QUICK START GUIDE

# Ruckus SmartZone GPB/MQTT Interface Getting Started Guide, 5.1.1

Supporting SmartZone 5.1.1

*Part Number: 800-72237-001 Rev A*
*Publication Date: April 2019*

# Copyright, Trademark and Proprietary Rights Information



## Export Restrictions

These products and associated technical data (in print or electronic form) may be subject to export control laws of the United States of America. It is your responsibility to determine the applicable regulations and to comply with them. The following notice is applicable for all products or technology subject to export control:

*These items are controlled by the U.S. Government and authorized for export only to the country of ultimate destination for use by the ultimate consignee or end-user(s) herein identified. They may not be resold, transferred, or otherwise disposed of, to any other country or to any person other than the authorized ultimate consignee or end-user(s), either in their original form or after being incorporated into other items, without first obtaining approval from the U.S. government or as otherwise authorized by U.S. law and regulations.*

## Disclaimer

THIS CONTENT AND ASSOCIATED PRODUCTS OR SERVICES ("MATERIALS"), ARE PROVIDED "AS IS" AND WITHOUT WARRANTIES OF ANY KIND, WHETHER EXPRESS OR IMPLIED. TO THE FULLEST EXTENT PERMISSIBLE PURSUANT TO APPLICABLE LAW, ARRIS DISCLAIMS ALL WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, TITLE, NON-INFRINGEMENT, FREEDOM FROM COMPUTER VIRUS, AND WARRANTIES ARISING FROM COURSE OF DEALING OR COURSE OF PERFORMANCE. ARRIS does not represent or warrant that the functions described or contained in the Materials will be uninterrupted or error-free, that defects will be corrected, or are free of viruses or other harmful components. ARRIS does not make any warranties or representations regarding the use of the Materials in terms of their completeness, correctness, accuracy, adequacy, usefulness, timeliness, reliability or otherwise. As a condition of your use of the Materials, you warrant to ARRIS that you will not make use thereof for any purpose that is unlawful or prohibited by their associated terms of use.

## Limitation of Liability

IN NO EVENT SHALL ARRIS, ARRIS AFFILIATES, OR THEIR OFFICERS, DIRECTORS, EMPLOYEES, AGENTS, SUPPLIERS, LICENSORS AND THIRD PARTY PARTNERS, BE LIABLE FOR ANY DIRECT, INDIRECT, SPECIAL, PUNITIVE, INCIDENTAL, EXEMPLARY OR CONSEQUENTIAL DAMAGES, OR ANY DAMAGES WHATSOEVER, EVEN IF ARRIS HAS BEEN PREVIOUSLY ADVISED OF THE POSSIBILITY OF SUCH DAMAGES, WHETHER IN AN ACTION UNDER CONTRACT, TORT, OR ANY OTHER THEORY ARISING FROM YOUR ACCESS TO, OR USE OF, THE MATERIALS. Because some jurisdictions do not allow limitations on how long an implied warranty lasts, or the exclusion or limitation of liability for consequential or incidental damages, some of the above limitations may not apply to you.

## Trademarks

ARRIS, the ARRIS logo, Ruckus, Ruckus Wireless, Ruckus Networks, Ruckus logo, the Big Dog design, BeamFlex, ChannelFly, EdgeIron, FastIron, HyperEdge, ICX, IronPoint, OPENG, SmartCell, Unleashed, Xclaim, ZoneFlex are trademarks of ARRIS International plc and/or its affiliates. Wi-Fi Alliance, Wi-Fi, the Wi-Fi logo, the Wi-Fi CERTIFIED logo, Wi-Fi Protected Access (WPA), the Wi-Fi Protected Setup logo, and WMM are registered trademarks of Wi-Fi Alliance. Wi-Fi Protected Setup™, Wi-Fi Multimedia™, and WPA2™ are trademarks of Wi-Fi Alliance. All other trademarks are the property of their respective owners.

# Contents

**Preface** ..... **5**
Document Conventions ..... 5
Notes, Cautions, and Warnings ..... 5
Command Syntax Conventions ..... 6
Document Feedback ..... 6
Ruckus Product Documentation Resources ..... 6
Online Training Resources ..... 7
Contacting Ruckus Customer Services and Support ..... 7
What Support Do I Need? ..... 7
Open a Case ..... 7
Self-Service Resources ..... 7

**GPB-MQTT Interface Implementation** ..... **9**
GPB-MQTT Overview ..... 9
Prerequisite Task ..... 9
Working with the GPB/MQTT Interface ..... 11
Enabling Authentication in the MQTT Broker ..... 11
Configuring Northbound Data Streaming Settings ..... 14
Compiling Google Protobuf Binding Classes ..... 14
Executing the Test Subscriber ..... 15
Execution Script to Start Mosquitto MQTT ..... 16
Execution Script Before Installing Release 5.0 ..... 16
Execution Script After Installing Release 5.0 ..... 16
Exit from the Test subscriber ..... 16
Execution Result ..... 16

**Appendix** ..... **17**
AP Message Hierarchy and Information ..... 17
ap_avc.proto ..... 19
ap_avc_all.proto ..... 23
ap_client.proto ..... 24
ap_hccd_report.proto ..... 29
ap_mesh.proto ..... 32
ap_report.proto ..... 36
ap_rogue.proto ..... 52
ap_status.proto ..... 55
ap_wired_client.proto ..... 76
sci-alarm.proto ..... 78
sci configuration message ..... 81
sci_event.proto ..... 84
sci-message.proto ..... 86
sci-pci.proto ..... 88
switch_all.proto ..... 91
switches.proto ..... 92

# Preface


- Document Conventions ..... 5
- Command Syntax Conventions ..... 6
- Document Feedback ..... 6
- Ruckus Product Documentation Resources ..... 6
- Online Training Resources ..... 7
- Contacting Ruckus Customer Services and Support ..... 7


## 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 | `device(config)# interface ethernet 1/1/6` |
| **bold** | User interface (UI) components such as screen or page names, keyboard keys, software buttons, and field names | On the **Start** menu, click **All Programs**. |
| *italics* | Publication titles | Refer to the *Ruckus Small Cell Release Notes* 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 |
|---|---|
| **bold** text | Identifies command names, keywords, and command options. |
| *italic* text | Identifies a variable. |
| [ ] | Syntax components displayed within square brackets are optional.<br>Default responses to system prompts are enclosed in square brackets. |
| { **x** \| **y** \| **z** } | A choice of required parameters is enclosed in curly brackets separated by vertical bars. You must select one of the options. |
| **x** \| **y** | A vertical bar separates mutually exclusive elements. |
| < > | Nonprinting characters, for example, passwords, are enclosed in angle brackets. |
| ... | Repeat the previous element, for example, *member*[*member*...]. |
| \ | 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@arris.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

- 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
- 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.

# GPB-MQTT Interface Implementation


- GPB-MQTT Overview....9
- Prerequisite Task....9
- Working with the GPB/MQTT Interface....11
- Enabling Authentication in the MQTT Broker....11
- Configuring Northbound Data Streaming Settings....14
- Compiling Google Protobuf Binding Classes....14
- Executing the Test Subscriber....15

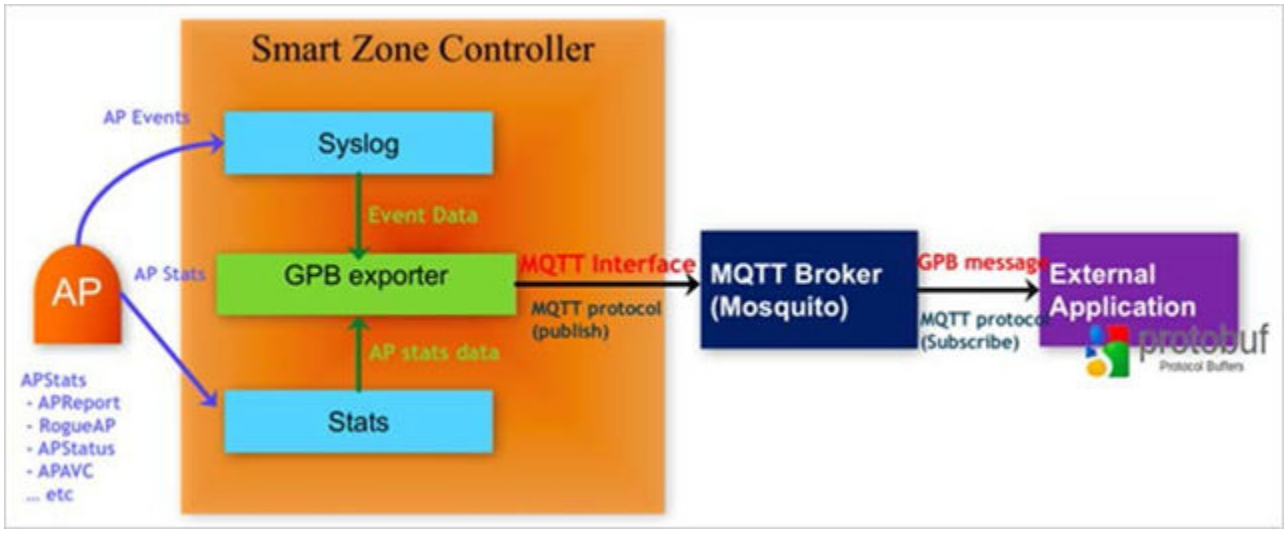

## GPB-MQTT Overview

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//
   repodata/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 mosquitto mosquitto-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:

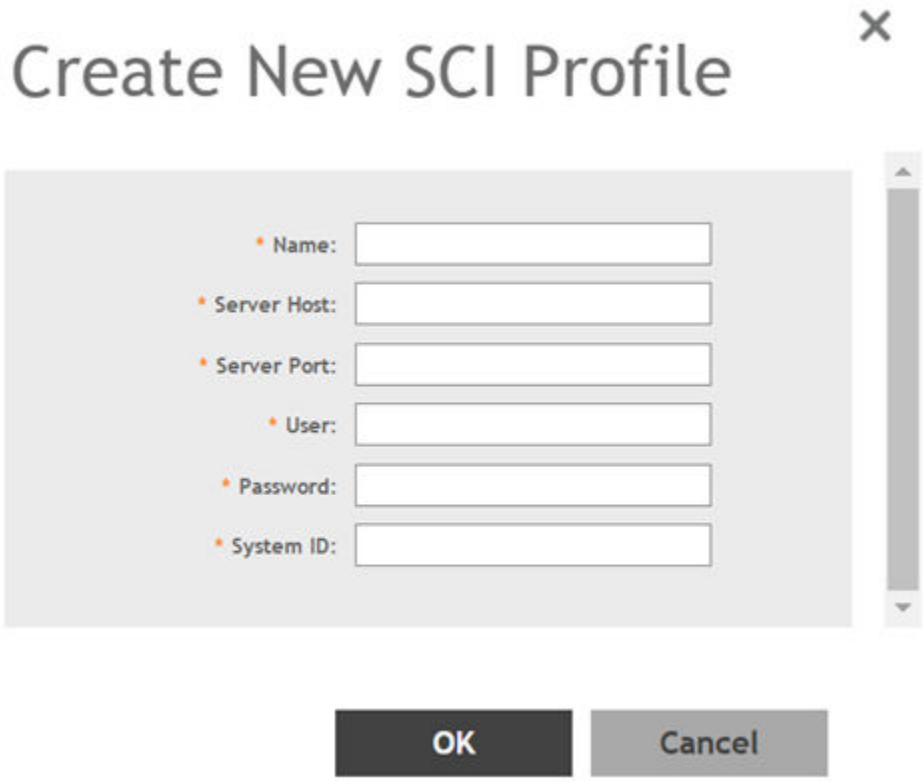
      ```
      mosquitto_sub -h <mosquitto_ip> -p 8883 -t 'sci-topic' --psk-identity testuser --psk
      7465737475736572
      ```

   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 14.

# 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 `MockSCI-TLS-5.0.5.tar.gz`.

# 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.

# Appendix


- AP Message Hierarchy and Information....17
- ap_avc.proto....19
- ap_avc_all.proto....23
- ap_client.proto....24
- ap_hccd_report.proto....29
- ap_mesh.proto....32
- ap_report.proto....36
- ap_rogue.proto....52
- ap_status.proto....55
- ap_wired_client.proto....76
- sci-alarm.proto....78
- sci configuration message....81
- sci_event.proto....84
- sci-message.proto....86
- sci-pci.proto....88
- switch_all.proto....91
- switches.proto....92


# 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

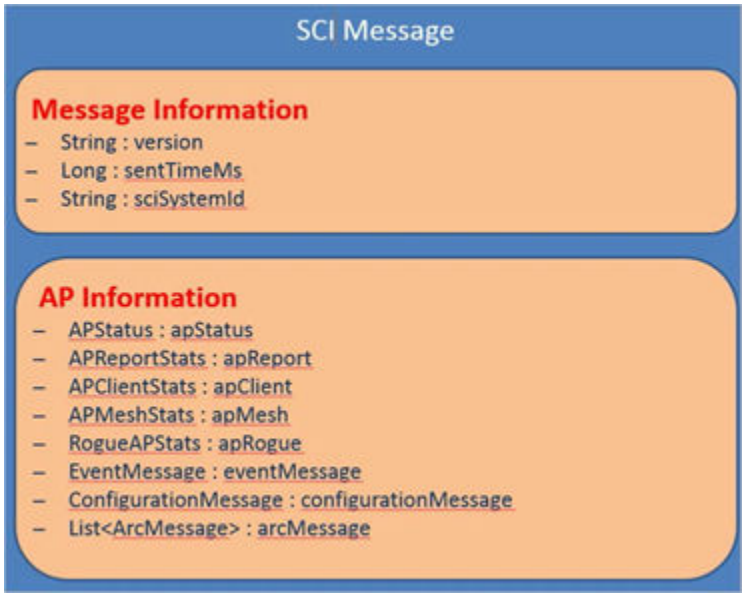
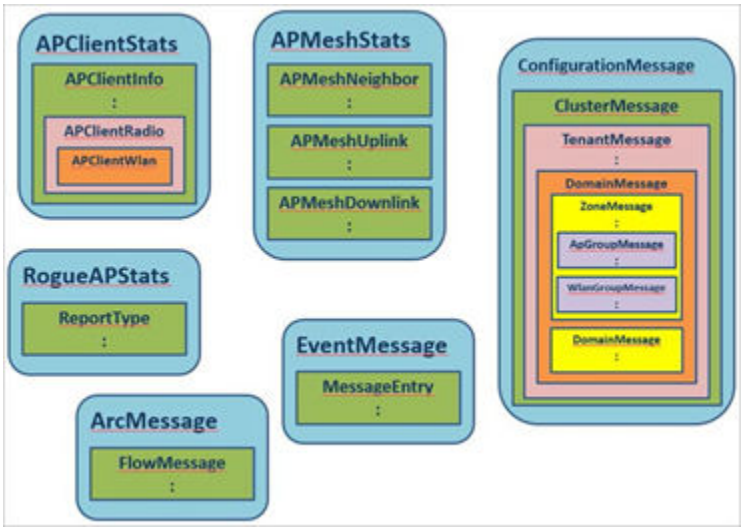


**FIGURE 4** AP Information



# ap_avc.proto

```
/**
*    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 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 2** 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 3** 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 3** UrlFilteringMsg descriptions (continued)

| Attribute Name | ValueType (size) | Property(Snapshot/Delta/Serialization) | ValueAggregationType(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 4** WifiCallingMsg descriptions

| Attribute Name | ValueType (size) | Property(Snapshot/Delta/Serialization) | ValueAggregationType(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 4** 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 5** 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

```
/**
*    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 APAVCStats {
    required uint32 version = 1;
    required .ArcMessage arc_message = 2;
}
```

# Field Description

**TABLE 6** 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

```
/**
*    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 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;
    /* 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 7** 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 7** AP Client information (continued)

| Attribute Name | ValueType (size) | Property(Snapshot/Delta/Serialization) | ValueAggregationType(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 | snapshot | NULL | Traffic class with quota. |

**TABLE 8** AP Client Info .TCWithQuota

| Attribute Name | ValueType (size) | Property(Snapshot/Delta/Serialization) | ValueAggregationType(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 9** AP Client WLAN

| Attribute Name | ValueType (size) | Property(Snapshot/Delta/Serialization) | ValueAggregationType(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 |
| wsgWlanId | int | snapshot | NULL | Unique WLAN ID assigned by the controller |

**TABLE 9** AP Client WLAN (continued)

| Attribute Name | ValueType (size) | Property(Snapshot/Delta/ Serialization) | ValueAggregation Type(SUM,MAX,MIN,AVG,NULL) | Description |
|---|---|---|---|---|
| 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 | WALN Group name |
| wlantenant_name | string | snapshot | NULL | WLAN tenant name |

**TABLE 10** 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 11** 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 |
| map_id | string | snapshot | NULL | Map UUID |
| aptenant_name | string | snapshot | NULL | AP tenant name |

**TABLE 11** AP Client Stats (continued)

| Attribute Name | **ValueType (size)** | **Property(Snapshot/Delta/ Serialization)** | **ValueAggregationType(SUM,MAX,MIN,AVG,NULL)** | Description |
|---|---|---|---|---|
| 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 borad data |

# ap_hccd_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";
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 12** AP HCCD Client Report Connection information

| Attribute Name | **ValueType (size)** | **Property(Snapshot/Delta/ Serialization)** | **ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)** | Description |
|---|---|---|---|---|
| client_mac | string | snapshot | NULL | Client MAC address |
| timestamp | uint64 | snapshot | NULL | Timestamp for starting to record this client session |

**TABLE 12** AP HCCD Client Report Connection information (continued)

| Attribute Name | ValueType (size) | Property(Snapshot/Delta/Serialization) | ValueAggregationType(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 13** AP HCCD Report information

| Attribute Name | ValueType (size) | Property(Snapshot/Delta/Serialization) | ValueAggregationType(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 13** AP HCCD Report information (continued)

| Attribute Name | **ValueType (size)** | **Property(Snapshot/Delta/ Serialization)** | **ValueAggregationType(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 aggregrating 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

```
/**
*    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 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 14** 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 15** 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 16** 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 17** 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:<br>• 0: MESH_DISABLED<br>• 1: MESH_RAP<br>• 2: MESH_MAP<br>• 3: MESH_EAP<br>• 4: MESH_DOWN<br>• 5: MESH_UNDEFINED |
| 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 17** 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 borad 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 connectionDHCPFailureCount = 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;
}
```

# Field Description

**TABLE 18** 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 19** 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 20** 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 20** 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 din period for RX data and mgmt. frame |
| peakTx_r | uint64 | Delta | SUM | Total delta bytes in one din 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 20** 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 |
| staIdleDisconCnt | uint32 | Delta | SUM | Client disconnect count with idle reason |
| staLeaveDisconCnt | uint32 | Delta | SUM | Client disconnect count with client active leave bss reason |
| staInvalidDisconCnt | 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 20** 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 faliure count on wlan(delta value) |
| L3authFailureCount | uint32 | Delta | SUM | L3 auth faliure count on wlan(delta value) |
| L3authSuccessCount | uint32 | Delta | SUM | L3 auth success count on wlan(delta value) |

**TABLE 21** 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 21** 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 22** 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:<br>0: rks_gre<br>1: soft_gre |
| apIPAddress | string | snapshot | NULL | AP IP address |

**TABLE 23** 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 24** 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 00:15:00in 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 24** 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 avg_throughput_estimate = sum__throughput_estimate/ 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 = 9.5Mbps 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 10:09:30in Bin(10:00~10:15), and the time is10:15:30 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 24** 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 | sting | snapshot | NULL | Session ID string |
| multiSessionId | sting | 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 24** AP Report Bin Client Information (continued)

| Attribute Name | ValueType (size) | Property(Snapshot/Delta/Serialization) | ValueAggregationType(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 25** Hccd Connection Message Information

| Attribute Name | ValueType (size) | Property(Snapshot/Delta/Serialization) | ValueAggregationType(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 26** Hccd Client Connection Message Information

| Attribute Name | ValueType (size) | Property(Snapshot/Delta/Serialization) | ValueAggregationType(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 26** Hccd Client Connection Message Information (continued)

| Attribute Name | ValueType (size) | Property(Snapshot/Delta/Serialization) | ValueAggregationType(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 27** AP Report Bin Information

| Attribute Name | ValueType (size) | Property(Snapshot/Delta/Serialization) | ValueAggregationType(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 28** AP Report Stats Information

| Attribute Name | ValueType (size) | Property(Snapshot/Delta/Serialization) | ValueAggregationType(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 28** AP Report Stats Information (continued)

| Attribute Name | **ValueType (size)** | **Property(Snapshot/Delta/ Serialization)** | **ValueAggregationType(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 |

# ap_rogue.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 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 29** Enum Rogue Report

| Name | **Value** | Description |
|---|---|---|
| Discovery | 0 | Rogue type possible value |
| Update | 1 | Rogue type possible value |

**TABLE 29** Enum Rogue Report (continued)

| Name | **Value** | Description |
|---|---|---|
| Disappear | 2 | Rogue type possible value |

**TABLE 30** 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 |
| rssi | 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 31** 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 31** Rogue AP Stats Information (continued)

| Attribute Name | **ValueType (size)** | **Property(Snapshot/Delta/ Serialization)** | **ValueAggregationType(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

```
/**
*    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 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;
```

```
    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 cmStatusLostSyncs = 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 cmStatusRangingAborteds = 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 32** AP Status Tunnel Information

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

**TABLE 33** 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 33** 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 34** 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 35** 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 35** 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 35** 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 35** AP Status WLAN Information (continued)

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

**TABLE 36** AP Status Radio Information

| Attribute Name | ValueType (size) | Property(Snapshot/Delta/Serialization) | ValueAggregationType(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 36** 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 36** 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 37** 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 38** 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 39** 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 coould confiure the size of MTU via SCG UI. Then SCG pass configuration to APs. So the max pake size is 1400 bytes if admin configure configure the MTU to 1400. The more details, see https://en.wikipedia.org/wiki/Maximum_transmission_unit. |
| 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 39** 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 |
| ipsecIp | 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 |
| rksDpIp | string | snapshot | NULL | Data blade IP address and port number |
| rksDpIpOnly | 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 39** AP Status System Information (continued)

| Attribute Name | ValueType (size) | Property(Snapshot/Delta/ Serialization) | ValueAggregation Type(SUM,MAX,MIN,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 |
| szConnCpIp | string | snapshot | NULL | SZ CP IPv4 address that is used by this AP connection. |
| szConnCpIpv6 | string | snapshot | NULL | SZ CP IPv6 address that is used by this AP connection. |
| szConnDpIp | string | snapshot | NULL | SZ DP IPv4 address that is used by this AP connection for tunnel traffic. |
| szConnDpIpv6 | 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. |
| IpDnsSvr1 | string | snapshot | NULL | DNS server 1 IPv4 address that is used by this AP. |
| IpDnsSvr2 | string | snapshot | NULL | DNS server 2 IPv4 address that is used by this AP |
| Ipv6DnsSvr1 | string | snapshot | NULL | DNS server 1 IPv6 address that is used by this AP. |
| Ipv6DnsSvr2 | 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 39** AP Status System Information (continued)

| Attribute Name | ValueType (size) | Property(Snapshot/Delta/Serialization) | ValueAggregationType(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 40** LAN Port Status Information

| Attribute Name | ValueType (size) | Property(Snapshot/Delta/Serialization) | ValueAggregationType(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) |
| sfpInfo | string | snapshot | NULL | Sfp supported information |
| wanConnectivity | string | snapshot | NULL | Description for this interface is WAN or LAN interface |

**TABLE 41** Cable Modem Information

| Attribute Name | ValueType (size) | Property(Snapshot/Delta/Serialization) | ValueAggregationType(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 41** 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 *TxPower*. |
| cmStatusResets | uint32 | snapshot | NULL | Gets the data for status reset. |
| cmStatusLostSyncs | uint32 | snapshot | NULL | Gets the data for *StatusLostsSyncs.* |
| cmStatusInvalidMaps | uint32 | snapshot | NULL | Gets the data *StatusInvalidMap.* |
| cmStatusInvalidUcds | uint32 | snapshot | NULL | Gets the data *StatusInvalidUcds.* |
| cmStatusInvalidRangingResponses | uint32 | snapshot | NULL | Gets the data *StatusInvalidRangingResponses.* |
| cmStatusInvalidRegistrationResponses | uint32 | snapshot | NULL | Gets the data for *StatusInvalidRegistrationResponses* |
| cmStatusT1Timeouts | uint32 | snapshot | NULL | Gets the data for *StatusT1Timeouts.* |
| cmStatusT2Timeouts | uint32 | snapshot | NULL | Gets the data *StatusT2Timeouts*. |
| cmStatusT3Timeouts | uint32 | snapshot | NULL | Gets the data for *StatusT3Timeouts.* |
| cmStatusT4Timeouts | uint32 | snapshot | NULL | Gets the data for *StatusT4Timeouts.* |
| cmStatusRangingAborteds | uint32 | snapshot | NULL | Gets the data for *statusRangingAborteds* |
| cmStatusDocsisOperMode | uint32 | snapshot | NULL | Gets the data for *StatusDocsisOperMode.* |
| cmStatusModulationType | uint32 | snapshot | NULL | Gets the data for *CmStatusModulationType.* |
| cmStatusEqualizationData | string | snapshot | NULL | Gets the data for *CmStatusEqualizationData.* |

**TABLE 42** 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 43** 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 |
| cellularIMSISIM0 | string | snapshot | NULL | SIM0 IMSI |
| cellularIMSISIM1 | string | snapshot | NULL | SIM1 IMSI |

**TABLE 43** 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 DCHP timeout count |
| cellularDHCPTimeoutCountSIM1 | int64 | snapshot | NULL | SIM1 DCHP 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 44** 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 45** 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 46** 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 46** AP Status Data (continued)

| Attribute Name | **ValueType (size)** | **Property(Snapshot/Delta/ Serialization)** | **ValueAggregationType(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 aggregration |
| map_name | string | snapshot | NULL | MAP name |
| apMac | string | snapshot | NULL | AP MAC address |

# ap_wired_client.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 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 47** AP Wired Client Information

| Attribute Name | **ValueType (size)** | **Property(Snapshot/Delta/ Serialization)** | **ValueAggregation Type(SUM,MAX,MIN,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 47** 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 48** 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

```
*Copyright 2013 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.
*
*    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 49** Enum Alarm Message Alarm State

| Name | Value | Description |
|---|---|---|
| OUTSTANDING | 0 | OUTSTANDING |
| CLEARED | 1 | CLEARED |

**TABLE 50** 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 categorty defined by AlarmCategory |
| alarmType | string | snapshot | NULL | Alarm type description defined by AlarmEnum represented with String. |
| initEventCode | uint32 | snapshot | NULL | The triggerring 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 contoller'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 51** Alarm Message Entry Information

| Attribute Name | **ValueType (size)** | **Property(Snapshot/Delta/ Serialization)** | **ValueAggregationType(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

```
*Copyright 2013 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.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 52** 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 53** 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 54** 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 55** 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 55** 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 56** Zone Message Information

| Attribute Name | **ValueType (size)** | **Property(Snapshot/Delta/ Serialization)** | **ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)** | Description |
|---|---|---|---|---|
| zoneId | 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 57** 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 58** 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

```
*Copyright 2013 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.
*
*    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 59** 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 59** 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 60** 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

```
*Copyright 2017 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.
*
*    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 ApHccdReportMessage apHccdReportMessage = 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;
}
```

# Field Description

**TABLE 61** SCI Message Information

| Attribute Name | ValueType (size) | Property(Snapshot/Delta/ Serialization) | ValueAggregation Type(SUM,MAX,MIN,AVG,NULL) | Description |
|---|---|---|---|---|
| version | string | snapshot | NULL | protocol version. |
| uuid | bytes | snapshot | NULL | Message identifier for duplication detection. |
| sentTimeMs | int64 | snapshot | NULL | Sent time in milliseconds. |
| sciSystemId | string | snapshot | NULL | SCI System identifier. |

**TABLE 61 SCI Message Information (continued)**

| Attribute Name | ValueType (size) | Property(Snapshot/Delta/ Serialization) | ValueAggregation Type(SUM,MAX,MIN,AVG,NULL) | Description |
|---|---|---|---|---|
| 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. |

# sci-pci.proto

```
* Copyright 2017 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.
*
*    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 62** 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 63** PCI Account Security Message Information

| Attribute Name | ValueType (size) | Property(Snapshot/Delta/ Serialization) | ValueAggregation Type(SUM,MAX,MIN,AVG,NULL) | Description |
|---|---|---|---|---|
| userUuid | 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 63** 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 64** 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 65** 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

```
*Copyright 2013 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.
*
*    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;
    optional .com.ruckuswireless.scg.protobuf.icx.PortStatus portStatuses = 4;
    optional .com.ruckuswireless.scg.protobuf.icx.PortStats portStats = 5;
    optional .com.ruckuswireless.scg.protobuf.icx.ConnectedDeviceStatus connectedDevicesStatus = 6;
    optional .com.ruckuswireless.scg.protobuf.icx.SwitchUnitStatus switchUnitStatuses = 7;
}
```

# Field Description

**TABLE 66** 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). |

# switches.proto

```
*Copyright 2013 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.
*
*    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 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 numOfUnits = 31;
    optional int32 poeUtilization = 32;
    optional int32 poeTotal = 33;
    optional int32 poeFree = 34;
    optional string family = 35;
}

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;
}
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;
}
message PortStatus {
    required 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 = 28;
    optional string switchGroupLevelTwoId = 29;
    optional string portSpeedCapacity = 30;
    optional string switchUnitId = 31;
    optional string portIfaceName = 32;
    optional bool poeEnabled = 33;
    optional bool usedInFormingStack = 34;
    optional string portIdentifier = 35;
    optional string unTaggedVlan = 36;
    optional bool isInWarningState = 37;
    optional int64 inDiscard = 38;
    optional int64 broadcastIn = 39;
    optional int64 broadcastOut = 40;
    optional int64 multicastIn = 41;
    optional int64 multicastOut = 42;
    optional string poeType = 43;
    optional string portIdentifierFormatted = 44;
    optional string portId = 45;
}
message  SwitchUnitStatus {
    required string id = 1;
    optional string switchId = 2;
```

```
    optional string upTime = 3;
    optional string unitStatus = 4;
    optional string unitSlNum = 5;
}
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 67** 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. |

**TABLE 67** Switch Status Information (continued)

| Attribute Name | ValueType (size) | Property(Snapshot /Delta/ Serialization) | ValueAggregation Type(SUM,MAX,MIN,AVG,NULL) | Description |
|---|---|---|---|---|
| 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. |

**TABLE 68** 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. |

**TABLE 69** Port Stats Information

| Attribute Name | ValueType (size) | Property(Snapshot/Delta/Serialization) | ValueAggregationType(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. |

**TABLE 70** Port Status Information

| Attribute Name | ValueType (size) | Property(Snapshot/Delta/Serialization) | ValueAggregationType(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. |
| 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. |

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

| Attribute Name | **ValueType (size)** | **Property(Snapshot/Delta/ Serialization)** | **ValueAggregation Type(SUM,MAX,MIN,AVG,NULL)** | Description |
|---|---|---|---|---|
| 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. |
| portIfaceName | 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. |
| 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. |

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

| Attribute Name | ValueType (size) | Property(Snapshot/Delta/ Serialization) | ValueAggregation Type(SUM,MAX,MIN,AVG,NULL) | Description |
|---|---|---|---|---|
| portId | string | snapshot | NULL | Port identifier. |

**TABLE 71** 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. |
| unitSlNum | string | snapshot | NULL | Serial Number of switch unit. |

**TABLE 72** 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. |
| 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. |
| localPortIfaceName | string | snapshot | NULL | Interface name of local port. |
| localPortMac | string | snapshot | NULL | Mac address of local port. |



Ruckus Wireless, Inc., a wholly owned subsidiary of ARRIS International plc.
350 West Java Dr., Sunnyvale, CA 94089 USA
www.ruckuswireless.com