

RUCKUS IoT Controller Software Installation Guide, 2.0.0.0

Supporting IoT Controller Release 2.0.0.0

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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.commscope.com/ruckus> 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/>
- 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.

Document Feedback

RUCKUS is interested in improving its documentation and welcomes your comments and suggestions.

You can email your comments to RUCKUS at #Ruckus-Docs@commscope.com.

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.commscope.com/ruckus>.

Online Training Resources

To access a variety of online RUCKUS training modules, including free introductory courses to wireless networking essentials, site surveys, and products, visit the RUCKUS Training Portal at <https://commscopeuniversity.myabsorb.com/>. The registration is a two-step process described in this [video](#). You create a CommScope account and then register for, and request access for, CommScope University.

Document Conventions

The following table lists the text conventions that are used throughout this guide.

TABLE 1 Text Conventions

Convention	Description	Example
monospace	Identifies command syntax examples	<code>device(config)# interface ethernet 1/1/6</code>
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 .
<i>italics</i>	Publication titles	Refer to the <i>RUCKUS Small Cell Release Notes</i> for more information.

Notes, Cautions, and Safety 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.
<i>italic text</i>	Identifies a variable.
[]	Syntax components displayed within square brackets are optional. Default responses to system prompts are enclosed in square brackets.
{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, <i>member[member...]</i> .
\	Indicates a "soft" line break in command examples. If a backslash separates two lines of a command input, enter the entire command at the prompt without the backslash.

About This Guide

- Introduction to RUCKUS IoT Controller..... 9
- What's New in This Document..... 9

Introduction to RUCKUS IoT Controller

The RUCKUS IoT Controller is a versatile, easy-to-deploy service and management component that allows for integration of Internet of Things (IoT) devices and IoT services for a wide range of use cases. It provides a robust, secure, scalable, interoperable, and well-managed general transport between IoT devices and cloud services.

The RUCKUS IoT Controller is an open-programmable framework that exposes northbound APIs and is thereby a highly flexible IoT transport for RUCKUS partners to integrate a wide range of IoT services and solutions for the enterprise and beyond.

This guide provides information about how to install the RUCKUS IoT Controller on a supported hypervisor. Topics include the list of supported hypervisors and RUCKUS IoT Controller installation instructions using the .OVA or .qcow2 file.

NOTE

If release notes are shipped with your product and the information there differs from the information in this guide, follow the instructions in the release notes.

This guide is intended for use by those responsible for installing and setting up network equipment. It assumes a basic working knowledge of local area networking, wireless networking, and wireless devices.

What's New in This Document

Summary of New Features in RUCKUS IoT Controller 2.0.0.0 GA

Feature	Description	Location
No new features for this release.	-	
Minor updates	These updates include changing images.	

TABLE 2 Summary of New Features in RUCKUS IoT Controller 1.8.1.1 SR

Feature	Description	Location
No new features added for this release.		
Installing RUCKUS IoT Controller on Oracle VM Virtual Box.	This topic is removed for the current release.	-
Installing RUCKUS IoT Controller using VMware Player.	This topic is removed for the current release.	-

About This Guide

What's New in This Document

TABLE 3 Summary of New Features in RUCKUS IoT Controller 1.8.1.0 MR

Feature	Description	Location
No New features for this release.	Minor updates	Refer to topics- Supported Hypervisors, Upgrading the RUCKUS IoT Controller, and Upgrading the RUCKUS IoT Controller with N+1 configuration.

TABLE 4 Summary of New Features in RUCKUS IoT Controller 1.8.0.0

Feature	Description	Location
No New features for this release.	The Intialization page is changed for all the Hypervisors.	Refer to Installing RUCKUS IoT Controller on Hypervisor on page 11

TABLE 5 Summary of New Features in RUCKUS IoT Controller Release 1.7.1.0 (Rev A)

Feature	Description	Location
Upgrading the RUCKUS IoT Controller with N+1 Configuration	New steps added	Refer to Upgrading the RUCKUS IoT Controller with N+1 Configuration on page 57.

Installing RUCKUS IoT Controller on Hypervisor

- System Requirements for Installing RUCKUS IoT Controller on a Hypervisor..... 11
- Installing RUCKUS IoT Controller on a VMware ESXi..... 12
- Installing a KVM Guest Using virsh Commands..... 23
- Installing a KVM Guest Using Virtual Machine Manager..... 23
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System Requirements for Installing RUCKUS IoT Controller on a Hypervisor

The RUCKUS IoT Controller supports a number of hypervisors and requires a virtual machine (VM).

The following table lists the hypervisors (and their release versions) on which you can install the controller.

TABLE 6 Supported Hypervisors

Hypervisor	Vendor	Version
ESXi	VMware	6.0 and later
KVM	Linux	2.11.1 or later
Hyper-v	Microsoft Windows	6.2 or later

NOTE

For the compatible hardware for the hypervisors listed above, refer to the respective vendors website.

The virtual machine (VM) on which the controller is installed must meet the following requirements:

- The VM for the VMware ESXi hypervisor must have a minimum of 4 vCPUs, 4 GB RAM, and Fixed 20 GB HDD.
- The VM for the KVM hypervisor must have a minimum of 4 vCPUs, 4 GB RAM, and Fixed 20 GB HDD.
- The VM for the Hyper-v hypervisor must have a minimum of 4 vCPUs, 4 GB RAM, and Fixed 20 GB HDD.
- Ports 80, 123 or NTP, 443, 1883, and 8883 must be open.

Hardware Recommendations for the IoT Server

Customers must obtain robust and reliable server hardware that will support a virtualized environment for IoT applications with enough headroom to expand in the future. Each deployment is unique and hardware specifications will need to be adapted to specific needs. For a typical deployment (e.g. RUCKUS IoT Controller, VMware ESXi, Ubuntu Linux server, IP camera VMS, additional IoT VMs or applications), we recommend server hardware that meets the below specifications:

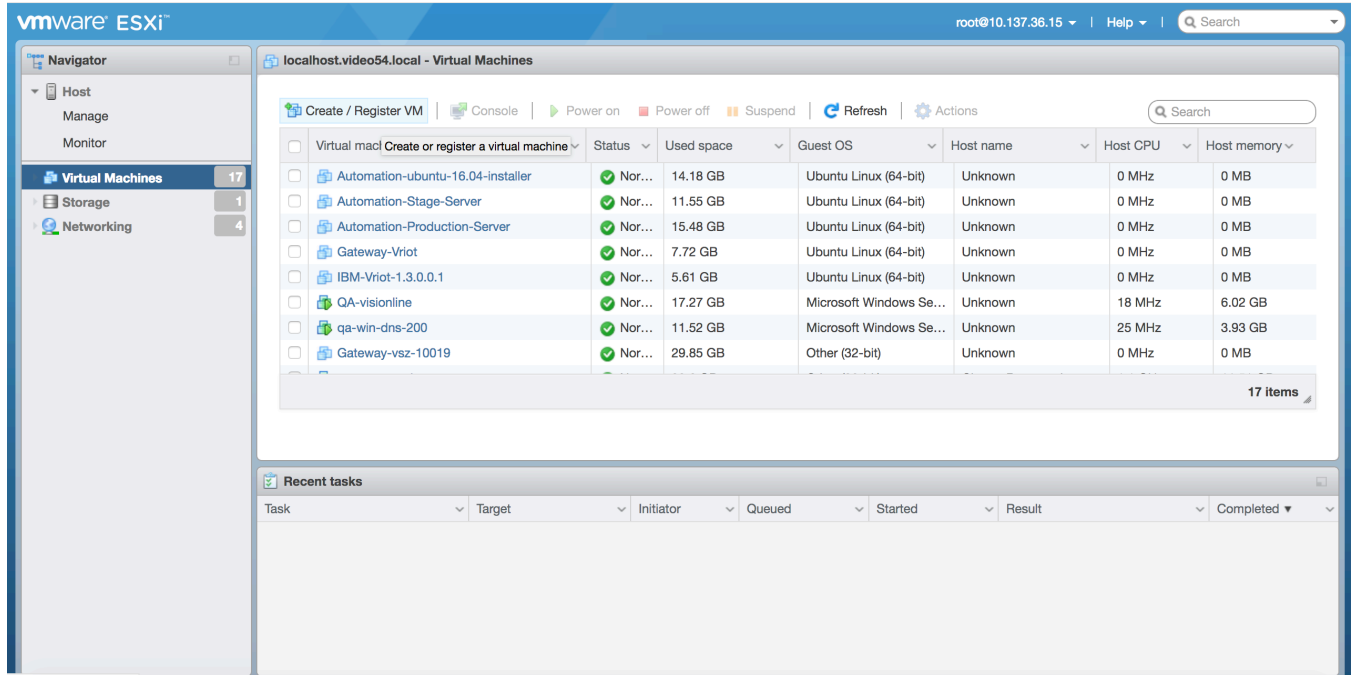
- **CPU:** 4 core i7 or equivalent
- **Memory:** 32 GB
- **Hard Disk:** 1 TB

Installing RUCKUS IoT Controller on a VMware ESXi

The RUCKUS IoT Controller can be installed on a VMware ESXi hypervisor using an .OVA file.

1. Download the RUCKUS IoT Controller distribution package in the .OVA file format from the RUCKUS Support website at <https://support.ruckuswireless.com>.
2. Open VMware ESXi and select **Virtual Machines** from the **Navigator** pane.

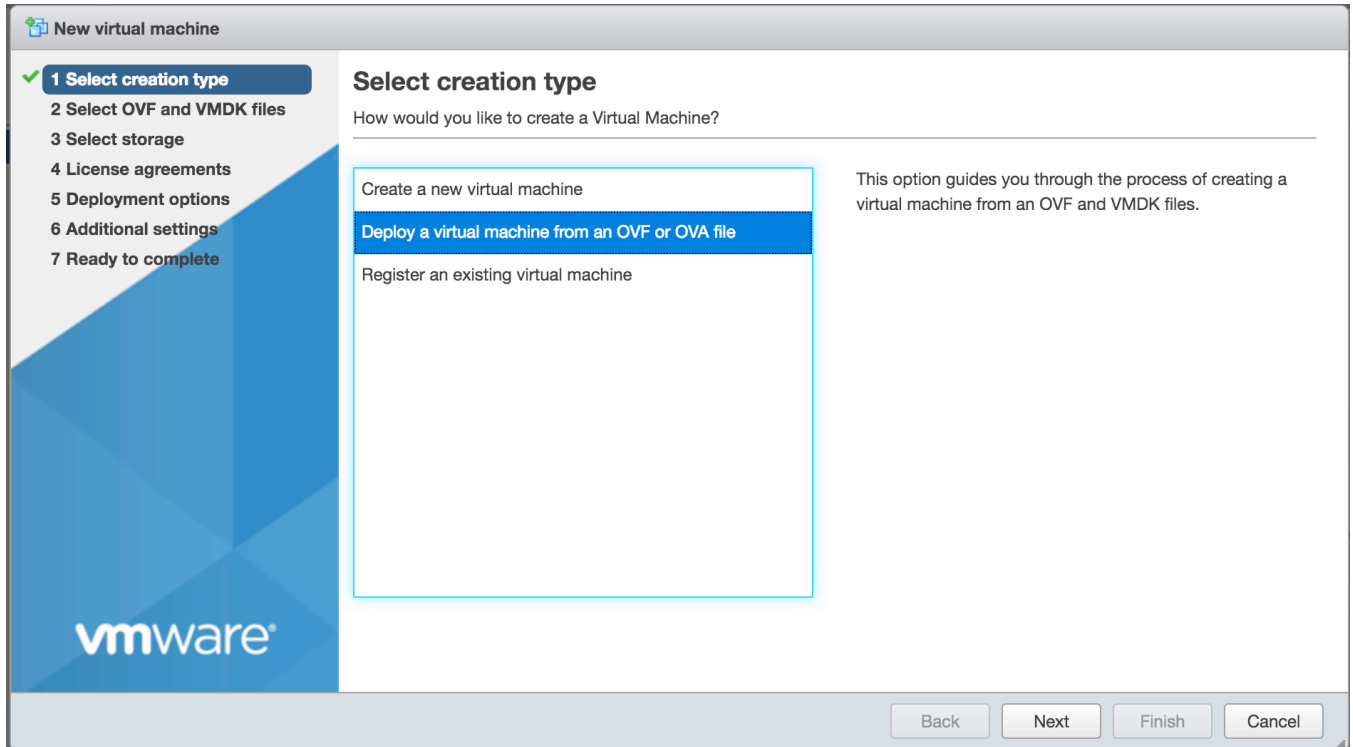
FIGURE 1 Creating or Registering Virtual Machines



3. Click **Create/Register VM**.

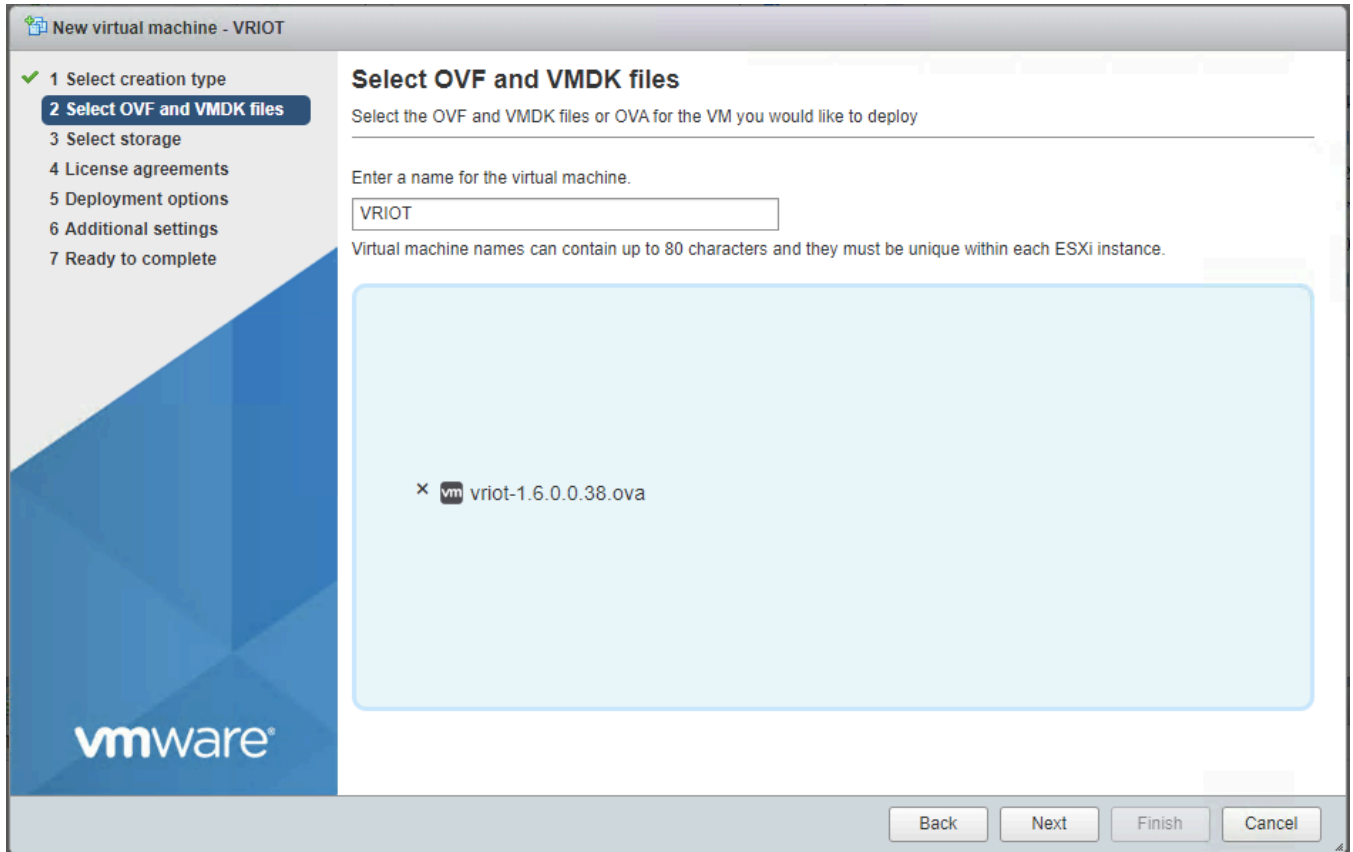
4. On the **New virtual machine** page, click **Select creation type**, and select **Deploy a virtual machine from an OVF or OVA file**. Click **Next**.

FIGURE 2 Select Creation Type Page



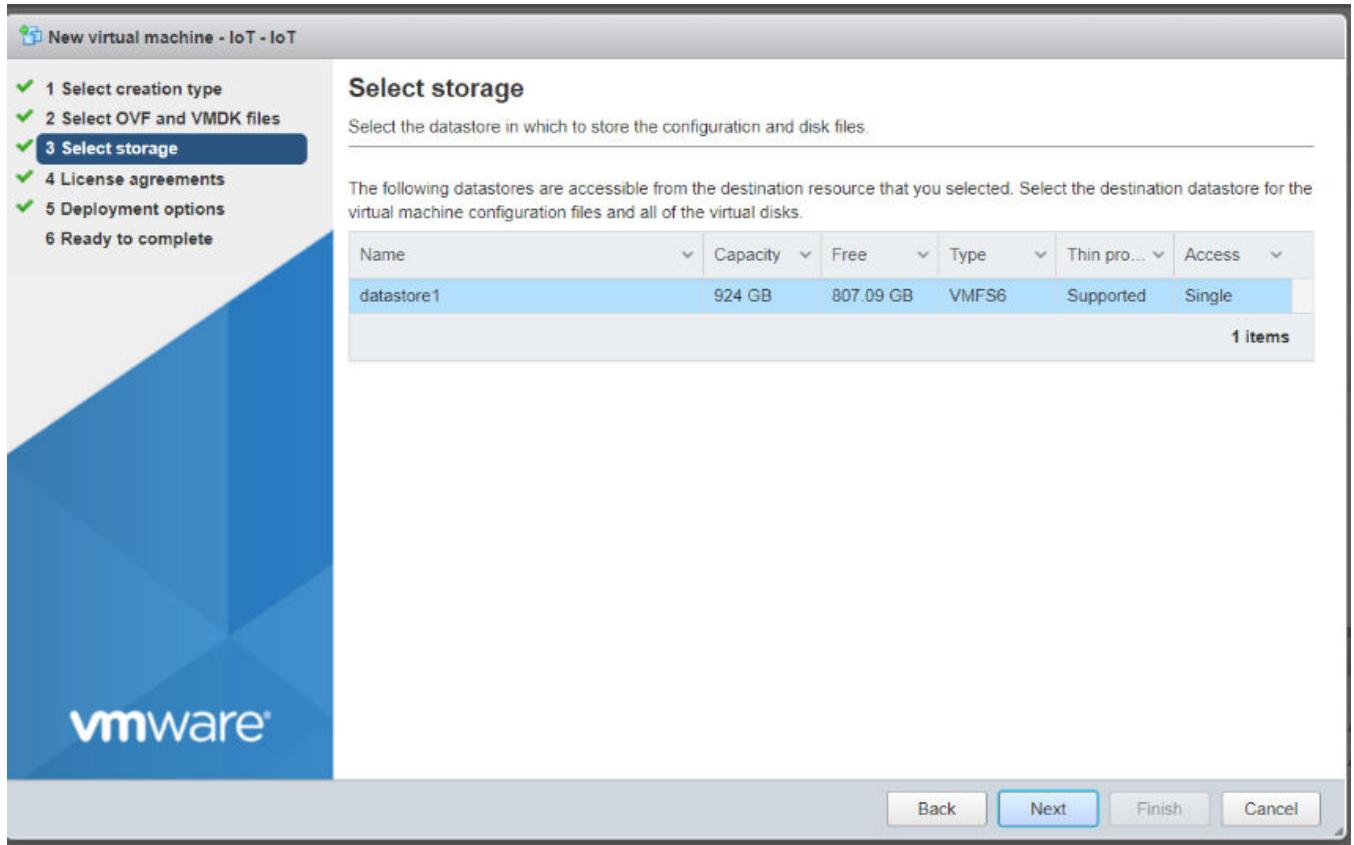
5. Click **Select OVF and VMDK files**, enter a name for the virtual machine, and select the OVF file. Click **Next**.

FIGURE 3 Select OVF and VMDK Files Page



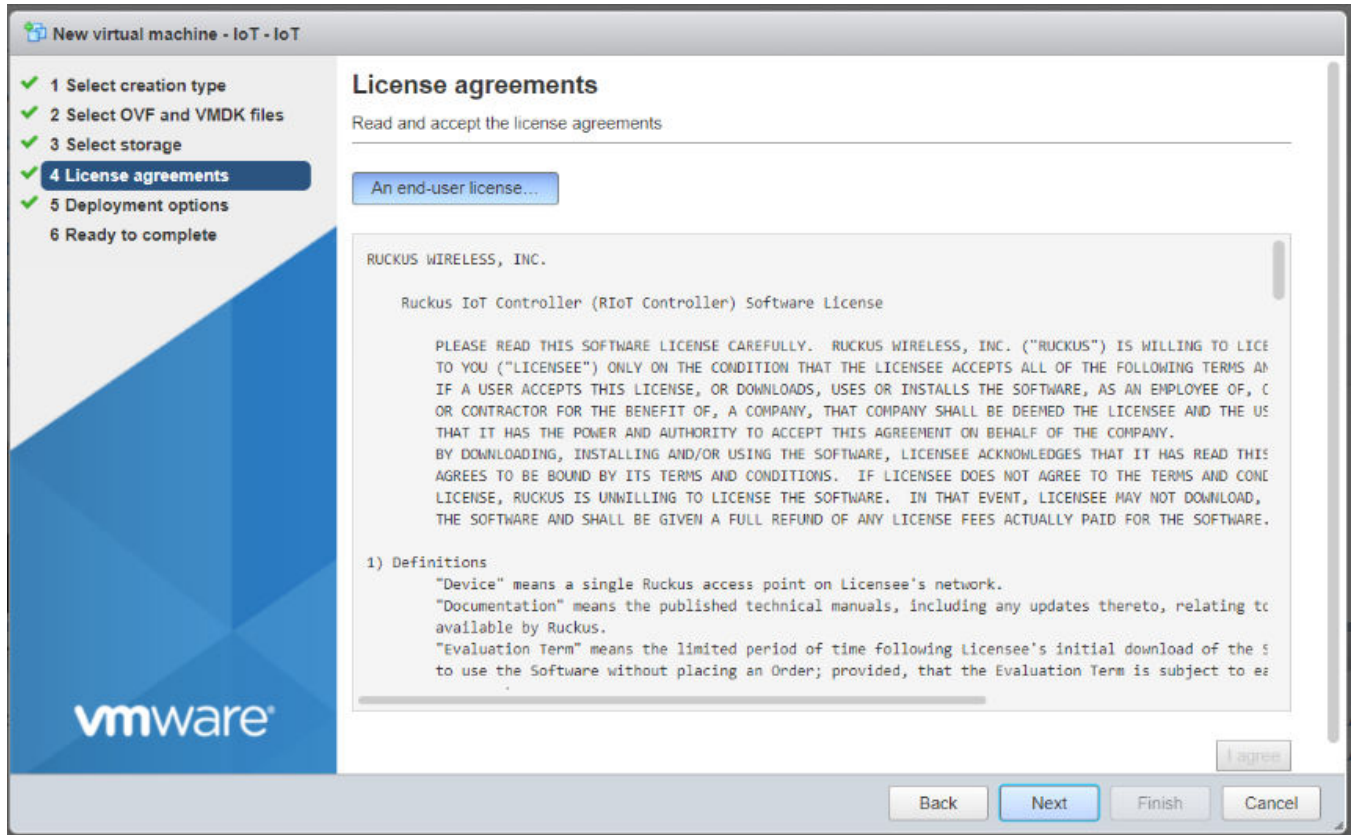
6. Click **Select storage**, and select the datastore in which you want to save the configuration and disk files. Click **Next**.

FIGURE 4 Select Storage Page



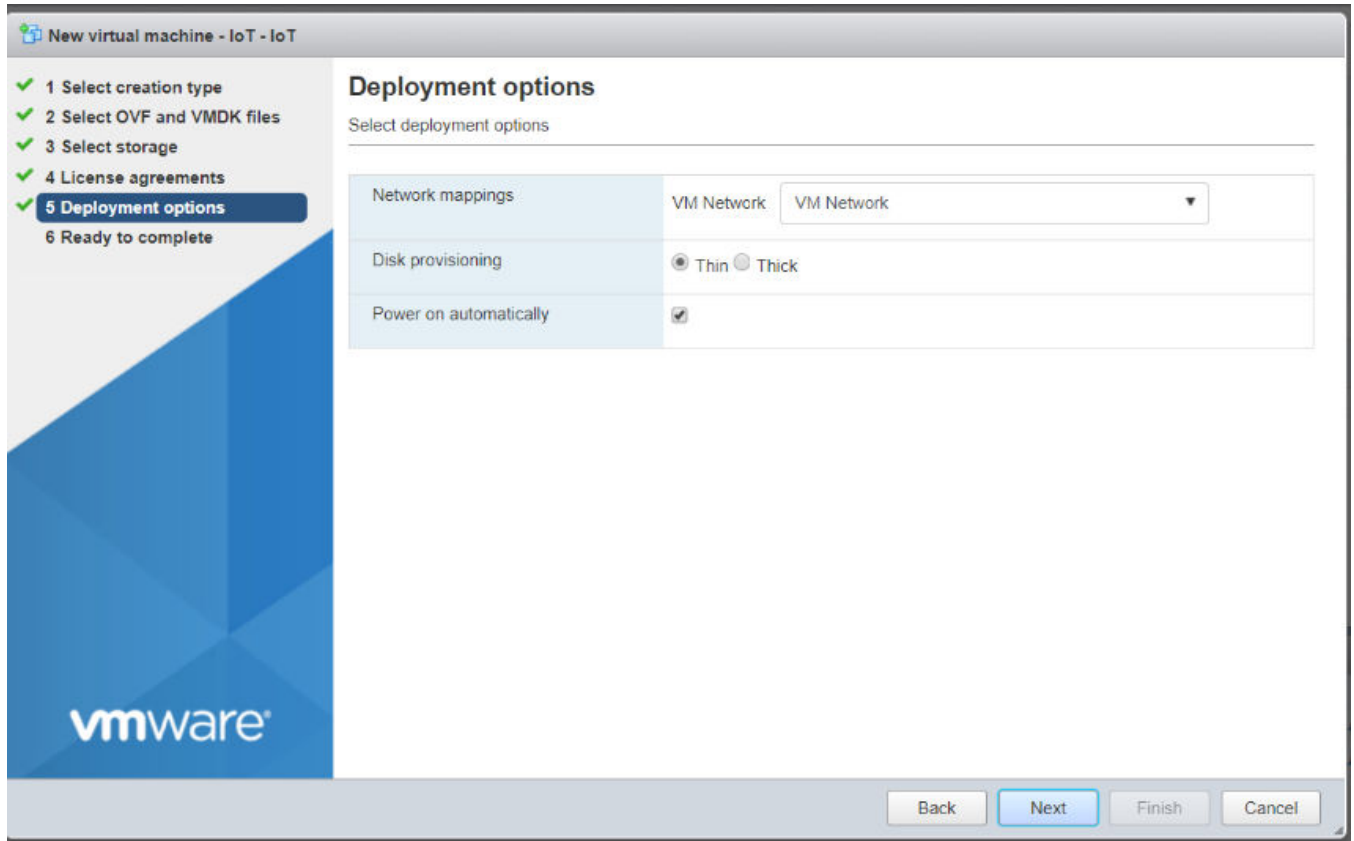
7. Click **License agreements** to accept the terms and conditions of the software license and click **Agree**.

FIGURE 5 License Agreements Page



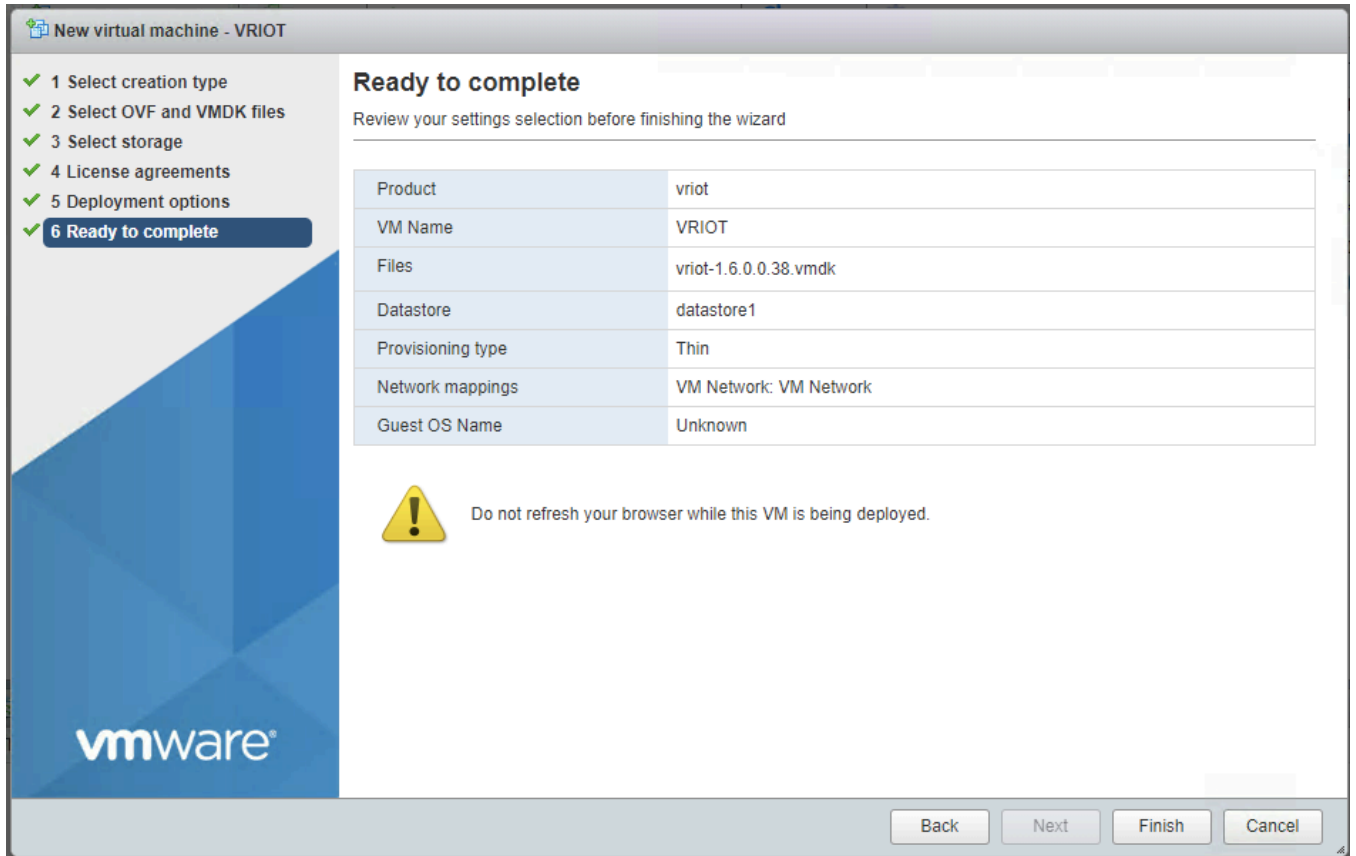
8. Click **Deployment options**, and select the **Network mappings** and **Disk provisioning**. Click **Next**.

FIGURE 6 Deployment Options Page



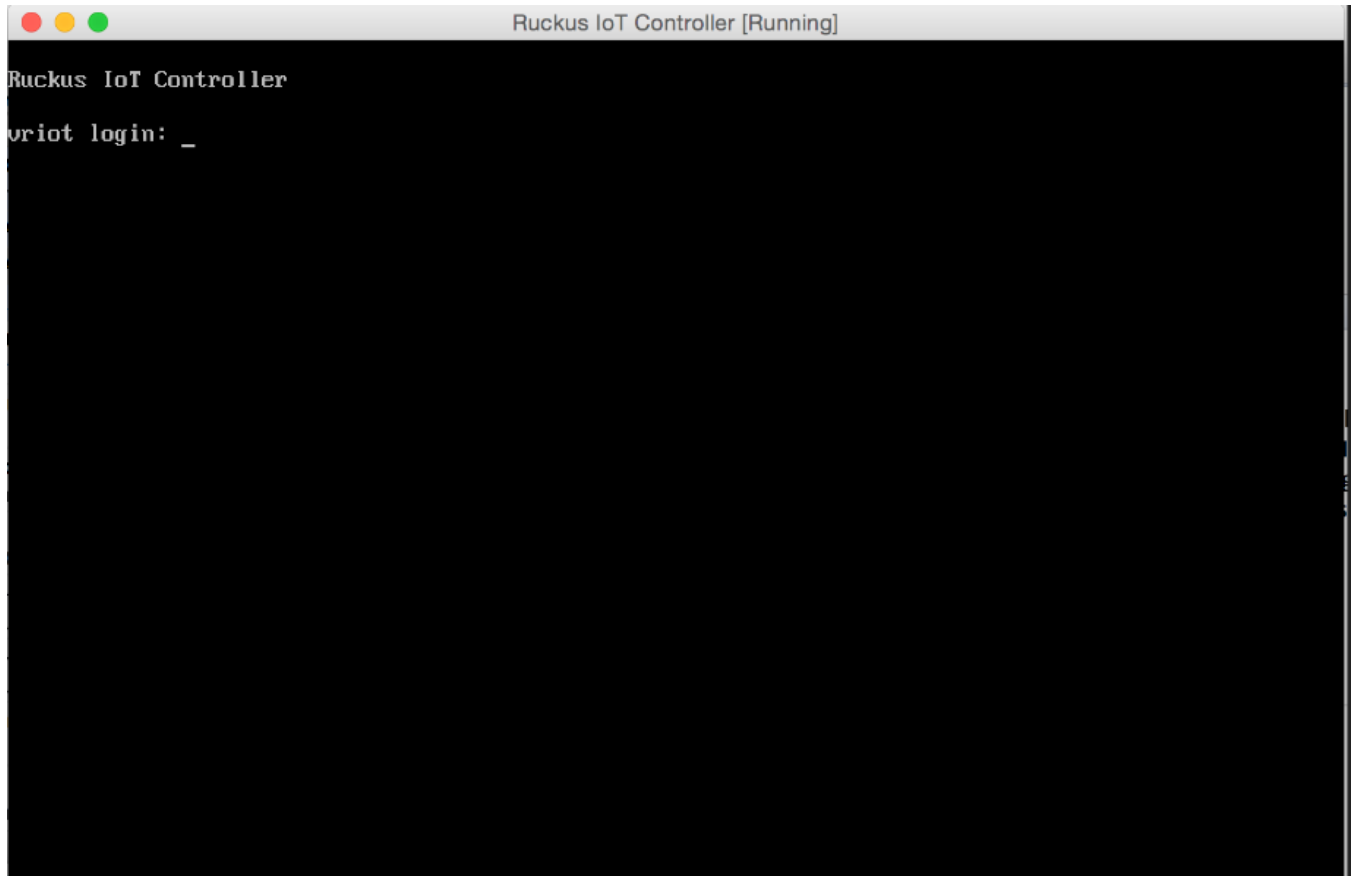
9. Click **Ready to complete** and review the settings. Click **Finish**.

FIGURE 7 Ready to Complete Page



The RUCKUS IoT Controller login prompt is displayed.

FIGURE 8 RUCKUS IoT Controller Login Prompt



10. Log in to the virtual machine using the username and password.

Installing RUCKUS IoT Controller on Hypervisor

Installing RUCKUS IoT Controller on a VMware ESXi

11. Enter **1** in the **Enter Choice** field to get the IP address of the virtual machine.
This information is needed to access the RUCKUS IoT Controller **Initialization** page.

FIGURE 9 Displaying the IP Address

```
1 - Ethernet Network
2 - System Details
3 - NTP Setting
4 - System Operation
5 - N+1
6 - Comm Debugger
x - Log Off

Enter Choice: 1

-----
Network info :
-----
IP (eth0)      : 10.174.112.79/23
Gateway       : 10.174.112.1
Hostname      : vriot
DNS domain    :
FQDN         : vriot
DNS          : 10.42.50.240 10.0.248.1
N+1 Status   : Disabled
-----

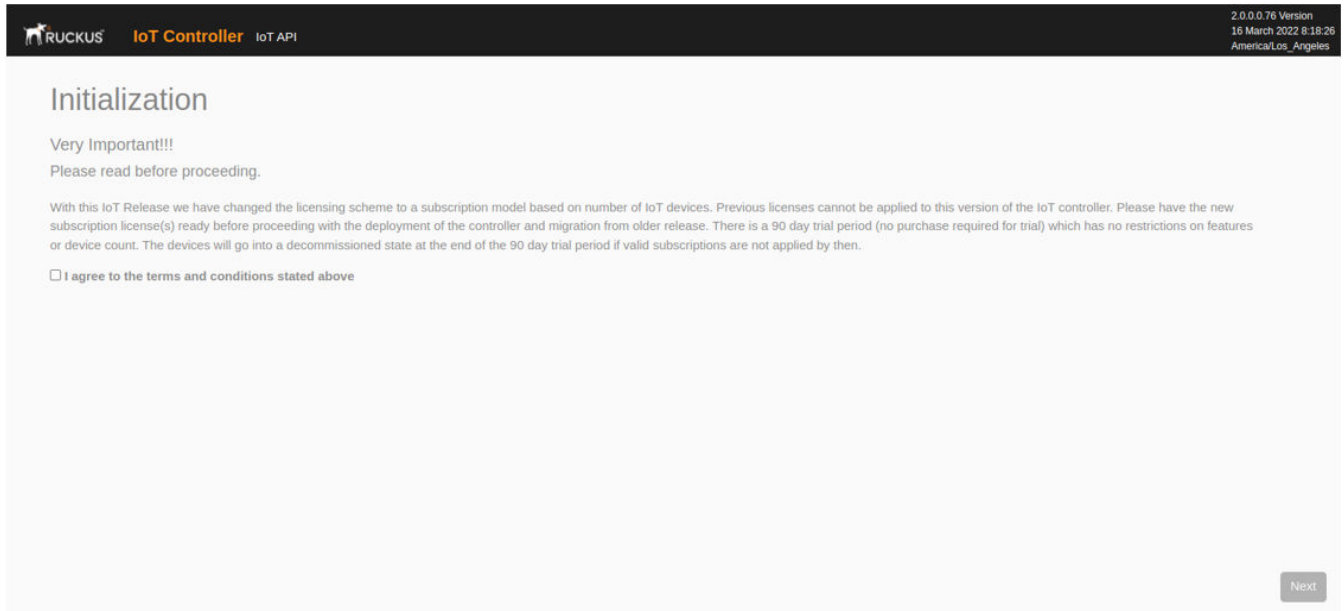
Set Network(1) or Exit(x). Select [1/x]:
```

To configure N+1 on the RUCKUS IoT Controller, enter **5** in the **Enter Choice** field. Refer to "Configuring N+1" in the *RUCKUS IoT Controller Configuration Guide* to complete this configuration.

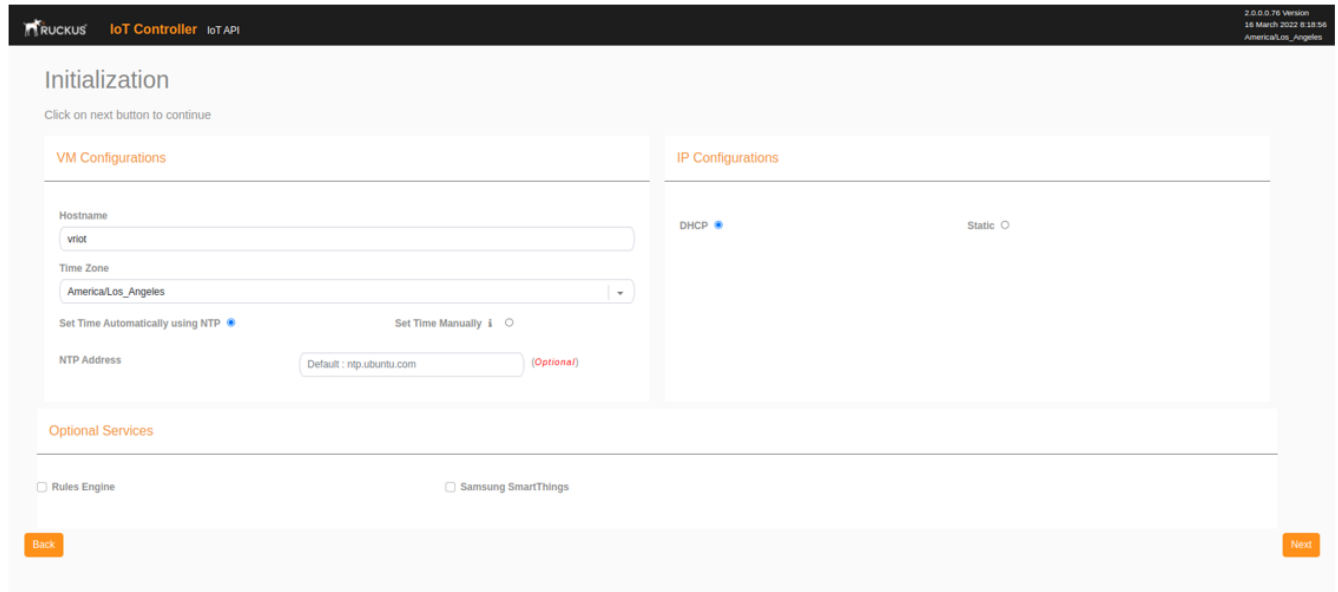
- Open a web browser on your host machine and enter the IP address of the VM in the address bar.
HTTP and HTTPS on ports 80 and 443 are supported.

The **Initialization** page is displayed.

FIGURE 10 Intialization Page



- Select the required services and click **Next**.



Installing RUCKUS IoT Controller on Hypervisor

Installing RUCKUS IoT Controller on a VMware ESXi

14. Confirm the configuration information and click **Next**.

The **RUCKUS IoT Controller Initialization** page is displayed.

FIGURE 11 Confirming the Password

The screenshot shows the RUCKUS IoT Controller Initialization page. The page has a dark header with the RUCKUS logo and navigation links. The main content area is white and contains the title 'Initialization' and the instruction 'Enter new password to continue'. There are two password input fields, each with a 'Show' button. At the bottom, there are 'Back' and 'Start' buttons. The top right corner displays version and date information.

15. Enter a new password and re-enter the new password in the **Confirm Password** field. Click **Start**.
16. The **End-user License Agreement** page is displayed. Click **Accept** to accept the RUCKUS IoT Controller license.

FIGURE 12 End-user License Agreement Page

The screenshot shows the End-user License Agreement page. The page has a dark header with the RUCKUS logo and navigation links. The main content area is white and contains the title 'End-user License Agreement' and the subtitle 'Ruckus IoT Controller (RIoT Controller) Software License'. The text of the license is visible, including a section for 'Definitions'. At the bottom, there are 'Close' and 'Accept' buttons. The top right corner displays version and date information.

You are ready to configure and start the RUCKUS IoT Controller services. Refer to the *RUCKUS IoT Controller Configuration Guide* for more information.

Installing a KVM Guest Using virsh Commands

The RUCKUS IoT Controller can be installed on the KVM Guest using virsh commands.

1. Use the **tar -xvf vriot-qcow2-2.0.0.0.x.tar** command to extract the vriot-qcow2-2.0.0.0.x.tar file.
2. Use the **sudo mv vriot-2.0.0.0.x.qcow2 /var/lib/libvirt/images/** command to move the qcow2 image to the libvirt images path..
3. Use the **virsh define vriot-2.0.0.0.x.xml** command to define the VM.

NOTE

You must edit the XML file to add it to the network interface

4. Use the **virsh start Ruckus-IoT-Controller** command to start the virtual machine (VM).
5. Use the **virsh console Ruckus-IoT-Controller** command to obtain console access to the VM.

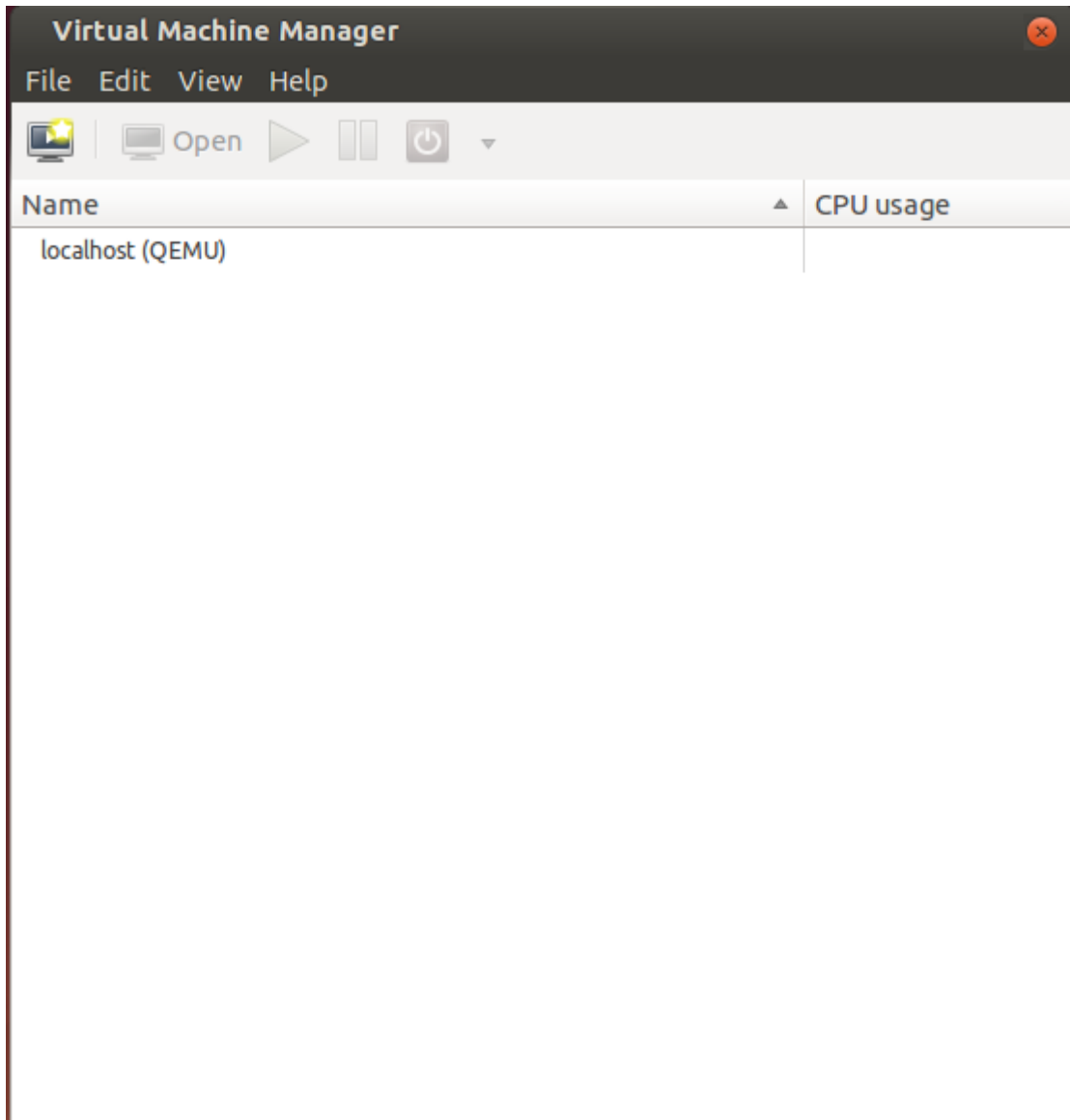
Installing a KVM Guest Using Virtual Machine Manager

The RUCKUS IoT Controller can be installed on a KVM guest using Virtual Machine Manager.

1. Download the RUCKUS IoT Controller distribution package in the .tar file format from the RUCKUS Support website at <https://support.ruckuswireless.com>.
2. Use the **tar -xvf filename.tar** command to obtain the qcow2 image file and template file.
3. Open the Virtual Machine Manager.

4. From the **Virtual Machine Manager** menu, select **File > Create a New Virtual Machine**.

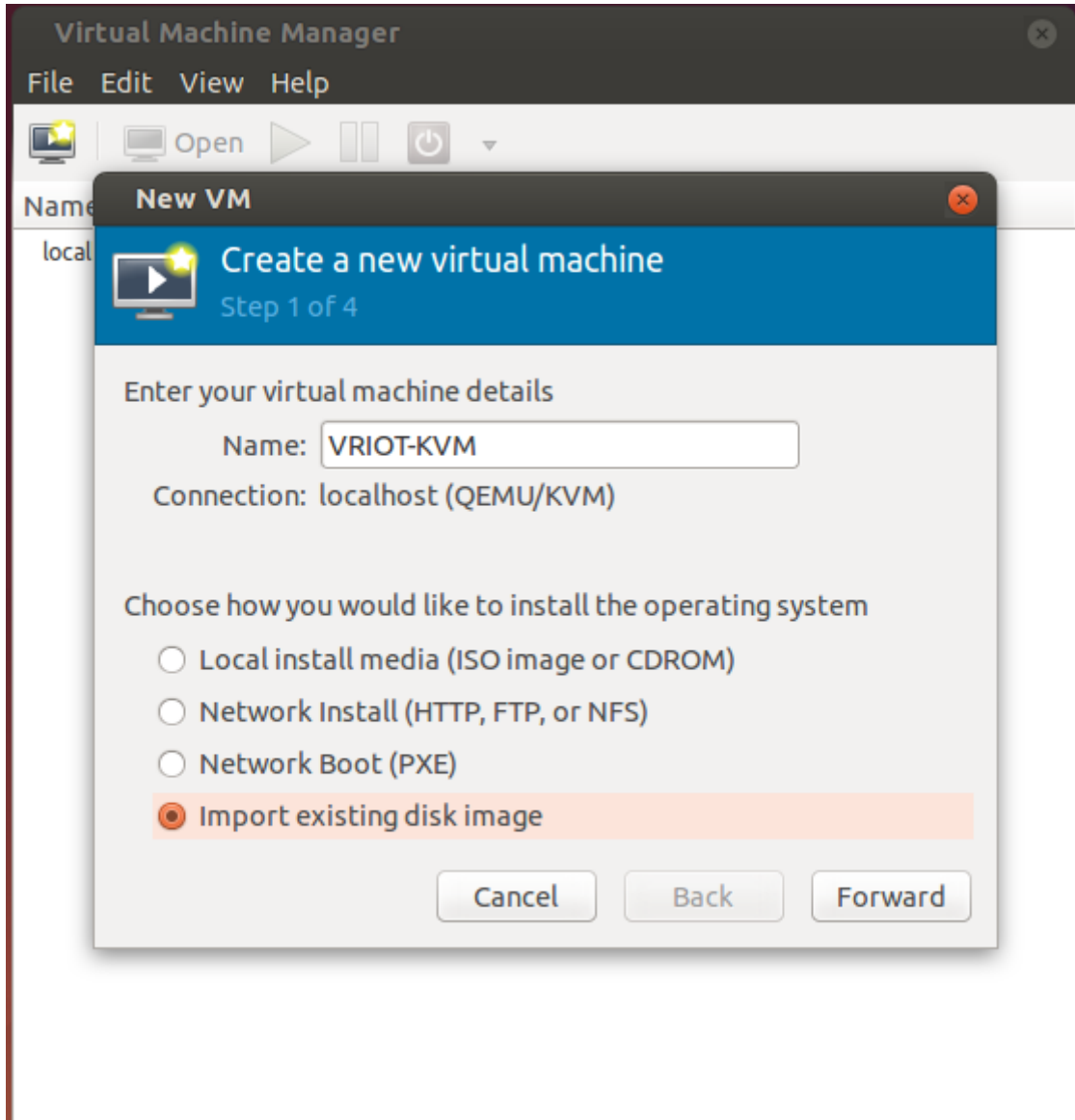
FIGURE 13 Virtual Machine Manager Menu



The **New VM** dialog box is displayed.

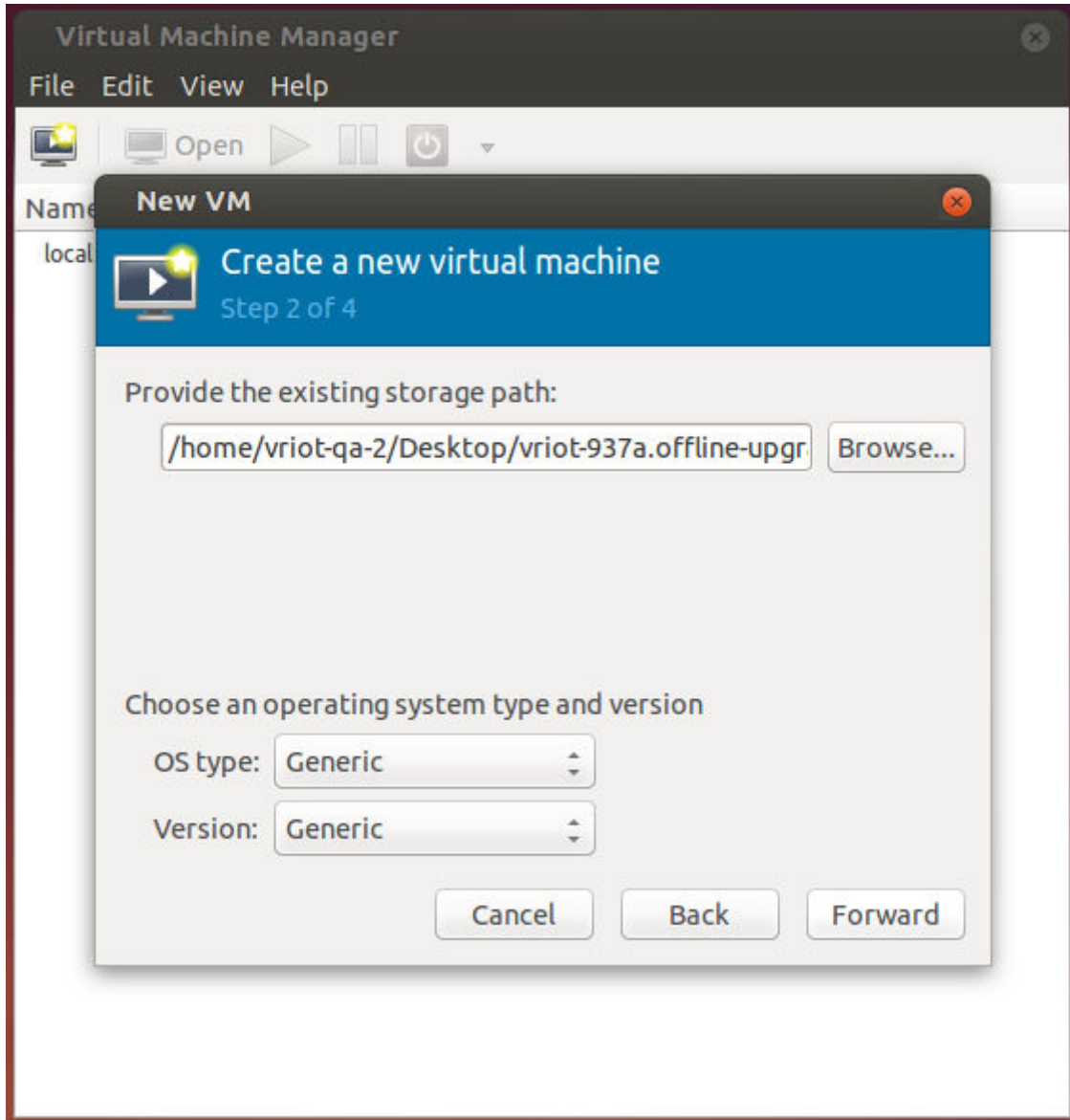
5. Enter the name of the virtual machine, select **Import existing disk image**, and click **Forward**.

FIGURE 14 New VM Dialog Box Step 1



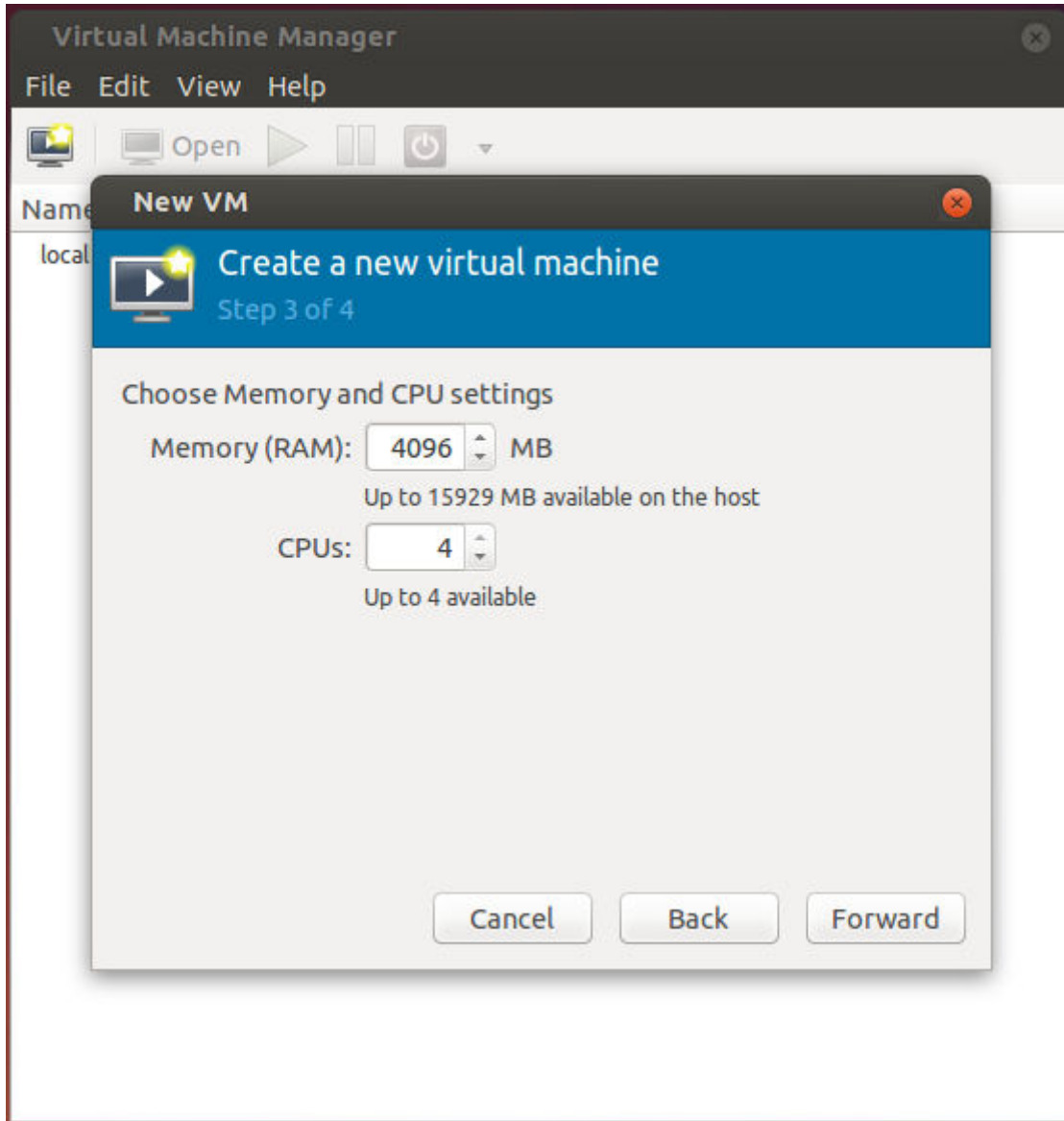
6. Enter the path of the .qcow image, the operating system type, and the version number, and click **Forward**.

FIGURE 15 New VM Dialog Box Step 2



7. Select the memory size of RAM (in MB) and the number of central processing units (CPUs) for the virtual machine, and click **Forward**.

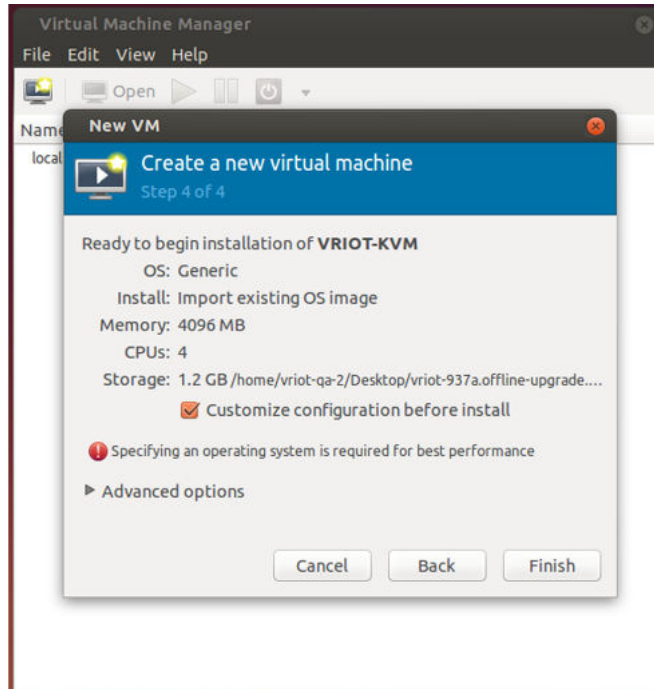
FIGURE 16 New VM Dialog Box Step 3



Installing RUCKUS IoT Controller on Hypervisor
Installing a KVM Guest Using Virtual Machine Manager

8. Select **Customize configuration before install**, and click **Finish**.

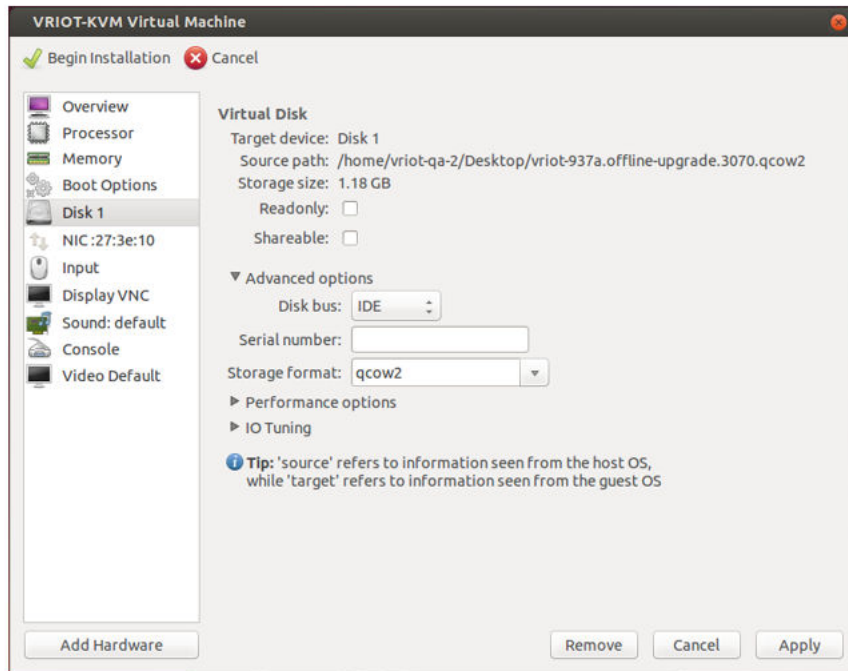
FIGURE 17 New VM Dialog Box Step 4



The RUCKUS IoT Controller installation on the virtual manager begins.

9. After the installation has completed, open the Virtual Machine Manager. Select **Disk** in the left pane and information about the disk is displayed. Expand **Advanced options** and ensure that the disk bus is **IDE** and the storage format is **qcow2**.

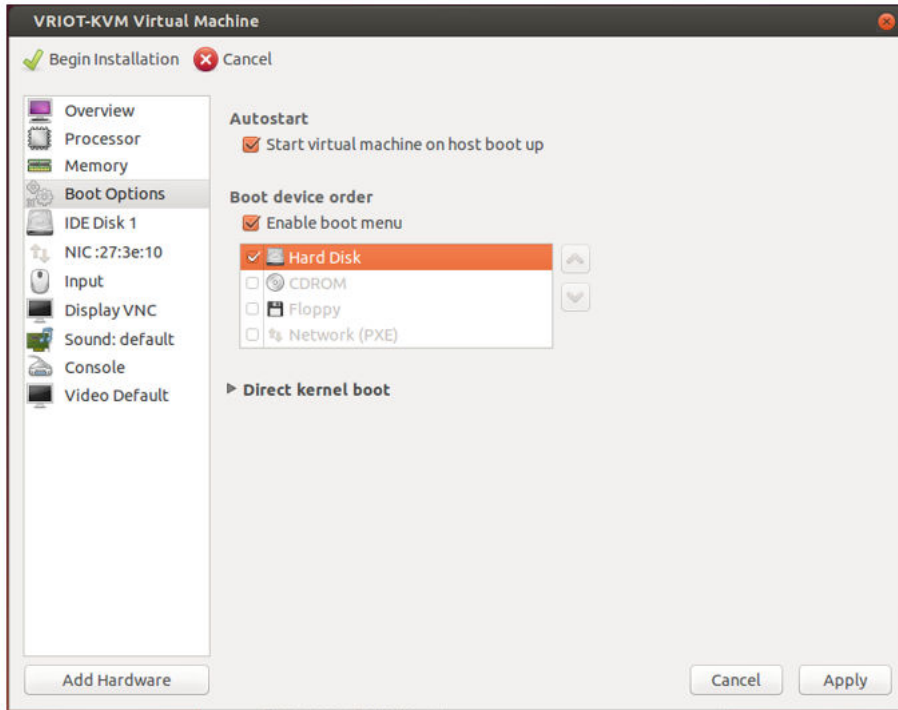
FIGURE 18 Virtual Disk Configuration



Installing RUCKUS IoT Controller on Hypervisor
Installing a KVM Guest Using Virtual Machine Manager

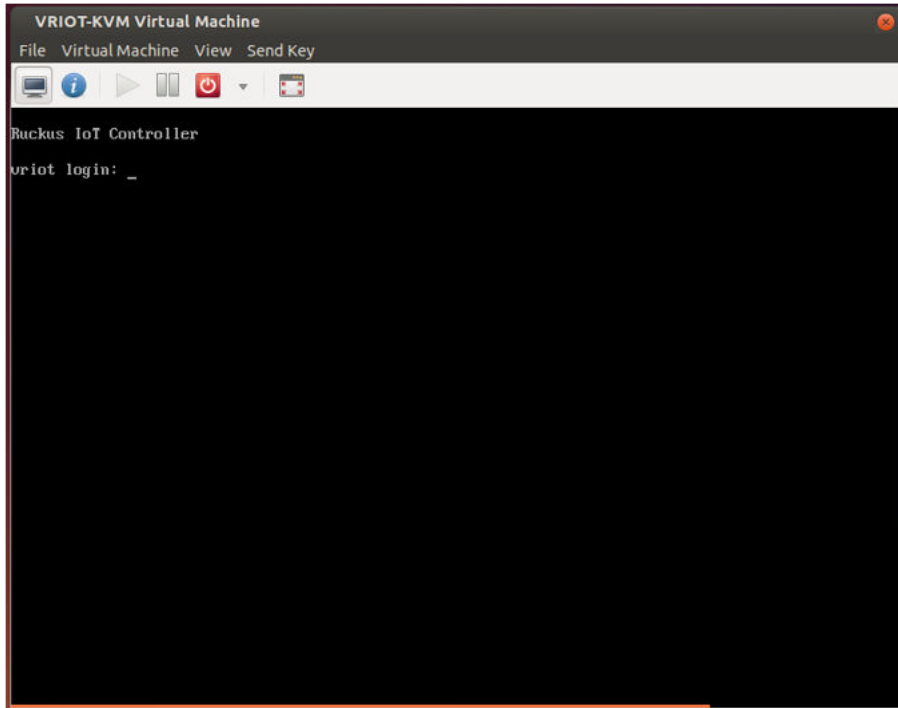
10. Select **Boot Options** in the left pane. Ensure that **Start virtual machine on host boot up** and **Enable boot menu** are selected. Select **Hard Disk** and click **Apply**.

FIGURE 19 Boot Options Configuration



11. Log in to the RUCKUS IoT Controller using the username and password.

FIGURE 20 RUCKUS IoT Controller Login Prompt



12. Enter **1** in the **Enter Choice** field to get the IP address of the virtual machine.
This information is needed to access the RUCKUS IoT Controller **Initialization** page.

FIGURE 21 Displaying the IP Address

```
1 - Ethernet Network
2 - System Details
3 - NTP Setting
4 - System Operation
5 - N+1
6 - Comm Debugger
x - Log Off

Enter Choice: 1

-----
Network info :
-----
IP (eth0)      : 10.174.112.79/23
Gateway       : 10.174.112.1
Hostname      : vriot
DNS domain    :
FQDN         : vriot
DNS           : 10.42.50.240 10.0.248.1
N+1 Status    : Disabled
-----

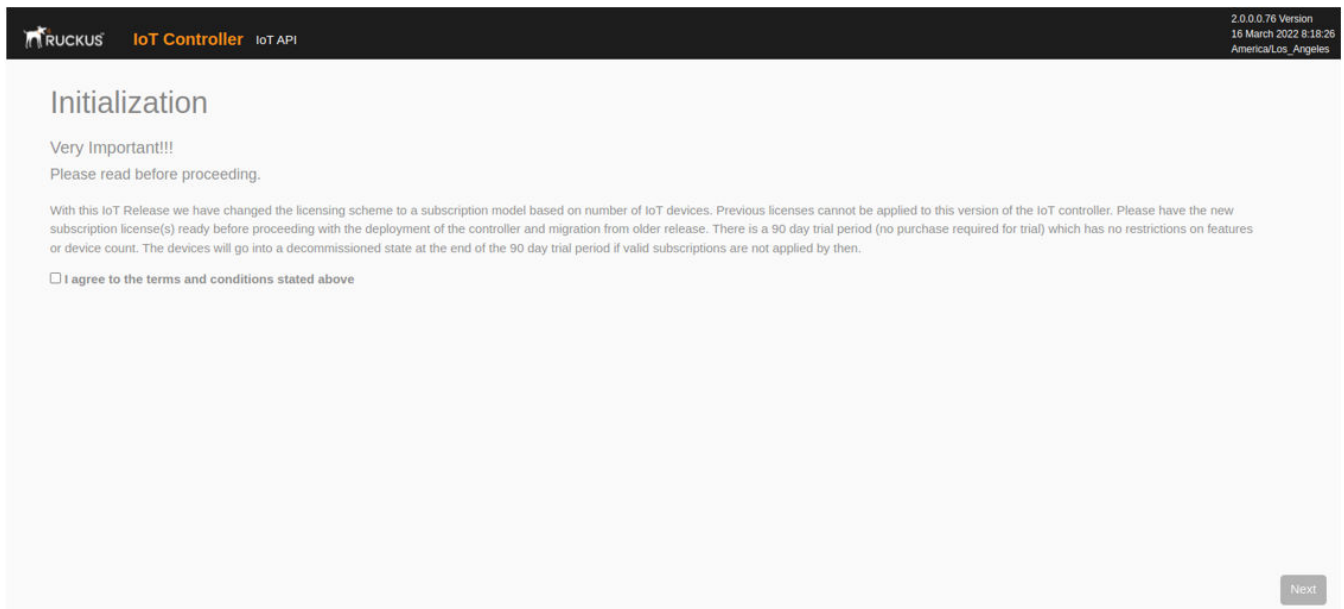
Set Network(1) or Exit(x). Select [1/x]:
```

To configure N+1 on the RUCKUS IoT Controller, enter **5** in the **Enter Choice** field. Refer to "Configuring N+1" in the *RUCKUS IoT Controller Configuration Guide* to complete this configuration.

13. Open a web browser on your host machine and enter the IP address of the VM in the address bar.

HTTP and HTTPS on ports 80 and 443 are supported.

The **Initialization** page is displayed.



14. Select the required services and click **Next**.

FIGURE 22 Initial VM and IP Configurations

The screenshot displays the 'Initialization' page of the RUCKUS IoT Controller. The page is divided into three main sections: 'VM Configurations', 'IP Configurations', and 'Optional Services'.
- **VM Configurations:** Includes a 'Hostname' field with the value 'vriot', a 'Time Zone' dropdown menu set to 'America/Santiago', and two radio buttons for 'Set Time Automatically using NTP' (unselected) and 'Set Time Manually' (selected). Below these is a 'Select Date and time' field showing 'May 20, 2021 4:13 PM'.
- **IP Configurations:** Features two radio buttons: 'DHCP' (selected) and 'Static' (unselected).
- **Optional Services:** Contains three checkboxes: 'Rules Engine', 'Track Central', and 'Samsung SmartThings', all of which are currently unchecked.

15. Confirm the configuration information and click **Next**.
The **RUCKUS IoT Controller Initialization** page is displayed.

FIGURE 23 Confirming the Password

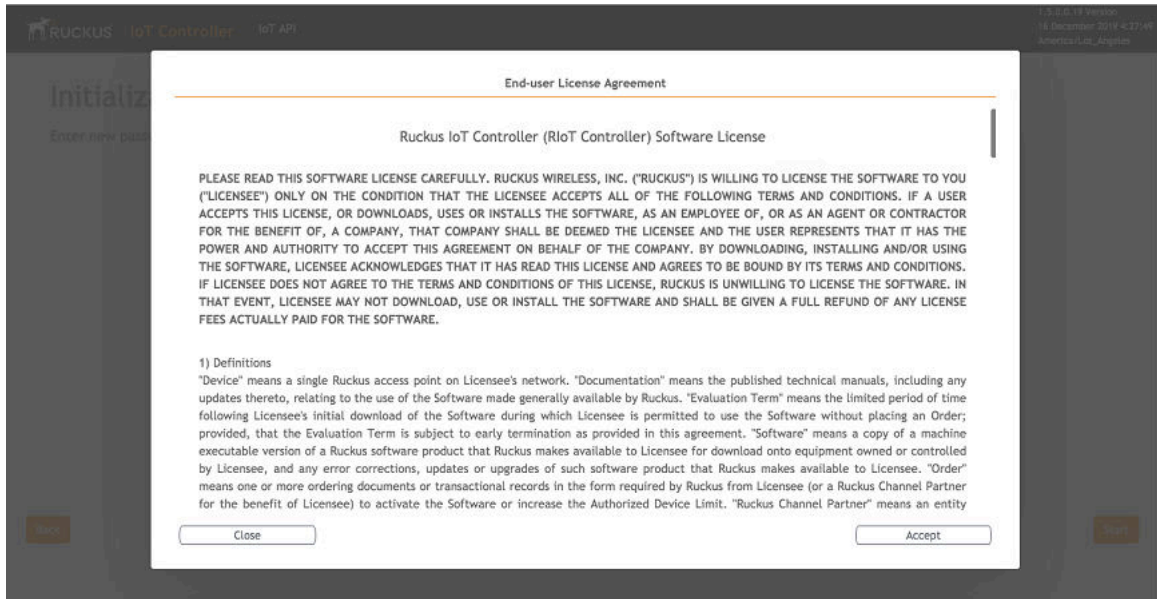
The screenshot shows the 'Initialization' page with a focus on password entry. The page header includes the RUCKUS IoT Controller logo and 'IoT API' on the left, and version information '1.5.0.0.19 Version', '16 December 2019 4:27:28', and 'America/Los_Angeles' on the right. The main heading is 'Initialization' with the instruction 'Enter new password to continue'.
- **New Password:** A text input field containing 'Enter password' with a 'Show' button to its right.
- **Confirm Password:** A text input field containing 'Retype password' with a 'Show' button to its right.
At the bottom of the page, there are two orange buttons: 'Back' on the left and 'Start' on the right.

Installing RUCKUS IoT Controller on Hypervisor

Installing RUCKUS IoT Controller on Hyper-V

16. Enter a new password and re-enter the new password in the **Confirm Password** field. Click **Start**.
17. The **End-user License Agreement** page is displayed. Click **Accept** to accept the RUCKUS IoT Controller license.

FIGURE 24 End-user License Agreement Page



You are ready to configure and start the RUCKUS IoT Controller services. Refer to the *RUCKUS IoT Controller Configuration Guide* for more information.

Installing RUCKUS IoT Controller on Hyper-V

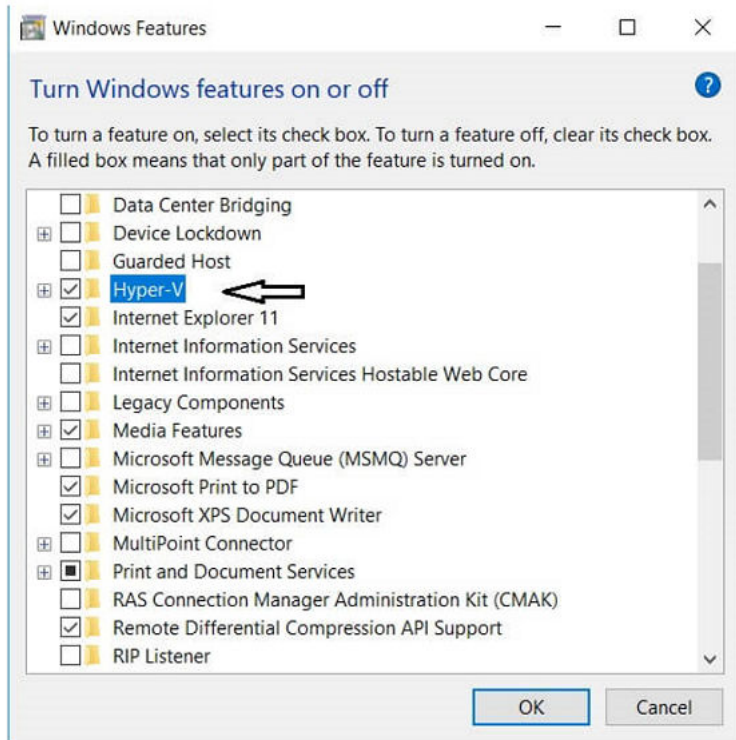
The RUCKUS IoT Controller can be installed on Hyper-V using a VHD file.

Installing Hyper-V

1. Extract the VMDK file from the .OVA file using a zip extractor application such as 7-Zip, WinZip, WinRAR, and so on.
2. Convert the VMDK to VHD using a tool such as StarWind V2V Converter or QEMU disk image utility for Windows.
3. From the Windows 10 **Start** menu, enter **Settings**, and press **Enter**.
The **Windows Settings** page is displayed.
4. Click **Apps**, and select **Apps and Features**.
5. Under **Related settings**, select **Programs and Features**.
The **Uninstall or change program** page is displayed.

6. Select **Turn Windows Features on or off**.

FIGURE 25 Windows Features



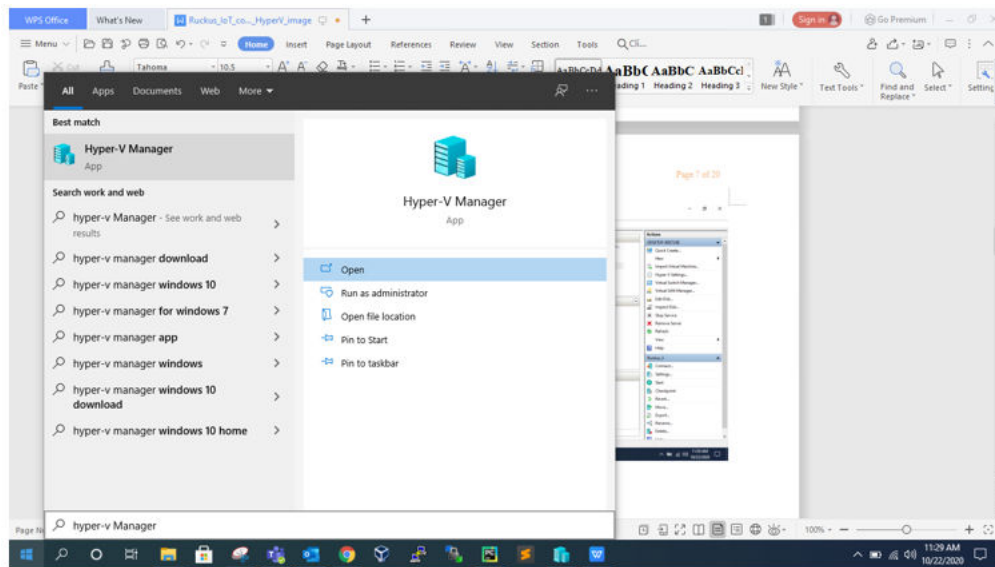
7. Select **Hyper-V**, and click **OK**.

Installing RUCKUS IoT Controller on Hypervisor

Installing RUCKUS IoT Controller on Hyper-V

- From the Windows 10 **Start** menu, enter **Hyper-V Manager**, and press **Enter**.

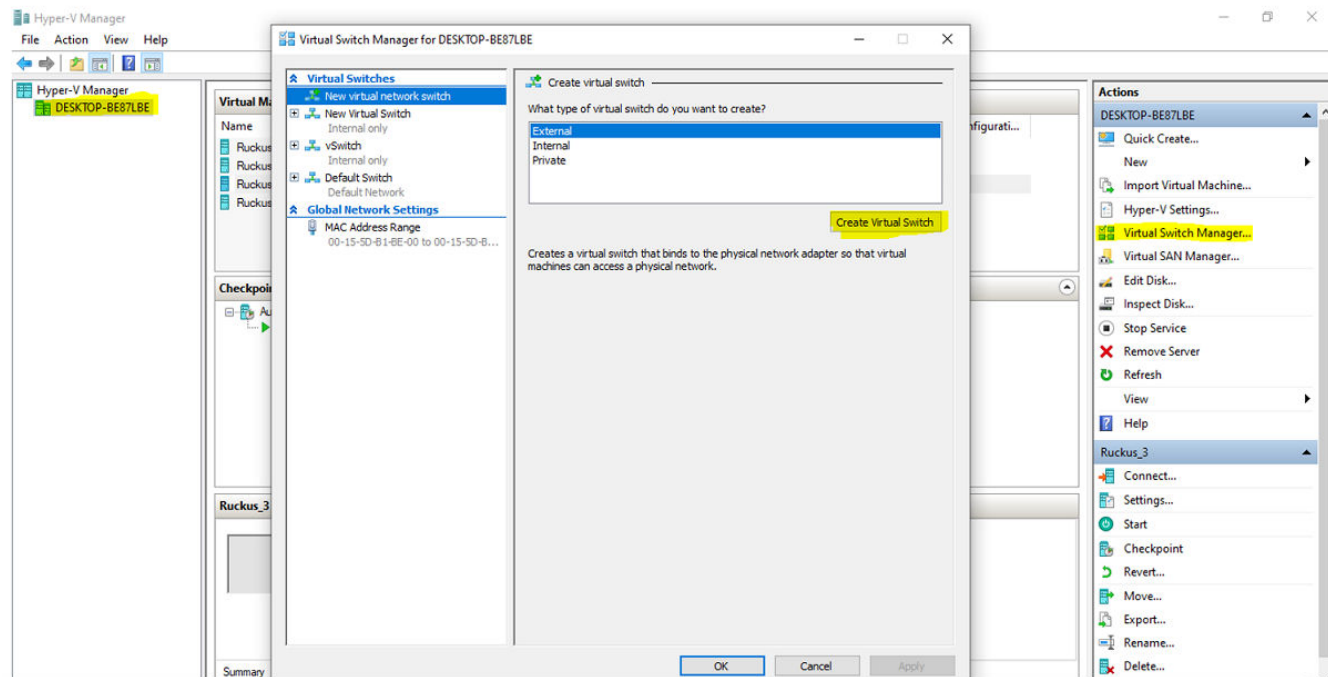
FIGURE 26 Hyper-V Manager App



- Click **Open**.
The **Hyper-V Manager** page is displayed.

- Click the Hyper-V host computer name in the left pane, and select **Virtual Switch Manager** from the **Actions** list in the right pane.
The **Virtual Switch Manager** dialog box is displayed.

FIGURE 27 Creating Virtual Switch

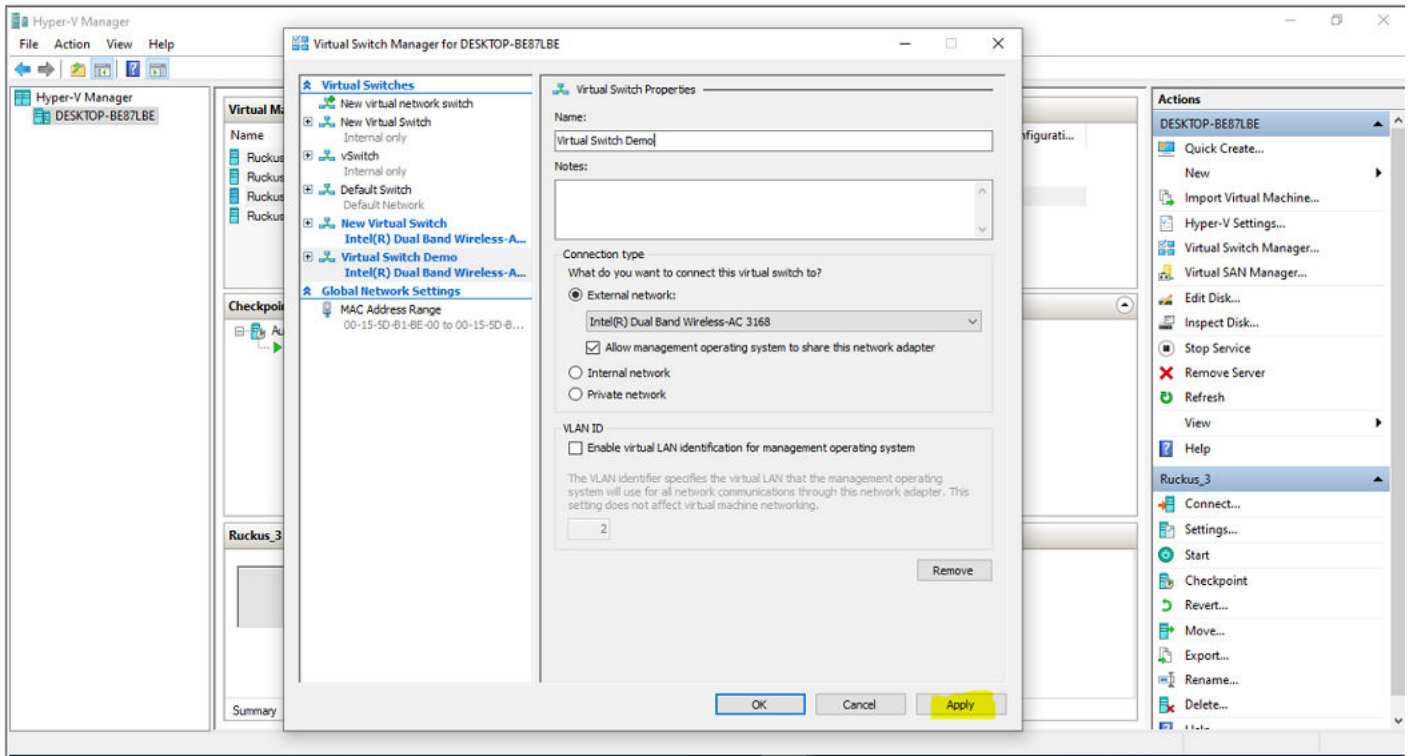


- Select the type of virtual switch (**External**, **Internal** or **Private**), click **Create Virtual Switch**, and click **OK**.
The **Virtual Switch Properties** dialog box is displayed.
- In the **Name** field, enter the name of the virtual switch. You can enter additional information in the **Notes** field.

Installing RUCKUS IoT Controller on Hypervisor

Installing RUCKUS IoT Controller on Hyper-V

- Under **Connection type**, select **External network**, **Internal network**, or **Private network**. If you select **External network**, select the type of network adapter you want to use, and select the **Allow management operating systems to share the network adapter** check box.



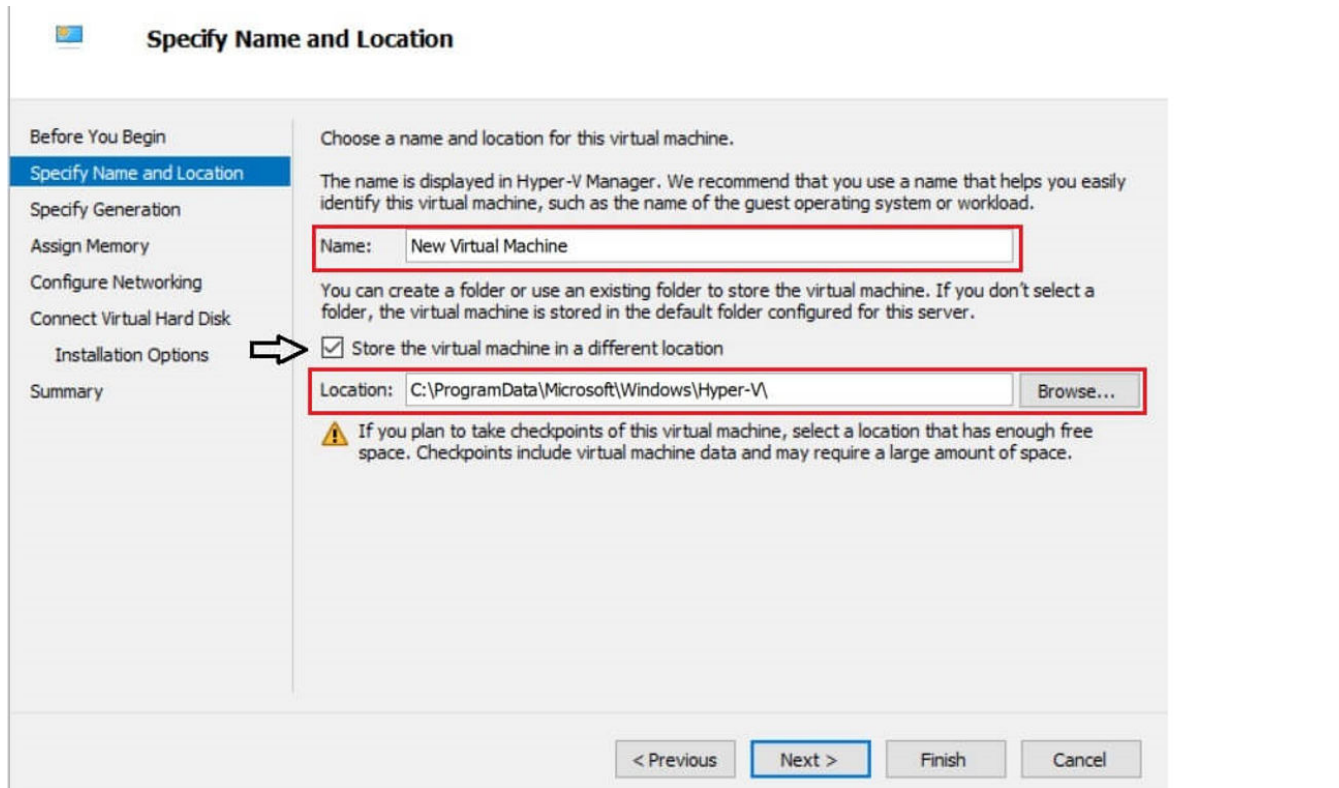
- Click **Apply**.

Creating a New Virtual Machine

- After installing Hyper-V on your computer, you can create new virtual machine. To create Virtual Machine, type Hyper-V Manager in the search box situated on the taskbar below and press ENTER.
- From the Windows 10 **Start** menu, enter **Hyper-V Manager**, and press **Enter**.
The **Hyper-V Manager** page is displayed.
- Click **Action** tab, select **New > Virtual Machine**.
The **New Virtual Machine Wizard** is displayed. You must complete each of the virtual machine configuration options through the wizard.

- Under **Specify Name and Location**, in the **Name** field, enter the name of the VM. Either store the VM in the default location or select the **Store the virtual machine in a different location** check box, and click **Browse** to select a different location.

FIGURE 28 Specify Name and Location Wizard Page



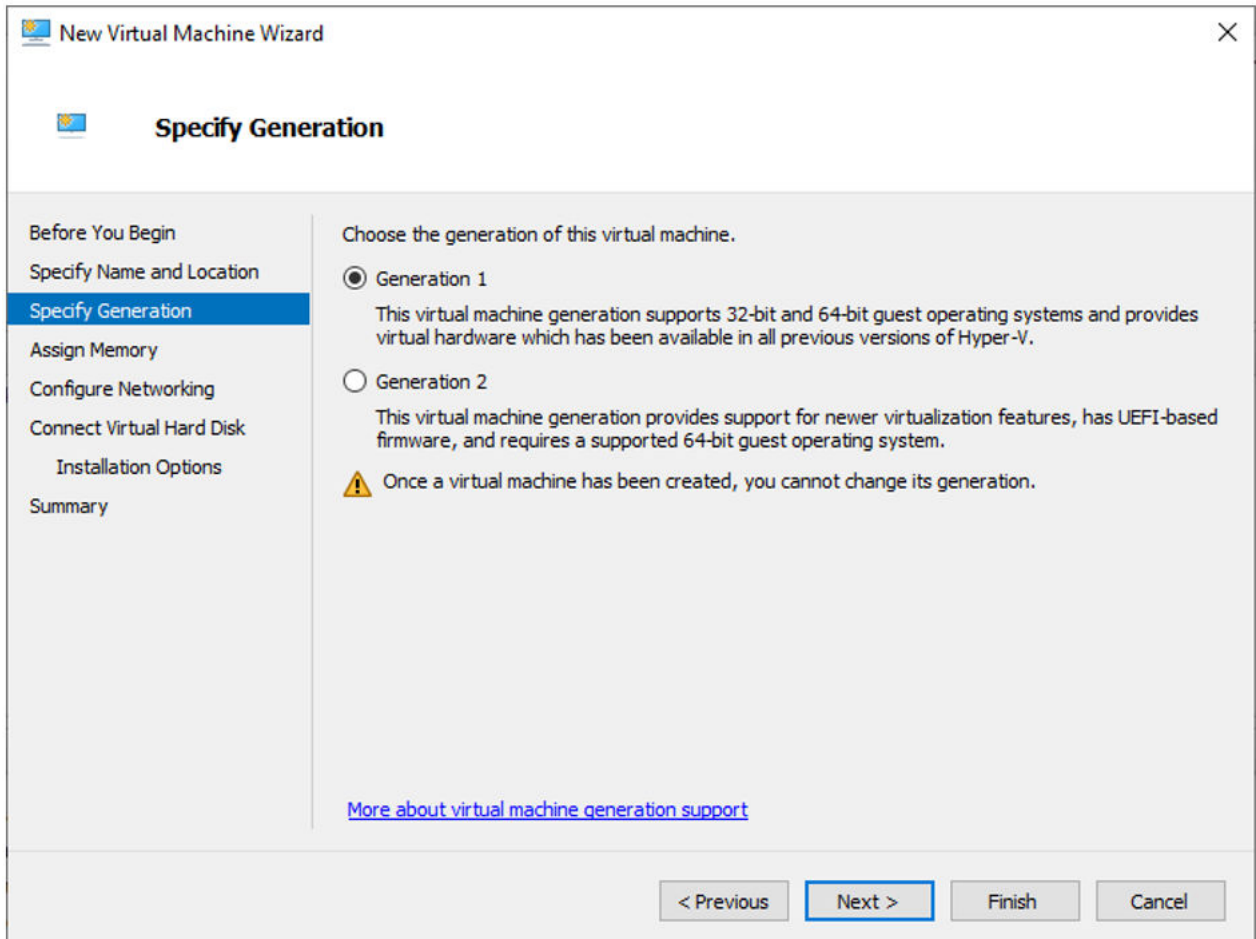
- Click **Next**.

Installing RUCKUS IoT Controller on Hypervisor

Installing RUCKUS IoT Controller on Hyper-V

- Under **Specify Generation**, select **Generation 1** or **Generation 2**. It is recommended to select **Generation 1**, because Generation 1 VMs support 32-bit and 64-bit guest operating systems and BIOS-based architectures.

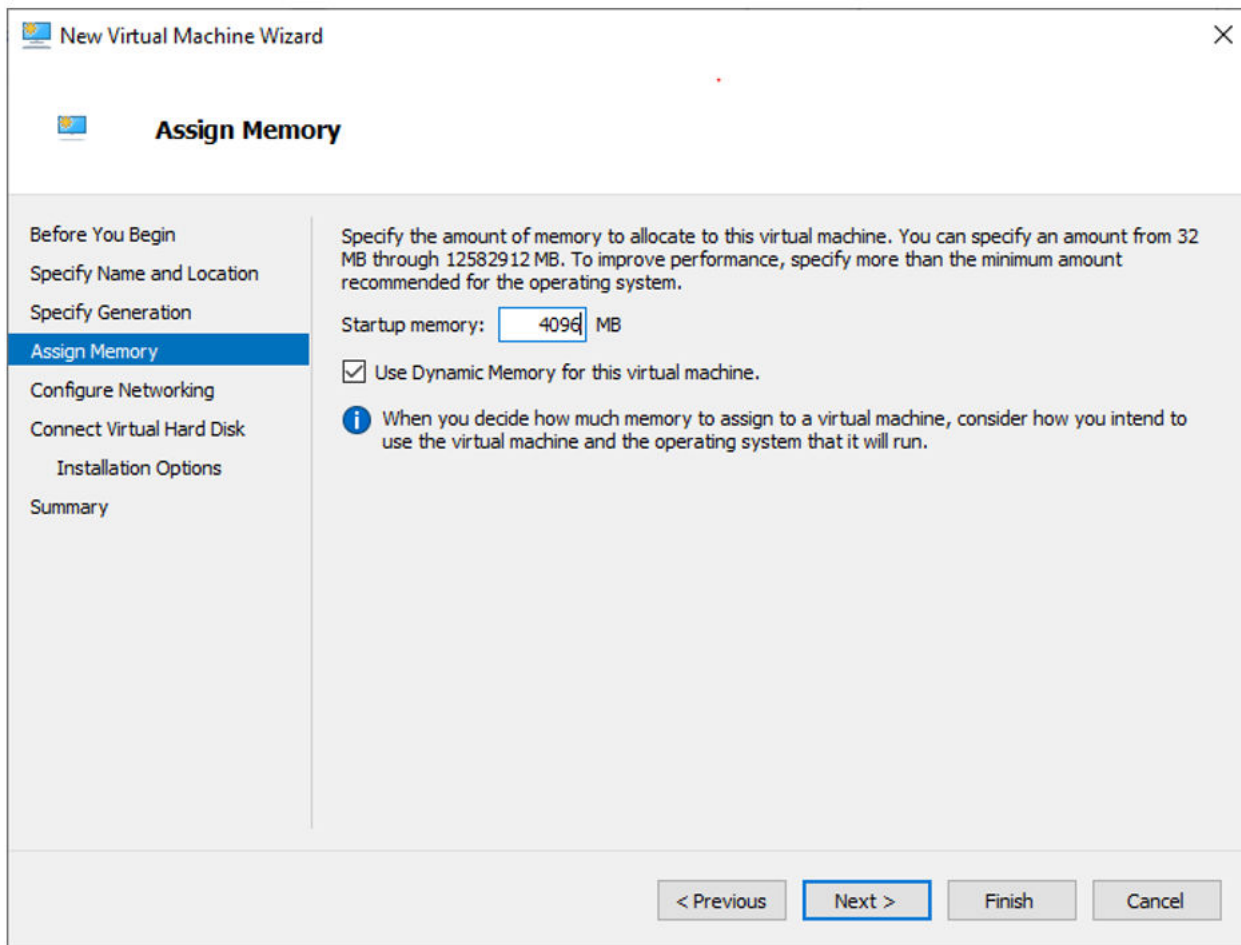
FIGURE 29 Specify Generation Wizard Page



- Click **Next**.

- Under Assign Memory, in the Startup memory field, enter the amount of memory that will be assigned to the VM (4096 MB as it is minimum RAM required for RUCKUS IoT controller). Select the **Use Dynamic Memory for this virtual machine** check box to save memory.

FIGURE 30 Assign Memory Wizard Page



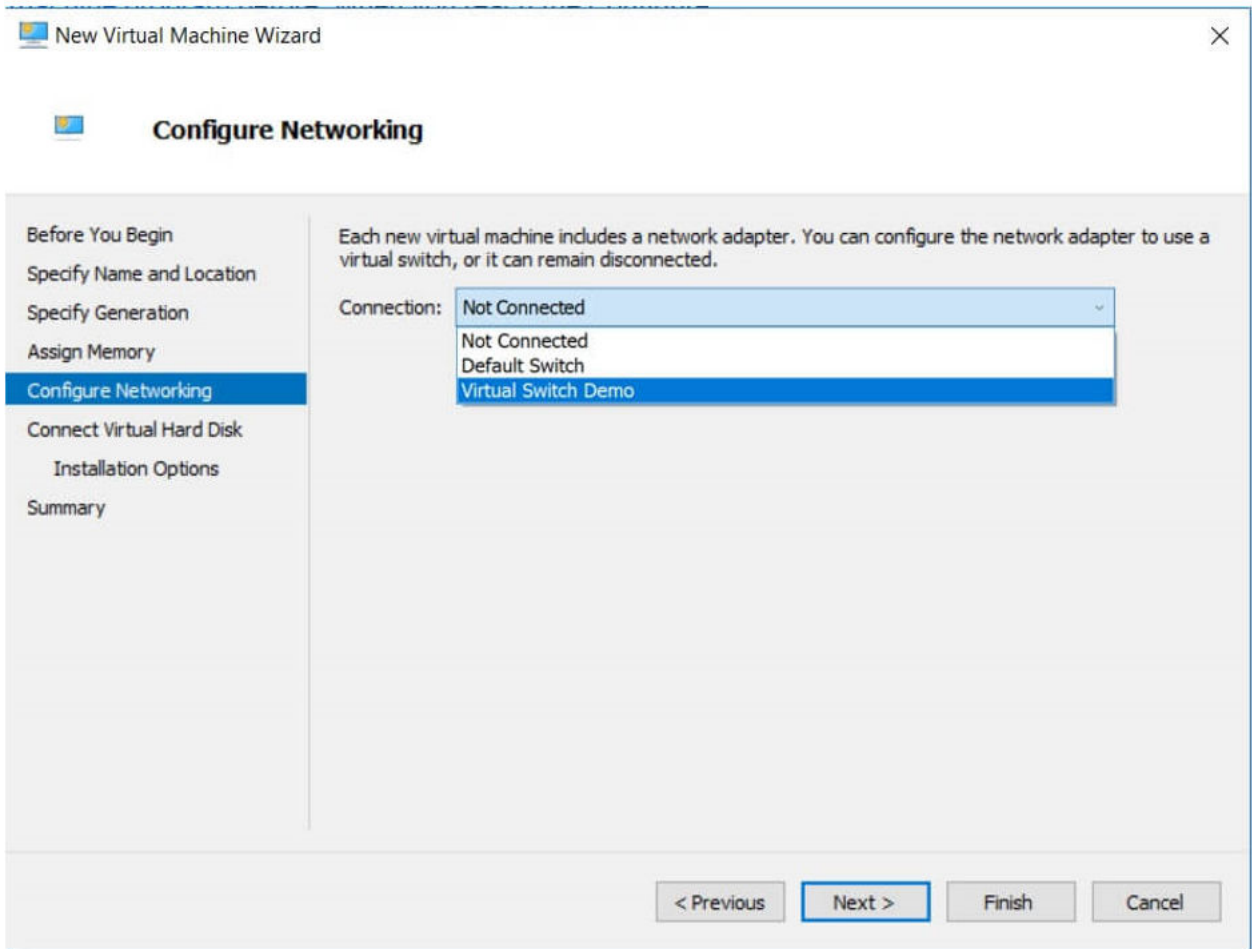
- Click **Next**.

- Under **Configure Networking**, select the connection that will be used when connecting the VM to the network. If you have not created a virtual switch earlier, select **Not Connected**.

NOTE

Use the default switch for the internal network, and use a different virtual switch with an external network.

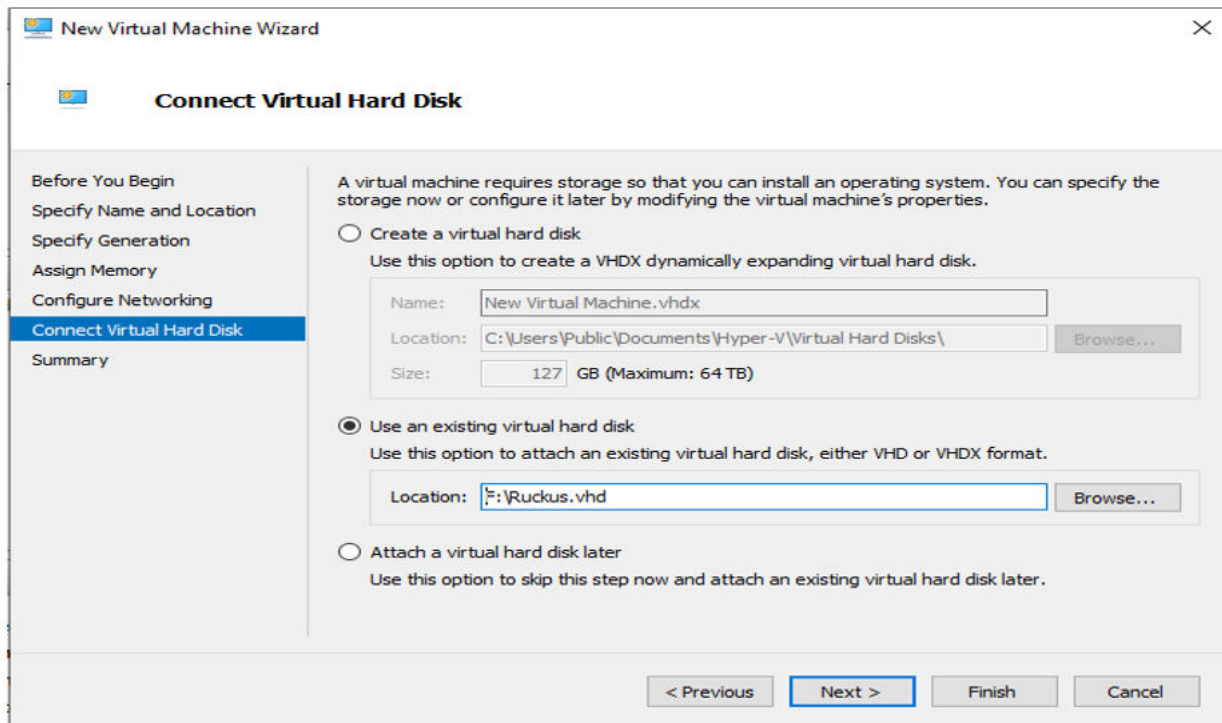
FIGURE 31 Configure Networking Wizard Page



- Click **Next**.

- Under **Connect Virtual Hard Disk**, select **Use an existing virtual hard disk to attach an existing virtual hard disk** in VHD or VHDX format, and click **Browse** to select the location of the virtual hard disk.

FIGURE 32 Connect Virtual Hard Disk Wizard Page



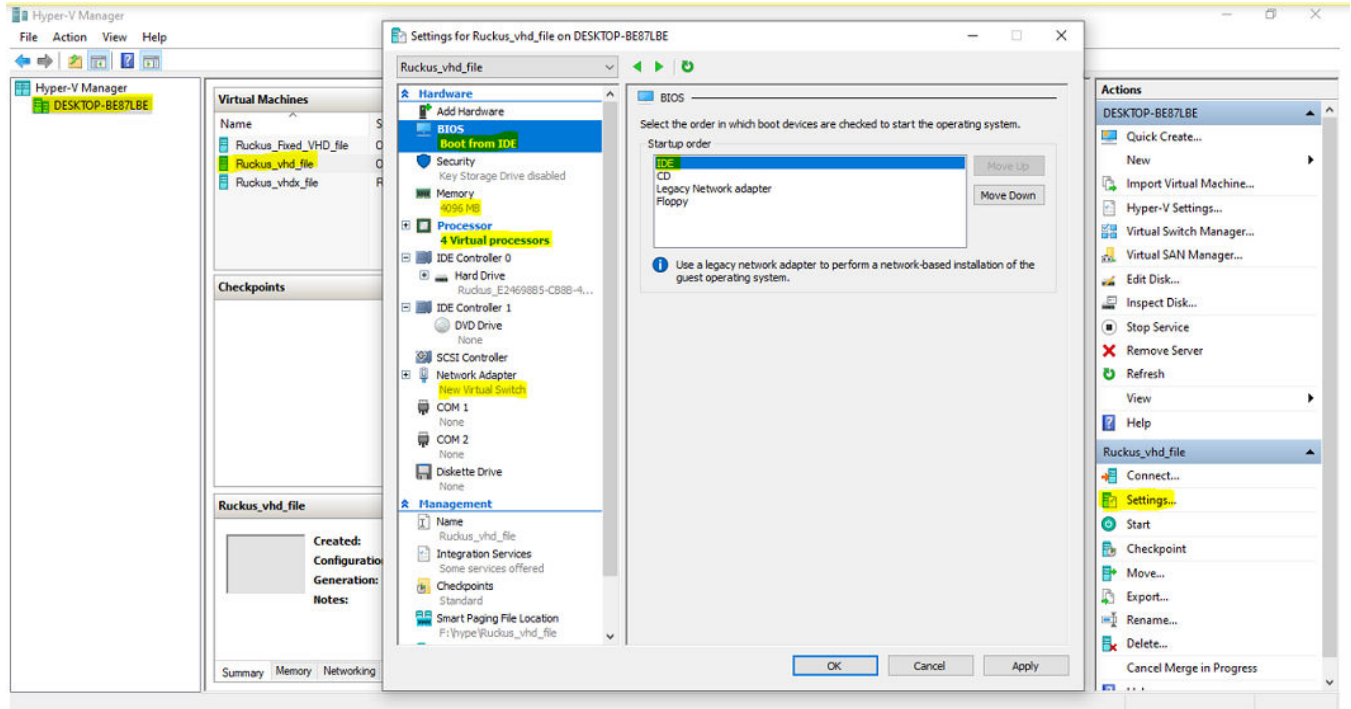
- Click **Finish**.

Installing RUCKUS IoT Controller on Hypervisor

Installing RUCKUS IoT Controller on Hyper-V

14. Open the VM in **Hyper-V Manager** and from the **Actions** list in the right pane, click **Settings**. Confirm the displayed VM configuration settings such as number of **PROCESSOR** is 4, **RAM** size is 4096 MB, and **HDD** size is 20 GB, click **Apply**, and click **OK**.

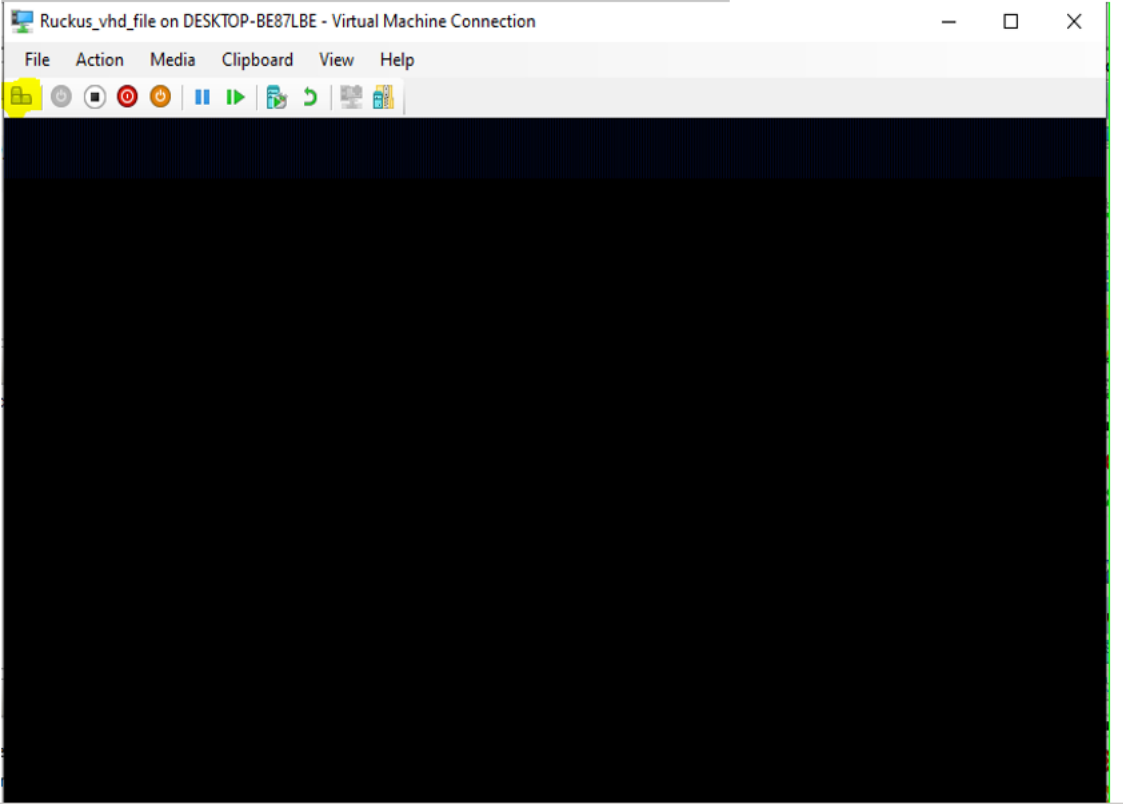
FIGURE 33 Confirming the VM Settings



NOTE

If you open the VM in Hyper-V Manager and a black screen is displayed, press **Ctrl+Alt+End** or **Ctrl+Alt+Delete** after a restart until the boot screen is no longer visible.

FIGURE 34 Appearance of Black Screen



Installing RUCKUS IoT Controller on AWS

- [Creating an Account with AWS](#)..... 47
- [Importing the VRIOT Image](#)..... 48
- [Creating a RUCKUS IoT Controller EC2 Instance](#)..... 49

Creating an Account with AWS

You must create an account with Amazon Web Service (AWS) and must have the login details for the account to begin.

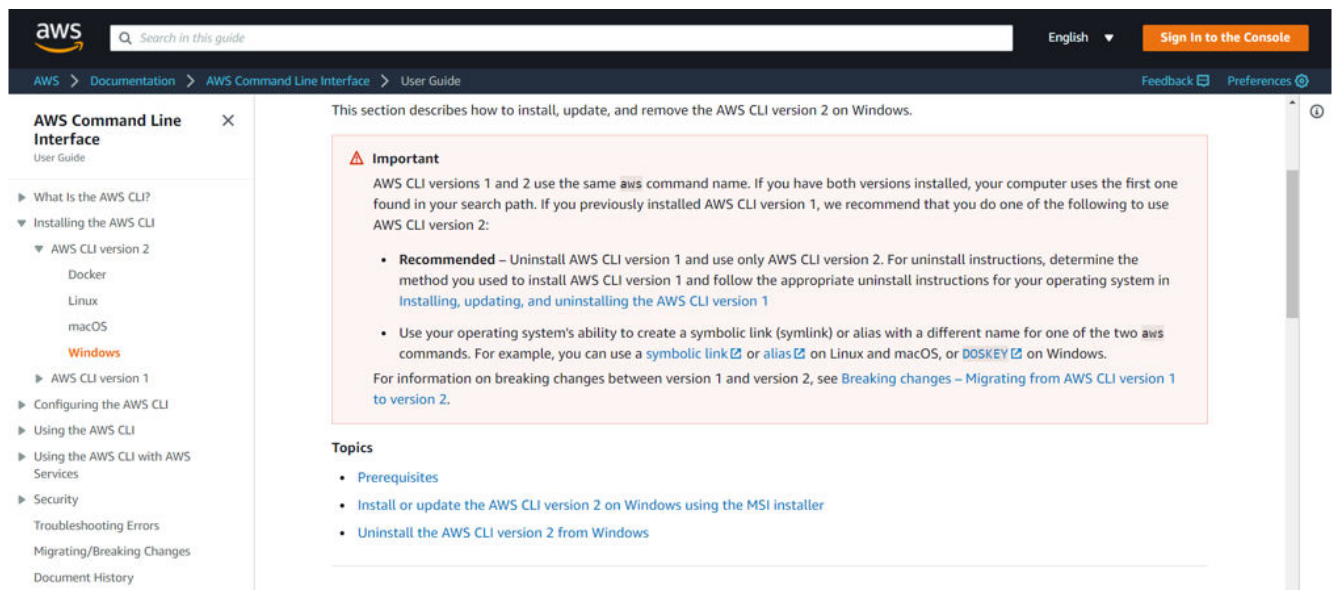
To create an account with AWS perform the following steps.

1. Download the AWS CLI on your OS (Operating System).

NOTE

The below installation is performed on Windows 10 operating system.

FIGURE 35 Opening the AWS Command Line Interface User Guide

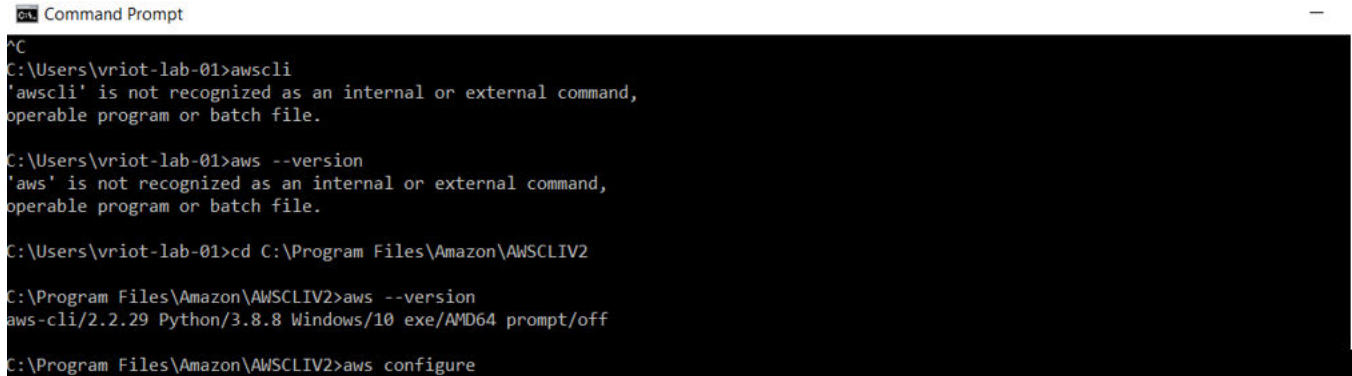


2. Click the link "Install update AWS CLI version 2 on Windows using the MSi installer".

Importing the VRIOT Image

Complete the following steps to import the VRIOT image into the AWS shared Amazon Machine Image (AMI).

1. Open the command line prompt, and execute the below commands.



```
Command Prompt
^C
C:\Users\vriot-lab-01>awscli
'awscli' is not recognized as an internal or external command,
operable program or batch file.

C:\Users\vriot-lab-01>aws --version
'aws' is not recognized as an internal or external command,
operable program or batch file.

C:\Users\vriot-lab-01>cd C:\Program Files\Amazon\AWSCLIV2

C:\Program Files\Amazon\AWSCLIV2>aws --version
aws-cli/2.2.29 Python/3.8.8 Windows/10 exe/AMD64 prompt/off

C:\Program Files\Amazon\AWSCLIV2>aws configure
```

```
Visit the "AWSCLI2" folder
Type "aws --version" at the command prompt
Now type "aws configure"
C:\Program Files\Amazon\AWSCLIV2>aws configure
AWS Access Key ID [None]: <enter AWS Access Key ID>
AWS Secret Access Key [None]: <enter AWS Secret Access Key>
Default region name [None]: us-west-2 (all lower case)
Default output format [None]:
```

2. Create a JSON file called import.json using the following commands. Replace the bucket name with the storage bucket name that you created.

In this example, the VRIOT image file name as vriot-2.0.0.0.5036.ova.

```
{
  "Description": "Import vriot",
  "DiskContainers": [
    {
      "Description": "vriot-2.0.0.0.5036",
      "Format": "ova",
      "UserBucket": {
        "S3Bucket": "vriot",
        "S3Key": "dev-2.0.0.0/6aa8.dev-2.0.0.0.5036/vriot-6aa8.dev-2.0.0.0.5036.ova"
      }
    }
  ]
}
```


3. After creating the "import.json" file, execute the following command.

```
# aws ec2 import-image --cli-input-json file://import.json
```

The system displays the below response.

```
{
  "Description": "Import vriot",
  "ImportTaskId": "import-ami-0d32a196c9257d5a7",
  "Progress": "1",
  "SnapshotDetails": [
    {
      "Description": "vriot-2.0.0.0.5036",
      "DiskImageSize": 0.0,
      "Format": "OVA",
      "UserBucket": {
        "S3Bucket": "vriot",
        "S3Key": "dev-2.0.0.0/6aa8.dev-2.0.0.0.5036/vriot-6aa8.dev-2.0.0.0.5036.ova"
      }
    }
  ],
  "Status": "active",
  "StatusMessage": "pending"
}
```

4. Enter the following command to verify the status of the imported VRIOT image. Be sure to use the correct import task identifier.

```
.# aws ec2 describe-import-image-tasks --import-task-ids "import-ami-0d32a196c9257d5a7"
```

5. Observe the following conversion status response and continue to check the status until conversion is complete. The estimated time for conversion is 30 minutes.

```
{
  "ImportImageTasks": [
    {
      "Architecture": "x86_64",
      "Description": "Import vriot",
      "ImportTaskId": "import-ami-0d32a196c9257d5a7",
      "LicenseType": "BYOL",
      "Platform": "Linux",
      "Progress": "39",
      "SnapshotDetails": [
        {
          "DeviceName": "/dev/sda1",
          "DiskImageSize": 2866090496.0,
          "Format": "VMDK",
          "Status": "completed",
          "UserBucket": {
            "S3Bucket": "vriot",
            "S3Key": "dev-2.0.0.0/6aa8.dev-2.0.0.0.5036/vriot-6aa8.dev-2.0.0.0.5036.ova"
          }
        }
      ],
      "Status": "active",
      "StatusMessage": "booting",
      "Tags": []
    }
  ]
}
```

Creating a RUCKUS IoT Controller EC2 Instance

Complete the following steps to create a RUCKUS IoT Controller instance on AWS.

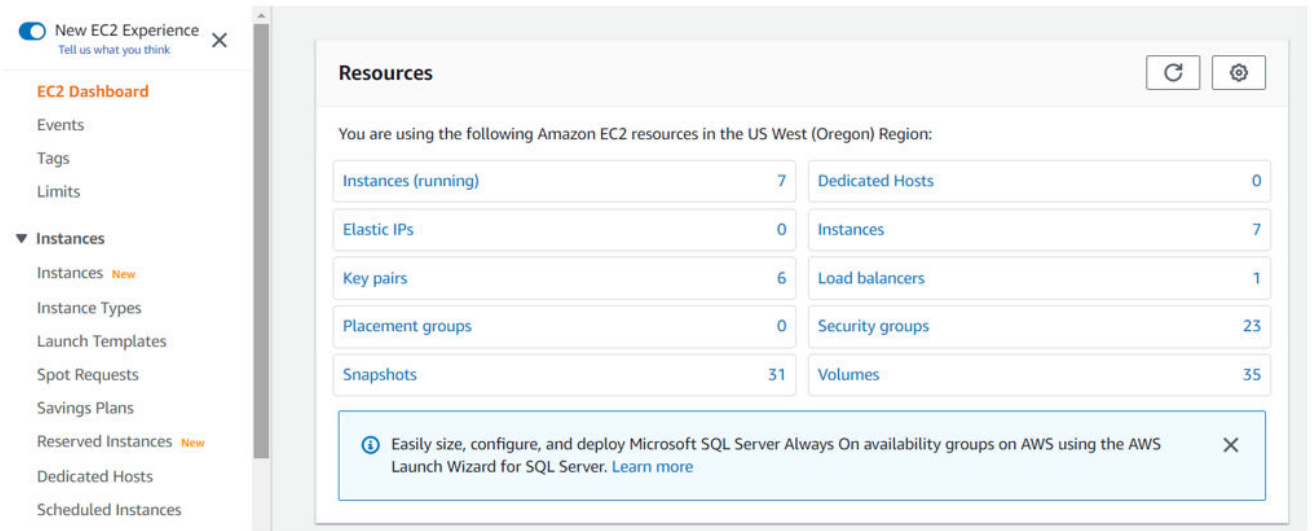
1. In the AWS Web Interface, click **Compute > EC2**.

Installing RUCKUS IoT Controller on AWS
 Creating a RUCKUS IoT Controller EC2 Instance

- Navigate to **Images > AMIs** to ensure that the imported Amazon Machine Image (AMI) exists.

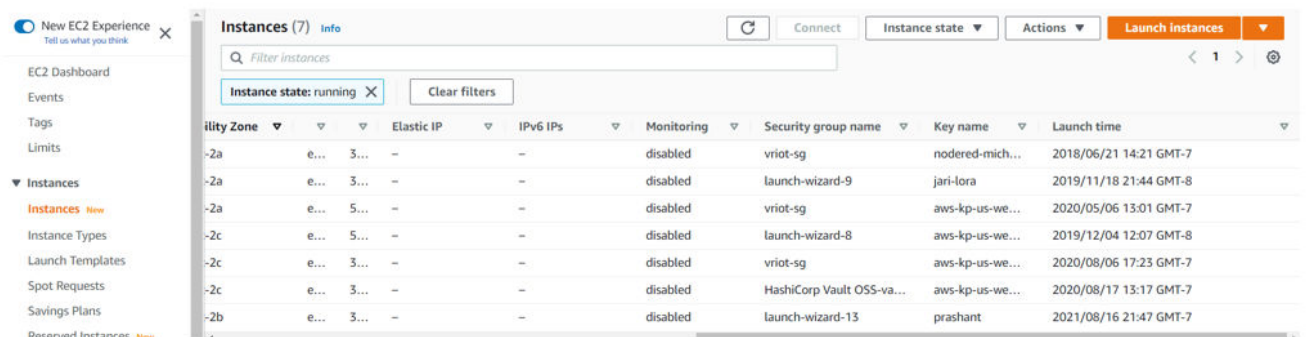
FIGURE 36 Creating an EC2 Instance

FIGURE 37 Dashboard Page



- Navigate to **Network & Security > Security Groups > Create Security Group**.
 The security group acts as a virtual firewall that controls the traffic for one or more instances.
- Define the **Setup group name, Description, Ports** and the **Firewall rule**.
 The table lists the common service ports.
- Navigate to **Instances** and click **Instances**.

FIGURE 38 Instances Page



- Select the "Key-Nmae" of the IoT instance
 The **Port Configuration** page is displayed.

FIGURE 39 Port Details

Port Configuration

The screenshot shows the AWS Management Console interface. The main area displays a list of EC2 instances. The instance **i-084ce62218ed07c70** is selected, and its details are shown in a modal window titled "Instance: i-084ce62218ed07c70".

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS	Public IPv4 address	Elastic IP
-	i-023146d5845ecaec	Running	c4.large	2/2 checks passed	No alarms	us-west-2a	ec2-34-219-187-234.us-we...	34.219.187.234	-
-	i-063bfb4105f24d3b	Running	t2.medium	2/2 checks passed	No alarms	us-west-2a	ec2-34-212-92-42.us-west...	34.212.92.42	-
-	i-0d26cf2de9e482df0	Running	t2.medium	2/2 checks passed	No alarms	us-west-2a	ec2-52-12-193-118.us-wes...	52.12.193.118	-
-	i-0a94abee4af6aa27c	Running	t2.small	2/2 checks passed	No alarms	us-west-2c	ec2-54-187-198-54.us-wes...	54.187.198.54	-
-	i-0b4b980266d721900	Running	t2.micro	2/2 checks passed	No alarms	us-west-2c	ec2-34-223-0-206.us-west...	34.223.0.206	-
-	i-0a06a73ffec37df2	Running	t2.small	2/2 checks passed	No alarms	us-west-2c	ec2-34-219-41-205.us-wes...	34.219.41.205	-
-	i-084ce62218ed07c70	Running	t2.medium	2/2 checks passed	No alarms	us-west-2b	ec2-54-189-129-64.us-wes...	54.189.129.64	-

Port	Protocol	Destination	Security groups
22	TCP	0.0.0.0/0	launch-wizard-13
5000	TCP	0.0.0.0/0	launch-wizard-13
27017	TCP	0.0.0.0/0	launch-wizard-13
8883	TCP	0.0.0.0/0	launch-wizard-13
443	TCP	0.0.0.0/0	launch-wizard-13
443	TCP	*/0	launch-wizard-13
4883	TCP	0.0.0.0/0	launch-wizard-13

Port range	Protocol	Destination	Security groups
All	All	0.0.0.0/0	launch-wizard-13
8883	TCP	0.0.0.0/0	launch-wizard-13
4883	TCP	0.0.0.0/0	launch-wizard-13

- Complete the required port details.

Upgrading the Software

- [Upgrading the AP Firmware Using SmartZone 100 or Virtual SmartZone Controller.....](#) 53
- [Upgrading the RUCKUS IoT Controller with N+1 Configuration.....](#) 57

Upgrading the AP Firmware Using SmartZone 100 or Virtual SmartZone Controller

You can upgrade the existing AP firmware using a SmartZone 100 controller or Virtual SmartZone.

Always back up the controller before attempting a software upgrade. If you are managing a multi-node cluster, back up the entire cluster, and then verify that the backup process has completed successfully. If you have an FTP server, back up the entire cluster and upload the backup files from all the nodes in a cluster to a remote FTP server.

NOTE

RUCKUS strongly recommends backing up the SmartZone 100 controller cluster before performing an upgrade. If the upgrade process fails for any reason, you can use the latest backup file to restore the controller cluster.

NOTE

Before beginning the upgrade, you must obtain a valid controller software upgrade file from RUCKUS Support or an authorized RUCKUS reseller.

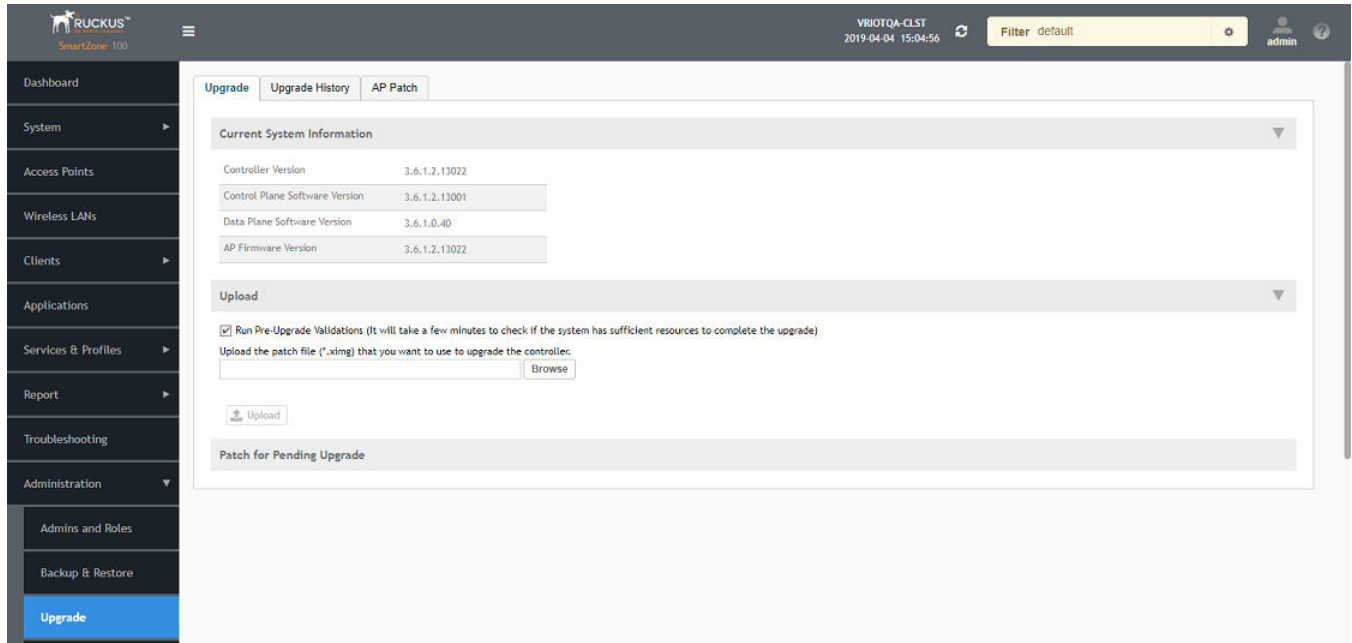
1. Copy the software upgrade file that you received from RUCKUS to the computer where you are accessing the controller web interface or to any location on the network that is accessible from the web interface.

Upgrading the Software

Upgrading the AP Firmware Using SmartZone 100 or Virtual SmartZone Controller

- From the SmartZone 100 user interface, click **Administration > Upgrade**.

FIGURE 40 SmartZone 100 User Interface



- Select the **Upgrade** tab.

Under **Current System Information**, the controller version information is displayed.

NOTE

The **Upgrade History** tab displays information about previous cluster upgrades.

- Under **Upload**, select **Run Pre-Upgrade Validations** to verify if the data migration was successful. This option allows you to verify data migration errors before performing the upgrade.

NOTE

You can still upgrade even if there are data migration errors.

- Click **Browse** to select the .ximg patch file.
- Click **Upload** to upload the controller configuration to the configuration in the patch file.

The controller uploads the file to its database, and then performs file verification. After the file is verified, the **Patch for Pending Upgrade** section is populated with information about the upgrade file. If data migration was unsuccessful, the following error is displayed:

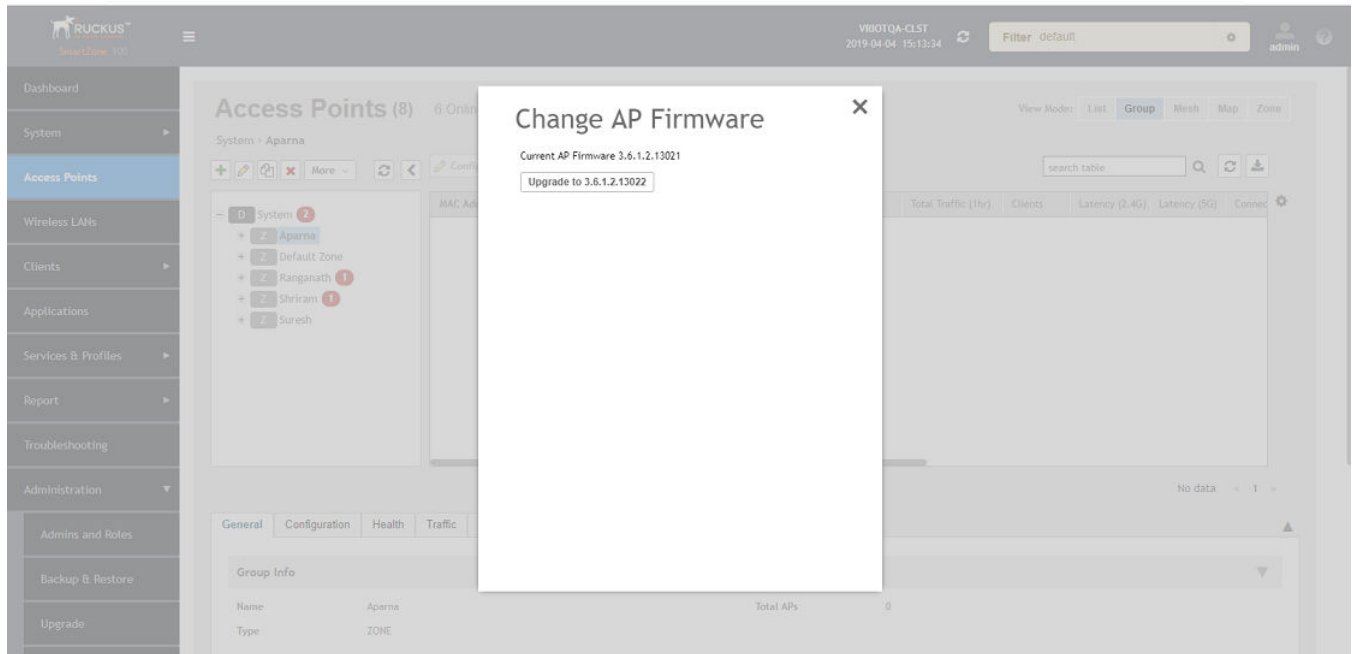
```
Exception occurred during the validation of data migration. Please apply the system configuration backup and contact system administrator.
```

- If the controller configuration upload was successful, perform one of the following steps:
 - Click **Upgrade** to start the upgrade process without backing up the current controller cluster or its system configuration.
 - Click **Backup & Upgrade** to back up the controller cluster and system configuration before performing the upgrade.

When the upgrade (or backup-and-upgrade) process is complete, the controller logs you out of the web interface automatically. When the controller login page displays again, you have completed upgrading the controller.

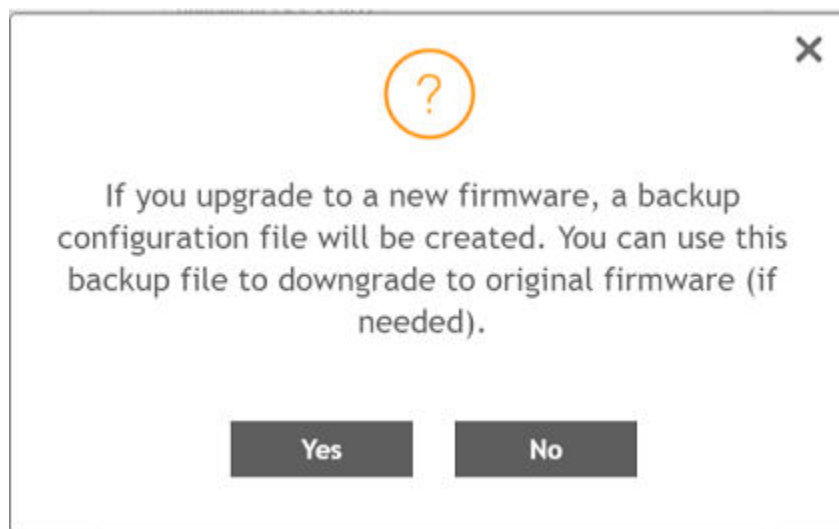
8. From the Smartzone 100 user interface, click **Access Points**.
9. Select the zone from the list, click **More**, and select **Change AP Firmware** from the list. The **Change AP Firmware** dialog box is displayed. The current AP firmware version is displayed.

FIGURE 41 Changing the AP Firmware



10. Click **Upgrade** to upgrade to the new firmware version.

FIGURE 42 Upgrading to New Firmware

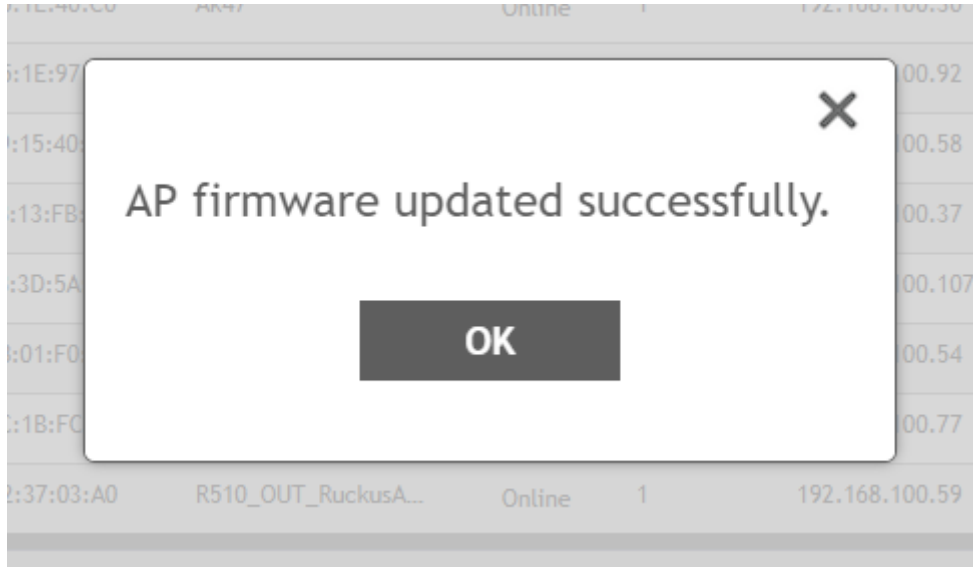


Upgrading the Software

Upgrading the AP Firmware Using SmartZone 100 or Virtual SmartZone Controller

11. Click **Yes**. A confirmation message is displayed stating that the firmware version was updated successfully.

FIGURE 43 Update Successful Confirmation Message



12. Click **OK**.
13. Open the RUCKUS IoT Controller. From the **Admin** tab, click **Versions and Patches**.

FIGURE 44 Uploading an Image



14. Click **Upload Image** and select the tar.gz image.
15. From the **Change Version to** list, select the image, and click **Set**.

The RUCKUS IoT Controller is upgraded successfully to the new build.

Upgrading the RUCKUS IoT Controller with N+1 Configuration

Complete the following steps to upgrade the primary and secondary RUCKUS IoT Controllers with the N+1 configuration.

1. Upgrade SmartZone to the supported version.

NOTE

Refer to [Upgrading the AP Firmware Using SmartZone 100 or Virtual SmartZone Controller](#) on page 53 for more information.

2. Upgrade the AP firmware using SmartZone 100 or the Virtual SmartZone Controller.

NOTE

Refer to [Upgrading the AP Firmware Using SmartZone 100 or Virtual SmartZone Controller](#) on page 53 for more information.

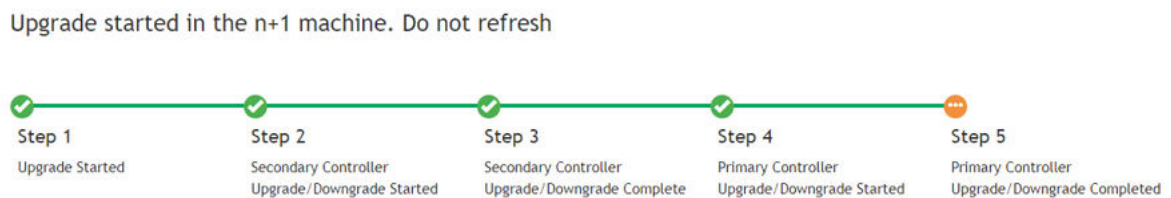
3. Ensure that the primary controller is active, and the secondary is running.
4. Upload the image file from the primary controller (the same as the normal controller). The image file is automatically copied to the secondary controller.
5. Select the version number, and click the **Set** button.

NOTE

Refer to [#unique_29](#) for more information.

The RUCKUS IoT Controller is re-directed to status page, as shown in the following figure.

FIGURE 45 Displaying the Upgrade Process in N+1 Configuration



After the secondary controller completes the upgrade, the secondary controller reboots. After step 5, the GUI is redirected to the login page of the secondary controller. (The primary controller fails over to the secondary controller.)

6. After a couple of minutes, the primary controller is upgraded and rebooted.

NOTE

If there are no changes to the version list, refer [#unique_29](#) for more information.

7. Wait for the primary controller to become active or perform a manual fallback to the primary controller.
8. Upload the licenses to the controllers.

Refer to [Activating a License](#) on page 63 for more information.

Refer to "Configuring the N+1 Feature" in the RUCKUS IoT Controller Configuration Guide.

Hot Upgrade of IoT Gateway

The "hot upgrade" of the IoT Gateway supports the offline upgrade of an AP IoT bundle from the IoT Controller. If the controller is running a current IoT image, the system makes sure the IoT version of the APs is upgraded or downgraded to match the current system image. If there is any IoT version mismatch between the AP and the controller, a warning message is displayed on IoT AP page.

You can observe the offline upgrade of an AP in the following manner.

1. From the main menu, click **IoT APs**.
The **IoT Access Points** page is displayed.
2. Select an IoT AP.

NOTE

If there is any IoT version mismatch between the AP and the controller, the following warning message is displayed: "Gateway IoT firmware mismatch".

FIGURE 46 Viewing IoT APs

The screenshot displays the 'IoT Access Points' management interface. On the left, there is a sidebar with a tree view showing folders like '[slamese]', '[QA-Clust-RS-2]', and '[CLST-5-2]'. The main area is divided into two sections: 'Pre-Approve IoT APs' and a detailed view of a selected AP.

<input type="checkbox"/>	Name	MAC ID	IP Address	Protocols	Up
<input type="checkbox"/>	R610@deSkj[121]	B4:79:C8:D4:E6:F0	10.74.136.230	BLE	34 days
<input type="checkbox"/>	H510-desk-15	D8:38:FC:25:C4:C0	10.74.136.16	ZIGBEE	34 days
<input type="checkbox"/>	20:58:69:11:09:10	20:58:69:11:09:10	Unavailable	NA	
<input type="checkbox"/>	B4:79:C8:3E:72:00	B4:79:C8:3E:72:00	Unavailable	NA	
<input type="checkbox"/>	T310-Shriram	18:4B:0D:22:A1:90	172.29.124.52	BLE	31 days
<input type="checkbox"/>	0C:F4:D5:1E:40:C0	0C:F4:D5:1E:40:C0	Unavailable	NA	
<input type="checkbox"/>	B4:79:C8:01:F0:30	B4:79:C8:01:F0:30	Unavailable	NA	
<input type="checkbox"/>	C8:08:73:26:AA:D0	C8:08:73:26:AA:D0	Unavailable	NA	
<input type="checkbox"/>	EC:8C:A2:37:03:A0	EC:8C:A2:37:03:A0	Unavailable	NA	
<input type="checkbox"/>	B4:79:C8:3E:75:40	B4:79:C8:3E:75:40	Unavailable	NA	

The detailed view on the right shows the selected AP '20:58:69:11:09:10' with a red 'Offline' status. A red warning banner reads 'Gateway IoT firmware mismatch'. Below this, the 'Radio Info' section shows 'IoT Radio Not Detected'.

- From the main menu, click **Events** to learn more about the warning message.

FIGURE 47 Displaying Events

Time	AP MAC	ID	Event	Message
2020-04-14 00:29:37.814848	20:58:69:38:B7:10	2	vSZ Link Status	Reboot of AP
2020-04-13 10:46:40.192613	B4:79:C8:04:E6:F0	6	Upgrade	Controller version 1.5.0.1.20 supports AP iot firmware version 1.5.0.1.15026, Gateway B4:79:C8:04:E6:F0 is in iot firmware version 1.4.0.0.1412 - Send upgrade.
2020-04-13 10:30:33.739043	0C:F4:D5:1E:97:D0	6	Upgrade	Controller version 1.5.0.1.20 supports AP iot firmware version 1.5.0.1.15026, Gateway 0C:F4:D5:1E:97:D0 is in iot firmware version 1.5.1.0.15026 - Upgrade controller or Downgrade Gateway
2020-04-13 10:25:32.938952	0C:F4:D5:1E:97:D0	6	Upgrade	Controller version 1.5.0.1.20 supports AP iot firmware version 1.5.0.1.15026, Gateway 0C:F4:D5:1E:97:D0 is in iot firmware version 1.5.1.0.15026 - Upgrade controller or Downgrade Gateway
2020-04-13 10:25:32.886309	0C:F4:D5:1E:97:D0	6	Upgrade	Controller version 1.5.0.1.20 supports AP iot firmware version 1.5.0.1.15026, Gateway 0C:F4:D5:1E:97:D0 is in iot firmware version 1.5.1.0.15026 - Upgrade controller or Downgrade Gateway
2020-04-13 10:25:32.811405	0C:F4:D5:1E:97:D0	6	Upgrade	Controller version 1.5.0.1.20 supports AP iot firmware version 1.5.0.1.15026, Gateway 0C:F4:D5:1E:97:D0 is in iot firmware version 1.5.1.0.15026 - Upgrade controller or Downgrade Gateway
2020-04-13 10:25:32.287729	0C:F4:D5:1E:97:D0	6	Upgrade	Controller version 1.5.0.1.20 supports AP iot firmware version 1.5.0.1.15026, Gateway 0C:F4:D5:1E:97:D0 is in iot firmware version 1.5.1.0.15026 - Upgrade controller or Downgrade Gateway
2020-04-13 10:24:25.458678	20:58:69:38:B7:10	5	Radio Message Delivery Failed	7C:B0:3E:AA:00:A4:5C:39 is not responding for command 'Move to Hue(direction 2,3)'
2020-04-13 10:24:24.949327	20:58:69:38:B7:10	5	Radio Message Delivery Failed	7C:B0:3E:AA:00:A4:5C:39 is not responding for command 'Move to Hue(direction 2,3)'
2020-04-13 10:24:24.510535	20:58:69:38:B7:10	5	Radio Message Delivery Failed	7C:B0:3E:AA:00:A4:5C:39 is not responding for command 'Move to Hue(direction 2,3)'
2020-04-13 10:24:23.961998	20:58:69:38:B7:10	5	Radio Message Delivery Failed	7C:B0:3E:AA:00:A4:5C:39 is not responding for command 'Move to Hue(direction 2,3)'
2020-04-13 10:24:23.461032	20:58:69:38:B7:10	5	Radio Message Delivery Failed	7C:B0:3E:AA:00:A4:5C:39 is not responding for command 'Move to Hue(direction 2,3)'
2020-04-13 10:24:22.948703	20:58:69:38:B7:10	5	Radio Message Delivery Failed	7C:B0:3E:AA:00:A4:5C:39 is not responding for command 'Move to Hue(direction 2,3)'

Deploying the APs

- [Connecting a Set of IoT APs Using a Grouping Method.....61](#)

Connecting a Set of IoT APs Using a Grouping Method

There are two methods to determine which set of IoT APs to connect with the IoT Controller:

- Isolate the IoT APs and non-IoT APs at Layer 2 (VLAN) or Layer 3 (IP) subnets. In this case, DHCP option 43 suboption 21 can be configured for networks with APs meant to connect with a particular IoT Controller. The syntax of suboption 21 is the same as suboption 6 for the Wi-Fi Controller.
- If network topology cannot be used for grouping, e.g., as a result of customer's network topology policies, the second method to use is static configuration method:

NOTE

Running **set-iotg-mqtt-broker ip** cli script is not recommended for the AP's already connected to the IoT controller.

- Disable IoT processes on all APs.
- Enable IoT processes only on IoT-enabled APs.
- Set the IoT Controller IP address on the IoT-enabled APs.

The static configuration method can be accomplished using a vSZ AP CLI script. For example, in vSZ, you create a zone for the group of IoT-enabled APs that you want to connect to a particular IoT Controller. You then apply the vSZ AP CLI script to the zone that enables IoT (**set iotg-enable 1**) and set the IoT Controller IP address with the **set iotg-mqtt-brokerip ip-address** command.

Managing a License

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Activating a License

RUCKUS IoT Controller is a licensed product. The license model used is subscription based. After purchasing RUCKUS IoT Controller, a trial license which is valid for 90 days is provided with it. You must purchase a subscription license based on your requirement before the expiry of trial license. After purchasing RUCKUS IoT Controller, an email message is sent to you containing an activation code. Clicking the activation code directs you to the RUCKUS Support website. After the code is validated and attached to a device (the IoT Controller serial number), the license can be downloaded from the website.

NOTE

For more information on licensing, refer *Software Licensing Guide, 2.0.0.0*

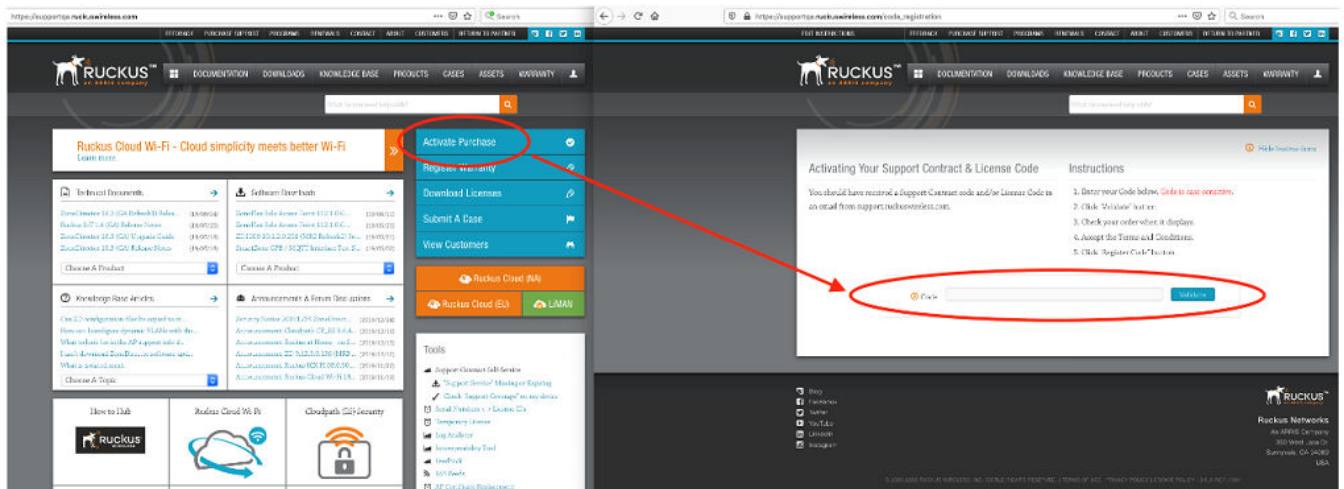
Complete the following steps to activate the license.

NOTE

In an N+1 setup, ensure that individual licenses are installed on both the primary and the secondary controller, respectively.

1. Click the activation code in the activation email message. You are redirected to the RUCKUS Support website (support.ruckuswireless.com). Log in to the website using your credentials.
2. Click **Activate Purchase**. The **Activating Your Support Contact & License Code** page is displayed. In the **Code** field, enter your activation code, and click **Validate**.

FIGURE 48 Validating the License Code

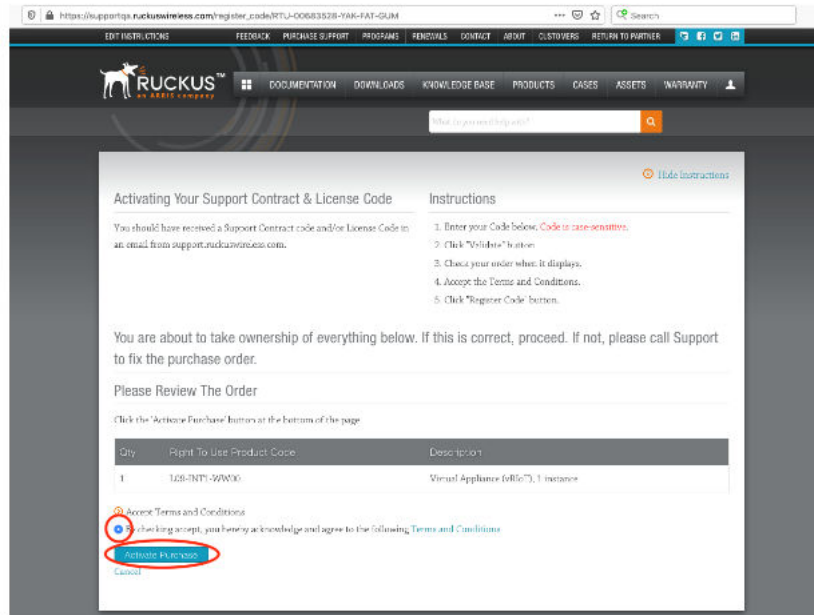


Managing a License

Activating a License

3. After the successful validation of the license code, accept the Terms and Conditions, and click **Activate Purchase**.

FIGURE 49 Activating Your Support Contract and License Code



4. Obtain the RUCKUS IoT Controller serial number in in one of two ways:
 - Obtain the RUCKUS IoT Controller serial number using the RUCKUS IoT Controller console.
 - a. Log in to the console of RUCKUS IoT Controller.
 - b. In the RUCKUS IoT Controller Main Menu, enter **2** in the **Enter Choice** field to get the system details.

FIGURE 50 RUCKUS IoT Controller Main Menu

```
*****
                        Ruckus IoT Controller
                        Main Menu
*****

1 - Ethernet Network
2 - System Details
3 - NTP Setting
4 - System Operation
5 - N+1
6 - Comm Debugger
x - Log Off

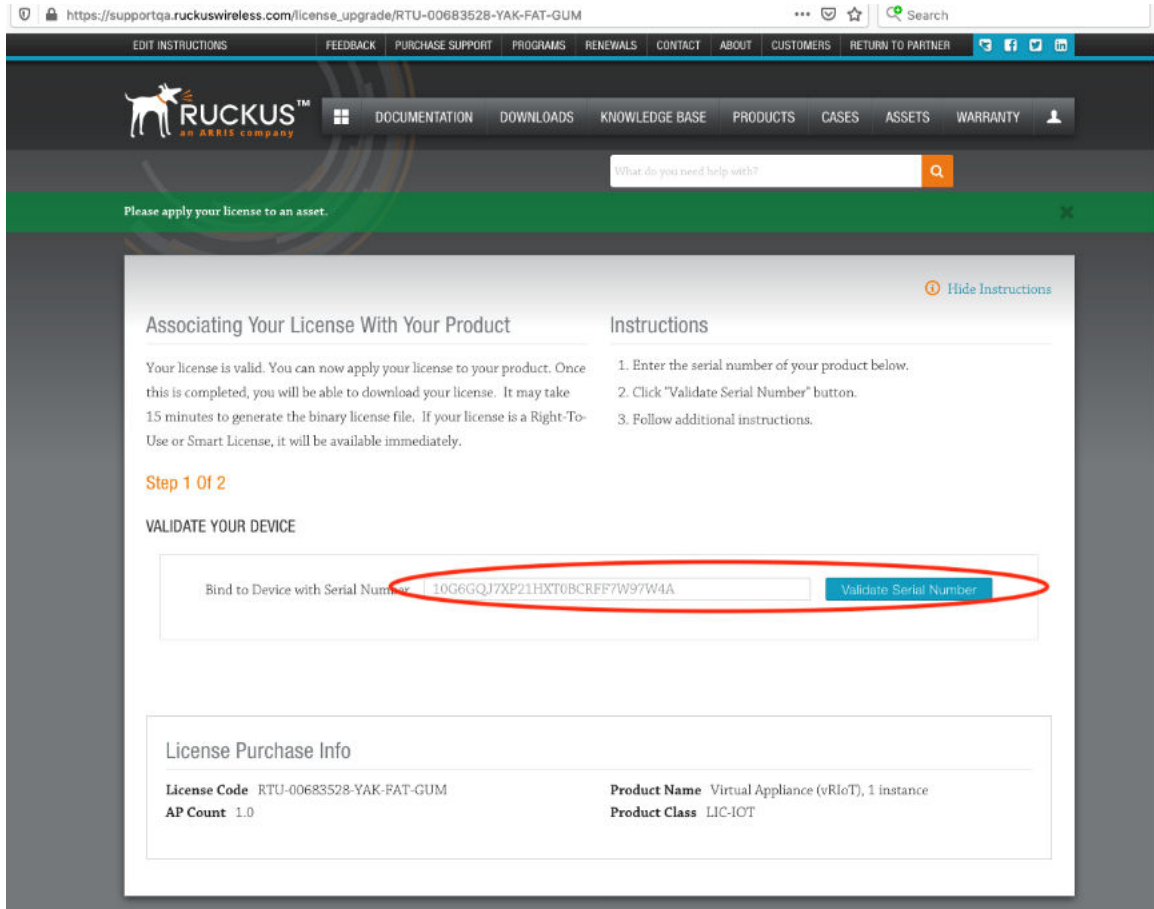
Enter Choice: 2

-----
System Details :
-----
Date & Time       :      Fri Jan 17 17:43:52 PST 2020
Serial            :      103VKDUDSV3PD0UGT1C1LE6KXXK2A
Version          :      1.5.0.0.17
-----
```

- To obtain the RUCKUS IoT Controller serial number using the RUCKUS IoT Controller user interface, refer to "Uploading the RUCKUS IoT Controller License" in the RUCKUS IoT Controller Configuration Guide.

5. On the **Associating Your License With Your Product** page, enter the RUCKUS IoT Controller serial number, and click **Validate Serial Number** to activate the license.

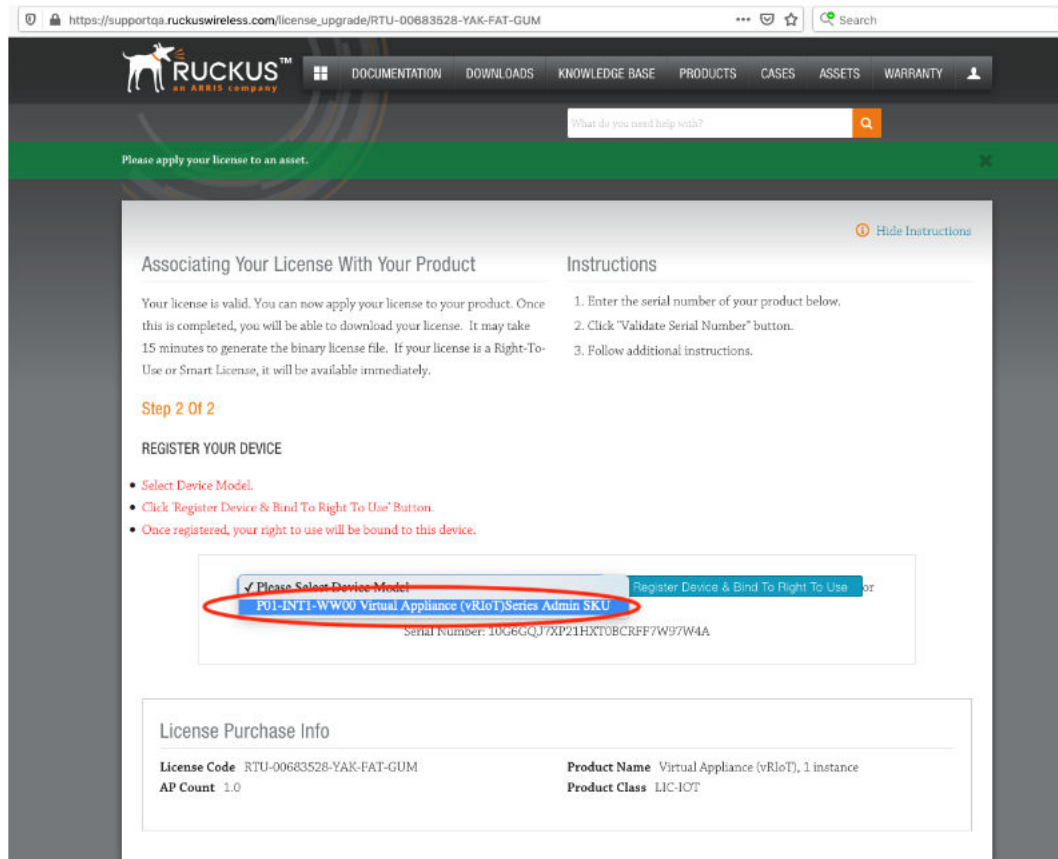
FIGURE 51 Associating the License with the Product



After successful validation, the registration page is displayed.

6. Select the P01-INT1-WW00 device model number and click **Register Device & Bind To Right To Use**.

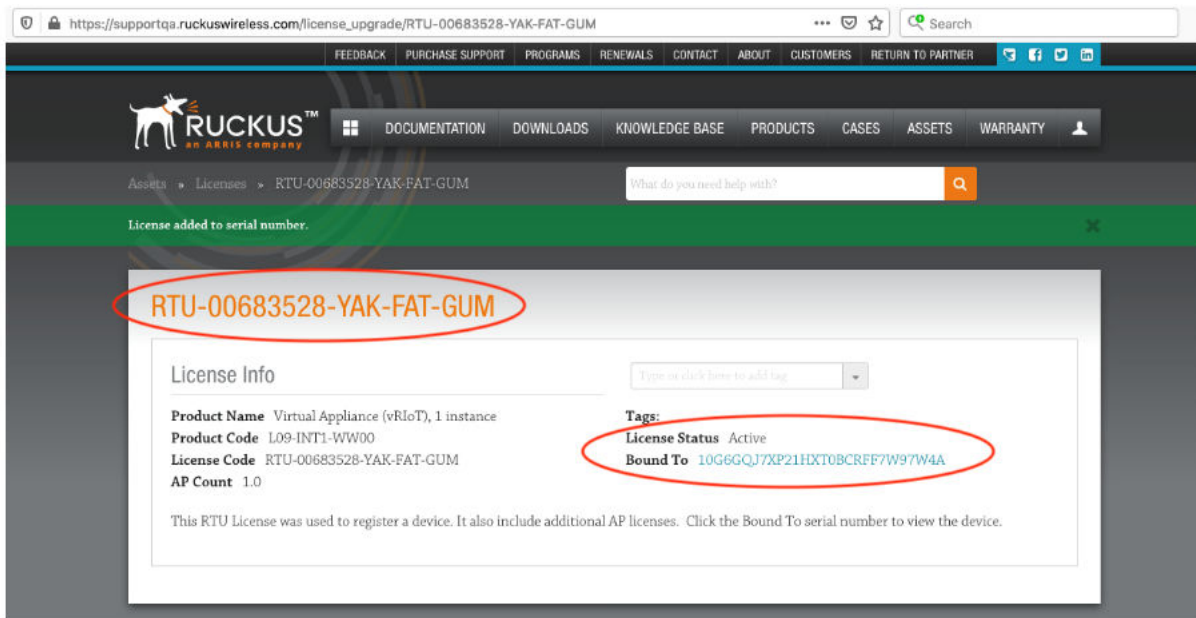
FIGURE 52 Registering the Device



Managing a License Activating a License

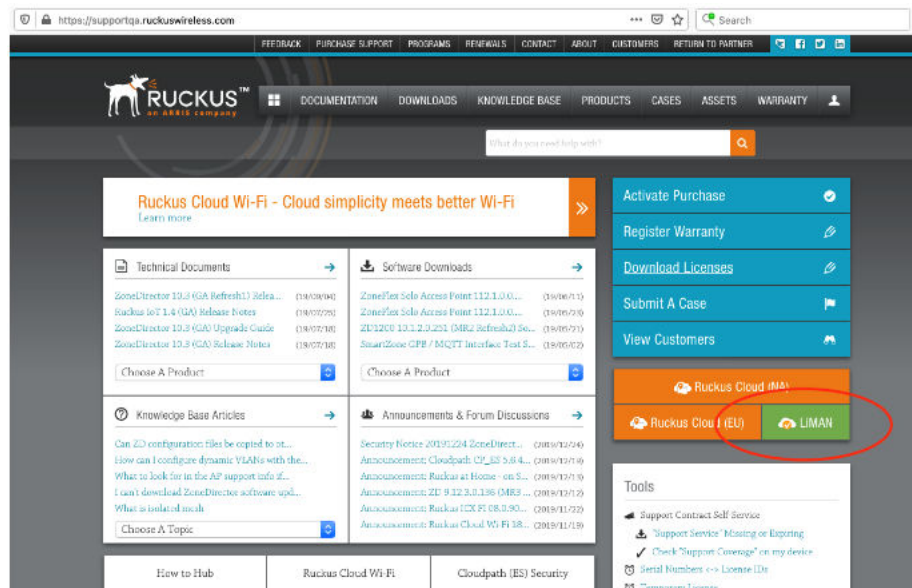
Your license information is displayed.

FIGURE 53 License Information



- Return to the RUCKUS Support website (support.ruckuswireless.com), and click **LiMAN**.

FIGURE 54 Accessing Smart License Manager (LiMAN)



8. In the **Smart License Manager (LiMAN)** page, enter the serial number of the controller, and click the **Download Licenses** button.

NOTE

The license must be uploaded to the controller.

FIGURE 55 Downloading the License

