



Ruckus Wireless™ SmartPositioning Technology (SPoT)

**Release Notes for SPoT Version 4.0
and vSPoT Version 3.0**

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Contents

1 SPoT 4.0 and vSPoT 3.0

Release Information

Introduction	4
Supported Controllers.	4
Supported Access Point Models.	5
vSPoT Release Info.	7
Supported Pre-Engine API Versions	7
New Features	8
Enhancements and Resolved Issues.	8
Enhancements.	8
System	8
Venue	9
vSPoT.	9
Resolved Issues.	9
Caveats and Limitations	10

2 Upgrading to a New Version

Key Features.	12
Full Upgrade	13
vSPoT on VMware Upgrade from Pre Version 2.4.0 to 2.4.4	13
vSPoT on VMware Upgrade from Version 2.4.x to 3.0	16
Enabling SSH Access	30
Procedure to Restore VM Snapshots	32
vSPoT on AWS Upgrade	34
Rolling Upgrade	35
vSPoT VM Architecture	35
Prerequisite	36
Rolling Upgrade Procedure	36

SPoT 4.0 and vSPoT 3.0 Release Information

1

Introduction

This document provides release information on the Ruckus SmartPositioning Technology (SPoT), release 4.0 and virtual SPoT (vSPoT) release 3.0

SPoT/vSPoT requires a Ruckus Wireless ZoneDirector or SmartZone wireless LAN controller to communicate between the SPoT location server and the access points.

Please refer to the ZoneDirector, SmartZone and Access Point *Release Notes* for information on Ruckus controllers and access points.

Most documents are available in PDF format from the Ruckus Support portal:

<https://support.ruckuswireless.com/>

Supported Controllers

This SPoT release supports the following ZoneDirector and SmartZone Controllers:

- ZoneDirector 9.8 and above (ZD 1100, 1200, 3000, 5000)
- SmartZone 3.0 and above (SZ 100, SCG 200, vSZ)

NOTE To manage multiple vSPoT venues on a single ZoneDirector controller, use firmware 9.12.2 and above. This will allow the controller to manage multiple vSPoT Venue IDs using a single IP.

NOTE To manage multiple vSPoT venues on a single SmartZone controller, use firmware 3.1.1 patch 1 and above. This will allow the controller to manage multiple vSPoT Venue IDs using a single IP.

Supported Access Point Models

This SPoT release supports the following ZoneFlex and SmartZone Access Points:

- R510
- H510
- T710
- H500
- R300
- R500
- R600
- R700
- R710
- R310
- T300
- T301n
- T301s
- SC8800-S
- SC8800-S-AC
- ZF7025
- ZF7055
- ZF7321
- ZF7321-U
- ZF7341
- ZF7343
- ZF7351
- ZF7351-U
- ZF7352
- ZF7363
- ZF7363-U
- ZF7372
- ZF7372-E
- ZF7441

- ZF7761-CM
- ZF7762
- ZF7762-AC
- ZF7762-S
- ZF7762-S-AC
- ZF7762-T
- ZF7781CM
- ZF7782
- ZF7782-E
- ZF7782-N
- ZF7782-S
- ZF7962
- ZF7982

NOTE SPoT support on the 5 GHz radio of 802.11ac APs is available as of ZoneDirector firmware version 9.10 and SmartZone version 3.x.

vSPoT Release Info

The following table maps the vSPoT release numbers to the corresponding cloud SPoT releases.

Table 1. vSPoT vs. SPoT release numbering

vSPoT Release	SPoT Release
1.0	2.0
1.0.1	2.0
1.1.0	2.1
1.2	2.2
1.3.1	2.3.1
1.4	2.4
1.5	2.5
1.6	2.6
1.7	2.7
1.7.1	2.7.1
1.8	2.8
2.0	3.0
2.3.4	3.3.4
2.3.7	3.3.7
2.4.0	3.4.0
2.4.2	3.4.2
2.4.3	3.4.3
2.4.4	3.4.4
3.0.0	4.0.0

Supported Pre-Engine API Versions

- 1.0
- 2.0
- 2.1

New Features

- 1 In vSPoT version 3.0, CPU and RAM usage is reduced by approximately 2 times the usage when compared to version 2.4.4. Storage requirement is also reduced by 20 times when compared to version 2.4.4.
- 2 Updated ovf meta data for ESXI 5.5 to be compatible for vSPoT.
- 3 vSPoT version 3.0 allows users to upscale or reduce the number for **Collator** and or **Pas** workers.

Enhancements and Resolved Issues

This release includes the following enhancements and bug fixes:

Enhancements

System

- Store location coordinates are now shown as integer values.
- Floating points have been removed. Example, 0, 0.
- Reduced the floating-point precision of device locations from 13 decimal places to 2 decimal places to conserve memory and storage space, without loss of application granularity.
- Enhanced the performance by reducing the number of celluloid workers for pas location calculation.
- Enhanced the performance by using Redis pipelining and converting some Redis functions to LUA scripts.
- Packaging simplification for memory constrained deployments.
- Defined MongoDB *engineConfig* cache GB size to 1GB to avoid OOM killing Mongod process.
- In RK system export LOGGING is set to TRUE for proper resque jobs logging during upgrade of resque-1.26.0 gem.
- Switched off use of AOF for rk-venue in Redis-server configuration.
- Upgraded multiple Ruby gems.
- Upgraded to latest CentOS 7.0 security patches for VM Host OS.
- Upgraded ImageMagick to version 6.7.2.7-5.
- Upgraded MongoDB to version 3.2.8-1.

- Upgraded Mosquitto Broker to version 1.4.9-2.
- Upgrade to Nginx to version 1.10.1.
- Upgraded to passenger version 5.0.30.
- Upgraded to Redis-server to version 3.2.3.

Venue

- None

vSPoT

- AWS vSPoT initial storage volume is updated for MongoDB 3.2.x WiredTiger file formats.
- Defined MongoDB storage write-ahead configuration in vSPoT AWS image for better system utilization on gp2 (SSD) storage instances.

Resolved Issues

- None

Caveats and Limitations

- None

Upgrading to a New Version

2

This chapter lists important information that you must be aware of when upgrading vSPoT.

- [Key Features](#)
- [Full Upgrade](#)
- [Rolling Upgrade](#)

Key Features

The following is the distinction between the two upgrade procedures.

Full Upgrade

NOTE: Full upgrade refers to [vSPoT on VMware Upgrade from Pre Version 2.4.0 to 2.4.4](#), [vSPoT on VMware Upgrade from Version 2.4.x to 3.0](#) or [vSPoT on AWS Upgrade](#).

- Provides better security since it contains host operating system improvements and security updates
- Provides a more atomic upgrade since the host operating system and application containers are built and tested together as part of the release process
- Easier for VMware administrators

Rolling Upgrade

NOTE: If you are upgrading to vSPoT 3.0 from vSPoT 2.4.x or earlier versions, Ruckus Wireless highly recommends that you do a full upgrade to take advantage of the security and performance improvements to the Host OS.

vSPoT upgrades from version 3.0 onwards can be performed via rolling upgrades.

- Decreased downtime during the upgrade procedure since there is no switch to virtual disks or having to restart the VM. This saves an enormous amount of downtime
- Easier upgrade procedure since access and storage configuration of VMware is not required
- Decreased manual configuration since networking and NTP server configuration is persisted within the VM, therefore this does not require reconfiguration
- Easier for Linux administrators

Full Upgrade

The following is the upgrade procedure based on the installation type.

CAUTION! In order to upgrade to vSPoT version 3.0, you need to ensure that the existing vSPoT is on version 2.4.0 and above. If your vSPoT version is below 2.4.0, you cannot directly upgrade to vSPoT 3.0. You would need to first upgrade to vSPoT 2.4.4 before upgrading to 3.0.

- 1 [vSPoT on VMware Upgrade from Pre Version 2.4.0 to 2.4.4](#)
- 2 [vSPoT on VMware Upgrade from Version 2.4.x to 3.0](#)
- 3 [vSPoT on AWS Upgrade](#)

vSPoT on VMware Upgrade from Pre Version 2.4.0 to 2.4.4

Step-by-step instructions for performing the upgrade are provided.

- 1 Log in to the vSphere Client:
 - a Launch an instance of VMWare vSphere Client (e.g. Windows VMWare vSphere Client).
 - b In the VMWare vSphere Client, enter the IP Address (or Hostname) and administrative credentials to login to your instance of ESXi server running the source and target vSPoT instances where you want to migrate the data storage volume.
- 2 Power Off Source and Target vSPoT instances:
 - a On the left panel, expand the list of installed VM instances, and locate the source and target vSPoT instances that will be swapping data storage volumes.
 - b Right click on each and **Power-Off** each instance successively (shortcut: **Ctrl-E**).
- 3 Detach source vSPoT instance data storage volume:
 - a Once both source and target instances have been Powered Off, navigate to the source VM instance (note the name of the source vSPoT instance - this will be used to relocate and mount the storage from the source to the target vSPoT instance in later steps). Right-click and choose the '**Edit Settings...**' menu item.

- b On the child window that appears, on the left panel, locate and identify the item under the 'Hardware' column, named '**Hard disk 3**', and click to select it.
- c From the same child window, with the 'Hard disk 3' item selected, locate the '**Remove**' button at the top of the left panel of the child window.

CAUTION! On the Removal Options displayed on the right panel, select 'Remove from virtual machine' ONLY. (The other option would wipe out the data and therefore make it impossible to migrate the data volume to the new target instance.)

- d Notice that the 'Hard disk 3' item is struck out and the 'Summary' column indicates it as 'Removed'; Click '**OK**' at the bottom right hand corner of the child window to proceed.
- 4 Remove target vSPoT instance data storage volume:
 - a From the list of VM instances on the parent window left panel, locate the target vSPoT instance item, and select and right click on the '**Edit Settings...**' menu item.
 - b Repeat Steps (3b) to (3d) above but for the target vSPoT instance, and click '**OK**' to end the disk removal process, so that the data storage volume to be attached may take its place.
 - 5 Attach source vSPoT instance data storage volume to target vSPoT instance:
 - a From the list of VM instances on the parent window left panel, again locate the target vSPoT instance item, right-click and select the '**Edit Settings...**' menu item.
 - b On the 'Virtual Machine Properties' child window, now locate and click the '**Add...**' button at the top of the left panel of the child window.
 - c On the new 'Add Hardware' child window, select the '**Hard Disk**' item in the middle panel of this child window and click on the '**Next**' button located at the bottom of this child window.
 - d In the 'Select a Disk' option under the 'Add Hardware' child window, select the option '**Use an existing virtual disk - Reuse a previously configured virtual disk**' in the 'Disk' option, then click on the '**Next**' button located at the bottom of this child window.
 - e On the 'Select Existing Disk' option under the 'Add Hardware' child window, click on the '**Browse...**' button next to the 'Disk File Path' text entry field,

- f From the new Windows file explorer dialog, locate and select the '**Data-stores**' file type that was created for your ESXi server, (e.g. esxi-local-storage-1), select the item, then click '**Open**'.
- g From the expanded list in the 'Browse Datastores' dialog, scroll to and locate the 'Name' identical to your source vSPoT instance that you recorded in Step (3a) above (e.g. vSPoT-version-187_vmx), and select the item, then click '**Open**'.
- h From the refreshed 'Browse Datastores' dialog, locate and select the item ending with '**_vmx_2.vmdk**', and click '**OK**'.
- i Back in the parent '**Add Hardware**' -> '**Select Existing Disk**' child window, notice the filled out 'Disk File Path' file based on your selections from the above steps, then click the '**Next**' button.
- j On the '**Add Hardware**' -> '**Advanced Options**' child window, right side panel, locate the '**Virtual Device Node**' section, and select the item directly beneath the 'SCSI (0:1) Hard disk 2' item (e.g. '**SCSI (0:2)**'), then click the '**Next**' button.
- k Review the '**Add Hardware**' -> '**Ready to Complete**' -> '**Options**' summary information, and click the '**Finish**' button to complete the data storage volume transfer action, OR, click '**Back**' to alter/edit any previously entered values/choices, OR, click '**Cancel**' to ABORT the operation.
- l Finally, click the '**OK**' button at the bottom right-hand corner of the '**Virtual Machine Properties**' window to finish the VM settings changes applied/changed/aborted.

Power On your target vSPoT instance VM and verify the data volume migration action has successfully completed.

vSPoT on VMware Upgrade from Version 2.4.x to 3.0

The following is the procedure to upgrade a vSPoT deployment from version 2.4.x to vSPoT 3.0.

NOTE: This upgrading process will result in application downtime due to the need for data migration across different and incompatible storage engines. During the migration, vSPoT should not be running, which could cause loss of data during migration.

Pre-requisite

You are required to open port 22 of your vSPoT host operating system (Host OS) on a public facing IP address.

Upgrade Procedure

The upgrade procedure has the following list of instructions.

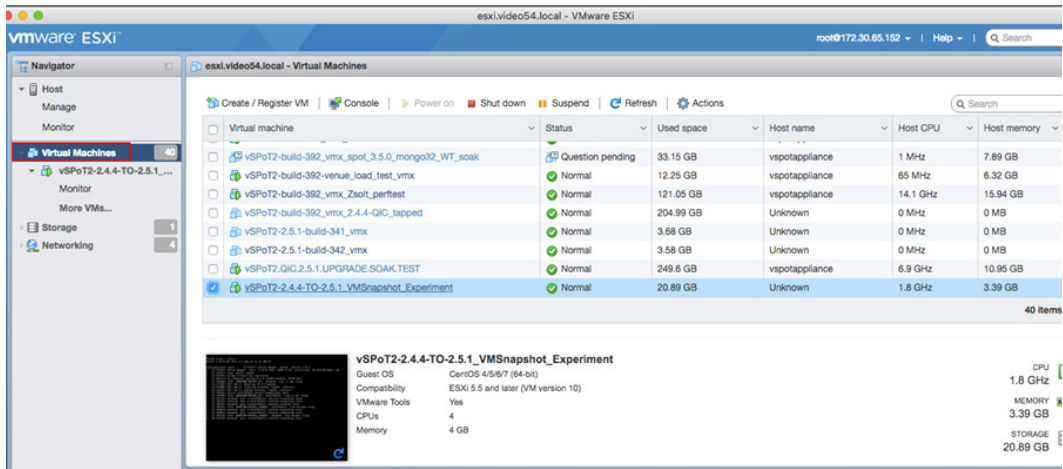
- 1 Backup the current vSPoT
- 2 Venue Identifiers
- 3 Download vSPoT 3.0
- 4 Stop VM server running vSPoT
- 5 Backup the MongoDB Data
- 6 Remove Redis append-only-file (AOF)
- 7 Prepare the Existing MongoDB Data Directories
- 8 Detach storage from vSPoT
- 9 Install and Import the vSPoT 3.0 VM Image
- 10 Attach Storage to vSPoT
- 11 Start vSPoT 3.0
- 12 Migrate Data to New Storage Engine Format
- 13 Restore the Data
- 14 Verify Successful Migration
- 15 Start Data Services
- 16 Clean Directories and Backup Snapshots
- 17 Re-Import vSPoT License File

NOTE: Ruckus Wireless recommends that you follow the below procedure for a successful upgrade.

1 Backup the current vSPoT

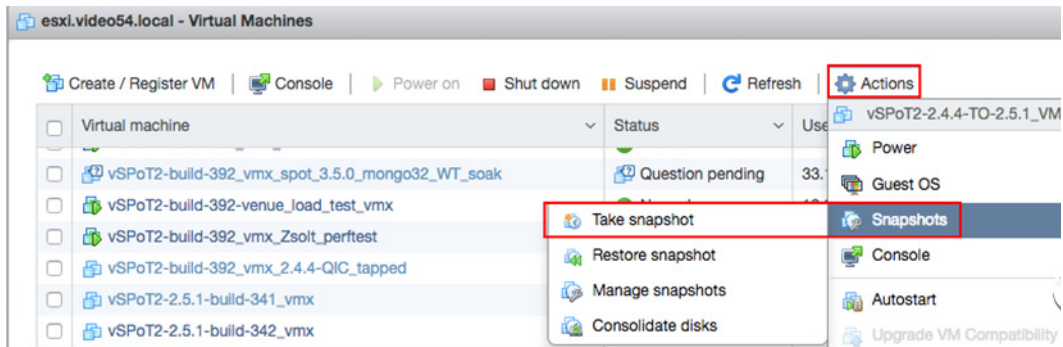
- a Login to the vSPoT vCenter
- b Using the VMWare ESXi web interface navigate to select **Virtual Machines** > **VMware** instance for a backup.

Figure 1. Selecting Virtual Machine Instance



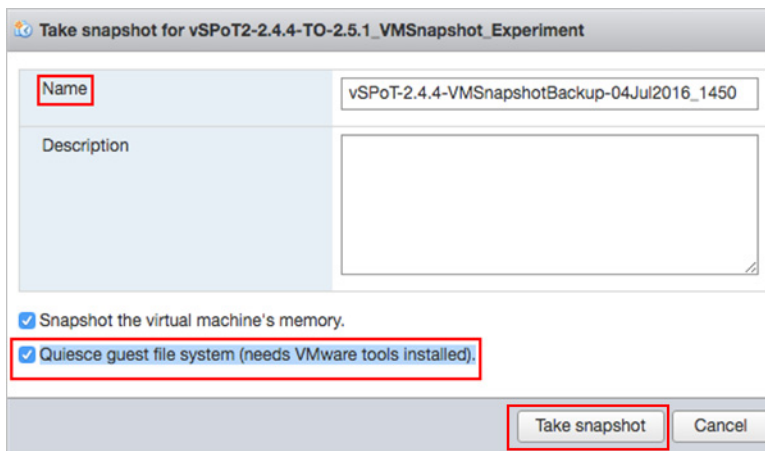
- c Ensure that your shared storage mounted for vCenter or ESXi has sufficient disk space for the snapshot backup. If vSPoT is using around 1TB, ensure you have at least 1TB additional free storage space for the snapshot backup.
- d In the tab menu navigate to select **Actions** > **Snapshots** > **Take snapshot**

Figure 2. Selecting the Snapshot Option



- e Enter a name for snapshot backup. For example, *vSPoT-2.4.4-VMSnapshot-Backup-04Jul2016_1450*. Also, select the option, *Quiesce guest file system (needs VMware tools installed)*.

Figure 3. Snapshot Name



- f Click on the **Take snapshot** button to complete the snapshot.
- g Check the **Recent tasks** tab at the bottom panel to ensure that the snapshot is complete. This could potentially be a long running task from 5 minutes to around 30 minutes depending on the size of your VMDK, mounted storage, storage type and performance.

Figure 4. Check Status of Snapshot

Virtual machine	Status	Used space	Host name	Host CPU	Host memory
vSPoT2-build-392_vmx_spot_3.5.0_mongo32_WT_soak	Question pending	33.15 GB	vspotappliance	1 MHz	7.89 GB
vSPoT2-build-392-venue_load_test_vmx	Normal	12.25 GB	vspotappliance	65 MHz	6.32 GB
vSPoT2-build-392_vmx_Zsoit_perftest	Normal	121.05 GB	vspotappliance	14.1 GHz	15.94 GB
vSPoT2-build-392_vmx_2.4.4-QIC_tapped	Normal	204.99 GB	Unknown	0 MHz	0 MB
vSPoT2-2.5.1-build-341_vmx	Normal	3.68 GB	Unknown	0 MHz	0 MB
vSPoT2-2.5.1-build-342_vmx	Normal	3.58 GB	Unknown	0 MHz	0 MB
vSPoT2_QIC_2.5.1_UPGRADE_SOAK_TEST	Normal	249.6 GB	vspotappliance	6.9 GHz	10.95 GB
vSPoT2-2.4.4-TO-2.5.1_VMSnapshot_Experiment	Normal	20.89 GB	Unknown	1.8 GHz	3.39 GB

Task	Target	Initiator	Queued	Started	Result	Completed
Create Snapshot	vSPoT2-2.4.4-TO-2.5.1_VMS...	root	07/04/2016 14:54:03	07/04/2016 14:54:03	Completed successfully	07/04/2016 14:56:13

- h Check that your created snapshot is visible in the list of snapshots by navigating to **Actions > Snapshots > Manage snapshots**. You should be able to see your created snapshot in the list pop-up window.

In the event that you need to restore a previous snapshot, follow the [Procedure to Restore VM Snapshots](#).

2 Venue Identifiers

After a successful backup of the vSPoT instance, ensure that you have an updated list of Venue identifiers. This is required during data migration.

3 Download vSPoT 3.0

Download the latest vSPoT build version 3.0 (example *-VM tarball vSPoT2-3.0.0-build-543.tar*) from the support site (<https://support.ruckuswireless.com>)

4 Stop VM server running vSPoT

Stop the existing VM server running vSPoT version 2.4.4 by running the following CLI commands.

NOTE: Refer to [SSH Key Based Authentication](#) if you have not yet configured SSH access.

- a SSH to the vSPoT host operating system and to the vSPoT docker container

```
ssh admin@<vspot_host_os_public_ip>
admin@vspotappliance:~$ spot enter
```
- b Shut down all the running services other than Mongod server.

```
root@vspot:~# stop rk-venue
root@vspot:~# stop resque
root@vspot:~# service nginx stop
```
- c Exit from the docker container and return to the vSPoT host operating system (Host OS).

5 Backup the MongoDB Data

Backup the MongoDB data by:

- a From vSPoT Host OS, enter the container and download the scripts *vspot_venue_dump.sh* and *vspot_venue_restore.sh* from Ruckus vSPoT AWS S3 migration_scripts, and give the scripts execution rights.

```
admin@vspotappliance:~$ spot enter
root@vspot:~# wget -O /storage/vspot_venue_dump.sh https://
/s3-us-west-2.amazonaws.com/ruckuslbs/public/vspot/
vspot_venue_dump.sh
root@vspot:~# wget -O /storage/vspot_venue_restore.sh
https://s3-us-west-2.amazonaws.com/ruckuslbs/public/
vspot/vspot_venue_restore.sh
root@vspot:~# wget -O /usr/bin/mongodump32 https://s3-us-
west-2.amazonaws.com/ruckuslbs/public/vspot/mongodump32
root@vspot:~# chmod +x /storage/
{vspot_venue_dump.sh,vspot_venue_restore.sh} /usr/bin/
mongodump32
```

- b Backup the MongoDB data for a specified venue (example rksg-dev) by using the below procedure.

NOTE If you have more than one venue to migrate, repeat this step for each venue as per your list of venue identifiers.

```
root@vspot:~# bash ./vspot_venue_dump.sh rksg-dev --full-dump
```

Response

```
THIS SCRIPT MUST BE RUN IN vSPoT docker container!  
IT IS MEANT TO DO A vSPoT MongoDB and radio maps dump for  
a vSPoT data migration purpose!
```

```
+ '[' '!' -f /etc/envvars ']'
```

```
+ source /etc/envvars
```

```
Creating /storage/venue_dump/dump_mongo and /storage/  
venue_dump/dump_radio_maps directories ...
```

```
DONE.
```

```
Proceed to dump groups ...
```

```
+ /usr/bin/mongodump32 --gzip --port 27017 --db rk-  
system_production --query '{\"_id\":  
ObjectId(\"562677639180054fd7000002\")}' --collection  
groups --out /storage/venue_dump/dump_mongo
```

```
2016-07-26T14:52:43.841+0800    writing rk-system_produc-  
tion.groups to
```

```
2016-07-26T14:52:43.843+0800    done dumping rk-  
system_production.groups (1 document)
```

```
DONE.
```

```
Proceed to dump venue rksg-dev ...
```

```
+ /usr/bin/mongodump32 --gzip --port 27017 --db rk-  
system_production --query '{\"_id\": \"rksg-  
dev\"}' --collection venues --out /storage/venue_dump/  
dump_mongo
```

```
2016-07-26T14:52:43.862+0800    writing rk-system_produc-  
tion.venues to
```

```
2016-07-26T14:52:43.863+0800    done dumping rk-  
system_production.venues (1 document)
```

DONE.

```
Proceed to dump venue rksg-dev access_points ...
2016-07-26T15:09:20.821+0800    rk-system_produc-
tion.impressions 28173377
2016-07-26T15:09:21.962+0800    rk-system_produc-
tion.impressions 28285371
2016-07-26T15:09:21.963+0800    done dumping rk-
system_production.impressions (28285371 documents)
```

DONE.

Analytics data dump completed DONE.

```
Copying radio maps for rksg-dev into /storage/venue_dump/
dump_radio_maps ...
+ cp -rpfv /opt/spot/system/private/venues/rksg-dev /
storage/venue_dump/dump_radio_maps
`/opt/spot/system/private/venues/rksg-dev' -> `/storage/
venue_dump/dump_radio_maps/rksg-dev'
`/opt/spot/system/private/venues/rksg-dev/foreground_
maps' - `/storage/venue_dump/dump_radio_maps/rksg-dev/
foreground_maps'
```

DONE.

```
+ cd /storage/venue_dump
```

Creating gzip tarball at /storage/rksg-dev_dump.tar.gz of
above mongodumps and radio maps ...

```
+ tar -zcvf /storage/rksg-dev_dump.tar.gz dump_mongo
dump_radio_maps
dump_mongo/
dump_mongo/rk-system_production/
dump_mongo/rk-system_production/groups.metadata.json.gz
```

```
dump_radio_maps/rksg-dev/radio_maps/
56383dbb3d6ae907d7000012/floor_6.png
dump_radio_maps/rksg-dev/radio_maps/
56383dbb3d6ae907d7000012/floor_3.png
```

```
dump_radio_maps/rksg-dev/radio_maps/
56383dbb3d6ae907d7000012/floor_6_annotated.png
```

DONE.

```
Deleting mongodumps and radio maps dump temp dir /storage/
venue_dump ...
```

```
+ rm -rf /storage/venue_dump
```

```
+ ls -alrth /storage/rksg-dev_dump.tar.gz
```

```
-rw-r--r-- 1 root root 919M Jul 26 15:10 /storage/rksg-
dev_dump.tar.gz
```

ALL DONE.

- c Verify the existence of non-empty archive file

```
root@vspot:~#ls -lah /storage/rksg-dev_dump.tar.gz
```

6 Remove Redis append-only-file (AOF)

Upgraded version of vSPoT does not use Redis AOF, so it must be removed to prevent data corruption during Redis server startup.

```
admin@vspotappliance:~$ sudo rm -f /storage/redis/data/
rk_venue.aof
```

Exit and return to the vSPoT Host OS.

7 Prepare the Existing MongoDB Data Directories

Prepare existing MongoDB data directories by:

- a From vSPoT Host OS, enter vSPoT docker container and stop the MongoDB server process

```
admin@vspotappliance:~$ spot enter
```

```
root@vspot:~# service mongod stop
```

- b Prepare a new MongoDB data directory from the vSPoT docker container and a new working directory

```
root@vspot:~# mv /storage/mongo /storage/mongo24
```

```
root@vspot:~# mkdir -p /storage/mongo/{data,log}
```

```
root@vspot:~# chown mongod:mongod -R /storage/mongo
```

- c Exit back to vSPoT Host OS and shut down vSPoT docker container.

```
admin@vspotappliance:~$ spot stop 244
```

8 Detach storage from vSPoT

From vSphere user interface, detach the storage volume for the current VM running vSPoT version 2.4.4.

CAUTION! Do not delete the detached storage volume.

9 Install and Import the vSPoT 3.0 VM Image

Install and import the VMDK image into your existing vSphere. The procedure is similar to that described in [vSPoT on VMware Upgrade from Pre Version 2.4.0 to 2.4.4](#) but keep in mind that this installation is from vSPoT 2.4.x to 3.0.

10 Attach Storage to vSPoT

From vSphere user interface, attach the storage volume to the current VM running the installed vSPoT 3.0.

11 Start vSPoT 3.0

Start the vSPoT 3.0 VM after the storage volume has been successfully attached.

12 Migrate Data to New Storage Engine Format

Migrate MongoDB data to be compatible with the new storage engine used in vSPoT3.0 by following the below procedure.

- a Check vSPoT3.0 docker container is running by running the command:

```
admin@vspotappliance:~$ spot list
```

```
admin@vspotappliance:~$ spot list
Response

CONTAINER
ID          IMAGE                                     COMMAND
  STATUS          PORTS                                     NAMES
847391fb7cfb registry.internal.ruckuslbs.com/ruckus/vspot:3.0.0.RC-3-846  "/sbin/init"
ago         Up 18 hours          0.0.0.0:80->80/tcp, 0.0.0.0:1883->1883/tcp, 0.0.0.0:8442-8442-
0.0.0.0:8883->8883/tcp, 0.0.0.0:60812->60812/tcp  vspot300RC

admin@vspotappliance:~$ spot enter
```

- b Shut down all the running services other than Mongod server.

```
root@vspot:~# stop rk-venue
```

```
root@vspot:~# stop resque
```

```
root@vspot:~# service nginx stop
```

- c Check that all processes that was stopped in the above step have been terminated

```
# The following should not return any lines
```

```
root@vspot:~# ps -ef | grep -E 'ruby|redis|mosquitto|nginx'
| grep -v grep
```

```
# If any process is returned, repeat the commands to shutdown
the respective processes.
```

13 Restore the Data

Restore the MongoDB data by:

- a Enter the Docker container

```
admin@vspotappliance:~$ spot enter
```

- b Run the data restore script to first restore the MongoDB data, then subsequently create database indexes.

NOTE: This may take a long time to complete, based on the migration data set.

```
root@vspot:~# bash /storage/vspot_venue_restore.sh /
storage/rksg-dev_dump.tar.gz
```

NOTE: If you had previously exported more than one venue, you will need to repeat this data restore step for each venues as per your list of venue identifiers.

Response

```
> .
> .
> THIS SCRIPT MUST BE RUN IN vSPoT docker container!
> .
> ONLY A MongoDB and radio maps restore from a valid vSPoT
venue dump will be performed from /storage/rksg-
dev_dump.tar.gz file.
> .
> ADDITIONAL MONGODB DATA CHANGES MUST BE PERFORMED FOR AN
AWS SPoT to vSPoT data restoration!
> .
> .
> Deleting any previous /storage/venue_dump dir and
contents...
> + rm -rf /storage/venue_dump
> .
> DONE.
> + cd /storage
> + '[' -f /storage/rksg-dev_dump.tar.gz ']'
> + mkdir -p /storage/venue_dump
> .
> Exploding /storage/rksg-dev_dump.tar.gz into /storage/
venue_dump ...
> + tar -zxvf /storage/rksg-dev_dump.tar.gz -C /storage/
venue_dump
> dump_mongo/
> dump_mongo/rk-system_production/
```

```

> dump_mongo/rk-system_production/groups.meta-
data.json.gz
> dump_mongo/rk-system_production/visits.meta-
data.json.gz
> dump_mongo/rk-system_production/locations.bson.gz
> .
> .
> dump_mongo/rk-system_production/groups.bson.gz
> dump_mongo/rk-system_production/access_points.meta-
data.json.gz
> dump_radio_maps/
> dump_radio_maps/rksg-dev/
> dump_radio_maps/rksg-dev/foreground_maps/
> dump_radio_maps/rksg-dev/foreground_maps/pPEVNY51J-
tutq2vW8Yxq2w.png
> dump_radio_maps/rksg-dev/foreground_maps/hjiaM6CtqdqM-
BLb96YkxqA.jpg
> .
> .
> dump_radio_maps/rksg-dev/radio_maps/
56383dbb3d6ae907d7000012/floor_6_annotated.png
> .
> DONE.
> .
> Restoring DB data dump ...
> + mongorestore --gzip --port 27017 --noIndexRestore /
storage/venue_dump/dump_mongo
> 2016-07-26T16:11:54.938+0800    building a list of dbs
and collections to restore from /storage/venue_dump/
dump_mongo dir
> 2016-07-26T16:11:54.940+0800    reading metadata for rk-
system_production.visits from /storage/venue_dump/
dump_mongo/rk-system_production/visits.metadata.json.gz
> .
> .
> 2016-07-26T16:26:54.940+0800
[#####]          rk-system_produc-
tion.visits  4.2 GB/393.5 MB  (1100.9%)
> 2016-07-26T16:26:54.940+0800
[#####]  rk-system_production.impres-
sions  7.4 GB/267.1 MB  (2848.0%)

```

```

> 2016-07-26T16:26:54.940+0800
> 2016-07-26T16:26:57.356+0800
[#####] rk-system_production.impres-
sions 7.4 GB/267.1 MB (2853.7%)
> 2016-07-26T16:26:57.356+0800 no indexes to restore
> 2016-07-26T16:26:57.356+0800 finished restoring rk-
system_production.impressions (28285371 documents)
> 2016-07-26T16:26:57.939+0800
[#####] rk-system_production.visits
4.2 GB/393.5 MB (1104.0%)
> .
> .
> 2016-07-26T16:48:15.702+0800
[#####] rk-system_production.visits
7.9 GB/393.5 MB (2062.0%)
> 2016-07-26T16:48:15.702+0800 no indexes to restore
> 2016-07-26T16:48:15.702+0800 finished restoring rk-
system_production.visits (28138897 documents)
> 2016-07-26T16:48:15.702+0800 done
> .
> DONE.
> + cd /opt/spot/system
> .
> Create indexes for Analytics DB ...
> + bundle exec rake mi:create_indexes
> Run options: --seed 10490
> # Running:
> .
> Finished in 0.002529s, 0.0000 runs/s, 0.0000 assertions/
s.
> 0 runs, 0 assertions, 0 failures, 0 errors, 0 skips
> .
> DONE.
> .
> Restoring radio maps dump ...
> + cp -rpfv /storage/venue_dump/dump_radio_maps/rksg-dev
/opt/spot/system/private/venues/
> `/storage/venue_dump/dump_radio_maps/rksg-dev/fore-
ground_maps/xIhaFqAniklXPImRY1dewg.png' -> `/opt/spot/
system/private/venues/rksg-dev/foreground_maps/xIhaFqAn-
iklXPImRY1dewg.png'

```

```
> .
> .
> `:/storage/venue_dump/dump_radio_maps/rksg-dev/radio_
maps/56383dbb3d6ae907d7000012/venue.svg' -> `:/opt/spot/
system/private/venues/rksg-dev/radio_maps/
56383dbb3d6ae907d7000012/venue.svg'
> `:/storage/venue_dump/dump_radio_maps/rksg-dev/radio_
maps/56383dbb3d6ae907d7000012/floor_3_inside.png' -> `/
opt/spot/system/private/venues/rksg-dev/radio_maps/
56383dbb3d6ae907d7000012/floor_3_insid
e.png'
> .
> DONE.
> .
> ALL DONE.
root@vspot:~#
```

14 Verify Successful Migration

Start the web service for verification.

```
root@vspot:~# service nginx start
```

View and validate application state from <http://<vSPoT VM IP>:8443>. Check the application version, and its ability to login to vSPoT version 3.0 administration dashboard using a valid user account and admin account.

15 Start Data Services

Start up data services background services.

```
root@vspot:~# start rk-venue
root@vspot:~# start resque
```

NOTE: This will begin to receive live data from the access points, or via MQTT tap broker.

From the Admin pages, validate the data presence of radio maps, access points, venues, etc. From the analytics page, verify real-time and historical data (heat maps and daily visit counts).

16 Clean Directories and Backup Snapshots

After successfully migrating to vSPoT version 3.0 follow the below procedure.

- a Clean the earlier database directory

```
admin@vspotappliance:~$ sudo rm -fr /storage/mongo24
```

- b Exit to vSPoT Host OS and from VMWare vCenter web interface.
- c You may want to delete or cleanup your VMWare snapshots after you have ascertained that the upgrade is successful and you may no longer need to revert to the previous version of vSPoT VM.

17 Re-Import vSPoT License File

Re-import the vSPoT license to get the full working license purchased for your vSPoT instance.

Enabling SSH Access

You have the following options to enable remote SSH access on logging to vSPoT CLI console.

- SSH key based authentication
- Enabling password based authentication

SSH Key Based Authentication

This is a preferred and secure option. Execute the following CLI commands for enabling SSH access.

- 1 After logging in to vSPoT CLI, create the SSH directory in the administrator's home directory.

```
admin@vspotappliance:~$ mkdir -p ~/.ssh
admin@vspotappliance:~$
```

- 2 Add the SSH private key to the SSH authorized key file. The following are two examples. In both cases you will need to specify your public SSH key.

Example 1:

```
admin@vspotappliance:~$ echo 'ssh-rsa
AAAAB3NzaC1yc2EAAAADAQABAAQcjfXGGdeNsqTPPWdI6Iext/
DhZ5GrewC6yh6HZAYjlgDamdZebbAvzIwWvWJjxsOGHkhdF5eY9qG1KdZih
WVOTaM1oKrUSshAEEPQnYUBa/nF3J3q4nIX4rOiKsBrT44/
sYKbt+TKgeQ9x5RfwqjqlxCQeq4UbV8K2xf0jLCfF6if8jRXYoyUNI4t0S
mRzGkEtQ8UqnYDmOglgu4N+kewcT1laz3ty0YfM-
```

```
K1HToN1+RXL256ZDoLT8w0TAo5h/lpiLthgr8t8+UYHSee-
jEuOR+zC2E+37Dr8JVbeTzXAT5zRZhxE7uLkjPCj8HKLekHqyG22251rdKr
dWeYmrK/Xp joe' >> ~/.ssh/authorized_keys
```

Example 2:

```
admin@vspotappliance:~$ curl https://raw.githubusercontent.com/mitchellh/vagrant/master/keys/vagrant.pub >> ~/.ssh/authorized_keys
% Total    % Received % Xferd Average Speed   Time    Time     Time  Current
           % Dload  % Upload   Total   Spent    Left   Speed
100 409 100 409  0     0  841    0  --:--:--  --:--:--  --:--:--  843
admin@vspotappliance:~$
```

Enabling Password Based Authentication

This is a less secure option. Execute the following CLI commands for enabling SSH access.

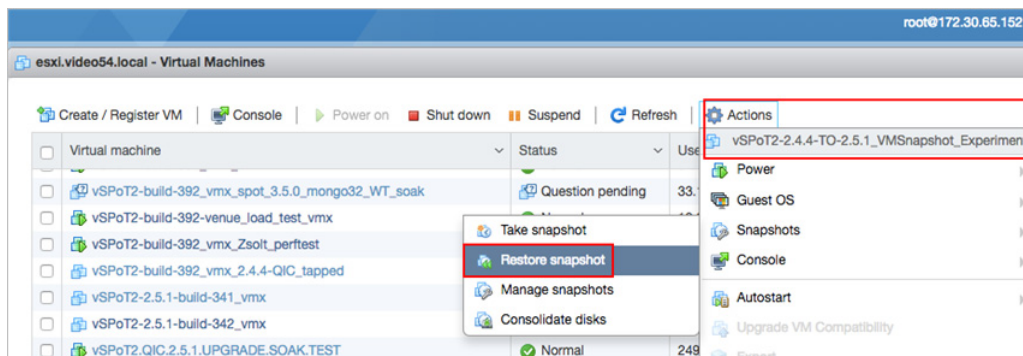
```
admin@vspotappliance:~$ sudo sed -i 's/^PasswordAuthenticati-
tion.*/PasswordAuthentication yes/' /etc/ssh/sshd_config
admin@vspotappliance:~$ sudo service sshd restart
Redirecting to /bin/systemctl restart sshd.service
admin@vspotappliance:~$
```

Procedure to Restore VM Snapshots

Follow the below procedure to restore the vSPoT backup.

- a Login to the vSPoT vCenter
- b Using the VMWare ESXi web interface navigate to select **Virtual Machines** > **VMware** backup instance for restoration. Ensure that the backup is a good valid working snapshot.
- c In the tab menu navigate to select **Actions** > **Snapshots** > **Restore snapshot**

Figure 5. Selecting Restore Snapshot Option



- d To start the restore click the **Restore** button in the pop-up confirmation window.
- e Check the state of the snapshot restoration from the **Recent tasks** panel at the bottom panel. Your vSPoT restored instance should be up and running on successful completion.

Figure 6. View the Restored Snapshot

The screenshot shows the VMware vSphere interface for a host named 'esxi.video54.local'. The main view displays a table of virtual machines with columns for name, status, used space, host name, host CPU, and host memory. The selected VM is 'vSPoT2-2.4.4-TO-2.5.1_VMSnapshot_Experiment', which is in a 'Normal' state and uses 24.99 GB of space on host 'vspotappliance' with 24 MHz CPU and 3.48 GB memory.

Below the VM list, the details for the selected snapshot are shown:

- Guest OS:** CentOS 4/5/6/7 (64-bit)
- Compatibility:** ESXi 5.5 and later (VM version 10)
- VMware Tools:** Yes
- CPUs:** 4
- Memory:** 4 GB
- Host name:** vspotappliance

On the right side, resource usage is visualized with progress bars and icons:

- CPU:** 24 MHz
- MEMORY:** 3.48 GB
- STORAGE:** 24.99 GB

At the bottom, the 'Recent Tasks' table shows the following entries:

Task	Target	Initiator	Queued	Started	Result	Completed
Revert To Current Snapshot	vSPoT2-2.4.4-TO-2.5.1_VMS...	root	07/04/2016 15:36:08	07/04/2016 15:36:08	Running... 96%	
Acquire Cim Services Ticket	esxi.video54.local	VC Internal	07/04/2016 15:34:42	07/04/2016 15:34:42	Completed successfully	07/04/2016 15:34:42
Destroy	coresos_production_vmware_...	root	07/04/2016 15:30:20	07/04/2016 15:30:20	Completed successfully	07/04/2016 15:30:21
Destroy	coresos_production_vmware_...	root	07/04/2016 15:30:02	07/04/2016 15:30:02	Completed successfully	07/04/2016 15:30:04

vSPoT on AWS Upgrade

Virtual SPoT in AWS can be updated with the following steps.

- 1 Delete the current vSPoT installation on AWS. The delete step will automatically keep the storage volume with the collected data
- 2 Install the vSPoT and specify the storage volume identifier during the creation process.

NOTE: Ruckus Wireless ensures that the CloudFormation template contains the AMI identifier of the latest vSPoT release.

Rolling Upgrade

The rolling upgrade functionality provides a simplified and faster application upgrade procedure for an existing vSPoT deployment. This feature removes the need for any post-configuration steps. For example, IP address or NTP server configuration for a vSPoT upgrade.

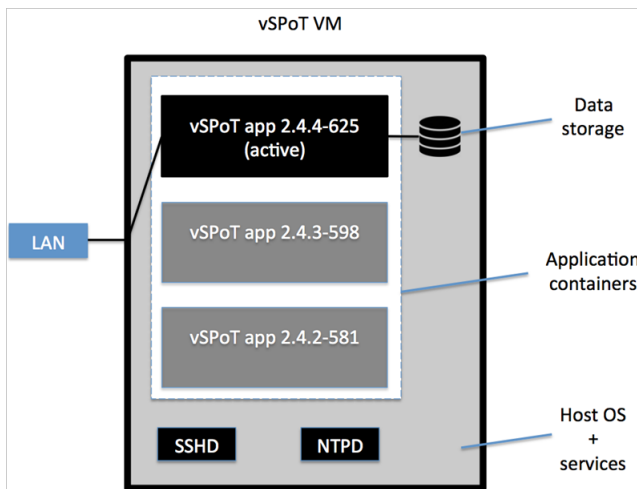
NOTE: Rolling upgrades was introduced from 2.4.x release and continues to 3.x.x and later releases.

However, if you are upgrading from vSPoT 2.4.x to vSPoT 3.0, Ruckus Wireless highly recommends that you perform a full upgrade to take advantage of the security and performance improvements to the Host OS.

vSPoT VM Architecture

From 2.4.x releases, the new vSPoT internal architecture (as seen in [Figure 7](#)) relies on docker container technology, which provides a means to decouple the virtual machine (VM) runtime environment from the vSPoT application. Each vSPoT application version is distributed as a separate container image and additional CLI tools are provided to enable switching between different vSPoT application versions. Due to network and storage configurations, at any given time only one application version can be active or running within a single vSPoT VM.

Figure 7. vSPoT VM Architecture



Prerequisite

The following are the prerequisites for using rolling upgrade.

- This upgrade procedure works with vSPoT version 2.4.0 and higher
- This procedure is a CLI based solution, which requires a console or SSH access to the vSPoT VM
- The license file needs to be uploaded after every upgrade

Rolling Upgrade Procedure

Follow the steps mentioned below.

- 1 Logout from the vSPoT web application
- 2 Login to the vSPoT console (see: *Using CLI Console* in the vSPoT Installation Guide).
- 3 Upload the vSPoT application bundle to the vSPoT system and load the image to the system by executing the commands.
 - a Use `wget` to download the image from the given URL (Option A) or secure copy it to the local disk (Option B)
 - b Run the following command by targeting your local bundle

```
admin@vspotappliance:~$ spot load vspot-container-2.4.4-625.tar.bz2
```

To retrieve the bundle you have the following options.

- i. **Option A**, download the image from the Ruckus support site.
 - Navigate to the <https://support.ruckuswireless.com/> site
 - Login with your user credentials of login name and password

NOTE: Navigate to vSPoT download section to locate the uploaded image. The file name seen in [Figure 8](#) is an example and not the actual file name. Please check the <https://support.ruckuswireless.com/> for vSPoT 2.4.4 (GA) Rolling Update Software Release.

Figure 8. vSPoT software release

Software Downloads

Search software name, description, product name, etc

[Download Software](#)

vSPoT 2.4.4 (GA) Software Release

Virtual SmartPositioning Technology SPoT 2.4.4 (GA) Software Release

Filename: vSPoT-2.4.4.-build-380.tar

for VBox and ESXi

Added: 2016-04-25 04:00:19 PM

Availability: All Users

File Type: TAR


File Name: vSPoT-2.4.4-build-380.tar

File Size: 1.5 GB

MD5 Checksum: 9d0a4235b00ea72efd89f700bc296302

vSPoT 2.4.4 (GA) Software Release

vSPoT

 vSPoT is a virtualized instance for Ruckus SPoT™ Smart Positioning Technology, managed and deployed on-premise. It gives both carriers/service providers and enterprises the ability to deliver a wide-range of Location Based value added services that can help them increase their profitability while enhancing users online experiences.

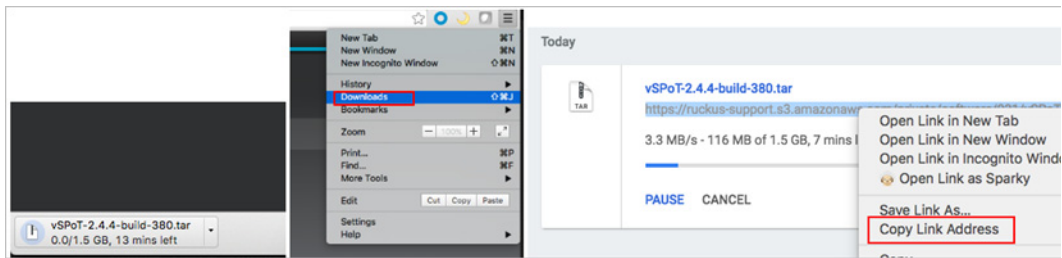
- Technical Documents
- Software Downloads
- Knowledge Base Articles
- Forum Discussions

- Click on download and fetch the temporary download link. Right click and choose **Copy Link Address** using your preferred browser's download manager (Figure 9). The download link is the following format.

```
https://ruckus-support.s3.amazonaws.com/private/software/931/vspot-container-2.4.4-625.tar.bz2?AWSAccessKeyId=AKIAJMJ3QLNNKLOV235TQ&Expires=1464965029&Signature=k9LS0cENQ5o0Da9HWWmPEdgGSr0%3D
```

NOTE The download image file name mentioned is an example. Please check the <https://support.ruckuswireless.com/> for vSPoT 2.4.4 (GA) Rolling Update Software Release and its corresponding download link.

Figure 9. vSPoT software download



- Log in to the vSPoT using CLI or SSH.

NOTE Refer to the section *Using CLI Console* in the vSPoT Installation Guide.

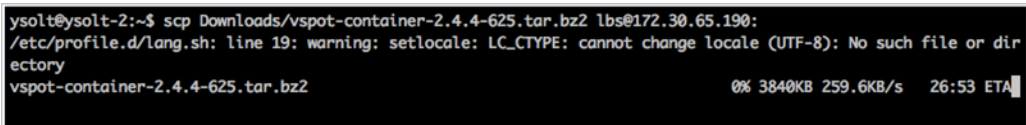
- Use the following command to download the image. The URL needs to be placed between single quotes. Example:

```
admin@vspotappliance:~$ wget 'https://ruckus-support.s3.amazonaws.com/private/software/931/vspot-container-2.4.4-625.tar.bz2?AWSAccessKeyId=AKIAJ3QLNN-KLOV235TQ&Expires=1464965029&Signature=k9LS0cENQ5oo-Da9HWWmPEdGSR0%3D'
```

- ii. **Option B**, upload the image using SCP (Secure Copy) or SFTP (Secure File Transfer Protocol)

- After downloading the image to the local workstation, use your preferred SCP/SFTP application to upload the bundle. If you are using windows you can use WinSCP, example (<https://winscp.net>)

Figure 10. SCP/SFTP application upload



- Run the following command by targeting your local bundle

```
admin@vspotappliance:~$ spot load ${ROLLING_UPDATE_BUNDLE_FILE}
```

```
For example: admin@vspotappliance:~$ spot load vspot-container-2.4.4-625.tar.bz2
```

- 4 Use the list command to verify that the new application bundle has been successfully loaded.

```
admin@vspotappliance:~$ spot images
```

Response

REPOSITORY	TAG	IMAGE ID	CREATED	VIRTUAL SIZE
registry.internal.ruckuslbs.com/ruckus/vspot	2.4.4-625	f79f1d6df16d	5 weeks ago	1.459 GB
registry.internal.ruckuslbs.com/ruckus/vspot	2.4.3-598	4a2e98f36098	8 weeks ago	1.464 GB

```
admin@vspotappliance:~$
```

- 5 View the current available application version by executing the following command. As per the below response the current vSPoT application version is 2.4.3-598.

```
admin@vspotappliance:~$ spot list
```

Response

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS
78d4b19fadd6	registry.internal.ruckuslbs.com/ruckus/vspot:2.4.3-598	"/sbin/init"	4 minutes ag	Up 4 minutes
	PORTS		NAMES	
	0.0.0.0:80->80/tcp, 0.0.0.0:8442-8443->8442-8443/tcp, 0.0.0.0:8883->8883/tcp		vspot243	

```
admin@vspotappliance:~$
```

- 6 To stop the current vSPoT application execute the command:

```
admin@vspotappliance:~$ spot stop 2.4.3-598 vspot243
admin@vspotappliance:~$
```

- 7 Start the desired vSPoT application version by executing the command:

```
admin@vspotappliance:~$ spot start 2.4.4-625
Starting up vSPOT AIO application container: vspot244
8863cc1d84a8618dbd87960a804f129c8b2e6bdff90f11503c6358e20d4
c3c94
admin@vspotappliance:~$
```

- 8 Login to the vSPoT web application and upload your licenses.
- 9 To list the available images, execute the command:

```
admin@vspotappliance:~$ spot images
```

Response

REPOSITORY	TAG	IMAGE ID	CREATED	VIRTUAL SIZE
registry.internal.ruckuslbs.com/ruckus/vspot	2.4.4-625	f79f1d6df16d	5 weeks ago	1.459 GB
registry.internal.ruckuslbs.com/ruckus/vspot	2.4.3-598	4a2e98f36098	8 weeks ago	1.464 GB

- 10** To remove or delete unused vSPoT application images from the local application repository execute the below command. The image file name mentioned is as per the images listed above.

```
admin@vspotappliance:~$ docker rmi 4a2e98f36098  
admin@vspotappliance:~$
```




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