
optional uint64 lastConfSyncTime = 1020;
optional uint64 freeStorage = 1021;
optional int32 ethPortStatus = 1022;
optional int32 ethStateChange = 1023;
optional uint32 numRogues = 1024;
optional uint32 numAuthClients = 1025;
optional uint32 rxByteRate = 1026;
optional uint32 txByteRate = 1027;
optional uint64 rxErrorPkts = 1028;
optional uint64 txErrorPkts = 1029;
optional uint64 RxDropPkts = 1030;
optional uint64 LanStatsRxBytes = 1031;
optional uint64 LanStatsTxBytes = 1032;
optional uint64 LanStatsRxPkts = 1033;
optional uint64 LanStatsTxPkts = 1034;
optional uint64 LanStatsRxErrorPkts = 1035;
optional uint64 LanStatsTxErrorPkts = 1036;
optional uint64 LanStatsRxBcastPkts = 1037;
optional uint64 LanStatsTxBcastPkts = 1038;
optional uint64 LanStatsRxMcastPkts = 1039;
optional uint64 LanStatsTxMcastPkts = 1040;
optional uint64 LanStatsRxUcastPkts = 1041;
optional uint64 LanStatsTxUcastPkts = 1042;
optional uint64 LanStatsRxDroppedPkts = 1043;
optional uint64 LanStatsTxDroppedPkts = 1044;
optional uint64 LanStatsRxByteRate = 1045;
optional uint64 LanStatsTxByteRate = 1046;
optional uint64 TxDropPkts = 1047;
}

message LanPortStatus {
  optional uint32 port = 1;
  optional string interface = 2;
  optional string dot1x = 3;
  optional string logicLink = 4;
  optional string phyLink = 5;
  optional string sfpInfo = 6;
}

message CableModemInfo {
  optional string cmMac = 1;
  optional string cmIp = 2;
  optional string cmFwVersion = 3;
  optional uint64 cmUptime = 4;
  optional string cmSerialNumber = 5;
  optional string cmIpv6 = 6;
  optional string cmCapabilities = 7;
  optional uint32 cmRangingTimeout = 8;
  optional uint32 cmStatusValue = 9;
  optional string cmStatusCode = 10;
  optional string cmStatusTxPower = 11;
  optional uint32 cmStatusResets = 12;
  optional uint32 cmStatusLostSynchs = 13;
  optional uint32 cmStatusInvalidMaps = 14;
}

```

```
    optional uint32 cmStatusInvalidUcds = 15;
    optional uint32 cmStatusInvalidRangingResponses = 16;
    optional uint32 cmStatusInvalidRegistrationResponses = 17;
    optional uint32 cmStatusT1Timeouts = 18;
    optional uint32 cmStatusT2Timeouts = 19;
    optional uint32 cmStatusT3Timeouts = 20;
    optional uint32 cmStatusT4Timeouts = 21;
    optional uint32 cmStatusRangingAbortedds = 22;
    optional uint32 cmStatusDocsisOperMode = 23;
    optional uint32 cmStatusModulationType = 24;
    optional string cmStatusEqualizationData =25;
}

message APStatusLBS {
    optional bool isLBSEnable = 1;
    optional bool isLBSConnected = 2;
    optional bool isSupportLBS = 3;
}

message CellularInfo {
    optional string cellularWanInterface = 1; // "wwan0"
    optional string cellularConnectionStatus = 2; // "2G" / "3G" / "4G" / "Not Connected"
    optional string cellularIMSISIM0 = 3;
    optional string cellularIMSISIM1 = 4;
    optional string cellularICCIDSIM0 = 5;
    optional string cellularICCIDSIM1 = 6;
    optional string cellularIsSIM0Present = 7; // YES or NO
    optional string cellularIsSIM1Present = 8; // YES or NO
    optional uint64 cellularTxBytesSIM0 = 9;
    optional uint64 cellularTxBytesSIM1 = 10;
    optional uint64 cellularRxBytesSIM0 = 11;
    optional uint64 cellularRxBytesSIM1 = 12;
    optional string cellularActiveSim = 13; // "SIM0" / "SIM1"
    optional string cellularIPaddress = 14;
    optional string cellularSubnetMask = 15;
    optional string cellularDefaultGateway = 16;
    optional string cellularOperator = 17;
    optional int32 cellular3G4GChannel = 18;
    optional string cellularSignalStrength = 19;
    optional string cellularCountry = 20;
    optional int32 cellularRadioUptime = 21;
    optional string cellularLTEFirmware = 22;
    optional int64 cellularSwitchCountSIM0 = 23;
    optional int64 cellularSwitchCountSIM1 = 24;
    optional int64 cellularNWLostCountSIM0 = 25;
    optional int64 cellularNWLostCountSIM1 = 26;
    optional int64 cellularCardRemovalCountSIM0 = 27;
    optional int64 cellularCardRemovalCountSIM1 = 28;
    optional int64 cellularDHCPTIMEoutCountSIM0 = 29;
    optional int64 cellularDHCPTIMEoutCountSIM1 = 30;
    optional string cellularRoamingStatus = 31;
    optional string cellularIMEI = 32;
}

message APStatusData {
    optional APStatusSystem APSystem = 1;
    optional APStatusIPSec APIPsec = 2;
    repeated APStatusBrownout APBrownout = 3;
    repeated APStatusRadio APRadio = 4;
    optional APStatusIPSecStats APIPsecStats = 5;
    repeated APStatusTunnel APTunnel = 6;
    repeated LanPortStatus lanPortStatus = 7;
    optional CableModemInfo cableModemInfo = 9;
    optional APStatusLBS APStatusLBS = 10;
}

message APStatus {
    required uint32 version = 1;
    optional APStatusData ap_status_data = 2;
    optional string zone_id = 3;
    optional string apgroup_id = 4;
    optional string cluster_id = 5;
}
```

```

optional string domain_id = 6;
optional string aptenant_id = 7;
optional string map_id = 8;
optional string aptenant_name = 9;
optional string zone_name = 10;
optional string apgroup_name = 11;
optional string domain_name = 12;
optional string wlangroup24G_id = 13;
optional string wlangroup24G_name = 14;
optional string wlangroup5G_id = 15;
optional string wlangroup5G_name = 16;
optional uint64 sampleTime = 17;
optional uint32 aggregationInterval = 18;
optional string map_name = 19;
optional string apMac = 20;
}

```

## Field Description

**TABLE 33 AP Status Tunnel Information**

Name	Value	Description
Online	1	AP state possible value
Flagged	2	AP state possible value

**TABLE 34 AP Status Tunnel Information**

Attribute Name	ValueType (size)	Property(Snapshot /Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
gw	string	snapshot	NULL	Application name
index	int32	snapshot	NULL	Current tunnel index
type	int32	snapshot	NULL	Tunnel type
isActive	int32	snapshot	NULL	Current tunnel state (active or inactive)
cICMP	uint64	snapshot	MAX	Number of keepalive packets sent
cNonICMP	uint64	snapshot	MAX	Number of keepalive packets lost
cDisconnect	uint64	snapshot	MAX	Number of SoftGRE sessions terminated
rxBytes	uint64	snapshot	SUM	Total bytes received
rxPkts	uint64	snapshot	SUM	Total packets received
rxDropPkts	uint64	snapshot	SUM	No space in linux buffers. The AP received a frame completely, and AP has to allocate a memory for this frame. Then pass to next handler who interested to this frame. The AP drop the frame if it has no enough memory. The counter plus one if this case happen.
rxErrPkts	uint64	snapshot	SUM	Number of bad packets received
txBytes	uint64	snapshot	SUM	Total bytes transmitted
txPkts	uint64	snapshot	SUM	Total packets transmitted

**TABLE 34 AP Status Tunnel Information (continued)**

Attribute Name	ValueType (size)	Property(Snapshot /Delta/ Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
txDropPkts	uint64	snapshot	SUM	No space available in linux AP has to allocate a memory to store the packet that AP plans to transmit to client. The AP may drop it if AP has no enough memory. Then the counter plus one.
txErrPkts	uint64	snapshot	SUM	Packet transmit problems. The AP plans to transmit packet to client. But somehow AP can't transmit to client successfully, and AP drops the packets at the end. Then the counter plus one.
txFragPkts	uint64	snapshot	SUM	Total fragmented Tx packets
uptime	string	snapshot	NULL	Tunnel uptime
reEstablishment	uint64	snapshot	NULL	Number of tunnel reestablishment
kaRetryCnt	uint64	snapshot	NULL	Keep alive retry count
kaSentCnt	uint64	snapshot	NULL	Number of keep alive sent
kaLostCnt	uint64	snapshot	NULL	Number of keep alive lost
reason	string	snapshot	NULL	Reason for last re-connection
suggest	string	snapshot	NULL	Reason for last re-connection

**TABLE 35 AP Status IPSec Statistics**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
ipsecSessionTime	uint64	snapshot	MAX	Session time
ipsecTxPkts	uint64	snapshot	MAX	Total packets transmitted
ipsecRxPkts	uint64	snapshot	MAX	Total packets received
ipsecTxBytes	uint64	snapshot	MAX	Total bytes transmitted
ipsecRxBytes	uint64	snapshot	MAX	Total bytes received
ipsecTxDropPkts	uint64	snapshot	MAX	Total Tx packets dropped
ipsecRxDropPkts	uint64	snapshot	MAX	Total Rx packets dropped
ipsecTxIdleTime	uint64	snapshot	MAX	Tx idle time
ipsecRxIdleTime	uint64	snapshot	MAX	Rx idle time

**TABLE 36 AP Status WLAN Information**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
ssid	string	snapshot	NULL	SSID of the WLAN
bssid	string	snapshot	NULL	BSSID of the WLAN
ap	string	snapshot	NULL	MAC address of the AP
80211RadioMode	string	snapshot	NULL	Radio mode used by the AP



**TABLE 36 AP Status WLAN Information (continued)**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
ap80211RadioMode	string	snapshot	NULL	Radio mode used by the AP
channel	int	snapshot	NULL	Radio channel used by the AP
rxBytes	uint64	delta	SUM	Total data and management packet data size received
txBytes	uint64	delta	SUM	Total data and management packet data size transmitted
rxFrames	uint64	delta	SUM	Total number of data and management packets received
txFrames	uint64	delta	SUM	Total number of data and management packets transmitted
txBcastFrames	uint64	snapshot	SUM	Total broadcast packets transmitted
txMcastFrames	uint64	snapshot	SUM	Total multicast packets transmitted
txDataFrames	uint64	snapshot	SUM	Accumulated number of packets transmitted
txDataBytes	uint64	snapshot	SUM	Accumulated data bytes transmitted
txMgmtFrames	uint64	snapshot	SUM	Accumulated number of packet transmitted
txMgmtBytes	uint64	snapshot	SUM	Accumulated management bytes transmitted
txDropDataFrames	uint64	snapshot	SUM	Total Tx data frames dropped (or dropped by MQ) . In AP internal design, it has a messages queue(MQ) to queue all packets that AP plans to forward to clients. Then AP transmit packets to clients accoring the priority / scheduling/... The MQ is Ruckus propritary internal design.
txDropMgmtFrames	uint64	snapshot	SUM	Total Tx management frames dropped (or dropped by MQ) . In AP internal design, it has a messages queue(MQ) to queue all packets that AP plans to forward to clients. Then AP transmit packets to clients accoring the priority / scheduling/... The MQ is Ruckus propritary internal design.
rxBcastFrames	uint64	snapshot	SUM	Total broadcast packets received
rxMcastFrames	uint64	snapshot	SUM	Total multicast packets received
rxDataFrames	uint64	snapshot	SUM	Accumulated number of packets received
rxDataBytes	uint64	snapshot	SUM	Accumulate data bytes received
rxMgmtFrames	uint64	snapshot	SUM	Accumulated number of packets received

**TABLE 36 AP Status WLAN Information (continued)**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
rxMgmtBytes	uint64	snapshot	SUM	Accumulate management bytes received
totalNumClients	int	snapshot	NULL	Current client count
vlan	int	snapshot	NULL	VLAN ID of the WLAN
wsgWlanId	int	snapshot	NULL	WLAN ID assigned by the controller
wlanId	int	snapshot	NULL	WLAN interface ID
wlangroup_name	string	snapshot	NULL	WLAN Group name
wlangroup_id	string	snapshot	NULL	WLAN Group identifier
wlantenant_id	string	snapshot	NULL	WLAN tenant identifier
wlantenant_name	string	snapshot	NULL	WLAN tenant name
ftassoc_success	uint32	snapshot	NULL	802.11r fast roaming status success
ftassoc_failure	uint32	snapshot	NULL	802.11r fast roaming status failure
is_probe_withheld	uint32	snapshot	NULL	Probe resp withheld if this is a Probe Request, Client Load Balancing and Band Steering decide whether to withhold the response).
is_auth_withheld	uint32	snapshot	NULL	Auth resp withheld (If this is an Auth Request, Client Load Balancing and Band Steering decide whether to withhold the response).
WlanName	string	snapshot	NULL	Wlan SSID
AuthMethod	string	snapshot	NULL	Wlan authentication method
EncryptMethod	string	snapshot	NULL	Wlan encryption method
IsGuest	uint32	snapshot	NULL	An indication for guest access allowed
IsBcastDisable	uint32	snapshot	NULL	Hidden SSID wlan indication
UpRateLimit	uint32	snapshot	NULL	Wlan rate limiting for upstream
DownRateLimit	uint32	snapshot	NULL	Wlan rate limiting for downstream
IsTunnel	uint32	snapshot	NULL	Tunnel wlan indication
NumAssocReq	uint32	snapshot	NULL	Assoc req count on Wlan
NumAssocResp	uint32	snapshot	NULL	Assoc resp count on Wlan
NumReassocReq	uint32	snapshot	NULL	Re-assoc req count on Wlan
NumReassocResp	uint32	snapshot	NULL	Re-assoc resp count on Wlan
NumAssocFail	uint32	snapshot	NULL	Assoc failure count on Wlan
NumAuthReq	uint32	snapshot	NULL	auth req count on Wlan
NumAuthResp	uint32	snapshot	NULL	auth resp count on Wlan
NumAuthSuccess	uint32	snapshot	NULL	success auth count on Wlan
NumAuthFail	uint32	snapshot	NULL	failure auth count on Wlan

**TABLE 36 AP Status WLAN Information (continued)**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
AuthFailRate	uint32	snapshot	NULL	auth failure rate on Wlan
RtsThreshold	uint32	snapshot	NULL	Wlan RTS threshold value

**TABLE 37 AP Status Radio Information**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
radioid	int	snapshot	NULL	Radio ID number used by the AP
Channel	int	snapshot	CONF	Radio channel used by the AP
mode	string	snapshot	NULL	Radio mode used by the AP
band	string	snapshot	NULL	Radio band used by the AP
80211RadioMode	string	snapshot	NULL	Radio mode used by the AP. Radio is 11bgn, means radio support 802.11B, 802.11G, and 802.11n. It has three capabilities. The 11bgn is not a good format if machine wants to parse. Because we have 11AC now. So we use "/" to separate each capability and then the machine can parse the string easily.
txPower	string	snapshot	NULL	Tx power of the WiFi interface
phyError	uint32	snapshot	SUM	Accumulated number of Rx phy errors
channelBlacklist	string	snapshot	NULL	Channel blacklist
noiseFloor	int	snapshot	AVG	Last recorded noise floor
rxBytes	uint64	Delta	SUM	Total data bytes received on radio
rxFrames	uint64	Delta	SUM	Total data frames received on radio
rxRadioBytes	uint64	snapshot	SUM	Total data bytes received on radio
rxRadioFrames	uint64	snapshot	SUM	Number of fragmented frames received
txBytes	uint64	Delta	SUM	Total data bytes transmitted on radio
txFrames	uint64	Delta	SUM	Total data frames transmitted on radio
txRadioBytes	uint64	snapshot	SUM	Total data bytes received on radio
txRadioFrames	uint64	snapshot	SUM	Number of fragments transmitted
retry	uint64	snapshot	SUM	Number of transmission retries
drop	uint32	snapshot	SUM	Number of excessive transmission retries
rxMulticast	uint64	snapshot	SUM	Number of multicast packets received

**TABLE 37 AP Status Radio Information (continued)**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
txMulticast	uint64	snapshot	SUM	Number of multicast packets transmitted
total	uint32	snapshot	AVG	Exponential average of total channel utilization
busy	uint32	snapshot	AVG	Exponential average of channel busy time
rx	uint32	snapshot	AVG	Exponential average of channel availability for receiving
tx	uint32	snapshot	AVG	Exponential average of channel availability for for transmitting
channelWidth	uint32	snapshot	NULL	Channel width
wlans	.APStatusWlan	Serialization	Null	Serialization data for all of wlans
ap	string	snapshot	NULL	AP mac address
latency	uint32	snapshot	NULL	The time taken by a packet from ethernet ingress to Radio egress or Tx complete
capacity	uint32	snapshot	NULL	The saturated throughput estimate of a link
connectionFailure	float	snapshot	NULL	The rate of client connection failure
connectionAuthFailureCount	uint32	snapshot	SUM	802.11 auth failure count on radio
connectionAssocFailureCount	uint32	snapshot	SUM	802.11 assoc failure count on radio
connectionTotalCount	uint32	snapshot	SUM	Total connection count on radio
numOfChannelChange	uint32	snapshot	SUM	Number of channel change on radio
isLatencyFlagged	bool	snapshot	SUM	Does the radio latency value exceed criteria or not
isCapacityFlagged	bool	snapshot	SUM	Does radio capacity value exceed criteria or not
isConnectionFailureFlagged	bool	snapshot	SUM	Does radio connection failure rate exceed criteria or not
isAirtimeFlagged	bool	snapshot	SUM	Does radio airtime utilization total value exceed criteria or not
isRadioEnabled	bool	snapshot	SUM	Is wifi interface up or not
secondaryChannel	uint32	snapshot	SUM	Second channel value for 80_80MHz channel width
eirp	int32	snapshot	SUM	Radio eirp value = tx_power +antenna gain
connectionTotalFailureCount	uint32	snapshot	SUM	Total connection failure count on radio
tx_rts_cnt	uint32	snapshot	NULL	TX RTS frame count
PowerMgmtEnable	int32	snapshot	NULL	TX power control is allowed
MeshEnable	int32	snapshot	NULL	Mesh is enabled on radio
RxErrorPkts	uint64	snapshot	NULL	RX error packet on radio

**TABLE 37 AP Status Radio Information (continued)**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
TxErrorPkts	uint64	snapshot	NULL	TX error packet on radio
RxPktErrorRate	uint32	snapshot	NULL	RX packet error rate on radio
TxPktErrorRate	uint32	snapshot	NULL	TX packet error rate on radio
TxPktRetryRate	uint32	snapshot	NULL	TX packet retry rate on radio
TxRetryBytes	uint64	snapshot	NULL	TX retry packet data bytes on radio
RxDropPkts	uint64	snapshot	NULL	RX drop packet count
AssocSuccessRate	uint32	snapshot	NULL	Assoc success rate on radio
AssocFailRate	uint32	snapshot	NULL	Assoc failure rate on radio
BeaconPeriod	uint32	snapshot	NULL	Antenna gain value on radio
RtsThreshold	uint32	snapshot	NULL	Time period for beaon
totalFailureClientCount	uint32	snapshot	SUM	Total failure client count
totalClientCnts	uint32	snapshot	NULL	Current client count per radio

**TABLE 38 AP Status Brownout Information**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
events	int32	snapshot	NULL	Brown out event. It could be "Brownout Occurred" or "Brownout restored"
pwrType	int32	snapshot	NULL	Brown out power. It could be "PoE" or "12VDC power supply"
timeStamp	int32	snapshot	NULL	Date and time of the brownout event

**TABLE 39 AP Status IPsec Information**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
ipsecActiveServerIP	string	snapshot	NULL	IPSec remote server IP address (only populated when IPSec is enabled)
ipsecVirtualIPv4	string	snapshot	NULL	IPSec virtual IPv4 address (only populated when IPSec is enabled)
ipsecVirtualIPv6	string	snapshot	NULL	IPSec virtual IPv6 address (only populated when IPSec is enabled)
ipsecEffectiveIKESA	string	snapshot	NULL	IPSec IKE SA (only populated when IPSec is enabled)
ipsecEffectiveESPSA	string	snapshot	NULL	IPSec child SA (only populated when IPSec is enabled)

**TABLE 40 AP Status System Information**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
ap	string	snapshot	NULL	MAC address of the AP
usbDeviceVersion	string	snapshot	NULL	USB device version
usbDeviceVID	string	snapshot	NULL	USB device VLAN ID
usbDevicePID	string	snapshot	NULL	USB device product ID (PID)
gpsInfo	string	snapshot	NULL	GPS information
countryCode	string	snapshot	NULL	Country code
seqNumber	uint64	snapshot	NULL	Counter for generating mesh statistics. The count increases by one whenever the AP generates mesh statistics. When the AP restarts, the counter also resets to zero (0).
zoneUUID	string	snapshot	NULL	Unique zone ID (for example, b381206b-2e5d-43dc-b249-e36ffae9855c) assigned by the controller
zoneName	string	snapshot	NULL	Zone name assigned by the controller. The admin configures the Zone name via controller's user interface. The controller passes it to the AP, which the zone name.
timeZone	string	snapshot	NULL	Time zone. The admin configure the time zone via SCG UI. Then SCG pass the time zone to APs.
gatewayIp	string	snapshot	NULL	Default gateway IP address of the AP
lastRebootReason	string	snapshot	NULL	Reason the AP was last rebooted
totalBootCount	uint32	snapshot	NULL	Total number of reboots since the AP was last power cycled
mtuSize	uint32	snapshot	NULL	AP br0 mtu setting. MTU stands for Maximum transmission unit. The admin could configure the size of MTU via SCG UI. Then SCG pass configuration to APs. So the max packet size is 1400 bytes if admin configure the MTU to 1400. The more details, see <a href="https://en.wikipedia.org/wiki/Maximum_transmission_unit">https://en.wikipedia.org/wiki/Maximum_transmission_unit</a> .
rejoinCount	uint32	snapshot	NULL	Number of times the AP rejoined the controller
rejoinReason	string	snapshot	NULL	Reason the AP rejoined the controller
oops	string	snapshot	NULL	Kernel oops if there is kernel panic. The AP logs crash point when AP's kernel panic happened. Then AP report the crash point to SCG after AP boots up again.

**TABLE 40 AP Status System Information (continued)**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
lossConnectBootCnt	uint32	snapshot	NULL	Number of times the AP lost connection with the controller
deviceName	string	snapshot	NULL	Name of the AP
location	string	snapshot	NULL	Location of the AP
fwVersion	string	snapshot	NULL	Version of firmware installed on the AP
devSupportUsb	int	snapshot	NULL	Indicator for USB support on the AP . It could be 0 and 1. 0: not support, 1: support
deviceIpMode	int	snapshot	NULL	Current IP mode of the AP (IPv4 or IPv6)
ip	string	snapshot	NULL	IPv4 address of the AP
ipv6	string	snapshot	NULL	IPv6 address of the AP
ipseclp	string	snapshot	NULL	IPsec virtual IP address of the AP (only populated when IPsec is enabled)
apConnectedIp	string	snapshot	NULL	IP address the AP uses to connect to the controller.
uptime	long	snapshot	NULL	Duration since the AP was last rebooted . The unit is second.
mountState	string	snapshot	NULL	AP mount state
currentTemperature	int	snapshot	NULL	Current temperature inside the AP
lifeMaxTemperature	int	snapshot	NULL	Highest AP temperature ever recorded
lifeMinTemperature	int	snapshot	NULL	Lowest AP temperature ever recorded
dnatInfo	string	snapshot	NULL	rks_gre tunnel gateway IP address
rksDplp	string	snapshot	NULL	Data blade IP address and port number
rksDplpOnly	string	snapshot	NULL	Data blade IP address
ipType	string	snapshot	NULL	IPv4 or IPv6
isIpTypeChanged	uint32	snapshot	NULL	Fake data; should be removed
managementVlan	uint32	snapshot	NULL	AP management VLAN ID
apState	string	snapshot	NULL	AP KPI status
isConnectionTotalCountFlagged	boolean	snapshot	NULL	AP KPI attribute "client total connection" flagging status
totalConnectedClient	uint32	snapshot	NULL	AP KPI attribute "client total connection" number
crashDump	uint32	snapshot	NULL	Indicator if there is crash dump is generated on AP or not
altitudeUnit	string	snapshot	NULL	GPS attribute : floor or meters
altitudeValue	uint32	snapshot	NULL	GPS attribute: floor value
poemode	uint32	snapshot	NULL	8023af PoE power source

**TABLE 40 AP Status System Information (continued)**

Attribute Name	ValueType (size)	Property(Snapsh ot/Delta/ Serialization)	ValueAggregation Type(SUM,MAX,M IN,AVG,NULL)	Description
poeModeSetting	uint32	snapshot	NULL	8023af PoE mode
ipv6Type	string	snapshot	NULL	AP IPv6 mode (static, pope, auto)
freeMemoryPercentage	double	snapshot	NULL	The percentage of AP free memeory
freeStoragePercentage	double	snapshot	NULL	The percentage of AP free storage
cpuPercentage	double	snapshot	NULL	The percentage of AP CPU using rate
totalMemory	uint64	snapshot	NULL	AP totoal memory size
freeMemory	uint64	snapshot	NULL	AP current free memory size
model	string	snapshot	NULL	AP model name
serialNumber	string	snapshot	NULL	The serial number in AP borad data
desc	string	snapshot	NULL	AP model display string
numRadio	int32	snapshot	NULL	Number of radio on AP
szConnCplp	string	snapshot	NULL	SZ CP IPv4 address that is used by this AP connection.
szConnCplpv6	string	snapshot	NULL	SZ CP IPv6 address that is used by this AP connection.
szConnDplp	string	snapshot	NULL	SZ DP IPv4 address that is used by this AP connection for tunnel traffic.
szConnDplpv6	string	snapshot	NULL	SZ DP IPv6 address that is used by thsi AP connection for tunnel traffic.
netmask	string	snapshot	NULL	The netmask is used by this AP network.
lpDnsSvr1	string	snapshot	NULL	DNS server 1 IPv4 address that is used by this AP.
lpDnsSvr2	string	snapshot	NULL	DNS server 2 IPv4 address that is used by this AP
lpv6DnsSvr1	string	snapshot	NULL	DNS server 1 IPv6 address that is used by this AP.
lpv6DnsSvr2	string	snapshot	NULL	DNS server 2 IPv6 address that is usd by this AP.
ApStatus	int32	snapshot	NULL	The status for AP connect to SZ
lastConfSyncTime	uint64	snapshot	NULL	The timestamp for last configuration sync up.
freeStorage	uint64	snapshot	NULL	AP free storage size
ethPortStatus	int32	snapshot	NULL	AP ethernet port status (up/down)
rxErrorPkts	uint64	snapshot	NULL	RX error packet count on radio
txErrorPkts	uint64	snapshot	NULL	TX error packet count on radio
RxDropPkts	uint64	snapshot	NULL	RX packet drop count on radio
LanStatsRxBytes	uint64	snapshot	NULL	AP ethernet port RX data bytes



**TABLE 40 AP Status System Information (continued)**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
LanStatsTxBytes	uint64	snapshot	NULL	AP ethernet port TX data bytes
LanStatsRxPkts	uint64	snapshot	NULL	AP ethernet port RX data packets
LanStatsTxPkts	uint64	snapshot	NULL	AP ethernet port TX data packets
LanStatsRxErrorPkts	uint64	snapshot	NULL	AP ethernet port RX error packet count
LanStatsTxErrorPkts	uint64	snapshot	NULL	AP ethernet port TX error packet count
LanStatsRxDroppedPkts	uint64	snapshot	NULL	AP ethernet port RX drop packet count
LanStatsTxDroppedPkts	uint64	snapshot	NULL	AP ethernet port TX drop packet count
TxDropPkts	uint64	snapshot	NULL	AP total TX drop packet count on wifi

**TABLE 41 LAN Port Status Information**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
port	uint32	snapshot	NULL	Port number for Ethernet interface
interface	string	snapshot	NULL	Interface name for lan device
dot1x	string	snapshot	NULL	Dot1X support mode (auth, sup, none)
logicLink	string	snapshot	NULL	Link status (up/down)
phyLink	string	snapshot	NULL	Link attributes (up/down, speed, duplex)
sfplInfo	string	snapshot	NULL	Sfp supported information
wanConnectivity	string	snapshot	NULL	Description for this interface is WAN or LAN interface

**TABLE 42 Cable Modem Information**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
cmMac	string	snapshot	NULL	Cable modem device mac address
cmIp	string	snapshot	NULL	Cable modem IP address
cmFwVersion	string	snapshot	NULL	Cable modem version
cmUptime	uint32	snapshot	NULL	Cable modem alive time
cmSerialNumber	string	snapshot	NULL	Cable modem serial number
cmIpv6	string	snapshot	NULL	Cable modem IPv6 address
cmCapabilities	string	snapshot	NULL	Capabilities of cable modem
cmRangingTimeout	uint32	snapshot	NULL	Gets the data for ranging timeout

**TABLE 42 Cable Modem Information (continued)**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
cmStatusValue	uint32	snapshot	NULL	Gets the data for status value.
cmStatusCode	string	snapshot	NULL	Gets the data for status code.
cmStatusTxPower	string	snapshot	NULL	Gets the data for <i>TxPower</i> .
cmStatusResets	uint32	snapshot	NULL	Gets the data for status reset.
cmStatusLostSyncs	uint32	snapshot	NULL	Gets the data for <i>StatusLostSyncs</i> .
cmStatusInvalidMaps	uint32	snapshot	NULL	Gets the data <i>StatusInvalidMap</i> .
cmStatusInvalidUcds	uint32	snapshot	NULL	Gets the data <i>StatusInvalidUcds</i> .
cmStatusInvalidRangingResponses	uint32	snapshot	NULL	Gets the data <i>StatusInvalidRangingResponses</i> .
cmStatusInvalidRegistrationResponses	uint32	snapshot	NULL	Gets the data for <i>StatusInvalidRegistrationResponses</i>
cmStatusT1Timeouts	uint32	snapshot	NULL	Gets the data for <i>StatusT1Timeouts</i> .
cmStatusT2Timeouts	uint32	snapshot	NULL	Gets the data <i>StatusT2Timeouts</i> .
cmStatusT3Timeouts	uint32	snapshot	NULL	Gets the data for <i>StatusT3Timeouts</i> .
cmStatusT4Timeouts	uint32	snapshot	NULL	Gets the data for <i>StatusT4Timeouts</i> .
cmStatusRangingAbortedds	uint32	snapshot	NULL	Gets the data for <i>statusRangingAbortedds</i>
cmStatusDocsisOperMode	uint32	snapshot	NULL	Gets the data for <i>StatusDocsisOperMode</i> .
cmStatusModulationType	uint32	snapshot	NULL	Gets the data for <i>CmStatusModulationType</i> .
cmStatusEqualizationData	string	snapshot	NULL	Gets the data for <i>CmStatusEqualizationData</i> .

**TABLE 43 AP Status LBS Information**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
isLBSEnable	boolean	snapshot	NULL	AP LBS supported status
isLBSConnected	boolean	snapshot	NULL	LBS connected status
isSupportLBS	boolean	snapshot	NULL	Fake data; should be removed

**TABLE 44 Cellular Information**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
cellularWanInterface	string	snapshot	NULL	Cellular WAN interface
cellularConnectionStatus	string	snapshot	NULL	Cellular connection status
cellularIMSIM0	string	snapshot	NULL	SIM0 IMSI
cellularIMSIM1	string	snapshot	NULL	SIM1 IMSI

**TABLE 44 Cellular Information (continued)**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
cellularICCIDSIM0	string	snapshot	NULL	SIM0 ICCID
cellularICCIDSIM1	string	snapshot	NULL	SIM1 ICCID
cellularIsSIM0Present	string	snapshot	NULL	SIM0 present
cellularIsSIM1Present	string	snapshot	NULL	SIM1 present
cellularTxBytesSIM0	uint64	snapshot	NULL	SIM0 Tx in Byte
cellularTxBytesSIM1	uint64	snapshot	NULL	SIM1 Tx in Byte
cellularRxBytesSIM0	uint64	snapshot	NULL	SIM0 Rx in Byte
cellularRxBytesSIM1	uint64	snapshot	NULL	SIM1 Rx in Byte
cellularActiveSim	string	snapshot	NULL	Cellular active SIM
cellularIPaddress	string	snapshot	NULL	Cellular IP address
cellularSubnetMask	string	snapshot	NULL	Cellular subnet mask
cellularDefaultGateway	string	snapshot	NULL	Cellular default gateway
cellularOperator	string	snapshot	NULL	Cellular operator
cellular3G4GChannel	int32	snapshot	NULL	Cellular 3g/4g channel
cellularSignalStrength	string	snapshot	NULL	Cellular signal strength
cellularCountry	string	snapshot	NULL	Country name
cellularRadioUptime	int32	snapshot	NULL	Cellular radio uptime
cellularLTEFirmware	string	snapshot	NULL	Cellular LTE firmware
cellularSwitchCountSIM0	int64	snapshot	NULL	SIM0 switch count
cellularSwitchCountSIM1	int64	snapshot	NULL	SIM1 switch count
cellularNWLostCountSIM0	int64	snapshot	NULL	SIM0 NW lost count
cellularNWLostCountSIM1	int64	snapshot	NULL	SIM1 NW lost count
cellularCardRemovalCountSIM0	int64	snapshot	NULL	SIM0 card removal count
cellularCardRemovalCountSIM1	int64	snapshot	NULL	SIM1 card removal count
cellularDHCPTimeoutCountSIM0	int64	snapshot	NULL	SIM0 DHCP timeout count
cellularDHCPTimeoutCountSIM1	int64	snapshot	NULL	SIM1 DHCP timeout count
cellularRoamingStatus	string	snapshot	NULL	Cellular roaming status
cellularIMEI	string	snapshot	NULL	Cellular IMEI
cellularRSRP	INT32	snapshot	NULL	Cellular RSRP
cellularRSRQ	INT32	snapshot	NULL	Cellular RSRQ
cellularSINR	INT32	snapshot	NULL	Cellular SINR
cellularRSCP	INT32	snapshot	NULL	Cellular RSCP
cellularECIO	INT32	snapshot	NULL	Cellular ECIO
cellularBand	STRING	snapshot	NULL	Cellular band
cellularUplinkBandwidth	STRING	snapshot	NULL	Cellular uplink bandwidth
cellularDownlinkBandwidth	STRING	snapshot	NULL	Cellular downlink bandwidth
gpsHistory	.GpsHistoryData	snapshot	NULL	GPS history

**TABLE 45 Gps History Data**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
timestamp	UINT64	snapshot	NULL	timestamp
latitude	STRING	snapshot	NULL	latitude
longitude	STRING	snapshot	NULL	longitude

**TABLE 46 AP Status Data Information**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
APSystem	.APStatusSystem	Serialization	NULL	Serialization data for all of AP system information.
APIPsec	.APStatusIPSec	Serialization	NULL	Serialization data for all of IPsec tunnel information.
APBrownout	.APStatusBrownout	Serialization	NULL	Serialization data for all of AP brown out information.
APRadio	.APStatusRadio	Serialization	NULL	Serialization data for all of AP radio information.
APIPsecStats	.APStatusIPSecStats	Serialization	NULL	Serialization data for all of AP IPsec tunnel stats information.
APTunnel	.APStatusTunnel	Serialization	NULL	Serialization data for all of AP tunnel stats information.
lanPortStatus	.LanPortStatus	Serialization	NULL	Serialization data for all of ethernet port status information.
cableModemInfo	.CableModemInfo	Serialization	NULL	Serialization data for all of cable modem device information.
APStatusLBS	.APStatusLBS	Serialization	NULL	Serialization data for all of LBS information.
cellularInfo	.CellularInfo	Serialization	NULL	Serialization data for all of cellular information.

**TABLE 47 AP Status Data**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
version	uint32	snapshot	NULL	This stats report version number
ap_status_data	.APStatusData	Serialization	NULL	Serialization data for AP status information
zone_id	string	snapshot	NULL	Zone UUID
apgroup_id	string	snapshot	NULL	AP group UUID
cluster_id	string	snapshot	NULL	Cluster UUID
domain_id	string	snapshot	NULL	Domain UUID
aptenant_id	string	snapshot	NULL	AP tenant UUID
map_id	string	snapshot	NULL	MAP UUID
aptenant_name	string	snapshot	NULL	AP tenant name
zone_name	string	snapshot	NULL	Zone name

**TABLE 47 AP Status Data (continued)**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
apgroup_name	string	snapshot	NULL	AP group name
domain_name	string	snapshot	NULL	Domain name
wlangroup24G_id	string	snapshot	NULL	UUID for Wlan group on 2.4G radio
wlangroup24G_name	string	snapshot	NULL	Name for wlan group on 2.4G radio
wlangroup5G_id	string	snapshot	NULL	UUID for wlan group on 5G radio
wlangroup5G_name	string	snapshot	NULL	Name for wlan group on 5G radio
sampleTime	uint64	snapshot	NULL	Timestamp to generate this stats report
aggregationInterval	uint32	snapshot	NULL	Interval for stats data aggregation
map_name	string	snapshot	NULL	MAP name
apMac	string	snapshot	NULL	AP MAC address

# ap\_wired\_client.proto

```

/**
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 * information contained herein except pursuant to a valid license from Ruckus.
 */
option java_package = "com.ruckuswireless.scg.protobuf";

message APWiredClientInfo {
  optional string clientMac = 1;
  optional string ipAddress = 2;
  optional string ipv6Address = 3;
  optional int32 vlan = 4;
  optional uint64 rxFrames = 5;
  optional uint64 rxBytes = 6;
  optional uint64 rxUcast = 7;
  optional uint64 rxMcast = 8;
  optional uint64 rxBcast = 9;
  optional uint64 rxDrop = 10;
  optional uint64 rxEapol = 11;
  optional uint64 rxMcastLegacy = 12;
  optional uint64 txFrames = 13;
  optional uint64 txBytes = 14;
  optional uint64 txUcast = 15;
  optional uint64 txMcast = 16;
  optional uint64 txBcast = 17;
  optional uint64 txDrop = 18;
  optional uint64 txEapol = 19;
  enum AUTH_STATUS
  {
    UNAUTH = 0;
    AUTHENTICATED = 1;
  }
  optional AUTH_STATUS authStatus = 20;
}

message APWiredClientStats {
  optional uint32 version = 1;
  repeated APWiredClientInfo clients = 2;
  optional uint64 timestamp = 3;
  optional uint64 sampleTime = 4;
  optional uint32 aggregationInterval = 5;
  optional string zone_id = 6;
  optional string domain_id = 7;
  optional string deviceName = 8;
  optional string apgroup_id = 9;
  optional string aptenant_id = 10;
  optional string map_id = 11;
  optional string cluster_id = 12;
}

```

## Field Description

**TABLE 48 AP Wired Client Information**

Attribute Name	ValueType (size)	Property(Snapsh ot/Delta/ Serialization)	ValueAggregation Type(SUM,MAX,M IN,AVG,NULL)	Description
clientMac	string	Snapshot	NULL	Wired Client MAC address
ipAddress	string	Snapshot	NULL	Wired Client IPv4 address
ipv6Address	string	Snapshot	NULL	Wired Client IPv6 address

**TABLE 48 AP Wired Client Information (continued)**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
vlan	int32	Snapshot	NULL	Wired Client VLAN
rxFrames	uint64	Snapshot	NULL	Receive packet frames
rxBytes	uint64	Snapshot	NULL	Receive packet bytes
rxUcast	uint64	Snapshot	NULL	Receive unicast packets
rxMcast	uint64	Snapshot	NULL	Receive multicast packets
rxBcast	uint64	Snapshot	NULL	Receive Broadcast packets
rxDrop	uint64	Snapshot	NULL	Drop packets on receive side
rxEapol	uint64	Snapshot	NULL	Receive EAPOL packets
rxMcastLegacy	uint64	Snapshot	NULL	Receive legacy multicast packets
txFrames	uint64	Snapshot	NULL	Transmit packet frames
txBytes	uint64	Snapshot	NULL	Transmit packet bytes
txUcast	uint64	Snapshot	NULL	Transmit unicast packets
txMcast	uint64	Snapshot	NULL	Transmit multicast packets
txBcast	uint64	Snapshot	NULL	Transmit Broadcast packets
txEapol	uint64	Snapshot	NULL	Transmit EAPOL packets
authStatus	.APWiredClientInfo .AUTH_STATUS	Snapshot	NULL	Wired client authentication status(UNAUTH or AUTHENTICATED)

**TABLE 49 AP Wired Client Stats Information**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
version	uint32	Snapshot	NULL	GPB version
clients	.APWiredClientInfo	Serialization	NULL	Serialization data for all of wired client information
timestamp	uint64	Snapshot	NULL	time for this report
sampleTime	uint64	Snapshot	NULL	sample time for these stats
aggregationInterval	uint32	Snapshot	NULL	aggregation interval for report
zone_id	string	Snapshot	NULL	zone UUID
domain_id	string	Snapshot	NULL	domain UUID
deviceName	string	Snapshot	NULL	AP device name
apgroup_id	string	Snapshot	NULL	ap group UUID
aptenant_id	string	Snapshot	NULL	ap tenant UUID
map_id	string	Snapshot	NULL	map UUID
cluster_id	string	Snapshot	NULL	cluster UUID

# sci-alarm.proto

```
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copyright and trade secret laws. You may not view, use, disclose, copy, or distribute this file or any
information contained herein except pursuant to a valid license from Ruckus.
*
*   JsonMessage GPB format is used to transfer the JSON messages across
*   applications which includes the version, message content and message
*   content type attributes.
*/
option java_package = "com.ruckuswireless.scg.protobuf.sci";

message AlarmMessage {
  enum AlarmState {
    OUTSTANDING = 0;
    CLEARED = 1;
  }
  optional uint32 version = 1;
  optional string alarmUuid = 2;
  optional uint32 alarmCode = 3;
  optional string alarmSeverity = 4;
  optional string mainCategory = 5;
  optional string alarmType = 6;
  optional uint32 initEventCode = 7;
  optional uint64 timestamp = 8;
  optional AlarmState alarmState = 9;
  repeated AlarmMessageEntry attributes = 10;
  optional string domainId = 11;
  optional string zoneId = 12;
  optional string apGroupId = 13;
  optional string apMac = 14;
  optional string clientMac = 15;
  optional string reason = 16;
  optional string domainName = 17;
  optional string zoneName = 18;
  optional string apGroupName = 19;
  optional string apIpAddress = 20;
  optional string apIpv6Address = 21;
  optional string description = 22;
  optional string subCategory = 23;
  optional string bladeId = 24;
}

message AlarmMessageEntry {
  optional string key = 1;
  optional string value = 2;
}
```

## Field Description

**TABLE 50 Enum Alarm Message Alarm State**

Name	Value	Description
OUTSTANDING	0	OUTSTANDING
CLEARED	1	CLEARED



**TABLE 51 Alarm Message Information**

Attribute Name	ValueType (size)	Property(Snapshot /Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
version	uint32	snapshot	NULL	GPB version
alarmUuid	string	snapshot	NULL	Alarm UUID
alarmCode	uint32	snapshot	NULL	Alarm Code defined by AlarmEnum
alarmSeverity	string	snapshot	NULL	Alarm severity defined by AlarmEnum
mainCategory	string	snapshot	NULL	Alarm main category defined by AlarmCategory
alarmType	string	snapshot	NULL	Alarm type description defined by AlarmEnum represented with String.
initEventCode	uint32	snapshot	NULL	The triggering event code number for this alarm.
timestamp	uint64	snapshot	NULL	The timestamp of this alarm's creation.
alarmState	.AlarmMessage.AlarmState	snapshot	NULL	The AlarmState of current triggering alarm which contains (OUTSTANDING/CLEARED).
attributes	.AlarmMessageEntry	snapshot	NULL	The AlarmMessageEntry contains additional attribute values required by outer service.
domainId	string	snapshot	NULL	Domain UUID.
zoneId	string	snapshot	NULL	Zone UUID. Unique zone ID assigned by SZ controller.
apGroupId	string	snapshot	NULL	AP Group identifier.
apMac	string	snapshot	NULL	Access Point MAC address.
clientMac	string	snapshot	NULL	UE/Client MAC address if the events are related to client.
reason	string	snapshot	NULL	Reason for the alarm to occur.
domainName	string	snapshot	NULL	Domain name.
zoneName	string	snapshot	NULL	Zone name assigned by the controller. The admin configures the Zone name via the controller's user interface.
apGroupName	string	snapshot	NULL	AP Group name.
apIpAddress	string	snapshot	NULL	IPv4 address of the AP.
apIpv6Address	string	snapshot	NULL	IPv6 address of the AP.
description	string	snapshot	NULL	Description of the alarm represented by string.
subCategory	string	snapshot	NULL	Sub category of the alarm.
bladeId	string	snapshot	NULL	Blade ID information from which node alarm created.

**TABLE 52 Alarm Message Entry Information**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
key	string	snapshot	NULL	Alarm message entry key.
value	string	snapshot	NULL	Alarm message entry value.

# sci configuration message

```
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information contained herein except pursuant to a valid license from Ruckus.
*/
option java_package = "com.ruckuswireless.scg.protobuf.sci";

message ConfigurationMessage {
    required uint32 version = 1;
    optional ClusterMessage clusterInfo = 2;
    optional uint64 timestamp = 3;
}

message ClusterMessage {
    /* Cluster Informations */
    optional string clusterUuid = 1;
    optional string clusterName = 2;
    optional string controlBlades = 3; // (/wsg/api/scg/planes/control
and /wsg/api/sci/cbs)
    optional string controllerUtilizations = 4; //
(/wsg/api/sci/cbutils)
    optional string systemSummary = 5; //
(/wsg/api/scg/planes/systemSummary)
    /* Raw Data [Compression]*/
    optional string domains = 100; //
(/wsg/api/scg/session/currentUser/domainList)
    optional string zones = 101; //
(/wsg/api/scg/zones/byDomain/$domain)
    optional string apGroups = 102; //
(/wsg/api/scg/apgroup/byZone/$zone)
    optional string wlanGroups = 103; //
(/wsg/api/scg/wlangroup/byZone/$zone)
    optional string wlans = 104; // (/wsg/api/scg/wlans/byZone/$zone)
    optional string aps = 105; // (/wsg/api/sci/aps)
    /* System Hierarchy [Group Tree]*/
    repeated TenantMessage tenantInfos = 200;
}

message TenantMessage {
    optional string tenantId = 1;
    optional string tenantName = 2;
    optional DomainMessage adminDomain = 3;
}

message DomainMessage {
    optional string domainId = 1;
    optional string domainName = 2;
    repeated ZoneMessage zoneInfos = 3;
    repeated DomainMessage subDomainInfos = 4;
}

message ZoneMessage {
    optional string zoneId = 1;
    optional string zoneName = 2;
    repeated ApGroupMessage apGroupInfos = 3;
    repeated WlanGroupMessage wlanGroupInfos = 4;
}

message ApGroupMessage {
    optional string apGroupId = 1;
    optional string apGroupName = 2;
}

message WlanGroupMessage {
    optional string wlanGroupId = 1;
```

```
    optional string wlanGroupName = 2;
}
```

## Field Description

**TABLE 53 Configuration Message Information**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
version	uint32	snapshot	NULL	GPB version
clusterInfo	.ClusterMessage	snapshot	NULL	Cluster information
timestamp	uint64	snapshot	NULL	Time and date of cluster message

**TABLE 54 Cluster Message Information**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
clusterUuid	string	snapshot	NULL	Cluster UUID
clusterName	string	snapshot	NULL	Cluster name
controlBlades	string	snapshot	NULL	JSON string of control node information
controllerUtilizations	string	snapshot	NULL	JSON string of system resource utilization
systemSummary	string	snapshot	NULL	JSON string of system summary
domains	string	snapshot	NULL	JSON string of domain list
zones	string	snapshot	NULL	JSON string of zone list
apGroups	string	snapshot	NULL	JSON string of AP group list
wlans	string	snapshot	NULL	JSON string of WLAN list
aps	string	snapshot	NULL	JSON string of AP list
tenantInfos	.TenantMessage	snapshot	NULL	Group Tree System Hierarchy

**TABLE 55 Tenant Message Information**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
tenantId	string	snapshot	NULL	Tenant UUID
tenantName	string	snapshot	NULL	Tenant name
adminDomain	.DomainMessage	snapshot	NULL	Domain information

**TABLE 56 Domain Message Information**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
domainId	string	snapshot	NULL	Domain UUID
domainName	string	snapshot	NULL	Domain name
zoneInfos	.ZoneMessage	snapshot	NULL	Zone information

**TABLE 56 Domain Message Information (continued)**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
subDomainInfos	.DomainMessage	snapshot	NULL	Sub Domain information

**TABLE 57 Zone Message Information**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
zoneld	string	snapshot	NULL	Zone UUID
zoneName	string	snapshot	NULL	Zone name
apGroupInfos	.ApGroupMessage	snapshot	NULL	AP Group information
wlanGroupInfo	.WlanGroupMessage	snapshot	NULL	WLAN Group information

**TABLE 58 AP Group Message Information**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
apGroupId	string	snapshot	NULL	AP Group UUID
apGroupName	string	snapshot	NULL	AP Group name

**TABLE 59 WLAN Group Message Information**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
wlanGroupId	string	snapshot	NULL	WLAN Group UUID
wlanGroupName	string	snapshot	NULL	WLAN Group name

## sci\_event.proto

```

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information contained herein except pursuant to a valid license from Ruckus.
*
*   JsonMessage GPB format is used to transfer the JSON messages across
*   applications which includes the version, message content and message
*   content type attributes.
*/
option java_package = "com.ruckuswireless.scg.protobuf.sci";
message EventMessage {
    required uint32 version = 1;
    optional uint32 eventCode = 2;
    optional string eventType = 3;
    optional string mainCategory = 4;
    optional string subCategory = 5;
    optional string domainId = 6;
    optional string zoneId = 7;
    optional string apGroupId = 8;
    optional string apMac = 9;
    optional string clientMac = 10;
    optional uint64 timestamp = 11;
    repeated MessageEntry attributes = 12;
    optional string severity = 13;
    optional string reason = 14;
    optional string domainName = 15;
    optional string zoneName = 16;
    optional string apGroupName = 17;
    optional string apIpAddress = 18;
    optional string apIpv6Address = 19;
    optional string description = 20;
}
message MessageEntry {
    optional string key = 1;
    optional string value = 2;
}

```

## Field Description

**TABLE 60** Event Message Information

Attribute Name	ValueType (size)	Property(Snapshot /Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
version	uint32	snapshot	NULL	GPB version
eventCode	uint32	snapshot	NULL	Event code
eventType	string	snapshot	NULL	Event type
mainCategory	string	snapshot	NULL	Event main category
subCategory	string	snapshot	NULL	Event sub category
domainId	string	snapshot	NULL	Domain UUID
zoneId	string	snapshot	NULL	Zone UUID. Unique zone ID (for example, b381206b-2e5d-43dc-b249-e36ffae9855c) assigned by the controller.
apGroupId	string	snapshot	NULL	AP Group identifier
apMac	string	snapshot	NULL	Access Point MAC address

**TABLE 60** Event Message Information (continued)

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
clientMac	string	snapshot	NULL	UE/Client MAC address if the events are related to the client
timestamp	uint64	snapshot	NULL	Event timestamp (UTC time)
attributes	.MessageEntry	snapshot	NULL	Additional event attributes.
severity	string	snapshot	NULL	Event severity
reason	string	snapshot	NULL	Reason for the event to occur.
domainName	string	snapshot	NULL	Domain name.
zoneName	string	snapshot	NULL	Zone name. Zone name assigned by the controller. The admin configures the Zone name via the controller's user interface. The controller passes it to the AP. AP retains the zone name.
apGroupName	string	snapshot	NULL	AP Group name
apIPAddress	string	snapshot	NULL	IPv4 address of the AP
apIPv6Address	string	snapshot	NULL	IPv6 address of the AP
description	string	snapshot	NULL	Description of the event

**TABLE 61** Message Entry Information

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
key	string	snapshot	NULL	Message key
value	string	snapshot	NULL	Message content

# sci-message.proto

```

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copyright and trade secret laws. You may not view, use, disclose, copy, or distribute this file or any
information contained herein except pursuant to a valid license from Ruckus.
*
*   JsonMessage GPB format is used to transfer the JSON messages across
*   applications which includes the version, message content and message
*   content type attributes.
*/
option java_package = "com.ruckuswireless.scg.protobuf.sci";
message SciMessage {
    extensions 1001 to 3000;

    //protocol version
    optional string version = 1;
    // Message identifier for duplication detection    optional bytes uuid = 3;
    // Sent time in milliseconds    optional int64 sentTimeMs = 4;
    // SCI System identifier    optional string sciSystemId = 5;

    // AP StatsMessage After SZ 3.5    optional APStatus apStatus = 101;
    optional APReportStats apReport = 102;
    optional APClientStats apClient = 103;
    optional APMeshStats apMesh = 104;
    optional RogueAPStats apRogue = 105;
    optional EventMessage eventMessage = 106;
    optional ConfigurationMessage configurationMessage = 107;

    // AP StatsMessage After SZ 3.5.1
    optional AlarmMessage alarmMessage = 108;
    optional APWiredClientStats apWiredClient = 109;

    // PCI Compliance Report After SZ 5.0.0
    optional PciReportMessage pciReportMessage = 110;

    // Since SZ 5.0.0
    optional ApHccidReportMessage apHccidReportMessage = 111;

    // Since SZ 5.1.1
    optional .com.ruckuswireless.scg.protobuf.icx.SwitchMessage switchMessage = 112;
    optional .SciRogueMessage sciRogueMessage = 113;
    optional .APAVCStats apAvc = 114;

    // Backward compatible with SZ 3.4
    repeated ArcMessage arcMessage = 206;

    // Since SZ 5.1.2
    optional .com.ruckuswireless.scg.protobuf.icx.SwitchConfigurationMessage
switchConfigurationMessage = 300;
    optional com.ruckuswireless.scg.protobuf.icx.RealtimeSwitchStatus realtimeSwitchStatus = 301;
}

```

## Field Description

**TABLE 62** SCI Message Information

Attribute Name	ValueType (size)	Property(Snapsho t/Delta/ Serialization)	ValueAggregation Type(SUM,MAX,MI N,AVG,NULL)	Description
version	string	snapshot	NULL	protocol version.
uuid	bytes	snapshot	NULL	Message identifier for duplication detection.



**TABLE 62** SCI Message Information (continued)

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
sentTimeMs	int64	snapshot	NULL	Sent time in milliseconds.
sciSystemId	string	snapshot	NULL	SCI System identifier.
apStatus	.APStatus	snapshot	NULL	APStatus from Routine AP Statistic Report.
apReport	.APReportStats	snapshot	NULL	APReportStats from Routine AP Statistic Report.
apClient	.APClientStats	snapshot	NULL	APClientStats from Routine AP Statistic Report.
apMesh	.APMeshStats	snapshot	NULL	APMeshStats from Routine AP Statistic Report.
apRogue	.RogueAPStats	snapshot	NULL	RogueAPStats from Routine AP Statistic Report.
eventMessage	.EventMessage	snapshot	NULL	Event message which has been applied to be sent to outer service.
configurationMessage	.ConfigurationMessage	snapshot	NULL	SZ overall configuration message sent out every 15 minutes.
alarmMessage	.AlarmMessage	snapshot	NULL	Alarm message will be sent out when the alarm happens.
apWiredClient	.APWiredClientStats	snapshot	NULL	APWiredClientStats from Routine AP Statistic Report.
pciReportMessage	.PciReportMessage	snapshot	NULL	PCI Compliance Report which will be sent out every 15 minutes.
apHccdReportMessage	.ApHccdReportMessage	snapshot	NULL	ApHccdReportMessage from Routine AP Statistic Report.
arcMessage	.ArcMessage	snapshot	NULL	ArcMessage is from Routine AP Statistic Report which will be sent out every 5 minutes.
switchMessage	.com.ruckuswireless.scg.protobuf.icx.SwitchMessage	snapshot	NULL	SwitchMessage from ICX Statistic Report.
sciRogueMessage	.SciRogueMessage	snapshot	NULL	SciRogueMessage from AP rogue AP report which have been classified by rogue AP policy of SZ.
apAvc	.APAVCStats	snapshot	NULL	APAVCStats contains a series of ArcMessage.
switchConfigurationMessage	.com.ruckuswireless.scg.protobuf.icx.SwitchConfigurationMessage	snapshot	NULL	Switch overall configuration message sent out every 15 minutes.
realtimeSwitchStatus	.com.ruckuswireless.scg.protobuf.icx.RealtimeSwitchStatus	snapshot	NULL	Switch realtime status.

## sci-pci.proto

```
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* herein except pursuant to a valid license from Ruckus.
*
*   JsonMessage GPB format is used to transfer the JSON messages across
* applications which includes the version, message content and message
* content type attributes.
*/
option java_package = "com.ruckuswireless.scg.protobuf.sci";
message PciReportMessage {
  optional uint32 version = 1;
  optional string pciReportUuid = 2;
  optional bool changedPassword = 3 [default = true];
  repeated ControllerSummaryMessage controllerSummary = 4;
  optional bool enabledSSL = 5 [default = true];
  optional bool blockedTelnet = 6 [default = true];
  optional bool enabledPasswordAuthentication = 7 [default = true];
  optional bool encryptedCredential = 8 [default = true];
  optional bool enabledPasswordStandard = 9 [default = true];
  optional bool enabledUniquePassword = 10 [default = false];
  optional bool disabledGenericAccount = 11 [default = false];
  optional bool synchronizeNTP = 12 [default = true];
  optional bool alertConfigurationChange = 13 [default = true];
  repeated AccountSecurityMessage accountSecurity = 14;
  repeated WlanInformationMessage wlanInformation = 15;
}

message AccountSecurityMessage {
  optional string userUuid = 1;
  optional string userName = 2;
  optional string accountSecurityUuid = 3;
  optional string accountSecurityName = 4;
  optional string description = 5;
  optional string domainId = 6;
  optional uint32 accountLockout = 7;
  optional uint32 lockoutDuration = 8;
  optional uint32 passwordExpiration = 9;
  optional uint32 passwordReuse = 10;
  optional uint32 sessionIdle = 11;
  optional bool twoFactorAuthEnabled = 12;
  optional uint32 disableInactiveAccounts = 13;
}

message ControllerSummaryMessage {
  optional string controllerSummaryUuid = 1;
  optional string modelName = 2;
}

message WlanInformationMessage {
  optional string id = 1;
  optional string zoneId = 2;
  optional string wlanName = 3;
  optional string ssid = 4;
  optional string vlanId = 5;
  optional string securityMethod = 6;
  optional string wpaVersion = 7;
}
```

## Field Description

**TABLE 63 PCI Report Message Information**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
version	uint32	snapshot	NULL	GPB version
pciReportUuid	string	snapshot	NULL	PCI report UUID
changedPassword	boolean	snapshot	NULL	Default password of SZ is changed or not
controllerSummary	.ControllerSummary Message	Serialization	NULL	Controller Summary
enabledSSL	boolean	snapshot	NULL	SSL of SZ web is enabled or not
blockedTelnet	boolean	snapshot	NULL	Telnet of SZ is blocked or not
enabledPasswordAuthentication	boolean	snapshot	NULL	Authentication mechanism is enabled on each user of SZ or not
encryptedCredential	boolean	snapshot	NULL	Credentials of SZ are encrypted or not
enabledPasswordStandard	boolean	snapshot	NULL	Password standards of SZ are enabled or not
enabledUniquePassword	boolean	snapshot	NULL	Unique password of SZ is enabled or not
disabledGenericAccount	boolean	snapshot	NULL	Generic accounts of SZ are disabled or not
synchronizeNTP	boolean	snapshot	NULL	Time of SZ is synchronized to NTP or not
alertConfigurationChange	boolean	snapshot	NULL	Configuration change alert of SZ is enabled or not
accountSecurity	.AccountSecurityMessage	Serialization	NULL	Account Security
wlanInformation	.WlanInformationMessage	Serialization	NULL	Wlan information messages

**TABLE 64 PCI Account Security Message Information**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
userId	string	snapshot	NULL	User UUID
userName	string	snapshot	NULL	User name
accountSecurityUuid	string	snapshot	NULL	Account security UUID
accountSecurityName	string	snapshot	NULL	Account security name
description	string	snapshot	NULL	Account security description
domainId	string	snapshot	NULL	Domain ID
accountLockout	uint32	snapshot	NULL	Failed authentication attempts before account lockout
lockoutDuration	uint32	snapshot	NULL	The duration for which the account is automatically locked

**TABLE 64 PCI Account Security Message Information (continued)**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
				without administrative intervention
passwordExpiration	uint32	snapshot	NULL	Time of password expiration
passwordReuse	uint32	snapshot	NULL	Password reuse setting
sessionIdle	uint32	snapshot	NULL	Session idle timeout
twoFactorAuthEnabled	boolean	snapshot	NULL	Two-Factor authentication is enabled or not
disableInactiveAccounts	uint32	snapshot	NULL	Time of disabling inactive account

**TABLE 65 PCI Control Summary Message Information**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
controllerSummaryUuid	string	snapshot	NULL	Controller summary UUID
modelName	string	snapshot	NULL	Model name

**TABLE 66 PCI WLAN Information Message**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
Id	string	snapshot	NULL	WLAN ID
ZoneID	string	snapshot	NULL	Zone UUID
WlanName	string	snapshot	NULL	WLAN name
ssid	string	snapshot	NULL	SSID
vlanId	string	snapshot	NULL	Vlan ID
securityMethod	string	snapshot	NULL	WLAN security method
wpaVersion	string	snapshot	NULL	WPA version

# switch\_all.proto

```
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*   information contained herein except pursuant to a valid license from Ruckus.
*
*   JsonMessage GPB format is used to transfer the JSON messages across
*   applications which includes the version, message content and message
*   content type attributes.
*/
option java_package = "com.ruckuswireless.scg.protobuf";
message SwitchMessage {
  required uint32 version = 1;
  optional .com.ruckuswireless.scg.protobuf.icx.SwitchStatus switchStatus = 2;
  optional .com.ruckuswireless.scg.protobuf.icx.SwitchStats switchStats = 3;
  repeated .com.ruckuswireless.scg.protobuf.icx.PortStatus portStatuses = 4;
  repeated .com.ruckuswireless.scg.protobuf.icx.PortStats portStats = 5;
  repeated .com.ruckuswireless.scg.protobuf.icx.ConnectedDeviceStatus connectedDevicesStatus = 6;
  repeated .com.ruckuswireless.scg.protobuf.icx.SwitchUnitStatus switchUnitStatuses = 7;
  repeated SwitchClientVisibility switchClientVisibility = 8;
}
```

## Field Description

**TABLE 67** Switch Message Information

Attribute Name	ValueType (size)	Property(Snapshot /Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
version	uint32	snapshot	NULL	
switchStatus	.com.ruckuswireless.scg.protobuf.icx.SwitchStatus	snapshot	NULL	Status of switch, ex: CPU, Memory, System Information, System Network Information.
switchStats	.com.ruckuswireless.scg.protobuf.icx.SwitchStats	snapshot	NULL	Stats of switch for statistical analysis, ex Network Traffic, CPU, Memory.
portStatuses	.com.ruckuswireless.scg.protobuf.icx.PortStatus	snapshot	NULL	Status of port, ex: CPU, Memory, Port Information(Network, PoE, Traffic, Packets In/Out).
portStats	.com.ruckuswireless.scg.protobuf.icx.PortStats	snapshot	NULL	Stats of port for statistical analysis, ex: Port Network Traffic.
connectedDevicesStatus	.com.ruckuswireless.scg.protobuf.icx.ConnectedDeviceStatus	snapshot	NULL	Status of connected device, ex: Remote Port Information(Device Name, Mac Address, Type, Description), Local Port Information(Name, Mac Address).
switchUnitStatuses	.com.ruckuswireless.scg.protobuf.icx.SwitchUnitStatus	snapshot	NULL	Status of switch unit, ex: Switch Unit Information(ID, Uptime, Status, Serial Number).
switchClientVisibility	.com.ruckuswireless.scg.protobuf.icx.SwitchClientVisibility	snapshot	NULL	Visibility of switch client

## switches.proto

```
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*   information contained herein except pursuant to a valid license from Ruckus.
*
*   JsonMessage GPB format is used to transfer the JSON messages across
*   applications which includes the version, message content and message
*   content type attributes.
*/
option java_package = "com.ruckuswireless.scg.protobuf";
message PowerSupplyGroup {
    option (com.ruckuswireless.scg.protobuf.storage.category) = GROUP;
    optional string id = 1 [(com.ruckuswireless.scg.protobuf.storage.id) = true];
    optional string stackId = 2;
    optional int32 powerSlotNum = 3;
    optional string powerSupplyType = 4;
    optional string powerSupplyStatus = 5;
    optional string serialNumber = 6;
}

message FanGroup {
    option (com.ruckuswireless.scg.protobuf.storage.category) = GROUP;
    optional string id = 1 [(com.ruckuswireless.scg.protobuf.storage.id) = true];
    optional string stackId = 2;
    optional int32 slotNum = 3;
    optional string type = 4;
    optional string status = 5;
    optional string serialNumber = 6;
}

message SwitchStatus {
    required string id = 1;
    optional string firmware = 2;
    optional string model = 3;
    optional string defaultGateway = 4;
    optional int32 numOfPorts = 5;
    optional string natIp = 6;
    optional string status = 7;
    optional bool poeAvailable = 8;
    optional uint64 lastBackup = 9;
    optional uint64 cpu = 10;
    optional uint64 memory = 11;
    optional string uptime = 12;
    optional int32 alerts = 13;
    optional bool isStack = 14;
    optional string stackId = 15;
    optional int32 priority = 16;
    optional string modules = 17;
    optional string domainId = 18;
    optional string groupId = 19;
    optional uint64 lastUpdateTimeInMillis = 20;
    optional string switchName = 21;
    optional string tenantId = 22;
    optional string switchGroupLevelOneId = 23;
    optional string switchGroupLevelTwoId = 24;
    optional string serialNumber = 25;
    optional string unitSerialNumbers = 26;
    optional string portModuleIds = 27;
    optional string partitionInUse = 28;
    optional string switchMode = 29;
    optional string switchSWVersion = 30;
    optional int32 numOfWorks = 31;
    optional int32 poeUtilization = 32;
    optional int32 poeTotal = 33;
    optional int32 poeFree = 34;
    optional string family = 35;
```

```
        optional string cloudPort = 43;
    optional string domainName = 44;
    optional string switchGroupLevelOneName = 45;
    optional string switchGroupLevelTwoName = 46;
    optional string powerSupplyGroups = 47;
    optional string fanGroups = 48;
    optional string ipAddress = 49;
}

message SwitchStats {
    required string id = 1;
    optional int64 timestamp = 2;
    optional string switchSerialNum = 3;
    optional int64 tx = 4;
    optional int64 rx = 5;
    optional int64 txRx = 6;
    optional int64 txPkt = 7;
    optional int64 rxPkt = 8;
    optional int64 txRxPkt = 9;
    optional int64 txRate = 10;
    optional int64 rxRate = 11;
    optional int64 txRxRate = 12;
    optional int64 cpu = 13;
    optional int64 memory = 14;
    optional string domainId = 15;
    optional string tenantId = 16;
    optional string switchGroupLevelOneId = 17;
    optional string switchGroupLevelTwoId = 18;
    optional string domainName = 19;
    optional string switchGroupLevelOneName = 20;
    optional string switchGroupLevelTwoName = 21;
}

message PortStats {
    required string id = 1;
    optional int64 timestamp = 2;
    optional string switchSerialNum = 3;
    optional string portMac = 4;
    optional int64 tx = 5;
    optional int64 rx = 6;
    optional int64 txRx = 7;
    optional int64 txPkt = 8;
    optional int64 rxPkt = 9;
    optional int64 txRxPkt = 10;
    optional int64 txRate = 11;
    optional int64 rxRate = 12;
    optional int64 txRxRate = 13;
    optional string domainId = 14;
    optional string tenantId = 15;
    optional string switchGroupLevelOneId = 16;
    optional string switchGroupLevelTwoId = 17;
    optional string switchId = 18;
    optional string domainName = 19;
    optional string switchGroupLevelOneName = 20;
    optional string switchGroupLevelTwoName = 21;
}

message PortStatus {
    optional string portMac = 1;
    optional string switchId = 2;
    optional string type = 3;
    optional string name = 4;
    optional string status = 5;
    optional string adminStatus = 6;
    optional string vlanIds = 7;
    optional string neighborName = 8;
    optional string portSpeed = 9;
    optional bool ruckusDevice = 10;
    optional bool lldpEnabled = 11;
    optional string lagName = 12;
    optional string lagStatus = 13;
    optional string spanningTreeStatus = 14;
}
```

```
optional int32 poeUsed = 15;
optional int32 poeTotal = 16;
optional double poePercent = 17;
optional string domainId = 18;
optional string switchGroupLevelOneId = 19;
optional int64 tx = 20;
optional int64 rx = 21;
optional double signalIn = 22;
optional double signalOut = 23;
optional int64 crcErr = 24;
optional int64 inErr = 25;
optional int64 outErr = 26;
optional string opticsType = 27;
optional string tenantId = 29;
optional string switchGroupLevelTwoId = 30;
optional string portSpeedCapacity = 31;
optional string switchUnitId = 32;
optional string portIfaceName = 33;
optional bool poeEnabled = 34;
optional bool usedInFormingStack = 35;
optional string portIdentifier = 36;
optional string unTaggedVlan = 37;
optional bool isInWarningState = 38;
optional int64 inDiscard = 39;
optional int64 broadcastIn = 40;
optional int64 broadcastOut = 41;
optional int64 multicastIn = 42;
optional int64 multicastOut = 43;
optional string poeType = 44;
optional string portIdentifierFormatted = 45;
optional string portId = 46 [(com.ruckuswireless.scg.protobuf.storage.id) = true];
optional string domainName = 47;
optional string switchGroupLevelOneName = 48;
optional string switchGroupLevelTwoName = 49;
}

message SwitchUnitStatus {
  optional string id = 1 [(com.ruckuswireless.scg.protobuf.storage.id) = true]; //Switch-Unit serial
  number
  optional string switchId = 2;
  optional string upTime = 3;
  optional string unitStatus = 4; //Active Or Passive
  optional string unitSlNum = 8;
  optional string domainId = 9;
  optional string switchGroupLevelOneId = 10;
  optional string switchGroupLevelTwoId = 11;
  optional string domainName = 12;
  optional string switchGroupLevelOneName = 13;
  optional string switchGroupLevelTwoName = 14;
  optional int32 unitId = 15;
  optional string unitState = 16;
}

message ConnectedDeviceStatus {
  option (com.ruckuswireless.scg.protobuf.storage.category) = STATUS;
  optional string id = 1 [(com.ruckuswireless.scg.protobuf.storage.id) = true]; //Remote Port MAC
  optional string remotePortMac = 2;
  optional string remoteDeviceName = 3;
  optional string remotePortType = 4;
  optional string remotePortDesc = 5;
  optional string localPort = 6;
  optional string remotePort = 7;
  optional string isRuckusAP = 8;
  optional string domainId = 9;
  optional string tenantId = 10;
  optional string switchGroupLevelOneId = 11;
  optional string switchGroupLevelTwoId = 12;
  optional string switchId = 13;
  optional string unitId = 14;
  optional string localPortIfaceName = 15;
  optional string localPortMac = 16;
  optional string domainName = 17;
}
```



```

    optional string switchGroupLevelOneName = 18;
    optional string switchGroupLevelTwoName = 19;
}

message SwitchClientVisibility {
    option (com.ruckuswireless.scg.protobuf.storage.category) = INFORMATION;
    optional string id = 1 [(com.ruckuswireless.scg.protobuf.storage.id) = true]; //SwitchId +
SwitchPortId + ClientMAC + VLAN
    optional string domainId = 2;
    optional string tenantId = 3;
    optional string switchId = 4;
    optional string groupId = 5;
    optional string unitId = 6;
    optional string switchPortId = 7;
    optional string domainName = 8;
    optional string switchName = 9;
    optional string switchPort = 10;
    optional string clientMac = 11;
    optional string clientVlan = 12;
    optional ClientType clientType = 13;
    optional ClientAuthType clientAuthType = 14;
    optional ClientAuthStatus clientAuthStatus = 15;
    optional string clientDesc = 16;
    optional string clientUserName = 17;
    optional string clientIpv4Addr = 18;
    optional string clientIpv6Addr = 19;
    optional string clientUpTime = 20;
    optional string pastAuthHistory = 21;
    optional int64 createdTime = 22;
    optional int64 updatedTime = 23;
    optional string vlanName = 24;
    optional int64 historyExpirationTime = 25;
    optional string switchGroupLevelOneId = 26;
    optional string switchGroupLevelTwoId = 27;
    optional string switchGroupLevelOneName = 28;
    optional string switchGroupLevelTwoName = 29;
}

message SwitchConfigurationMessage {
    optional SwitchClusterMessage clusterInfo = 1;
    optional uint64 timestamp = 2;
}

message SwitchClusterMessage {
    optional string clusterUuid = 1;
    optional string clusterName = 2;
    repeated TenantMessage tenantInfos = 3;
}

message TenantMessage {
    optional string tenantId = 1;
    optional string tenantName = 2;
    optional DomainMessage adminDomain = 3;
}

message DomainMessage {
    optional string domainId = 1;
    optional string domainName = 2;
    repeated DomainMessage subDomainInfos = 3;
    repeated SwitchGroupMessage switchGroupInfos = 4;
}

message SwitchGroupMessage {
    optional string switchGroupId = 1;
    optional string switchGroupName = 2;
    repeated SwitchGroupMessage subSwitchGroupInfos = 3;
}

message RealtimeSwitchStatus {
    optional string serialNumber = 1;
    optional string switchMac = 2;
    optional string domainId = 3;
}

```

```

optional string domainName = 4;
optional string switchGroupLevelOneId = 5;
optional string switchGroupLevelOneName = 6;
optional string switchGroupLevelTwoId = 7;
optional string switchGroupLevelTwoName = 8;
optional string status = 9;
}

message unitSlNum {
  required string id = 1;
  optional string remotePortMac = 2;
  optional string remoteDeviceName = 3;
  optional string remotePortType = 4;
  optional string remotePortDesc = 5;
  optional string localPort = 6;
  optional string remotePort = 7;
  optional string isRuckusAP = 8;
  optional string domainId = 9;
  optional string tenantId = 10;
  optional string switchGroupLevelOneId = 11;
  optional string switchGroupLevelTwoId = 12;
  optional string switchId = 13;
  optional string unitId = 14;
  optional string localPortIfaceName = 15;
  optional string localPortMac = 16;
}

```

## Field Description

**TABLE 68** Power Supply Group Information

Attribute Name	ValueType (size)	Property(Snapshot /Delta/ Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
id	string	snapshot	NULL	Identifier of switch.
stackId	string	snapshot	NULL	Stack identifier of switch.
powerSlotNum	int32	snapshot	NULL	Power Supply Slot Number of switch.
powerSupplyType	string	snapshot	NULL	Power Supply Type of switch.
powerSupplyStatus	string	snapshot	NULL	Power Supply Status of switch.
serialNumber	string	snapshot	NULL	Serial Number of switch.

**TABLE 69** Fan Group Information

Attribute Name	ValueType (size)	Property(Snapshot /Delta/ Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
id	string	snapshot	NULL	Identifier of switch.
stackId	string	snapshot	NULL	Stack identifier of switch.
slotNum	int32	snapshot	NULL	Fan Slot Number of switch.
type	string	snapshot	NULL	Fan Type of switch.
status	string	snapshot	NULL	Fan Status of switch.
serialNumber	string	snapshot	NULL	Serial Number of switch.

**TABLE 70** Switch Status Information

Attribute Name	ValueType (size)	Property(Snapshot /Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
id	string	snapshot	NULL	Identifier of switch.
firmware	string	snapshot	NULL	Firmware version of switch.
model	string	snapshot	NULL	Model of switch.
defaultGateway	string	snapshot	NULL	Default gateway of switch.
numOfPorts	int32	snapshot	NULL	Number of switch ports.
natIp	string	snapshot	NULL	NAT IP of switch.
status	string	snapshot	NULL	Status of switch
poeAvailable	bool	snapshot	NULL	PoE support of switch.
lastBackup	uint64	snapshot	NULL	Last backup of switch.
cpu	uint64	snapshot	NULL	CPU utilization of switch.
memory	uint64	snapshot	NULL	Memory utilization of switch.
uptime	string	snapshot	NULL	Uptime of switch.
alerts	int32	snapshot	NULL	Alerts of switch.
isStack	bool	snapshot	NULL	Stack support of switch.
stackId	string	snapshot	NULL	Stack identifier of switch.
priority	int32	snapshot	NULL	Priority.
modules	string	snapshot	NULL	Modules of switch.
domainId	string	snapshot	NULL	Domain identifier of SZ.
groupId	string	snapshot	NULL	Group identifier of switch.
lastUpdateTimeInMillis	uint64	snapshot	NULL	Last update time in millis.
switchName	string	snapshot	NULL	Name of switch.
tenantId	string	snapshot	NULL	Tenant identifier of SZ.
switchGroupLevelOneId	string	snapshot	NULL	Level 1 identifier of switch group.
switchGroupLevelTwoId	string	snapshot	NULL	Level 2 identifier of switch group.
serialNumber	string	snapshot	NULL	Serial number of switch.
unitSerialNumbers	string	snapshot	NULL	Serial numbers of switch unit.
portModuleIds	string	snapshot	NULL	Port module identifiers of switch.
partitionInUse	string	snapshot	NULL	Partition in use.
switchMode	string	snapshot	NULL	Mode of switch.
switchSWVersion	string	snapshot	NULL	Software version of switch.
numOfUnits	int32	snapshot	NULL	Number of switch units.
poeUtilization	int32	snapshot	NULL	PoE allocated capacity of switch.
poeTotal	int32	snapshot	NULL	Total PoE capacity of switch.
poeFree	int32	snapshot	NULL	PoE unallocated capacity of switch.
family	string	snapshot	NULL	Family of switch.
cloudPort	string	cloudPort	NULL	Cloud port(uplink port) of switch for Alto.
domainName	string	snapshot	NULL	Domain name of SZ.
switchGroupLevelOneName	string	snapshot	NULL	Level 1 Group name of switch.

**TABLE 70 Switch Status Information (continued)**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
switchGroupLevelTwoName	string	snapshot	NULL	Level 2 Group name of switch.
powerSupplyGroups	string	snapshot	NULL	Power Supply Group status of switch.
fanGroups	string	snapshot	NULL	Fan Group status of switch.
ipAddress	string	snapshot	NULL	Switch IP.

**TABLE 71 Switch Stats Information**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
id	string	snapshot	NULL	Switch identifier
timestamp	int64	snapshot	NULL	Timestamp.
switchSerialNum	string	snapshot	NULL	Serial number of switch.
tx	int64	snapshot	SUM	TX bytes of switch.
rx	int64	snapshot	SUM	RX bytes of switch.
txRx	int64	snapshot	SUM	TX/RX bytes of switch.
txPkt	int64	snapshot	SUM	TX packets of switch.
rxPkt	int64	snapshot	SUM	RX packets of switch.
txRxPkt	int64	snapshot	SUM	TX/RX packets of switch.
txRate	int64	snapshot	SUM	TX bit rate of switch (in kilobits per second, within a five-minute interval.).
rxRate	int64	snapshot	SUM	RX bit rate of switch (in kilobits per second, within a five-minute interval.).
txRxRate	int64	snapshot	SUM	TX/RX bit rate of switch (in kilobits per second, within a five-minute interval.).
cpu	int64	snapshot	NULL	CPU utilization of switch.
memory	int64	snapshot	NULL	Memory utilization of switch.
domainId	string	snapshot	NULL	Domain identifier of SZ.
tenantId	string	snapshot	NULL	Tenant identifier of SZ.
switchGroupLevelOneId	string	snapshot	NULL	Level 1 identifier of switch group.
switchGroupLevelTwoId	string	snapshot	NULL	Level 2 identifier of switch group.
domainName	string	snapshot	NULL	Domain name of SZ.
switchGroupLevelOneName	string	snapshot	NULL	Level 1 Group name of switch group.
switchGroupLevelTwoName	string	snapshot	NULL	Level 2 Group name of switch group.

**TABLE 72** Port Stats Information

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
id	string	snapshot	NULL	Port identifier
timestamp	int64	snapshot	NULL	Timestamp.
switchSerialNum	string	snapshot	NULL	Serial number of switch.
portMac	string	snapshot	NULL	Mac address of port.
tx	int64	snapshot	SUM	TX bytes of port.
rx	int64	snapshot	SUM	RX bytes of port
txRx	int64	snapshot	SUM	TX/RX bytes of port.
txPkt	int64	snapshot	SUM	TX packets of port.
rxPkt	int64	snapshot	SUM	RX packets of port.
txRxPkt	int64	snapshot	SUM	TX/RX packets of port.
txRate	int64	snapshot	SUM	TX bit rate of port (in kilobits per second, within a five-minute interval.).
rxRate	int64	snapshot	SUM	RX bit rate of port (in kilobits per second, within a five-minute interval.).
txRxRate	int64	snapshot	SUM	TX/RX bit rate of port (in kilobits per second, within a five-minute interval.).
domainId	string	snapshot	NULL	Domain identifier of SZ.
tenantId	string	snapshot	NULL	Tenant identifier of SZ.
switchGroupLevelOneId	string	snapshot	NULL	Level 1 identifier of switch group.
switchGroupLevelTwoId	string	snapshot	NULL	Level 2 identifier of switch group.
switchId	string	snapshot	NULL	Identifier of switch.
domainName	string	snapshot	NULL	Domain name of SZ.
switchGroupLevelOneName	string	snapshot	NULL	Level 1 Group name of switch.
switchGroupLevelTwoName	string	snapshot	NULL	Level 2 Group name of switch.

**TABLE 73** Port Status Information

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
portMac	string	snapshot	NULL	Mac address of port.
switchId	string	snapshot	NULL	Identifier of switch.
type	string	snapshot	NULL	Type of port.
name	string	snapshot	NULL	Name of port.
status	string	snapshot	NULL	Status of port.
adminStatus	string	snapshot	NULL	Admin status of port.
vlanIds	string	snapshot	NULL	VLAN identifier of port.
neighborName	string	snapshot	NULL	Neighbor name of port.
portSpeed	string	snapshot	NULL	Speed of port.
ruckusDevice	bool	snapshot	NULL	Ruckus devices support of port.

**TABLE 73** Port Status Information (continued)

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
lldpEnabled	bool	snapshot	NULL	LLDP enabled flag of port.
lagName	string	snapshot	NULL	LAG name of port.
lagStatus	string	snapshot	NULL	LAG status of port.
spanningTreeStatus	string	snapshot	NULL	Spanning tree status of port.
poeUsed	int32	snapshot	NULL	Amount of inline power consumed by the port. Each unit is in milliwatts.
poeTotal	int32	snapshot	NULL	Adjusts the inline power wattage. Valid values are from 1000 through 15400(IEEE802_3AF)/30000(IEEE802_3AT). Each unit is in milliwatts.
poePercent	double	snapshot	AVG	Percentage of inline power consumed by the port.
domainId	string	snapshot	NULL	Domain identifier of SZ.
switchGroupLevelOneId	string	snapshot	NULL	Level 1 identifier of switch group.
tx	int64	snapshot	SUM	TX bytes of port.
rx	int64	snapshot	SUM	RX bytes of port.
signalIn	double	snapshot	AVG	Input network utilization in hundredths of a percent over a five-minute interval.
signalOut	double	snapshot	AVG	Output network utilization in hundredths of a percent over a five-minute interval.
crcErr	int64	snapshot	NULL	Stats CRC align errors of port.
inErr	int64	snapshot	NULL	Input errors of port.
outErr	int64	snapshot	NULL	Output errors of port.
opticsType	string	snapshot	NULL	Optics type of port.
tenantId	string	snapshot	NULL	Tenant identifier of SZ.
switchGroupLevelTwoId	string	snapshot	NULL	Level 2 identifier of switch group.
portSpeedCapacity	string	snapshot	NULL	Capacity of port speed.
switchUnitId	string	snapshot	NULL	Identifier of switch unit.
portInterfaceName	string	snapshot	NULL	Interface name of port.
poeEnabled	bool	snapshot	NULL	PoE enabled flag of port.
usedInFormingStack	bool	snapshot	NULL	"Used in forming stack" flag of port.
portIdentifier	string	snapshot	NULL	Description of port.
untaggedVlan	string	snapshot	NULL	Untagged VLAN of port.
isInWarningState	bool	snapshot	NULL	"Is in warning state" flag of port.
inDiscard	int64	snapshot	NULL	Input discards of port.
broadcastIn	int64	snapshot	SUM	Input broadcast packets of port.
broadcastOut	int64	snapshot	SUM	Output broadcast packets of port.
multicastIn	int64	snapshot	SUM	Input multicast packets of port.

**TABLE 73 Port Status Information (continued)**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
multicastOut	int64	snapshot	SUM	Output multicast packets of port.
poeType	string	snapshot	NULL	PoE type of port.
portIdentifierFormatted	string	snapshot	NULL	Formatted of port identifier.
portId	string	snapshot	NULL	Port identifier.
domainName	string	snapshot	NULL	Domain name of SZ.
switchGroupLevelOneName	string	snapshot	NULL	Level 1 Group name of switch.
switchGroupLevelTwoName	string	snapshot	NULL	Level 2 Group name of switch.

**TABLE 74 Switch Unit Status Information**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
id	string	snapshot	NULL	Identifier of switch unit.
switchId	string	snapshot	NULL	Identifier of switch.
upTime	string	snapshot	NULL	Uptime of switch.
unitStatus	string	snapshot	NULL	Status of switch unit.
unitSINum	string	snapshot	NULL	Serial Number of switch unit.
domainId	string	snapshot	NULL	Domain identifier of SZ.
switchGroupLevelOneId	string	snapshot	NULL	Level 1 identifier of switch unit.
switchGroupLevelTwoId	string	snapshot	NULL	Level 2 identifier of switch unit.
domainName	string	snapshot	NULL	Domain name of switch unit.
switchGroupLevelOneName	string	snapshot	NULL	Level 1 Group name of switch unit.
switchGroupLevelTwoName	string	snapshot	NULL	Level 2 Group name of switch unit.
unitId	INT32	snapshot	NULL	stack unit ID.
unitState	string	snapshot	NULL	switch stacking config unit state.
unitName	string	snapshot	NULL	switch stacking config unit name.

**TABLE 75 Connected Device Status Information**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
id	string	snapshot	NULL	Identifier of remote port.
remotePortMac	string	snapshot	NULL	Mac address of remote port.
remoteDeviceName	string	snapshot	NULL	Name of remote device.
remotePortType	string	snapshot	NULL	Type of remote port.
remotePortDesc	string	snapshot	NULL	Description of remote port.
localPort	string	snapshot	NULL	Local port interface.
remotePort	string	snapshot	NULL	Remote port interface.
isRuckusAP	string	snapshot	NULL	RuckusAP support of remote device.

**TABLE 75 Connected Device Status Information (continued)**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
domainId	string	snapshot	NULL	Domain identifier of SZ.
tenantId	string	snapshot	NULL	Tenant identifier of SZ.
switchGroupLevelOneId	string	snapshot	NULL	Level 1 identifier of switch group.
switchGroupLevelTwoId	string	snapshot	NULL	Level 2 identifier of switch group.
switchId	string	snapshot	NULL	Identifier of switch.
unitId	string	snapshot	NULL	Identifier of switch unit.
localPortInterfaceName	string	snapshot	NULL	Interface name of local port.
localPortMac	string	snapshot	NULL	Mac address of local port.
domainName	string	snapshot	NULL	Domain name of SZ.
switchGroupLevelOneName	string	snapshot	NULL	Level 1 Group name of switch.
switchGroupLevelTwoName	string	snapshot	NULL	Level 2 Group name of switch.

**TABLE 76 Switch Client Visibility Information**

Attribute Name	ValueType (size)	Property(Snapshot/Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
id	string	snapshot	NULL	Identifier of SwitchId + SwitchPortId + ClientMAC + VLAN.
domainId	string	snapshot	NULL	Domain identifier of SZ.
tenantId	string	snapshot	NULL	Tenant identifier of SZ.
switchId	string	snapshot	NULL	Identifier of switch.
groupId	string	snapshot	NULL	Group identifier of switch.
unitId	string	snapshot	NULL	Identifier of switch unit.
switchPortId	string	snapshot	NULL	Switch port ID.
domainName	string	snapshot	NULL	Domain name
switchName	string	snapshot	NULL	Switch name
switchPort	string	snapshot	NULL	Switch Port
clientMac	string	snapshot	NULL	Mac address of client.
clientVlan	string	snapshot	NULL	VLAN of client.
clientType	.com.ruckuswireless.scg.protobuf.icx.ClientType	snapshot	NULL	Type of client.
clientAuthType	.com.ruckuswireless.scg.protobuf.icx.ClientAuthType	snapshot	NULL	Auth type of client.
clientAuthStatus	.com.ruckuswireless.scg.protobuf.icx.ClientAuthStatus	snapshot	NULL	Status of client.
clientDesc	string	snapshot	NULL	Description of client.
clientUserName	string	snapshot	NULL	User name of client.
clientIpv4Addr	string	snapshot	NULL	IPv4 address of client.
clientIpv6Addr	string	snapshot	NULL	IPv6 address of client.



**TABLE 76 Switch Client Visibility Information (continued)**

Attribute Name	ValueType (size)	Property(Snapshot /Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
clientUpTime	string	snapshot	NULL	Up time of client.
pastAuthHistory	string	snapshot	NULL	Past 24hour auth history of client.
createdTime	INT64	snapshot	NULL	Create time of client information.
updatedTime	INT64	snapshot	NULL	Update time of client information.
vlanName	string	snapshot	NULL	Name of Vlan.
historyExpirationTime	INT64	snapshot	NULL	Used to check if pastAuthHistory is expired.
switchGroupLevelOneId	string	snapshot	NULL	Level 1 identifier of switch group.
switchGroupLevelTwoId	string	snapshot	NULL	Level 2 identifier of switch group.
switchGroupLevelOneName	string	snapshot	NULL	Level 1 Group name of switch.
switchGroupLevelTwoName	string	snapshot	NULL	Level 2 Group name of switch.

**TABLE 77 Switch Configuration Message Information**

Attribute Name	ValueType (size)	Property(Snapshot /Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
clusterInfo	.com.ruckuswireless.scg.protobuf.icx.SwitchClusterMessage	snapshot	NULL	The cluster information.
timestamp	UINT64	snapshot	NULL	The timestamp

**TABLE 78 Switch Cluster Message Information**

Attribute Name	ValueType (size)	Property(Snapshot /Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
clusterUuid	string	snapshot	NULL	Cluster UUID
clusterName	string	snapshot	NULL	Cluster name
tenantInfos	.com.ruckuswireless.scg.protobuf.icx.TenantMessage	snapshot	NULL	Group Tree System Hierarchy.

**TABLE 79 Tenant Message Information**

Attribute Name	ValueType (size)	Property(Snapshot /Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
tenantId	string	snapshot	NULL	Tenant UUID
tenantName	string	snapshot	NULL	Tenant name
adminDomain	.com.ruckuswireless.scg.protobuf.icx.DomainMessage	snapshot	NULL	The admin domain of tenant.

**TABLE 80 Domain Message Information**

Attribute Name	ValueType (size)	Property(Snapshot /Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
domainId	string	snapshot	NULL	Domain UUID
domainName	string	snapshot	NULL	Domain name
subDomainInfos	.com.ruckuswireless.scg.protobuf.icx.DomainMessage	snapshot	NULL	The list of sub-domains.
switchGroupInfos	.com.ruckuswireless.scg.protobuf.icx.SwitchGroupMessage	snapshot	NULL	The list of switch groups.

**TABLE 81 Switch Group Message Information**

Attribute Name	ValueType (size)	Property(Snapshot /Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
switchGroupId	string	snapshot	NULL	Switch group UUID
switchGroupName	string	snapshot	NULL	Switch group name
subSwitchGroupInfos	.com.ruckuswireless.scg.protobuf.icx.SwitchGroupMessage	snapshot	NULL	The list of switch groups.

**TABLE 82 Real time Switch Status Information**

Attribute Name	ValueType (size)	Property(Snapshot /Delta/Serialization)	ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)	Description
serialNumber	string	snapshot	NULL	Serial number of switch.
switchMac	string	snapshot	NULL	Mac address of switch.
domainId	int32	snapshot	NULL	Domain UUID
domainName	string	snapshot	NULL	Domain name
switchGroupLevelOneId	string	snapshot	NULL	Level 1 identifier of switch group.
switchGroupLevelOneName	string	snapshot	NULL	Level 1 group name of switch.
switchGroupLevelTwoId	string	snapshot	NULL	Level 2 identifier of switch group.
switchGroupLevelTwoName	string	snapshot	NULL	Level 2 group name of switch.
status	string	snapshot	NULL	Connection status of switch.



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