

Oracle® SD-WAN Aware Installation and Upgrade Guide



Release 8.2
F26230-01
November 2019



Oracle SD-WAN Aware Installation and Upgrade Guide, Release 8.2

F26230-01

Copyright © 2018, 2019, Oracle and/or its affiliates. All rights reserved.

This software and related documentation are provided under a license agreement containing restrictions on use and disclosure and are protected by intellectual property laws. Except as expressly permitted in your license agreement or allowed by law, you may not use, copy, reproduce, translate, broadcast, modify, license, transmit, distribute, exhibit, perform, publish, or display any part, in any form, or by any means. Reverse engineering, disassembly, or decompilation of this software, unless required by law for interoperability, is prohibited.

The information contained herein is subject to change without notice and is not warranted to be error-free. If you find any errors, please report them to us in writing.

If this is software or related documentation that is delivered to the U.S. Government or anyone licensing it on behalf of the U.S. Government, then the following notice is applicable:

U.S. GOVERNMENT END USERS: Oracle programs, including any operating system, integrated software, any programs installed on the hardware, and/or documentation, delivered to U.S. Government end users are "commercial computer software" pursuant to the applicable Federal Acquisition Regulation and agency-specific supplemental regulations. As such, use, duplication, disclosure, modification, and adaptation of the programs, including any operating system, integrated software, any programs installed on the hardware, and/or documentation, shall be subject to license terms and license restrictions applicable to the programs. No other rights are granted to the U.S. Government.

This software or hardware is developed for general use in a variety of information management applications. It is not developed or intended for use in any inherently dangerous applications, including applications that may create a risk of personal injury. If you use this software or hardware in dangerous applications, then you shall be responsible to take all appropriate fail-safe, backup, redundancy, and other measures to ensure its safe use. Oracle Corporation and its affiliates disclaim any liability for any damages caused by use of this software or hardware in dangerous applications.

Oracle and Java are registered trademarks of Oracle and/or its affiliates. Other names may be trademarks of their respective owners.

Intel and Intel Xeon are trademarks or registered trademarks of Intel Corporation. All SPARC trademarks are used under license and are trademarks or registered trademarks of SPARC International, Inc. AMD, Opteron, the AMD logo, and the AMD Opteron logo are trademarks or registered trademarks of Advanced Micro Devices. UNIX is a registered trademark of The Open Group.

This software or hardware and documentation may provide access to or information about content, products, and services from third parties. Oracle Corporation and its affiliates are not responsible for and expressly disclaim all warranties of any kind with respect to third-party content, products, and services unless otherwise set forth in an applicable agreement between you and Oracle. Oracle Corporation and its affiliates will not be responsible for any loss, costs, or damages incurred due to your access to or use of third-party content, products, or services, except as set forth in an applicable agreement between you and Oracle.

This documentation is in preproduction status and is intended for demonstration and preliminary use only. It may not be specific to the hardware on which you are using the software. Oracle Corporation and its affiliates are not responsible for and expressly disclaim all warranties of any kind with respect to this documentation and will not be responsible for any loss, costs, or damages incurred due to the use of this documentation.

The information contained in this document is for informational sharing purposes only and should be considered in your capacity as a customer advisory board member or pursuant to your beta trial agreement only. It is not a commitment to deliver any material, code, or functionality, and should not be relied upon in making purchasing decisions. The development, release, and timing of any features or functionality described in this document remains at the sole discretion of Oracle.

This document in any form, software or printed matter, contains proprietary information that is the exclusive property of Oracle. Your access to and use of this confidential material is subject to the terms and conditions of your Oracle Master Agreement, Oracle License and Services Agreement, Oracle PartnerNetwork Agreement, Oracle distribution agreement, or other license agreement which has been executed by you and Oracle and with which you agree to comply. This document and information contained herein may not be disclosed, copied, reproduced, or distributed to anyone outside Oracle without prior written consent of Oracle. This document is not part of your license agreement nor can it be incorporated into any contractual agreement with Oracle or its subsidiaries or affiliates.

Contents

About This Guide

Audience	vii
Documentation Set	vii
My Oracle Support	vii

Revision History

1 Oracle SD-WAN Aware Installation Requirements

2 Install Oracle SD-WAN Aware On A New VM Using VMware

Upgrading an Oracle SD-WAN Aware VM	2-11
Increase Storage On Existing Oracle SD-WAN Aware VMs	2-16
Aware Database Backup and Restore	2-16
Upgrade Aware Using a New VM moving from OS 5.01 to OS 7.0	2-18
Upgrade Aware Using a New VM moving from OS 4.x to OS 7.x	2-19

3 Oracle SD-WAN Aware on Amazon Web Services

4 Aware Network Traffic

List of Figures

2-1	Deploy OVF Template	2-1
2-2	Name the VM	2-2
2-3	Edit VM Settings	2-2
2-4	Adjust Memory Size	2-3
2-5	Add Hard Disk	2-3
2-6	Adjust Disk Size	2-4
2-7	Specify Datastore	2-4
2-8	Choose Datastore	2-5
2-9	VM Reconfiguration Progress	2-5
2-10	Open vSphere Client Console	2-6
2-11	Login to Oracle SD-WAN Aware	2-7
2-12	Click on the Storage tile	2-8
2-13	Switch the Storage Partition	2-8
2-14	Delete All Existing Files Warning Dialog	2-8
2-15	Switch Active Storage System Warning Dialog	2-9
2-16	Put Aware in Maintenance Mode	2-9
2-17	Change Management IP and DNS Settings	2-9
2-18	Choose APN Aware Certificates	2-10
2-19	Open Aware SSL Certificate from the NCN	2-10
2-20	Enter the NCN Management IP Address	2-11
2-21	Choose the Devices to Poll	2-11
2-22	APN Aware Login Screen	2-12
2-23	Manage APN Aware Settings	2-12
2-24	Select Software Update File	2-13
2-25	Use Existing Virtual Disk	2-14
2-26	Choose Existing Oracle SD-WAN Aware VM	2-14
2-27	Wait for Reconfiguration to Complete	2-15
2-28	Power Down the Existing VM	2-15
2-29	Power On Upgraded VM	2-15
2-30	Oracle SD-WAN Aware Storage Systems	2-16
3-1	Create a VPC	3-1
3-2	Enter a Name and CIDR block	3-2
3-3	Create Internet Gateway	3-2
3-4	Name Internet Gateway	3-2
3-5	Attach Internet Gateway to VPC	3-3

3-6	Choose VPC to Attach to Internet Gateway	3-3
3-7	Create Subnet	3-3
3-8	Insert Name, Choose VPC, and Enter CIDR block	3-4
3-9	Create Route Table	3-4
3-10	Enter Name and Choose VPC for Route Table	3-4
3-11	Associate Route Table with Subnet	3-5
3-12	Add Routes	3-5
3-13	Launch Instance	3-6
3-14	Configure Instance Details	3-7
3-15	Create Instance on VPC	3-7
3-16	Add Storage to Instance	3-8
3-17	Tag the Instance	3-8
3-18	Configure Security Groups	3-9
3-19	Review Instance Before Launch	3-10
3-20	Choose or Create a Key Pair	3-10
3-21	Launch New Cloud Oracle SD-WAN Aware Instance	3-11

List of Tables

1-1	WAN Scale Database Sizing Parameters	1-2
1-2	Amazon Web Services Requirements	1-3
1-3	Network Bandwidth Requirements	1-4

About This Guide

The purpose of this document is to provide the reader with an understanding of how to install Oracle SD-WAN Aware on VMware vSphere or in the Amazon Web Services (AWS) Cloud. It covers requirements for installing the Aware VM server and instructions on how to deploy the Aware application.

The information provided in this document is current as of Aware 3.1 GA.

Audience

This document was designed for network administrators.

Documentation Set

The following table lists related documentation.

Document Name	Document Description
Oracle SD-WAN Aware Installation and Upgrade Guide	Contains information about installing and configuring Oracle SD-WAN Aware.
Oracle SD-WAN Aware Release Notes	Contains information about added features, resolved issues, requirements for use, and known issues in the latest Oracle SD-WAN Aware release.
Oracle SD-WAN Security Guide	Contains information about security methods within the Oracle SD-WAN solution.
Oracle SD-WAN Aware Features Guide	Collects feature descriptions and procedures for all incremental releases of this product. This guide is organized by release version.

My Oracle Support

My Oracle Support (<https://support.oracle.com>) is your initial point of contact for all product support and training needs. A representative at Customer Access Support (CAS) can assist you with My Oracle Support registration.

Call the CAS main number at 1-800-223-1711 (toll-free in the US), or call the Oracle Support hotline for your local country from the list at <http://www.oracle.com/us/support/contact/index.html>. When calling, make the selections in the sequence shown below on the Support telephone menu:

1. Select 2 for New Service Request.
2. Select 3 for Hardware, Networking, and Solaris Operating System Support.
3. Select one of the following options:
 - For technical issues such as creating a new Service Request (SR), select 1.

- For non-technical issues such as registration or assistance with My Oracle Support, select 2.

You are connected to a live agent who can assist you with My Oracle Support registration and opening a support ticket.

My Oracle Support is available 24 hours a day, 7 days a week, 365 days a year.

Emergency Response

In the event of a critical service situation, emergency response is offered by the Customer Access Support (CAS) main number at 1-800-223-1711 (toll-free in the US), or call the Oracle Support hotline for your local country from the list at <http://www.oracle.com/us/support/contact/index.html>. The emergency response provides immediate coverage, automatic escalation, and other features to ensure that the critical situation is resolved as rapidly as possible.

A critical situation is defined as a problem with the installed equipment that severely affects service, traffic, or maintenance capabilities, and requires immediate corrective action. Critical situations affect service and/or system operation resulting in one or several of these situations:

- A total system failure that results in loss of all transaction processing capability
- Significant reduction in system capacity or traffic handling capability
- Loss of the system's ability to perform automatic system reconfiguration
- Inability to restart a processor or the system
- Corruption of system databases that requires service affecting corrective actions
- Loss of access for maintenance or recovery operations
- Loss of the system ability to provide any required critical or major trouble notification

Any other problem severely affecting service, capacity/traffic, billing, and maintenance capabilities may be defined as critical by prior discussion and agreement with Oracle.

Locate Product Documentation on the Oracle Help Center Site

Oracle Communications customer documentation is available on the web at the Oracle Help Center (OHC) site, <http://docs.oracle.com>. You do not have to register to access these documents. Viewing these files requires Adobe Acrobat Reader, which can be downloaded at <http://www.adobe.com>.

1. Access the Oracle Help Center site at <http://docs.oracle.com>.
2. Click **Industries**.
3. Click the **Oracle Communications** link.
Under the **SD-WAN** header, select a product.
4. Select the Release Number.
A list of the entire documentation set for the selected product and release appears.
5. To download a file to your location, right-click the **PDF** link, select **Save target as** (or similar command based on your browser), and save to a local folder.

Revision History

This section provides a revision history for this document.

Date	Description
September 2019	• Initial Release

1

Oracle SD-WAN Aware Installation Requirements

Virtual Machine Requirements

1. Processor

- 4 Core, 3 GHz (or equivalent) or better for the server managing up to 64 Sites
- 8 Core, 3 GHz (or equivalent) or better for the server managing up to 128 Sites
- 16 Core, 3 GHz (or equivalent) or better for the server managing up to 256 Sites
- 16 Core, 3 GHz (or equivalent) or better for the server managing up to 550 Sites

2. Memory

- A minimum of 8GB of RAM is recommended for the VM managing up to 64 Sites
- A minimum of 16GB of RAM is recommended for the VM managing up to 128 Sites
- A minimum of 32GB of RAM is recommended for the VM managing up to 256 Sites
- A minimum of 32GB of RAM is recommended for the VM managing up to 550 Sites

3. Operating System

- VMware Hypervisor ESXi 5.1.0 or higher
- An environment running Microsoft Windows to perform the Oracle SD-WAN Aware installation

4. Disk Space

Note:

Oracle SD-WAN Aware only supports locally-attached storage due to application performance requirements.

The Oracle SD-WAN Aware VM image itself is about 500 MB. When you install the image, it creates a default 8 GB disk containing the Oracle SD-WAN Aware program, supporting operating system files, Maps, Configurations, Views, and default data storage for polled data. You will need to migrate from the default data disk to a disk that is sized per your Oracle SD-WAN Aware deployment.

Note:

Disk space requirements are highly dependent on the number of Sites, WAN links, and Network Services configured in your WAN. The table below provides guidelines for storage required based on the scale of your WAN.

Table 1-1 WAN Scale Database Sizing Parameters

WAN Scale			Storage Size for up to One Year of Data
Max # of Client Sites	Average # of WAN Links per Site	Average # of Network Services per Site ¹	
32	2	4	1.2 TB
32	4	8	1.8 TB
32	8	16	5.3 TB
64	2	4	1.5 TB
64	4	8	2.6 TB
64	8	16	9.6 TB
96	2	4	1.8 TB
96	4	8	3.3 TB
96	8	16	14.0 TB
128	2	4	2.0 TB
128	4	8	4.1 TB
128	8	16	18.0 TB
192	2	4	2.6 TB
192	4	8	5.6 TB
192	8	16	27.0 TB
256	2	4	3.0 TB
256	4	8	7.2 TB
256	8	16	35.0 TB
550	2	4	6.0 TB
550	4	8	14.4 TB
550	8	16	70 TB

¹ Static Conduit Service, Dynamic Conduit Service, Intranet Service, Internet Service

The database size also considers the space required for database migration during software updates. Database configuration options within Oracle SD-WAN Aware allow for older data to be automatically deleted. The numbers below scale by the number of months that data is stored. For example, storing six months of data requires half the space identified in the table above for storing one year of data.

 **Note:**

Due to the write-heavy nature of time-series data and the database, it is recommended that you do not use RAID-5 with Oracle SD-WAN Aware. RAID-1 or RAID-1+0 are recommended if you plan to implement a RAID. In addition, Logical Volume Manager (LVM) adds a small but appreciable amount of overhead, so using LVM is not recommended.

Amazon Web Services Requirements

- A 64-bit Oracle SD-WAN Aware Amazon Machine Image (AMI)
- An Amazon Virtual Machine and EC2 Instance that meets the following requirements based on the scale of the WAN to be managed by Cloud Aware:

Table 1-2 Amazon Web Services Requirements

WAN Scale			Amazon EC2 Instance		
Max # of Client Sites	Average # of WAN Links per Site	Average # of Network Services ¹ per Site	Instance Type	Storage Volume Type	Storage Size for up to One Year of Data
64	2	4	m4.xlarge	General Purpose	1.5 TB
64	4	8	m4.xlarge	General Purpose	2.6 TB
64	8	16	m4.xlarge	General Purpose	9.6 TB
128	2	4	m4.2xlarge	General Purpose	2.0 TB
128	4	8	m4.2xlarge	General Purpose	4.1 TB
128	8	16	m4.2xlarge	General Purpose	18.0 TB
256	2	4	m4.4xlarge	General Purpose	3.0 TB
256	4	8	m4.4xlarge	General Purpose	7.2 TB
256	8	16	m4.4xlarge	General Purpose	35.0 TB
550	2	4	m4.4xlarge	General Purpose	6.0 TB
550	4	8	m4.4xlarge	General Purpose	14.4 TB
550	8	16	m4.4xlarge	General Purpose	70 TB

¹ Static Conduit Service, Dynamic Conduit Service, Intranet Service, Internet Service

Network Bandwidth Requirements

The Oracle SD-WAN Aware VM requires network bandwidth for polling appliances. The table below shows the total network overhead for polling variable sized networks with a five-minute polling interval and the configured Bandwidth Limit rate that is required to poll the data within five minutes. The Bandwidth Limit rate is controlled by the Oracle SD-WAN Aware VM and is configured from the **Manage** tab and the **APN Discovery** tile if the default value is not sufficient.

Note:

Network Bandwidth requirements are highly dependent on the number of Sites, WAN links, and Network Services configured in your WAN. A typical deployment can use the default value, which limits the total Oracle SD-WAN Aware network bandwidth to 1000kbps. Configure your Oracle SD-WAN Aware network use based on the scale of your network.

Table 1-3 Network Bandwidth Requirements

Max # of Client Sites	WAN Scale		Data Collected per 5-minute Poll	Bandwidth Rate to Configure per 5-minute Poll (Kbps)
	Average # of WAN Links per Site	Average # of Network Services ¹ per Site		
32	2	4	1.2 MB	Default 1000
32	4	8	3.6 MB	Default 1000
32	8	16	20.0 MB	Default 1000
64	2	4	2.3 MB	Default 1000
64	4	8	7.2 MB	Default 1000
64	8	16	40.0 MB	2000
96	2	4	3.5 MB	Default 1000
96	4	8	10.8 MB	Default 1000
96	8	16	60.0 MB	3000
128	2	4	4.6 MB	Default 1000
128	4	8	14.4 MB	Default 1000
128	8	16	80.0 MB	4000
192	2	4	6.9 MB	Default 1000
192	4	8	21.6 MB	2000
192	8	16	120.0 MB	6000
256	2	4	9.2 MB	Default 1000
256	4	8	28.8 MB	2000
256	8	16	160 MB	10000
550	2	4	18.4 MB	Default 1000
550	4	8	57.6 MB	2000
550	8	16	320 MB	10000

¹ Static Conduit Service, Dynamic Conduit Service, Intranet Service, Internet Service

2

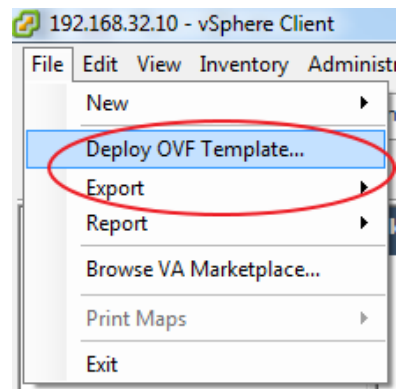
Install Oracle SD-WAN Aware On A New VM Using VMware

Before attempting this procedure, make sure your server meets the minimum requirements. The following procedure must be performed from a Microsoft Windows environment.

Import the ISO into vSphere Client

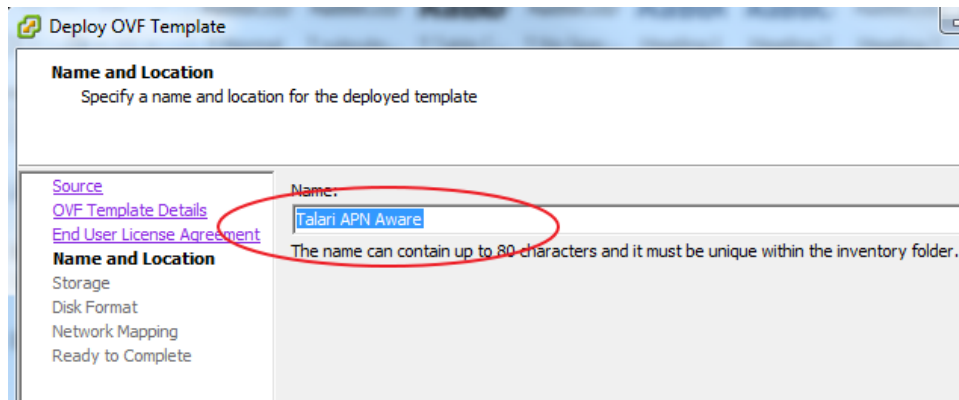
1. Download the release you plan to upgrade to.
2. Download the **Aware VM Image** (full VM Install) to download the software update file (e.g., **Aware_OS_R8_2_0_0_0_GA_09192019_Aware_R8_2_0_0_0_GA_09192019_nmsv1_aware_vmware.ova**).
3. Start and log in to the vSphere Client program.
4. When the start screen of the vSphere Client opens, click on **File**, then **Deploy OVF Template...**

Figure 2-1 Deploy OVF Template



5. Browse to the location of the Oracle SD-WAN Aware VM Image (.ova package) that was downloaded from the Talari Support portal.
6. Click **Next** and a screen will display information for the VM being imported.
7. Click **Next** and a screen will display the End User License Agreement. Click **Accept**.
8. Click **Next** and the **Name and Location** screen displays a default name for the VM. Change the name if desired and click **Next**.

Figure 2-2 Name the VM



9. Accept the defaults on the next three screens by clicking **Next**, then click **Finish**. This will have vSphere create the VM.

Note:

Decompressing the disk image onto the server can take several minutes.

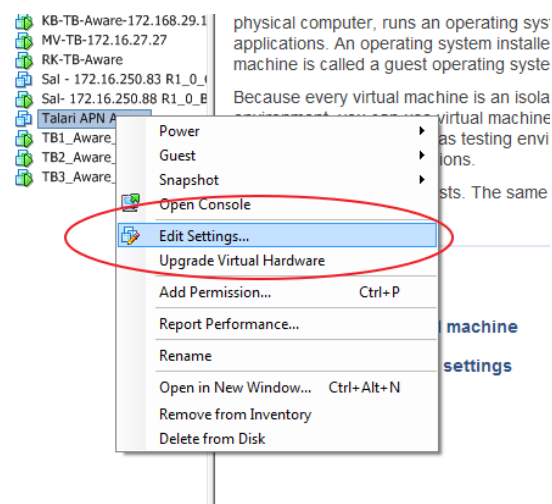
Note:

If this is the first time you've used the vSphere Client, you may need to click on the **Inventory** icon, identify the server, and expand its inventory list.

Configure the VM

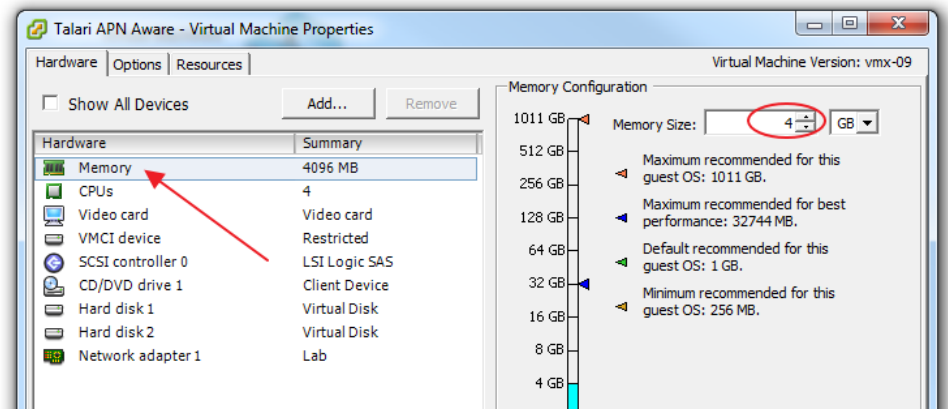
1. From the inventory list, right click on the new VM and select **Edit Settings...** from the menu.

Figure 2-3 Edit VM Settings



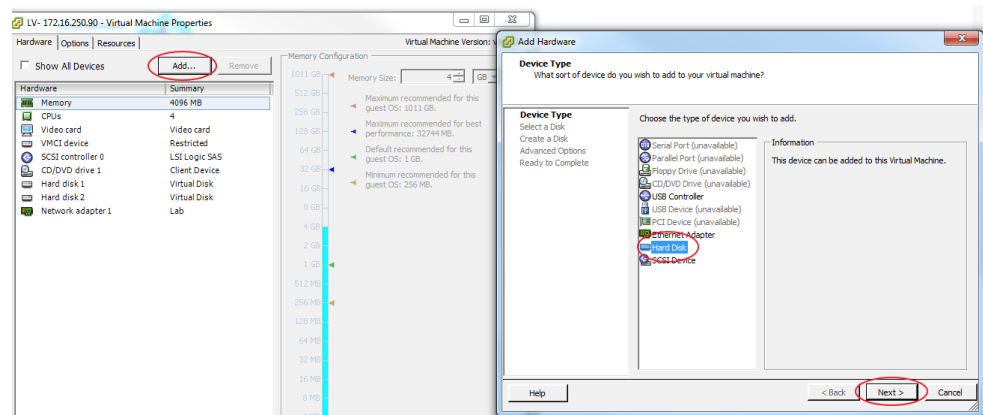
- On the right side of the **Virtual Machine Properties** screen, change the **Memory Size**.

Figure 2-4 Adjust Memory Size



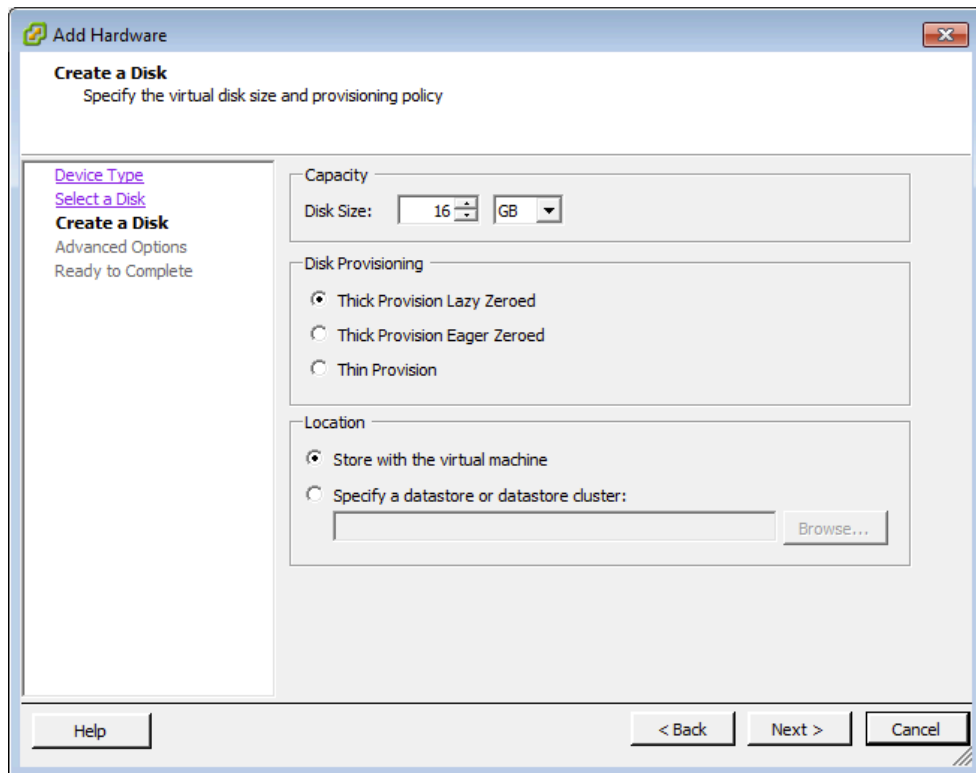
- Click on **Add...** When the **Add Hardware** screen opens, select **Hard Disk** and click **Next**.

Figure 2-5 Add Hard Disk



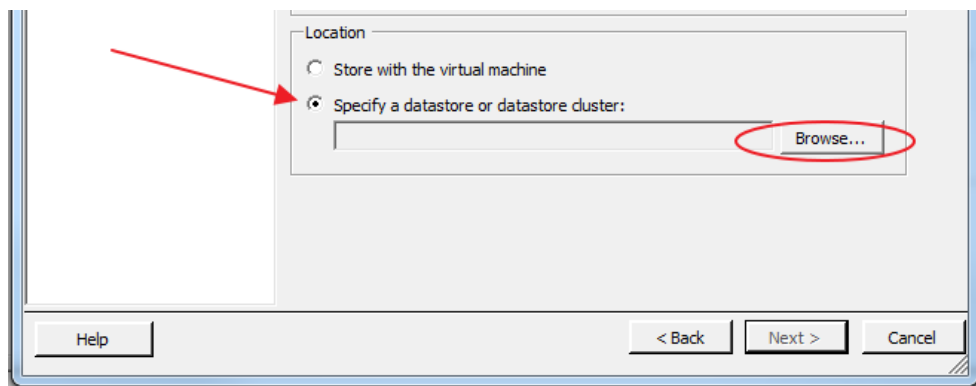
- Click the radio button for **Create a new virtual disk** and click **Next**.
- On the **Create a Disk** screen, change the **Disk Size**.

Figure 2-6 Adjust Disk Size



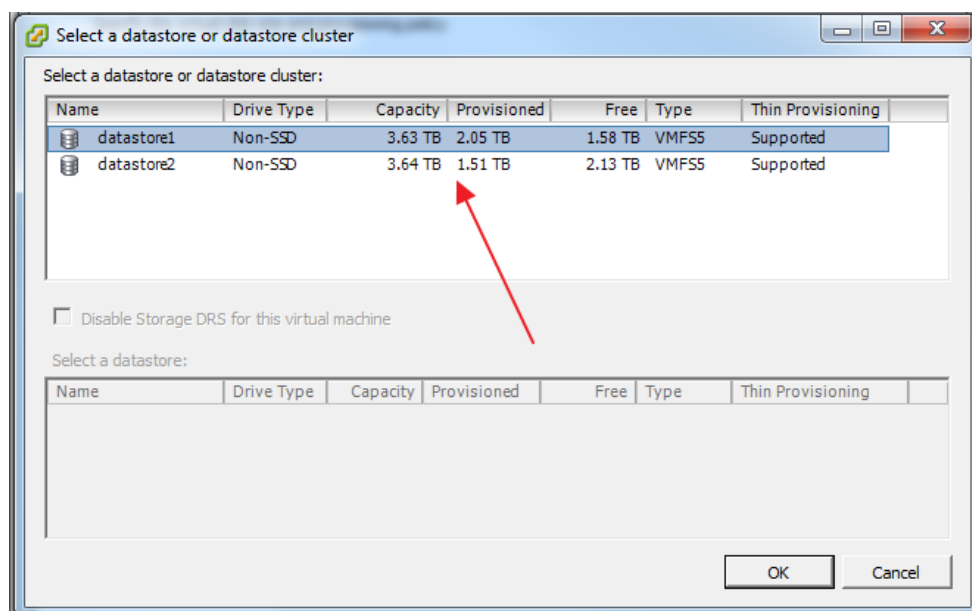
6. In the **Location** section of the **Create a Disk** screen, click the **Specify a datastore or datastore cluster** radio button and click **Browse**.

Figure 2-7 Specify Datastore



7. On the **Select a datastore or datastore cluster** screen, choose any available datastore with enough space remaining and click **OK** to return to the **Add Hardware** screen.

Figure 2-8 Choose Datastore



8. Accept the default settings by clicking **Next** and then **Finish** to return to the **Virtual Machine Properties** screen.
9. Click **OK** to exit the **Virtual Machine Properties** screen.
10. A progress bar appears at the bottom of the screen illustrating the creation of the virtual disk.

Figure 2-9 VM Reconfiguration Progress

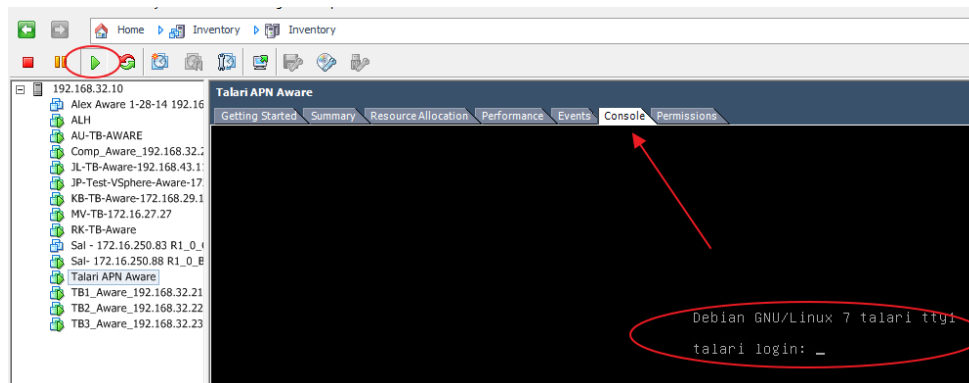
Name	Target	Status	Details
Reconfigure virtual ma...	LV- 172.16.250...	100%	
Reconfigure virtual ma...	LV- 172.16.250...	Completed	

Start the VM

1. From the inventory list, make sure the new VM is still selected and power it on by clicking the **Play icon**.
2. Click on the **Console** tab in the right-hand pane of the vSphere Client screen.
Note: To exit the console, release the mouse by pressing and holding the **Ctrl** and **Alt** buttons simultaneously.

Note: It may take up to 15 minutes for the Oracle SD-WAN Aware instance to finish initializing the first time the VM is launched. The login prompt will not be displayed until initialization is complete.

Figure 2-10 Open vSphere Client Console



3. Enter your login credentials.

Configure DHCP

1. If you are using a DHCP server, record the Host IP address that appears.
2. If you are not using a DHCP server, set the **Host IP** manually as follows:
 - a. From the command line, manually set the **Host IP** and **Netmask**.
`ifconfig eth0 <host_ip> netmask 255.255.0.0`
 - b. From the command line, manually add the **default gateway**.
`route add default gateway <gw_ip>`
 - c. Edit the `/etc/network/interfaces` file as follows:

```

GNU nano 2.2.6      File: /etc/network/interfaces
# interfaces(5) file used by ifup(8) and ifdown(8)
auto lo
iface lo inet loopback
# The Management network interface
auto eth0
iface eth0 inet static
address 172.16.250.19
netmask 255.255.0.0
gateway 172.16.0.5

[ Read 9 lines ]
^G Get Help      ^O WriteOut     ^R Read File    ^Y Prev Page    ^K Cut Text     ^C Cur Pos
^X Exit          ^J Justify      ^W Where Is    ^V Next Page    ^U UnCut Text  ^T To Spell
  
```

Note:

The **address** line in the `/etc/network/interfaces` file is the Host IP.

- a. In case of Aware OS is 7.0, do this - Edit the `/etc/sysconfig/network-scripts/ifcfg-eth0` file as follows:

```
DEVICE=eth0
BOOTPROTO=static
ONBOOT=yes
IPADDR=192.168.20.10
NETMASK=255.255.255.0
GATEWAY=192.168.20.254
```

- b. Substitute the IPADDR, NETMASK and GATEWAY as applicable to your network and save the file.
3. From the command line, kill the **dhclient**:


```
sudo pkill dhclient
```
 4. From the command line, restart networking. For Aware OS 5.01/4.x, do the following:


```
/etc/init.d/networking restart
```

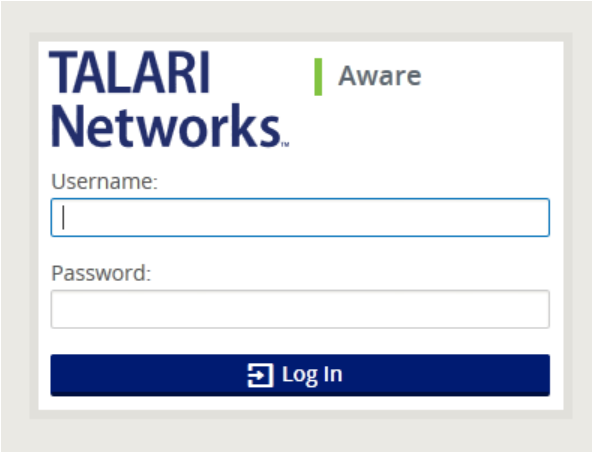
For Aware OS 7.0, do the following:

```
sudo service network restart
```

Configure the Storage System

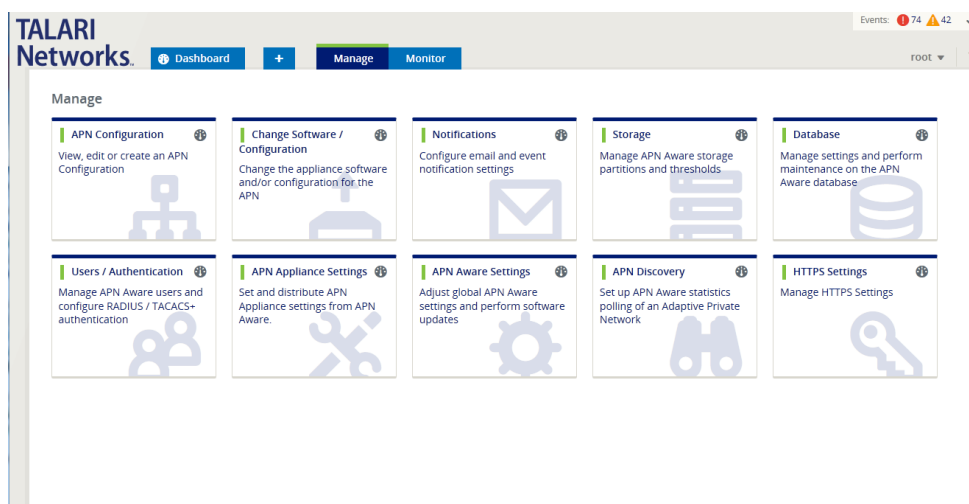
1. Open any web browser and navigate to the Host IP.
2. Login with your credentials.

Figure 2-11 Login to Oracle SD-WAN Aware



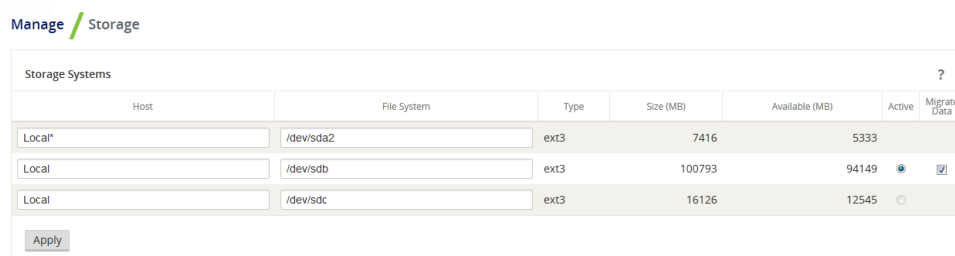
3. Click on **Manage**, and then **Storage**.

Figure 2-12 Click on the Storage tile



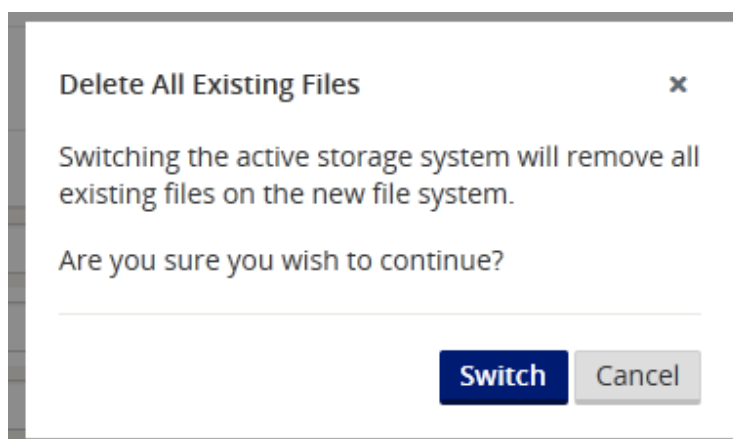
4. Click the **Active** radio button next to the storage partition you created and click **Apply**.

Figure 2-13 Switch the Storage Partition

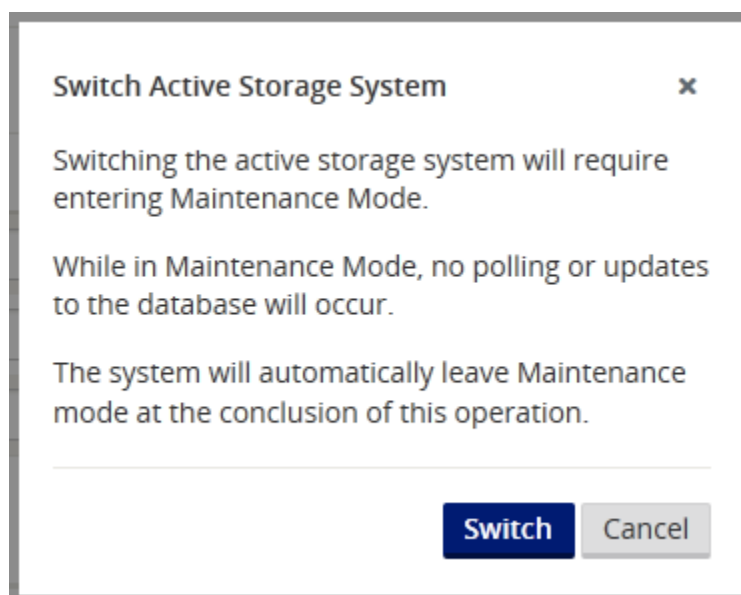


5. The **Delete All Existing Files** warning dialog appears. Click **Switch**.

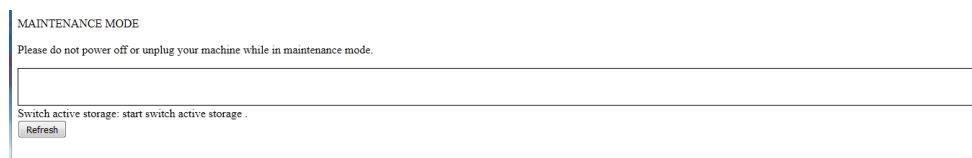
Figure 2-14 Delete All Existing Files Warning Dialog



6. The **Switch Active Storage System** dialog appears. Click **Switch**.

Figure 2-15 Switch Active Storage System Warning Dialog

7. This will place Oracle SD-WAN Aware into **Maintenance Mode** and a progress bar appears.

Figure 2-16 Put Aware in Maintenance Mode

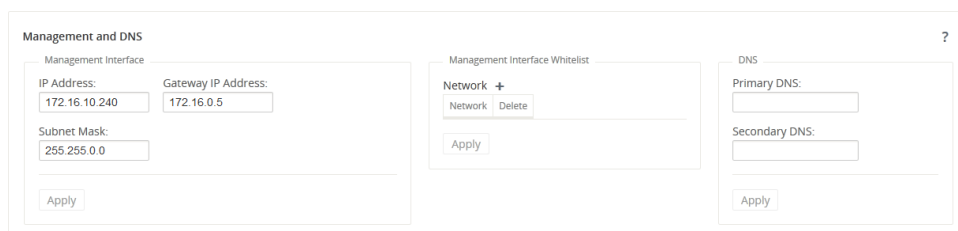
8. When the progress bar completes, click **Continue**.

Configure Oracle SD-WAN Aware Settings

1. Click **Manage**, then **APN Aware Settings**.
2. Change the Management IP/DNS/Time Settings as desired.

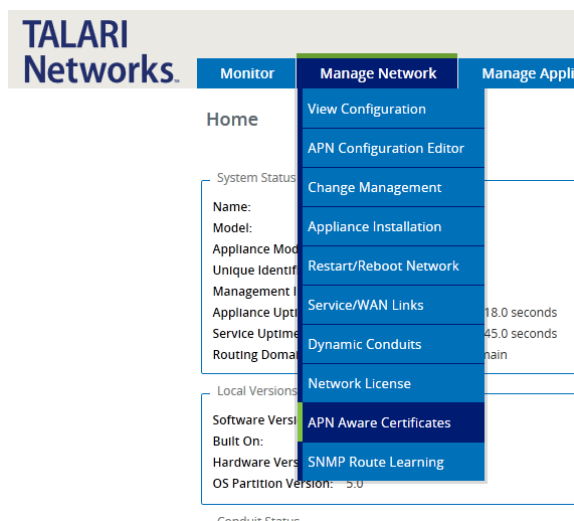
Note:

Enter the Host IP address, Netmask, and Gateway information here to enforce the settings as static.

Figure 2-17 Change Management IP and DNS Settings

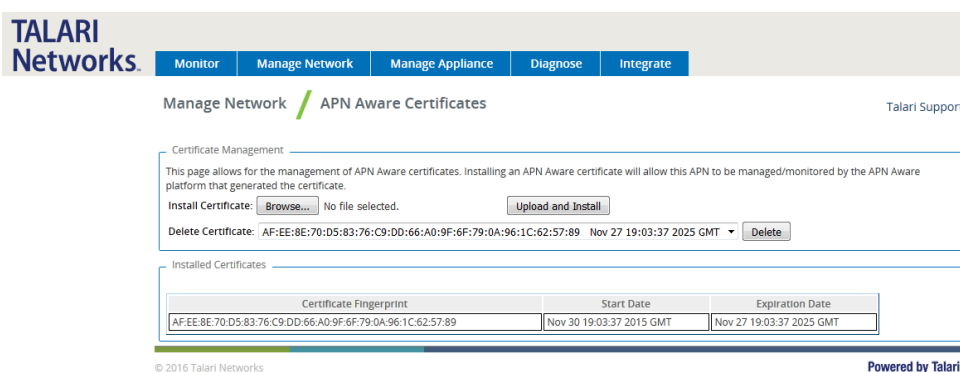
3. Click **Manage**, then **APN Discovery**.
4. Click on **Download Certificate**, then **Save** to save the certificate file to the local workstation.
5. Login to the NCN, click **Manage Network**, then **APN Aware Certificates**.

Figure 2-18 Choose APN Aware Certificates



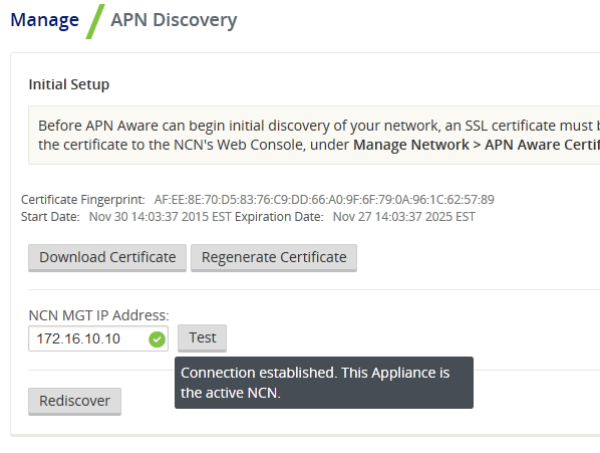
6. Click **Choose File** and choose the file you downloaded (e.g., **APNAAwareSSLCert**) to open it.

Figure 2-19 Open Aware SSL Certificate from the NCN



7. Click **Upload and Install**. When installation is complete, go back to the Aware installation.
8. In Aware, click on the **Manage**, then **APN Discovery**.
9. Enter the NCN Management IP Address and click **Test**. If everything is correct a green check mark appears with a message stating, "**Connection established. This Appliance is the active NCN.**"

Figure 2-20 Enter the NCN Management IP Address



10. Click **Discover** and all the configured appliances will autopopulate in a list at the bottom of the screen.
11. Click the checkbox next to **Poll** to automatically select all the polling checkboxes for discovered devices and click **Apply**.

Figure 2-21 Choose the Devices to Poll

Showing 1 - 3 of 3

<input checked="" type="checkbox"/> Poll ^	State	Name	MGT IP Address	Model	Serial Number	Software
<input checked="" type="checkbox"/>	Stats in Sync	JAD-NCN-860	172.16.10.10	t860	507595055009	R6_1_GA_1225
<input checked="" type="checkbox"/>	Stats in Sync	JAD-CL1-510	172.16.10.20	t510	507587055071	R6_1_GA_1225
<input checked="" type="checkbox"/>	Stats in Sync	JAD-CL2-510	172.16.10.30	t510	507587055072	R6_1_GA_1225

Apply

12. The Oracle SD-WAN Aware installation is complete.

Upgrading an Oracle SD-WAN Aware VM

An upgrade may be done either on an existing VM or by provisioning a new VM.

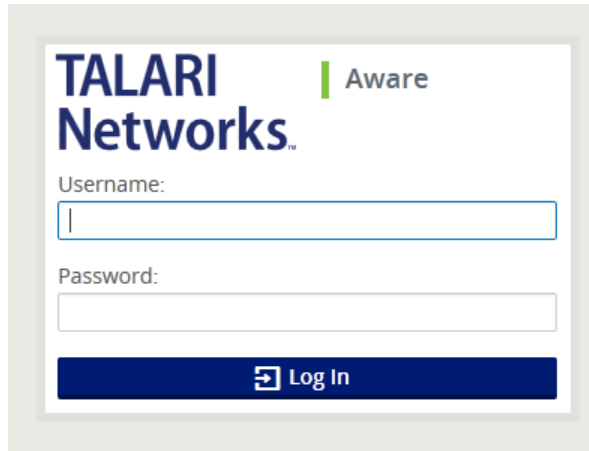
Upgrade Aware On Existing VM

Note:

Before attempting this upgrade procedure, make sure your server meets the minimum requirements.

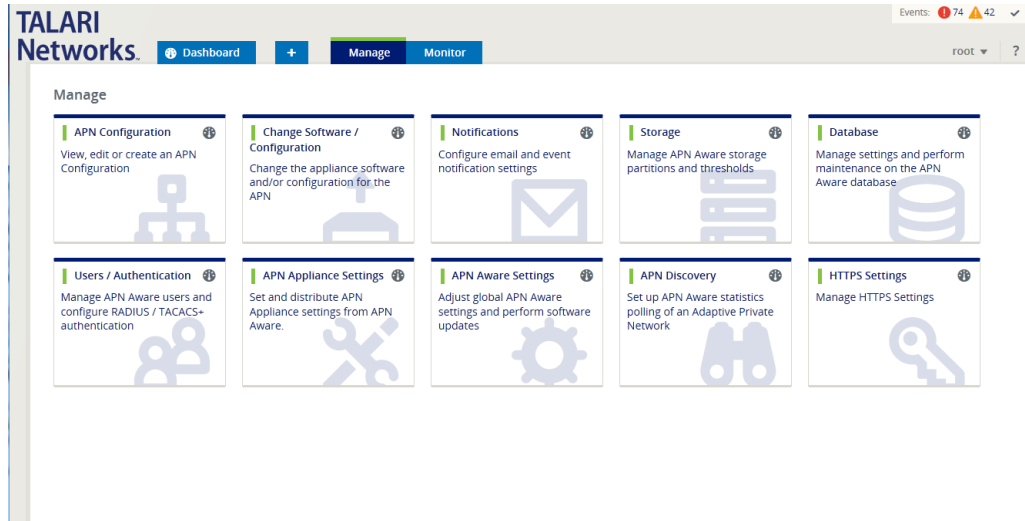
1. Download the software update file (e.g., **talari-nms_Aware_R3_0_GA_P1_11082016_amd64.tar.gz**).
2. Open any web browser and navigate to the Host IP. Login with your existing credentials.

Figure 2-22 APN Aware Login Screen



3. On the Web interface click on **Manage**, then **APN Aware Settings**.

Figure 2-23 Manage APN Aware Settings



4. In the **APN Aware Software Update** section, click on **Browse** and navigate to the file downloaded.

Figure 2-24 Select Software Update File

Manage / APN Aware Settings

APN Aware Software Update

Current Version: Aware_R3_0_GA_09292016 built on 09/28/16

Browse... Upload Clear

File Type: .gz

talari-nms_Aware_R3_0_GA_09292016_amd64.tar.gz

Install... ⚙️

5. Click **Upload**, and once the upload finishes, click **Install**, and follow the onscreen prompts to complete the software upgrade.

Upgrade Oracle SD-WAN Aware Using a New VM

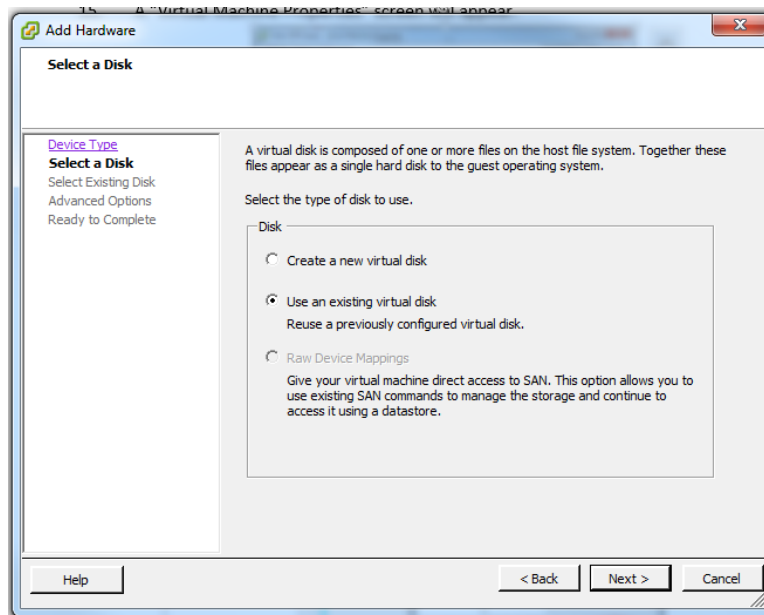
Check Aware OS version with Monitor→System Information.

If the current Aware OS version is 5.01 and the new VM install is for Aware R8.1 or earlier follow the steps below to upgrade using a new VM.

If the current Aware OS version is 5.01 and the new VM install is for Aware R8.2 or later with Aware OS 7.0 or later, please follow the steps in section Upgrade Aware Using a New VM moving from OS 5.01 to OS 7.0.

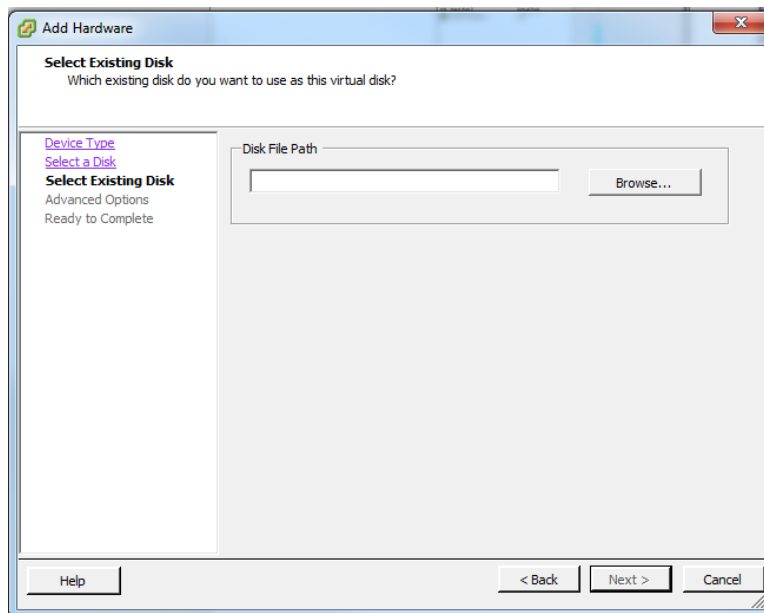
1. From the **Select a Disk** screen, click the radio button next to **Use an existing virtual disk** then click **Next**.

Figure 2-25 Use Existing Virtual Disk



2. Click the **Browse** button, and select the **Disk File Path** of the existing Oracle SD-WAN Aware VM you want to upgrade.

Figure 2-26 Choose Existing Oracle SD-WAN Aware VM



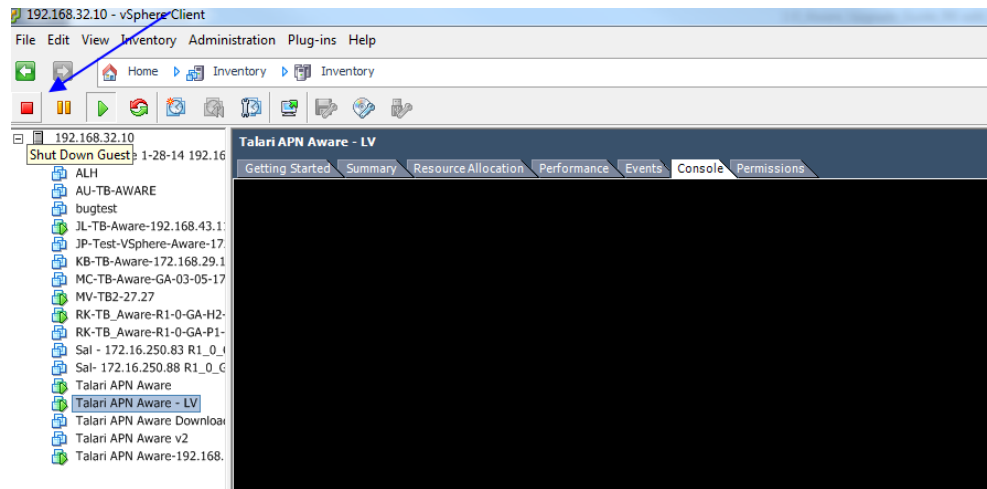
3. Click the **Next** button after selecting the VM, and a progress bar will appear at the bottom of the screen illustrating the reconfiguration of the virtual machine. Wait for the update to reach **Completed** status.

Figure 2-27 Wait for Reconfiguration to Complete

Name	Target	Status	Details	Initiated by	Requested Start Time	Start Time	Completed
Reconfigure virtual ma...	Talari APN Aw...	Completed		root	5/7/2014 3:39:22 PM	5/7/2014 3:39:22 PM	5/7/2014 3:

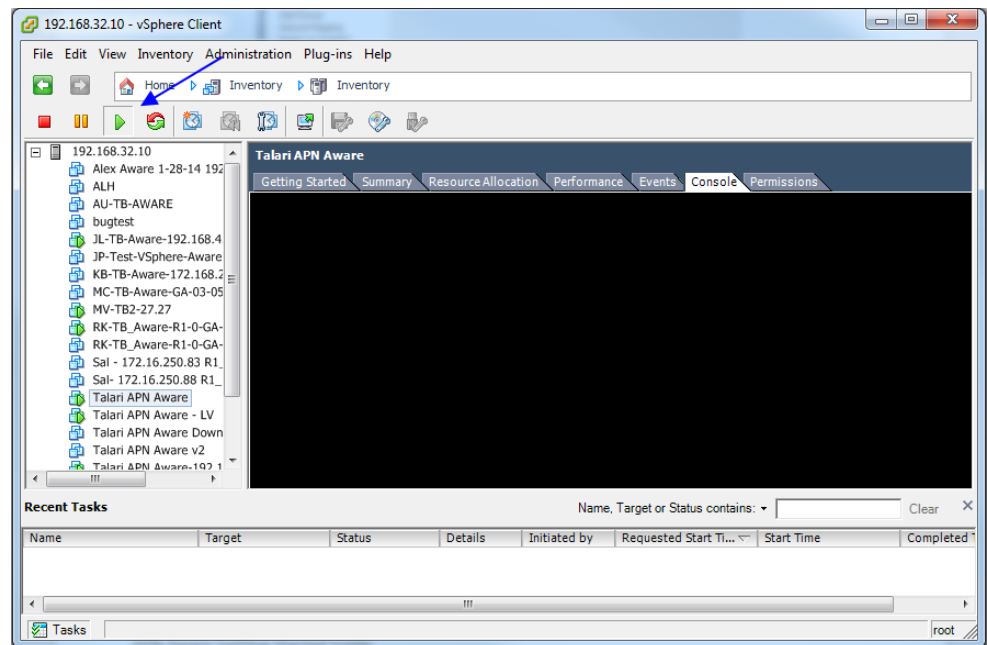
- From the inventory list, select your previous Oracle SD-WAN Aware VM and power it down by clicking the red **Stop** icon.

Figure 2-28 Power Down the Existing VM



- Power on the VM you chose to upgrade by clicking the green **Play** icon.

Figure 2-29 Power On Upgraded VM



Increase Storage On Existing Oracle SD-WAN Aware VMs

1. Open your vSphere Client and power down the VM you want to create more storage on.
2. Right click on the VM and choose **Edit Settings** from the menu.
3. Click the **Add** button and choose **Hard Disk** then click **Next**.
4. Click the radio button next to **Create a new virtual disk** and click **Next**.
5. In the **Capacity** section of the **Create a Disk** window, adjust the disk size appropriately and then click **Next**.
6. Click **Next** on the **Advanced Options** screen, and click **Finish** on the **Ready to Complete**.
7. Power on the VM.
8. Open a web browser and navigate to the Oracle SD-WAN Aware Management IP.
9. Click on **Manage**, then **Storage** where you will see your new disk.
10. Click the radio button under **Active** then click **Apply** (the **migrate** option is checked by default).

Figure 2-30 Oracle SD-WAN Aware Storage Systems

Manage / Storage

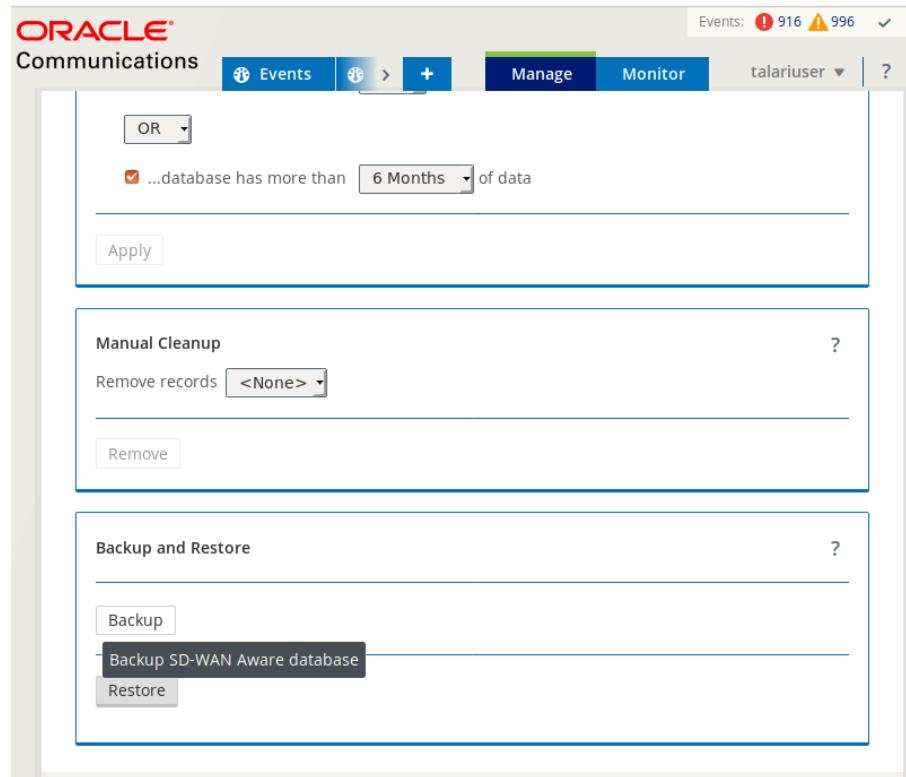
Storage Systems							?
Host	File System	Type	Size (MB)	Available (MB)	Active	Migrate Data	
Local*	/dev/sda2	ext3	7416	5333	<input type="radio"/>	<input type="checkbox"/>	
Local	/dev/sdb	ext3	100793	94149	<input checked="" type="radio"/>	<input checked="" type="checkbox"/>	
Local	/dev/sdc	ext3	16126	12545	<input type="radio"/>	<input type="checkbox"/>	

Apply

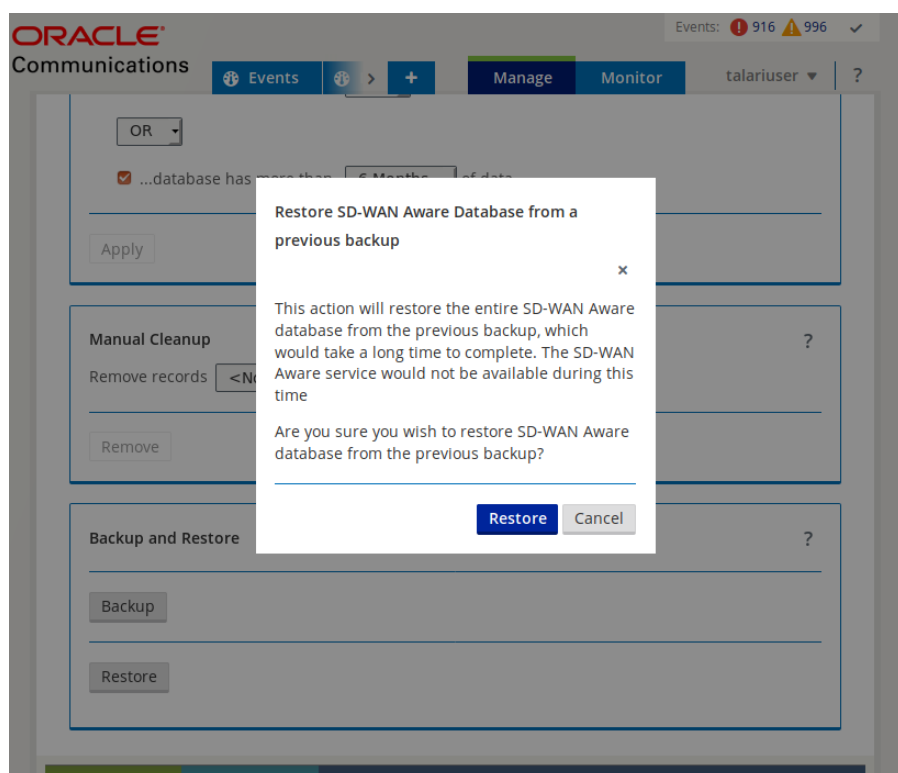
11. When the **Delete All Existing Files** dialog appears, click **Switch**.
12. When the **Switch Active Storage System** dialog appears, click **Switch**.
13. Maintenance mode may run for quite some time. When the **Switch active storage** process completes, click **Continue**.
14. You can now see the new disk is active and your data still intact.
15. Navigate back to the vSphere Client and power down the VM.
16. Right click on the VM and choose **Edit Settings** from the menu.
17. Select the old Hard Disk from the list and click the **Remove** button. Click **OK**.
18. Power on the VM.
19. Open a web browser and navigate to the Oracle SD-WAN Aware Management IP.
20. Click on **Manage Storage**, and you will see the old disk is no longer displayed in the list.

Aware Database Backup and Restore

Aware database backup option is available in Aware R8.2 or later to take a backup of the Aware database. This backup can be used to restore Aware database at a later point in time. The database backup requires extra space of two times the size of the current database.



Clicking on the Backup option in Manage→Database→Backup and Restore section brings up a confirmation dialog. Clicking Backup button on the confirmation dialog initiates the backup operation in the background. The Aware system is put in maintenance mode during the backup operation. Depending on the size of the database, the CPU and memory available, the database backup operation could take many hours to complete. For example the backup operation took about 23 hours to complete for a database size of 200GB. It also needed additional 400GB of storage for the backup files before they are compressed.



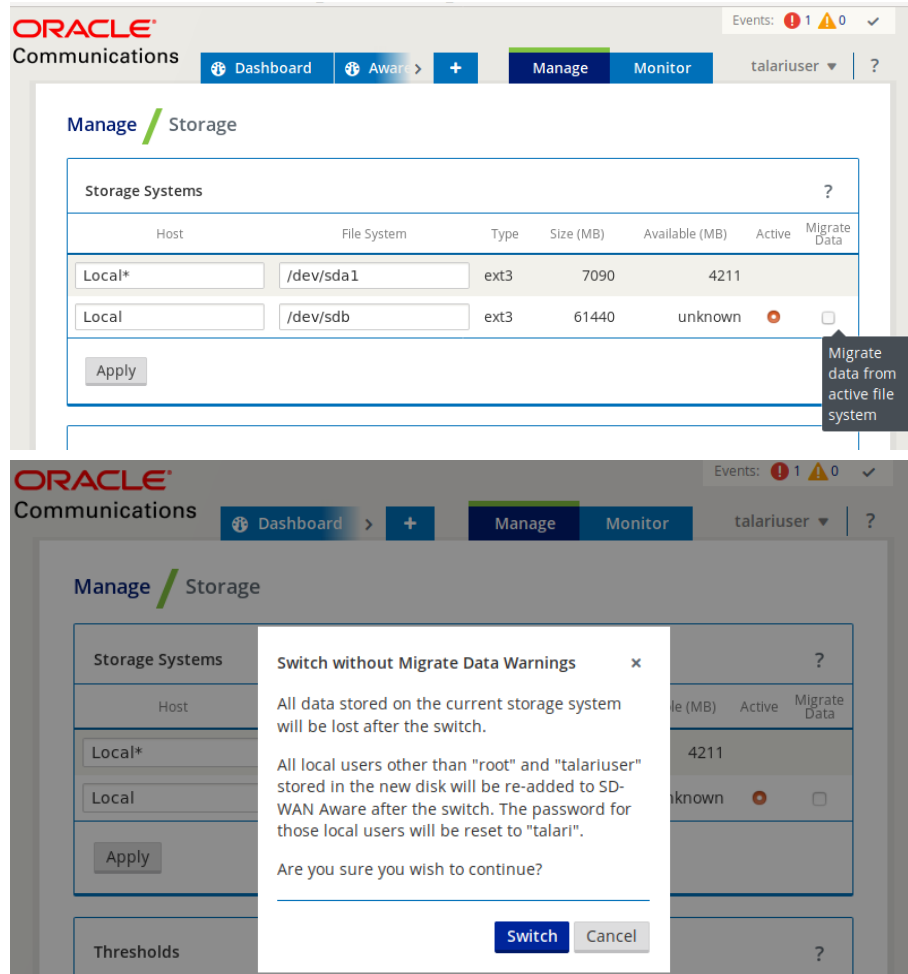
Database restore option can be used to restore Aware database to the previous restore point from the previous backup if available. The user needs to create the backup of the database for future restore.

Upgrade Aware Using a New VM moving from OS 5.01 to OS 7.0

If moving from an Aware VM with current Aware OS version is 5.01 to new VM install with Aware OS 7.0 or later please use the following procedure:

1. Upgrade to Aware R8.2 or later in the current VM using Manage→SD-WAN Aware Settings→Install.
2. After upgrading to Aware R8.2 in the current Aware VM, click on Backup button in Manage→Database→Backup and Restore section.
3. Install a new Aware VM with Aware R8_2 or later by following the steps 1 to 7 in section Upgrade Aware Using a New VM.
4. In the newly installed Aware VM, go to Manage→Storage section. The disk added from the previous VM will be shown as not active.
5. Click on the Active button of the added disk. Migrate Data option will be shown as checked. Uncheck the Migrate Data option and click on Apply. A confirmation dialog will show Switch without Migrate Data Warnings.
6. Click the Switch button to make the added disk as Active disk storage. See the diagram Aware storage Active option.
7. After the added disk is made active, go to Manage→Database→Backup And Restore section and click on Restore button. Complete the Restore action by clicking on the confirmation dialog.

After the restore action is completed the database would have been migrated completely and will be available in the current VM.



Upgrade Aware Using a New VM moving from OS 4.x to OS 7.x

Moving from Aware OS 4.x to Aware OS 7.x is a two step process.

1. Use the procedure to move to new VM with Aware full install having OS 5.01 and moving the disk from the previous VM and make it active. Note that Migrate Data option should not be checked while making the new disk active.
2. This completes migration from Aware OS 4.x to Aware OS 5.x. Follow the steps described in section Upgrade Aware Using a New VM moving from OS 5.01 to OS 7.0.

3

Oracle SD-WAN Aware on Amazon Web Services

The following sections contain procedures for creating and preparing an Amazon Virtual Machine and EC2 instance for a Cloud Aware installation.

Before You Begin

Before you continue, take some time to consider how a Cloud Aware Instance will fit into your current network architecture.

- What CIDR block do you plan to use for your VPC and its subnets?
- Do you plan to use existing subnets or create new ones for your VPC and Cloud Aware interfaces?
- Have you determined how much storage you will need for your Cloud Aware instance based on your Talari WAN?
- How do you plan to configure Security Groups for your Cloud Aware instance?
- Have you already created an AWS Key Pair?

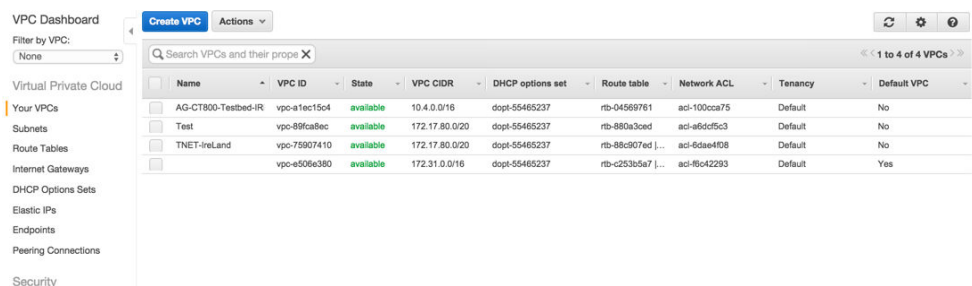
Create an Amazon Virtual Private Cloud

Note:

If a pre-existing VPC is available with connectivity to your private network, we recommend installing Cloud Aware within that VPC to simplify the deployment procedure. If you need to create a new VPC, continue with this procedure.

1. Log into Amazon Web Services (AWS).
2. From the main AWS Management Console click on the **VPC** link.
3. From the **VPC Dashboard**, click on the **Your VPCs** link and then click the **Create VPC** button to create a Virtual Private Cloud (VPC).

Figure 3-1 Create a VPC



The screenshot shows the AWS VPC Dashboard with a table of existing VPCs. The table has columns for Name, VPC ID, State, VPC CIDR, DHCP options set, Route table, Network ACL, Tenancy, and Default VPC. There are four VPCs listed, all in an 'available' state.

Name	VPC ID	State	VPC CIDR	DHCP options set	Route table	Network ACL	Tenancy	Default VPC
AG-CT800-Testbed-IR	vpc-a1ec15c4	available	10.4.0.0/16	dopt-55465237	rtb-04569761	acl-100cca75	Default	No
Test	vpc-89fca8ec	available	172.17.80.0/20	dopt-55465237	rtb-880a3ced	acl-a6dcf5c3	Default	No
TNET-ireland	vpc-75907410	available	172.17.80.0/20	dopt-55465237	rtb-88c907ed	acl-8dae4f08	Default	No
	vpc-e506e380	available	172.31.0.0/16	dopt-55465237	rtb-c253b5a7	acl-8fc42293	Default	Yes

4. Enter a **Name tag** to identify your VPC.

Figure 3-2 Enter a Name and CIDR block

Create VPC ✕

A VPC is an isolated portion of the AWS cloud populated by AWS objects, such as Amazon EC2 instances. Use the Classless Inter-Domain Routing (CIDR) block format to specify your VPC's contiguous IP address range, for example, 10.0.0.0/16. You cannot create a VPC larger than /16.

Name tag ⓘ

CIDR block ⓘ

Tenancy ⓘ

[Cancel](#) [Yes, Create](#)

5. Enter your pre-defined VPC **CIDR block**. Click **Yes, Create** to continue.
6. If you do not already have an existing Internet Gateway to use in AWS, from the VPC Dashboard, click the **Internet Gateway Link** and then click the **Create Internet Gateway** button.

Figure 3-3 Create Internet Gateway

VPC Dashboard [Create Internet Gateway](#) [Delete](#) [Attach to VPC](#) [Detach from VPC](#)

Filter by VPC:

Virtual Private Cloud

Your VPCs

Subnets

Route Tables

Internet Gateways

Search Internet Gateways an X

<input type="checkbox"/>	Name	ID	State	VPC
<input type="checkbox"/>	Tnet-IREland-GW	igw-36766...	attached	vpc-75907410 (172.17.80.0/20) TN...
<input type="checkbox"/>		igw-73c5d7...	attached	vpc-e506e380 (172.31.0.0/16)
<input type="checkbox"/>	AG-CT800-Testbed-IRL-igw	igw-5bee0...	attached	vpc-a1ec15c4 (10.4.0.0/16) AG-CT8...

7. Enter a **Name tag** for your Internet Gateway and click the **Yes, Create** button.

Figure 3-4 Name Internet Gateway

Create Internet Gateway ✕

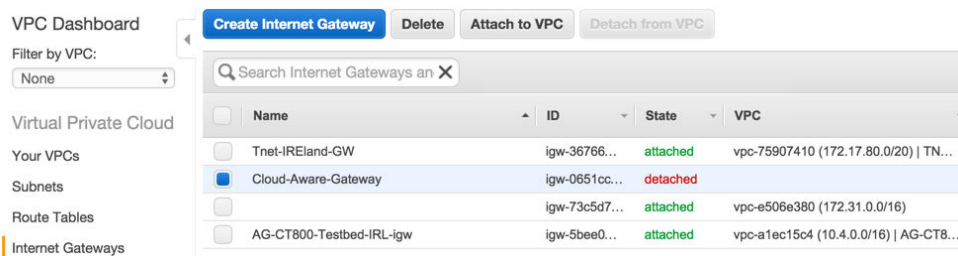
An Internet gateway is a virtual router that connects a VPC to the Internet.

Name tag ⓘ

[Cancel](#) [Yes, Create](#)

8. Select the Internet Gateway you just created and click the **Attach to VPC** button.

Figure 3-5 Attach Internet Gateway to VPC



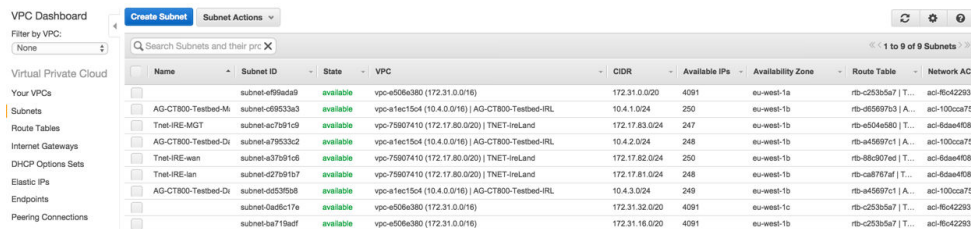
- Choose the Internet Gateway you created from the drop-down menu and click the **Yes, Attach** button to attach it to your VPC.

Figure 3-6 Choose VPC to Attach to Internet Gateway



- If you have not defined subnets to use with your VPC, click the **Subnets** link on the **VPC Dashboard**, and then click **Create Subnet** to create subnets (e.g., WAN, LAN, MGT) as your network requires. Cloud Aware only requires access to a management subnet.

Figure 3-7 Create Subnet



- Enter a **Name tag** to easily identify the subnet you are creating. Choose your new **VPC** from the drop-down menu. Enter the **CIDR block** you want to define for the subnet. (e.g., WAN, LAN, and MGT). Click the **Yes, Create** button to continue.
- Create as many subnets as your network requires.

Figure 3-8 Insert Name, Choose VPC, and Enter CIDR block

Create Subnet ✕

Use the CIDR format to specify your subnet's IP address block (e.g., 10.0.0.0/24). Note that block sizes must be between a /16 netmask and /28 netmask. Also, note that a subnet can be the same size as your VPC.

Name tag ⓘ

VPC ⓘ

Availability Zone ⓘ

CIDR block ⓘ

[Cancel](#) [Yes, Create](#)

13. If you have not defined route tables to use with your VPC, click the **Route Tables** link on the **VPC Dashboard**, and then click **Create Route Table** to create route tables for your subnets (e.g., WAN, LAN, and MGT) for your Cloud Aware instance.

Figure 3-9 Create Route Table

Create Route Table ✕

A route table specifies how packets are forwarded between the subnets within your VPC, the Internet, and your VPN connection.

Name tag ⓘ

VPC ⓘ

[Cancel](#) [Yes, Create](#)

14. Enter a **Name tag** to easily identify the route table you are creating. Choose your new **VPC** from the drop-down menu. Click the **Yes, Create** button to continue.

Figure 3-10 Enter Name and Choose VPC for Route Table

Create Route Table ✕

A route table specifies how packets are forwarded between the subnets within your VPC, the Internet, and your VPN connection.

Name tag ⓘ

VPC ⓘ

[Cancel](#) [Yes, Create](#)

15. Create a route table for each subnet.

16. Select the route table you plan to use for Cloud Aware. Click on the **Subnet Associations** tab and click the checkbox next to the management subnet to associate with this route table. Click **Save**.

Figure 3-11 Associate Route Table with Subnet

The screenshot shows the AWS console interface for associating a route table with subnets. At the top, there are buttons for 'Create Route Table', 'Delete Route Table', and 'Set As Main Table'. Below is a search bar and a table of route tables. The table has columns for Name, Route Table ID, Explicitly Associated With, Main, and VPC. The selected route table is 'rtb-42ba8a27 | Cloud-Aware-RouteTable-MGT'. Below the table, there are tabs for 'Summary', 'Routes', 'Subnet Associations', 'Route Propagation', and 'Tags'. The 'Subnet Associations' tab is active, showing a table with columns 'Associate', 'Subnet', 'CIDR', and 'Current Route Table'. Three subnets are listed, with the 'Cloud-Aware-MGT' subnet checked in the 'Associate' column.

Name	Route Table ID	Explicitly Associated With	Main	VPC
Tnet-Ireland-MGT	rtb-e504e580	1 Subnet	No	vpc-75907410 (172.17.80.0/20) TNET-IreLand
Tnet-Ireland-Lan	rtb-ca8767af	1 Subnet	No	vpc-75907410 (172.17.80.0/20) TNET-IreLand
Tnet-IRL-WAN-old	rtb-c253b5a7	0 Subnets	Yes	vpc-e506e380 (172.31.0.0/16)
Tnet-IRL-WAN	rtb-88c907ed	1 Subnet	Yes	vpc-75907410 (172.17.80.0/20) TNET-IreLand
Cloud-Aware-RouteTable-WAN	rtb-8dba8ae8	0 Subnets	No	vpc-cec294ab (172.17.80.0/20) Cloud-Aware
Cloud-Aware-RouteTable-MGT	rtb-42ba8a27	0 Subnets	No	vpc-cec294ab (172.17.80.0/20) Cloud-Aware
Cloud-Aware-RouteTable-LAN	rtb-bc8a8ad9	0 Subnets	No	vpc-cec294ab (172.17.80.0/20) Cloud-Aware
AG-CT800-Testbed-IRL-mangement-routes	rtb-d65697b3	1 Subnet	No	vpc-a1ec15c4 (10.4.0.0/16) AG-CT800-Testbed-IRL
AG-CT800-Testbed-IRL-data-routes	rtb-a45697c1	2 Subnets	No	vpc-a1ec15c4 (10.4.0.0/16) AG-CT800-Testbed-IRL

Associate	Subnet	CIDR	Current Route Table
<input type="checkbox"/>	subnet-e85c648d (172.17.81.0/24) Cloud-Aware-LAN	172.17.81.0/24	Main
<input type="checkbox"/>	subnet-c85c64ad (172.17.82.0/24) Cloud-Aware-WAN	172.17.82.0/24	Main
<input checked="" type="checkbox"/>	subnet-225b6347 (172.17.83.0/24) Cloud-Aware-MGT	172.17.83.0/24	Main

17. Associate each route table with the appropriate subnet.
18. Select the route table you plan to use for Cloud Aware. Click on the **Routes** tab. Click the **Edit** button, and then click the **Add another** route button.

Figure 3-12 Add Routes

The screenshot shows the AWS console interface for adding routes to a route table. At the top, there are buttons for 'Create Route Table', 'Delete Route Table', and 'Set As Main Table'. Below is a search bar and a table of route tables. The selected route table is 'rtb-8dba8ae8 | Cloud-Aware-RouteTable-WAN'. Below the table, there are tabs for 'Summary', 'Routes', 'Subnet Associations', 'Route Propagation', and 'Tags'. The 'Routes' tab is active, showing a table with columns 'Destination', 'Target', 'Status', 'Propagated', and 'Remove'. The 'Destination' field is set to '0.0.0.0/0' and the 'Target' field is set to 'igw-3651cc69'. There is an 'Add another route' button at the bottom.

Name	Route Table ID	Explicitly Associated With	Main	VPC
Tnet-Ireland-MGT	rtb-e504e580	1 Subnet	No	vpc-75907410 (172.17.80.0/20) TNET-IreLand
Tnet-Ireland-Lan	rtb-ca8767af	1 Subnet	No	vpc-75907410 (172.17.80.0/20) TNET-IreLand
Tnet-IRL-WAN-old	rtb-c253b5a7	0 Subnets	Yes	vpc-e506e380 (172.31.0.0/16)
Tnet-IRL-WAN	rtb-88c907ed	1 Subnet	Yes	vpc-75907410 (172.17.80.0/20) TNET-IreLand
Cloud-Aware-RouteTable-WAN	rtb-8dba8ae8	1 Subnet	No	vpc-cec294ab (172.17.80.0/20) Cloud-Aware
Cloud-Aware-RouteTable-MGT	rtb-42ba8a27	1 Subnet	No	vpc-cec294ab (172.17.80.0/20) Cloud-Aware
Cloud-Aware-RouteTable-LAN	rtb-bc8a8ad9	1 Subnet	No	vpc-cec294ab (172.17.80.0/20) Cloud-Aware
AG-CT800-Testbed-IRL-mangement-routes	rtb-d65697b3	1 Subnet	No	vpc-a1ec15c4 (10.4.0.0/16) AG-CT800-Testbed-IRL
AG-CT800-Testbed-IRL-data-routes	rtb-a45697c1	2 Subnets	No	vpc-a1ec15c4 (10.4.0.0/16) AG-CT800-Testbed-IRL

Destination	Target	Status	Propagated	Remove
172.17.80.0/20	local	Active	No	
0.0.0.0/0	igw-3651cc69	No	No	

19. Enter **0.0.0.0/0** in the **Destination** field and enter the Internet Gateway in the **Target** field. Click **Save** to continue.

Note:

When you click in the **Target** field, a list of available Internet Gateways that you can choose from should appear. If said list does not appear, you can find the name of your Internet Gateway by clicking on the **Internet Gateways** link on the VPC Dashboard and selecting the Internet Gateway. The name appears on the **Summary** tab.

- Repeat for each route table that you created.

Note:

Adding the 0.0.0.0/0 destination may only be necessary for the MGT and WAN route tables.

Create an Amazon EC2 Instance for Cloud Aware

- Click **EC2** to open the EC2 Dashboard.
- Click the **Launch Instance** button.

Figure 3-13 Launch Instance

The screenshot shows the Amazon EC2 Dashboard interface. On the left is a navigation menu with categories like EC2 Dashboard, INSTANCES, and IMAGES. The main area is titled 'Resources' and displays a summary of EC2 resources in the EU West (Ireland) region: 4 Running Instances, 0 Dedicated Hosts, 9 Volumes, 2 Key Pairs, 0 Placement Groups, 1 Elastic IPs, 17 Snapshots, 0 Load Balancers, and 17 Security Groups. Below this is a promotional banner for Amazon EC2 Container Service. At the bottom, there is a 'Create Instance' section with a 'Launch Instance' button.

- Click on **My AMIs** and **Select** the Cloud Aware version you would like to install.
- Choose an EC2 Instance Type. Consult the following table to determine what Instance Type is sized appropriately for your Talari WAN.

Talari WAN Scale			Amazon EC2 Instance		
Max # of Client Sites	Average # of WAN Links per Site	Average # of Network Services ¹ per Site	Instance Type	Storage Volume Type	Storage Size for up to One Year of Data
64	2	4	m4.xlarge	General Purpose	1.5 TB
64	4	8	m4.xlarge	General Purpose	2.6 TB
64	8	16	m4.xlarge	General Purpose	9.6 TB
128	2	4	m4.2xlarge	General Purpose	2.0 TB
128	4	8	m4.2xlarge	General Purpose	4.1 TB

128	8	16	m4.2xlarge	General Purpose	18.0 TB
256	2	4	m4.4xlarge	General Purpose	3.0 TB
256	4	8	m4.4xlarge	General Purpose	7.2 TB
256	8	16	m4.4xlarge	General Purpose	35.0 TB

¹ Static Conduit Service, Dynamic Conduit Service, Intranet Service, Internet Service

5. Click **Next: Configure Instance Details**.

Figure 3-14 Configure Instance Details

Step 2: Choose an Instance Type

Filter by: All instance types Current generation Show/Hide Columns

Currently selected: m4.2xlarge (26 ECUs, 8 vCPUs, 2.4 GHz, Intel Xeon E5-2676v3, 32 GiB memory, EBS only)

	Family	Type	vCPUs	Memory (GiB)	Instance Storage (GB)	EBS-Optimized Available	Network Performance
<input type="checkbox"/>	General purpose	t2.micro Free tier eligible	1	1	EBS only	-	Low to Moderate
<input type="checkbox"/>	General purpose	t2.small	1	2	EBS only	-	Low to Moderate
<input type="checkbox"/>	General purpose	t2.medium	2	4	EBS only	-	Low to Moderate
<input type="checkbox"/>	General purpose	t2.large	2	8	EBS only	-	Low to Moderate
<input type="checkbox"/>	General purpose	m4.large	2	8	EBS only	Yes	Moderate
<input type="checkbox"/>	General purpose	m4.xlarge	4	16	EBS only	Yes	High
<input checked="" type="checkbox"/>	General purpose	m4.2xlarge	8	32	EBS only	Yes	High

Cancel Previous Review and Launch Next: Configure Instance Details

6. Choose the previously created VPC from the **Network** drop-down menu.

Figure 3-15 Create Instance on VPC

1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Tag Instance 6. Configure Security Group

Step 3: Configure Instance Details

Configure the instance to suit your requirements. You can launch multiple instances from the same AMI, request Spot instances to take advantage of the lower pricing, assign an access management role to the instance, and more.

Number of instances 1 Launch into Auto Scaling Group

Purchasing option Request Spot instances

Network vpc-cec294ab (172.17.80.0/20) | Cloud-Aware Create new VPC

Subnet subnet-c85c64ad(172.17.82.0/24) | Cloud-Aware-WAN | eu-wes 251 IP Addresses available Create new subnet

Auto-assign Public IP Use subnet setting (Disable)

Placement group No placement group

IAM role None Create new IAM role

Shutdown behavior Stop

Cancel Previous Review and Launch Next: Add Storage

7. Choose the management **Subnet** you previously created from the drop-down menu that will allow you to access your Cloud Aware. Click **Next: Add Storage** to continue.

8. Under the **Network Interfaces** section, you may choose to specify a **Primary IP** for the default interface (eth0); otherwise, the IP address is automatically assigned from the subnet.
9. On the **Add Storage** screen click **Add New Volume** and enter the **Size** of the volume to store your Oracle SD-WAN Aware database. Consult the Amazon Web Services Requirements section on page 4 for details on how to size this device. Click **Next: Tag Instance** to continue.

Figure 3-16 Add Storage to Instance

1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Tag Instance 6. Configure Security Group 7. Review

Step 4: Add Storage

Type	Device	Snapshot	Size (GiB)	Volume Type	IOPS	Delete on Termination	Encrypted
Root	/dev/sda1	snap-c560420c	9	General Purpose (SSD)	27 / 3000	<input checked="" type="checkbox"/>	Not Encrypted
EBS	/dev/sdb	Search (case-insensitive)	128	General Purpose (SSD)	384 / 3000	<input type="checkbox"/>	<input type="checkbox"/>

Add New Volume

General Purpose (SSD) volumes provide the ability to burst to 3000 IOPS per volume, independent of volume size, to meet the performance needs of most applications and also deliver a consistent baseline of 3 IOPS/GiB. [Set my root volume to General Purpose \(SSD\)](#).

Free tier eligible customers can get up to 30 GB of EBS General Purpose (SSD) or Magnetic storage. [Learn more](#) about free usage tier eligibility and usage restrictions.

Cancel **Previous** **Review and Launch** **Next: Tag Instance**

10. On the **Tag Instance** screen, enter a **Key** (i.e., a Name) and a **Value** (i.e., a specific identifier for the Instance such as "Oracle SD-WAN Aware 2.0") to make it easy to identify your Cloud Aware EC2 instance. Click **Next: Configure Security Group** to continue.

Figure 3-17 Tag the Instance

1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Tag Instance

Step 5: Tag Instance

A tag consists of a case-sensitive key-value pair. For example, you could define a tag with key = Name and value = Webserver. [Learn more](#) about tagging your Amazon EC2 resources.

Key (127 characters maximum)	Value (255 characters maximum)
"Name"	Talari Aware 2.0

Create Tag (Up to 10 tags maximum)

Cancel **Previous** **Review and Launch** **Next: Configure Security Group**

- On the **Configure Security Group** page, click the radio button next to **Create a new security group** to follow the process for creating a new security group, or click the radio button next to **Select an existing security group** to choose from the groups already configured. Click **Review and Launch** to continue.

 **Note:**

To use Oracle SD-WAN Aware on AWS, at a minimum, SSH, HTTP, and HTTPS should be configured with a **Source** of **Anywhere** or a custom IP range. Network administrators may choose to adjust the security settings to best fit their existing network architecture and security policies.

Figure 3-18 Configure Security Groups

1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Tag Instance 6. Configure Security Group 7. Review


Step 6: Configure Security Group

Assign a security group: Create a new security group
 Select an existing security group

Security group name:

Description:

Type <small>i</small>	Protocol <small>i</small>	Port Range <small>i</small>	Source <small>i</small>
SSH <small>⌵</small>	TCP	22	Anywhere <small>⌵</small> 0.0.0.0/0 <small>ⓧ</small>
HTTP <small>⌵</small>	TCP	80	Anywhere <small>⌵</small> 0.0.0.0/0 <small>ⓧ</small>
HTTPS <small>⌵</small>	TCP	443	Anywhere <small>⌵</small> 0.0.0.0/0 <small>ⓧ</small>

 **Warning**
Rules with source of 0.0.0.0/0 allow all IP addresses to access your instance. We recommend setting security group rules to allow access from known IP addresses only.

- The **Review Instance Launch** screen summarizes the settings you configured for your Cloud Aware EC2 instance including any possible security issues and Amazon warnings. Once you have reviewed the information presented on this page, click **Launch** to create and initialize the EC2 instance.

Figure 3-19 Review Instance Before Launch

Step 7: Review Instance Launch

AMI Details [Edit AMI](#)

Aware_R2_0_QA_BUGFIX_D1_11142015 - ami-3574ef46
 Aware_R2_0_QA_BUGFIX_D1_11142015 created from /srv/net-bulk/Engineering/Builds/Aware_R2_0_QA_BUGFIX_D1_11142015/APN_Aware_Aware_R2_0_QA_BUGFIX_D1_11142015_nmsv1_aws_vmware.vmdk on Mon Nov 16 2015 01:13:16 GMT-0500 (EST)
 Root Device Type: ebs Virtualization type: hvm

Instance Type [Edit instance type](#)

Instance Type	ECUs	vCPUs	Memory (GiB)	Instance Storage (GB)	EBS-Optimized Available	Network Performance
m4.2xlarge	26	8	32	EBS only	Yes	High

Security Groups [Edit security groups](#)

Security Group ID	Name	Description
sg-dbc5bbf	aware	security group for aware

All selected security groups inbound rules

Security Group ID	Type	Protocol	Port Range	Source
sg-dbc5bbf	HTTP	TCP	80	0.0.0.0/0
sg-dbc5bbf	SSH	TCP	22	0.0.0.0/0
sg-dbc5bbf	DNS (UDP)	UDP	53	0.0.0.0/0
sg-dbc5bbf	DNS (TCP)	TCP	53	0.0.0.0/0
sg-dbc5bbf	HTTPS	TCP	443	0.0.0.0/0
sg-dbc5bbf	All ICMP	All	N/A	0.0.0.0/0

[Cancel](#) [Previous](#) [Launch](#)

13. On the **Key Pair** window, you may **Choose an existing key pair** or create a new one. Click **Launch Instances** to start your Oracle SD-WAN Aware EC2 Instance.

Figure 3-20 Choose or Create a Key Pair

Select an existing key pair or create a new key pair ✕

A key pair consists of a **public key** that AWS stores, and a **private key file** that you store. Together, they allow you to connect to your instance securely. For Windows AMIs, the private key file is required to obtain the password used to log into your instance. For Linux AMIs, the private key file allows you to securely SSH into your instance.

Note: The selected key pair will be added to the set of keys authorized for this instance. Learn more about [removing existing key pairs from a public AMI](#).

Choose an existing key pair ⌵

Select a key pair

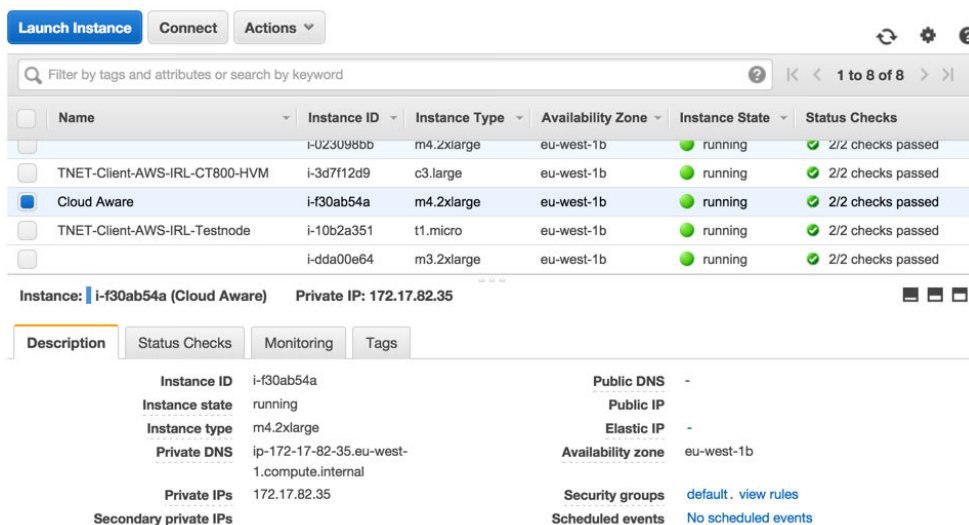
Tnet-Ireland ⌵

I acknowledge that I have access to the selected private key file (Tnet-Ireland.pem), and that without this file, I won't be able to log into my instance.

[Cancel](#) [Launch Instances](#)

14. When the **Instance State** is **running** and the **Status Checks** are passed, make note of the **Private IP** of your Oracle SD-WAN Aware Instance, which can be found on the **Description** tab.

Figure 3-21 Launch New Cloud Oracle SD-WAN Aware Instance



The screenshot displays the AWS Management Console interface for launching an instance. At the top, there are buttons for 'Launch Instance', 'Connect', and 'Actions'. Below these is a search bar and a table of instances. The instance 'i-f30ab54a' is selected and highlighted in blue. Below the table, the 'Description' tab is active, showing the following details:

Instance ID	i-f30ab54a	Public DNS	-
Instance state	running	Public IP	-
Instance type	m4.2xlarge	Elastic IP	-
Private DNS	ip-172-17-82-35.eu-west-1.compute.internal	Availability zone	eu-west-1b
Private IPs	172.17.82.35	Security groups	default. view rules
Secondary private IPs		Scheduled events	No scheduled events

15. From the **EC2 Dashboard**, select the **Network Interfaces** link and locate the default interface that was created for the Oracle SD-WAN Aware Instance. This will be used as the management interface. Highlight the interface and edit the **Name** tag to make it easy to identify.
16. From the **EC2 Dashboard**, select the **Elastic IPs** link and then click the **Allocate New Address** button to allocate an Elastic IP that will be reachable from outside the VPC.
17. Highlight the Elastic IP and click **Associate Address** from the **Actions** drop-down. Enter the **Network Interface** and **Private IP** of the Oracle SD-WAN Aware Instance and click **Associate**.
18. You can now use the Elastic IP to connect to Oracle SD-WAN Aware via a web browser. Default login credentials are: **Username:** *talariuser*, **Password:** *talari- \langle instance-id \rangle* (e.g., *talari-i-726a09ff*).

Connect Cloud Oracle SD-WAN Aware to Your WAN

There are a few options for connecting Cloud Aware to your existing Talari WAN.

- **Option 1:** Connect Cloud Aware via VPC
 1. A **Virtual Private Gateway** may be used to establish a **VPN Connection** between the VPC and your private network. Please consult AWS documentation for configuration details.
 2. Once the **Virtual Private Gateway** is operational, add a route to the VPC's route table that directs traffic destined for your private network to the **Virtual Private Gateway**.
- **Option 2:** Connect Cloud Aware via Talari Conduit
 1. If you deployed a Talari Virtual Appliance CT800 within a VPC and connected it to your Talari WAN, Cloud Aware can access the rest of the Talari WAN through its secure Talari Conduit.
 2. Add a route to the VPC's route table that directs traffic destined for your private network to the LAN-side **Network Interface** of the CT800 instance
- **Option 3:** Create an AWS Direct Connection

AWS Direct Connect can be used to establish a private connection between the VPC and your private network. Please consult AWS documentation for configuration details (<https://aws.amazon.com/directconnect/>).

Completing the Connection Between Cloud Aware and Your Talari WAN

Once a connection has been established between the VPC and your private network, do the following:

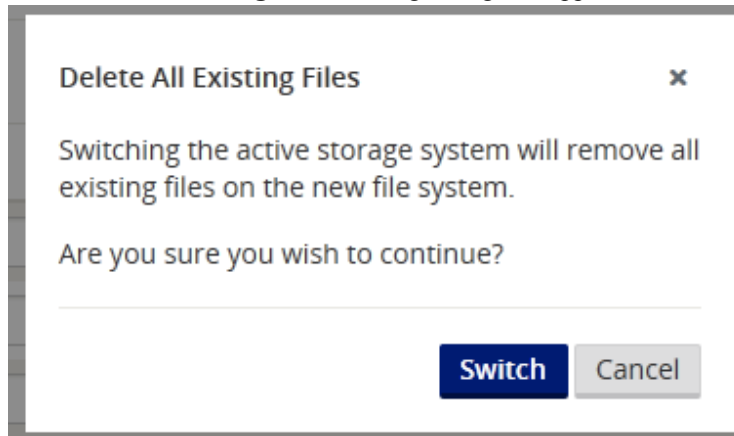
1. Log in to the Oracle SD-WAN Aware web console with the username **talariuser** and password **<AWS-ID>**.
2. From the Oracle SD-WAN Aware web console, go to **Manage**, then **Storage**, then click the **Active** radio button next to the storage partition you created, and click **Apply**.

Manage / Storage

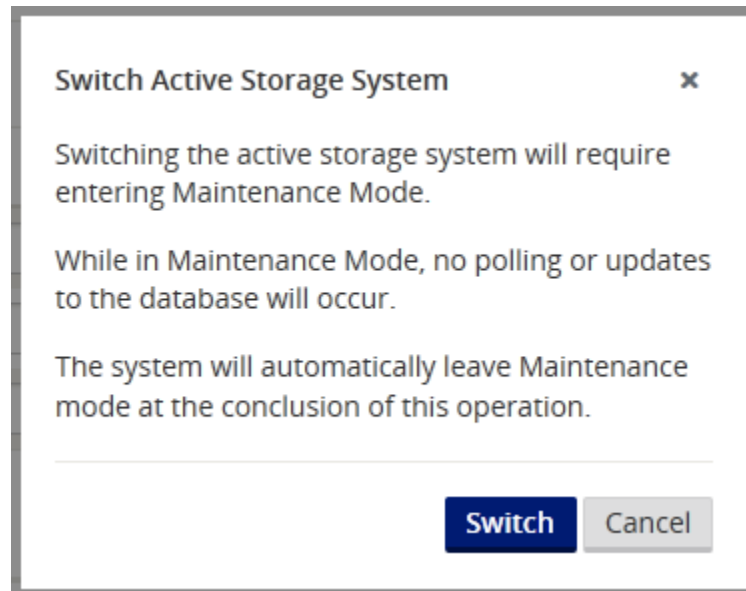
Storage Systems						?
Host	File System	Type	Size (MB)	Available (MB)	Active	Migrate Data
Local*	/dev/sda2	ext3	7416	5333	<input type="radio"/>	<input type="checkbox"/>
Local	/dev/sdb	ext3	100793	94149	<input checked="" type="radio"/>	<input checked="" type="checkbox"/>
Local	/dev/sdc	ext3	16126	12545	<input type="radio"/>	<input type="checkbox"/>

Apply

3. The **Delete All Existing Files** warning dialog will appear. Click **Switch**.



4. The **Switch Active Storage System** dialog will appear. Click **Switch**.



5. Oracle SD-WAN Aware will be placed into **Maintenance Mode**. A progress bar will appear. When the progress bar completes, click **Continue**.
6. From the Oracle SD-WAN Aware web console, go to **Manage**, then **APN Discovery** and click the **Download Certificate** button to download an SSL certificate to your workstation.
7. From the Network Control Node (NCN) web console, go to **Manage Network**, then **APN Aware Certificates** to upload and install the SSL certificate on the NCN.
8. From the Oracle SD-WAN Aware web console, go to **Manage à APN Discovery** and enter the **NCN MGT IP Address**, then click the **Discover** button to discover the Talari Appliances in your Talari WAN.
9. Oracle SD-WAN Aware can now manage and monitor the Talari Appliances on your Talari WAN.

4

Aware Network Traffic

Oracle SD-WAN Aware network traffic uses SSL encryption. To identify or classify Oracle SD-WAN Aware network traffic, look for the following:

1. Poll Request from Oracle SD-WAN Aware to Talari Appliance
 - **Protocol:** TCP
 - **Source IP:** Aware Management IP
 - **Source Port:** Random port number
 - **Destination IP:** Appliance Management IP
 - **Destination Port:** 2156
2. Poll Response from Talari Appliance to Oracle SD-WAN Aware
 - **Protocol:** TCP
 - **Source IP:** Appliance Management IP
 - **Source Port:** 2156
 - **Destination IP:** Aware Management IP
 - **Destination Port:** Same random port number as initial request