



Ruckus SPoT and vSPoT Frequently Asked Questions

Supporting SPoT 4.7.2 and vSPoT 3.7.2

Overview

For more detailed information on Cloud Based SPoT refer to the SPoT User Guide, available from the Ruckus Support website: <https://support.ruckuswireless.com/documents>

This document covers the FAQ for:

1. SPoT Point
2. SPoT Presence
3. vSPoT

What is SPoT

SPoT is Ruckus Inc's proprietary Location Technology. It uses Ruckus Controllers and Access Points to provide customers with location intelligence for purposes such as Location Analytics, Marketing, Operations planning etc.

What is SPoT Point

For customers that would like a high level of location accuracy in their venue, SPoT Point offers 2 options. SPoT Point with Calibration and SPoT Point Without Calibration.

SPoT Point with Calibration has an expected accuracy of 3-8m with 80% confidence. SPoT Point without Calibration has an expected accuracy of 10m (venue specific dependencies such as types of venue, AP placement and AP density will impact overall system accuracy).

NOTE: Refer to the Best Practice Guide for information on how best to Design for SPoT.

The SPoT Analytics Dashboard and SPoT API are available for both options.

What is SPoT Presence

SPoT Presence is ideal for venues that want the benefits of Location but do not have ideal AP density. (For example, 1-2 AP venues or large venues which have a sparse AP density).

Regarding location accuracy, Wi-Fi devices detected by SPoT Presence will be positioned at the location of the nearest AP.

The Analytics Dashboard and SPoT API will be available for SPoT Presence customers.

What is vSPoT

vSPoT is a virtualized instance of SPoT that users can deploy on premise. With vSPoT, users need not use Cloud Hosted SPoT if they prefer to run the service in a location of their choice.

vSPoT has both SPoT Point and SPoT Presence available for user selection.

vSPoT supports Multitenancy. Use firmware 9.12.2 and above for a ZoneDirector or firmware 3.1.1 patch 1 and above for a SmartZone Controller to manage multiple vSPoT Venue IDs using a single IP.

Hardware and Software Requirement

Which Hypervisor do I need for vSPoT?

vSPoT is a VMware based installation using VMware ESXi 5.5 and later.

What are the server requirements for supporting vSPoT ?

The actual usage depends heavily on the number of clients detected within the venue. The following is purely a guideline. Users should be ready to increase or decrease Server Resources needed according to the demands of the deployment.

For historical data storage, provision of at least 250kB per 1,000 clients per day is required.

The table lists the server requirements. Intel® Xeon® Processor E5-2690 v2 (25M Cache, 3.00 GHz) is the base for establishing this dimensioning table. A single socket of this processor equals 10 cores.

Daily unique visitors	Expected maximum real time WiFi unique client load on the system (per minute)	Expected maximum real time location calculations (per minute)	SPoT point CPU and RAM (minimum requirement of 3 APs)	SPoT presence vCPU and RAM (minimum requirement of 1 AP)
1000	100	1000	2 vCPU , 4 GB	1 vCPU, 2 GB
5000	500	5000	4 vCPU , 8 GB	2 vCPU, 4 GB
10000	1000	10000	8 vCPU , 12 GB	4 vCPU, 6 GB
20000	2000	20000	8 vCPU , 16 GB	8 vCPU, 8 GB
30000	3000	30000	12 vCPU , 24 GB	8 vCPU, 16 GB
40000	4000	40000	16 vCPU , 32 GB	12 vCPU, 24 GB
50000	5000	50000	20 vCPU , 40 GB	16 vCPU, 32 GB

Prepare

How should APs be plotted for optimal SPoT results?

For optimal location accuracy, SPoT needs client RSSI from 3 or more APs

1. RSSI > -75dBm
2. Place APs 20 - 25 meters apart
3. Avoid single-file placement

What's the communication protocol between the Controller/AP and the Location Server?

SPoT uses the MQTT message passing protocol with PSK-TLS encryption.

There is a TCP connection between the Controller and the location server in the cloud, and a separate TCP connection between each AP and the location server. Make sure that both Controller and the AP can reach the location server/internet.

Finally, make sure that Controller and APs have been time synchronized with a NTP server and configured with the right timezone. Without timing synchronization, the Controller/AP may not be able to establish a connection with the location server - and you would see a "red light" status on the SPoT admin portal against those APs.

What is the minimum recommended bandwidth and latency to run SPoT per AP?

For each report from a single AP (every 6 seconds), the header is 17 bytes and 10 bytes for each client. Thus presuming there is a single client and it is heard by 4 APs, the data consumption will be 17+10 = 27bytes for EACH AP. So in total, it will be 27 x 4 = 108 bytes every 6 seconds. Averaging this out to a per second metric, it will be 18 bytes per second.

For example a mall with about 30 APs, the uplink bandwidth requirement is about 100kbps - 200kbps max. For latency, QA has tested up to 500ms and the system still performs fine.

Is there a maximum number of AP or AP Groups that can connect to SPoT in SmartZone?

As long as SmartZone is able to handle the number of APs and AP Groups, SPoT will be able to support them.

If the venue's APs operate in mesh mode, via 5Ghz, would it have any implication on SPoT?

No, there will not be any implications on SPoT.

NOTE: SZ 3.2 does not support SPoT with Mesh the fix will be in SZ3.2.1

In SmartZone, will different AP Zone be able to connect to different SPoT servers?

Yes, as long as each AP Group is representative of a Venue for Location Services to differentiate between different Venues.

Add the respective **Venue ID** and **FQDN** (provided in the SPoT **Admin Portal** > **Config**) in the SmartZone configuration.

Must Location Server initialize the MQ connection for every AP Zone one by one?

Yes it does.

Accounts

What are the available Public Clouds for setting my Account and Venue ?

We currently have data center in the US. Ruckus will continue to build data centers as SPoT grows. The following is the site for access.

- <https://us-sys.ruckuslbs.com/sessions/new>

Which Public Cloud should I set my Account and Venue ?

We suggest you set up your Account and Venue in the data center that is in your region.

If for example, you have a few branches in US and a few branches in EU, you may want to consider putting all venues under a single DC so that managing all Venues would be easier. This is because, Accounts and Venues set up in One Public Cloud will not be available in another Public Cloud.

Map

What information is needed in the Map?

The following information is needed.

- Maps can be created with any map image.
- A map drawn to scale in jpg, jpeg or png format.
- The SPoT coverage area and zones.
- AP positions.
- Some dimensions of the Venue.

How long will it take to process the Map?

Create Your Own Map (CYOM) is a tool that can be used to process a map to a format compatible with SPoT. Depending on the size and complexity of the map it could take a couple of minutes or more to create the map. CYOM is available in Cloud Hosted SPoT and vSPoT.

How can I manage Radio Maps?

If you have uploaded the wrong file or made any mistakes, don't worry they can be deleted. The CYOM tool also allows users to edit the radio map to include changes such as movement of Access Point or adding/deleting Zones.

Licenses

What licenses do I need for purchasing vSPoT ?

You will need to purchase an Instance License for the base vSPoT software and AP Licenses for all APs enabled with vSPoT. You are strongly advised to purchase Support licenses for both the Instance and the APs. The Instance and AP licenses are one time purchases while the Support Licenses are subscriptions.

What licenses do I need for purchasing Cloud Hosted SPoT Point ?

You will need to purchase Client Capacity licenses for SPoT Point in multiples of 10 Clients/min for each venue. As a guide, 10 Clients/min roughly equates to 100 visitors a day but is subject to parameters including percentage of visitors with Wi-Fi enabled.

SPoT Point client capacity licenses comes in 1 year, 3 year and 5 year subscriptions. SPoT Point has 90 days worth of storage for analytics.

What licenses do I need for purchasing SPoT Presence ?

You will need to purchase Client Capacity licenses for SPoT Presence in multiples of 10 Clients/min for each venue. As a guide, 10 Clients/min roughly equates to 100 visitors a day but is subject to parameters including percentage of visitors with Wi-Fi enabled.

SPoT Presence client capacity licenses comes in 1 year, 3 year and 5 year subscriptions.

SPoT Presence has 30 days worth of storage for analytics.

How do I determine the number of Client licenses for purchasing a Venue ?

Look at the number of visitors in your venue for the busiest period and size the venue capacity according to that number. Alternatively if you have an estimate of the daily visitor-ship of the venue, follow the guide of 100 clients a day for 10clients/minute.

In the SPoT **Admin Portal** for **Cloud Hosted SPoT**, there is a **Utilization** graph, which shows the peak number of *clients detected* every hour for 2 weeks in blue and the *client capacity* allocated for the venue in orange.

Should there be less client capacity than number of clients in the venue, SPoT places a performance cap to the client capacity allocated. The access client devices detected will be disregarded. To ensure that all clients detected is processed by the SPoT engine, ensure that the client capacity allocated is higher than the clients detected within the venue.

Users may reallocate client licenses within the venue by going to the details page and updating the number of clients capacity to be allowed for the venue.

Enable

When will the SPoT server be created?

When the Map has been digitized, the SPoT service will be instantiated within 24hours.

vSPoT users would need to wait for 5 minutes after the Map is completed.

When can we have the Controller configuration information?

The Controller (SZ300 or SCG200 or SZ100 or vSZ or vSZ-D are referred to as controller), configuration information is available in the web interface. Navigate to **Admin** > **Config**.

In Cloud Hosted SPoT the configuration will only be successful after the SPoT server has been provisioned. In

vSPoT the controller may be configured once the map is completed.

Calibration

If I use SPoT Point Without Calibration or SPoT Presence will I need to perform Calibration?

No, you will not be required to calibrate.

If each Calibration Point takes 30 seconds to calibrate, how many rotations of 360 degrees does it take?

Makes at least 1 full turn per calibration point.

Do I have to calibrate every Calibration Point?

No, you do not have to. However, location accuracy increases with more calibrated Calibration Points.

It is better to plot more Calibration Points in CYOM on the onset, so that users have the choice of whether they would like to calibrate the Calibration Point during calibration, without needing to go back to make edits to the map in CYOM.

Will I be able manage my Venues set up in different vSPoT instances on the Calibration App?

Yes you will be able to. Navigate to **Settings** on the **Calibration App** and change the site to the desired address .

For vSPoT 3.3 and above, use [https://\[IPaddress\]](https://[IPaddress]), instead of [http://\[IP address\]:8443](http://[IP address]:8443)

Others

Do APs have to be on the same channel to operate SPoT?

No, they do not have to. We recommend a 3 channels configuration. The less channels used the better for indoor positioning.

For calibration, the APs have to be on a single channel for both 2.4Ghz and 5Ghz. After calibration is complete, place the APs on 3-Channel configuration mode for 2.4 GHz and 5Ghz.

Will there be performance differentiation using Channelfly?

SPoT works with a 3-channel AP configuration. Channelfly (enabled) will identify the best channel for each AP within those configured 3-channel range.

Do we need to re-calibrate the venue if there is a need to change an AP ?

If there is a need to switch out an AP, you do not need to re-calibrate the venue if the AP is of the same model. If it is of a different model, then you would need to re-calibrate. With a new or different type of AP, an area wide enough for the AP signal to reach would need to be re-calibrated.

AP MAC address can be edited on the **Access Point** page of the **SPoT Admin Portal**.

If I have a hidden SSID would it affect SPoT?

No, it will not affect SPoT.

In the AP status page, what do the colors red, green and amber mean?

In the AP status page the colors indicate:

- **Green:** SPoT is working well.
- **Amber:** The time synchronization is off in the AP by more than +/- 5 seconds. Synchronize the controller to a valid NTP server after that synchronize the AP and the controller.
- **Red:** Troubleshoot or contact customer service for assistance [https:// support.ruckuswireless.com](https://support.ruckuswireless.com).

I would like to exclude certain MAC addresses from being included in the Location Analytics. How would I do that?

In a .csv file, list the MAC addresses that you would like to exclude and upload this list to the **Admin Portal > Config > MAC Exclusion List**.

SPoT ceases to include these MAC addresses in the Analytics once these addresses are uploaded. If there are incorrect MAC addresses in the .csv file, the system will intelligently surface them in the .csv file for your action.

Can SPoT help to track Wi-Fi enabled assets?

Yes, SPoT can help track Wi-Fi enabled assets. Upload the .csv list of devices to be tracked to **Admin Portal > Config > Catalogue Devices**. In the **Analytics Dashboard > Real Time > Tracking** select the device or group of devices you are looking for and SPoT will show its position on the Map.

The tracking feature is able to show the last known position of the Wi-Fi device up to 7 days. It can also show the real time position of non-catalogue or unlisted devices in the venue.

What is the accuracy of SPoT compared to the solutions provided by Wi-Fi tag providers such as Aer Scout or Ekahau?

Generally, solutions that have their own tags will be more accurate. This is because the tags are designed to consistently send out Wi-Fi packets which are used specifically for positioning. As compared to SPoT which picks up *Probes* and *Data Packets* from client devices.

Is there an API document?

SPoT has an API document. Refer to https://us-sys.ruckuslbs.com/api_explorer. You can also access the APIs via the **SPoT > Admin Portal**.

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