

Installing vThunder ADC using VMware Template 1.0.0

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Introduction

The VMware templates 1.0.0 offers the following capabilities for Thunder[®] Application Delivery Controller (ADC):

- Monitors different vThunder performance metrics and logs using the VMware ESXi vRealize tools.
- Publishes the vThunder performance metrics to vRealize Operations (vROps) dashboard using the data collected by the <u>Thunder Observability Agent</u> (TOA). For more information on Thunder logs, see <u>Supported Thunder Metrics</u>.
- Publishes the vThunder syslog to vRealize Log Insight (vRLI) dashboard using the data collected by the <u>Thunder Observability Agent</u> (TOA).
 For more information on Thunder logs, see <u>Supported Thunder Logs</u>.
- NOTE: The VMware Template release v1.0.0 includes the vROps and vRLI dashboard configuration. The VMware templates for vThunder deployment and its configuration would be available in a future release.

The following VMware monitoring tools are supported:

- vRealize Operations (vROps)
- vRealize Log Insight (vRLI)

Figure 1 illustrates vThunder installed on VMware ESXi hypervisor.

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Figure 1 : vThunder for VMware ESXi

	vCenter Server		
A#	A#	💁 🔁 💵	
vThunder	vThunder	Thunder vRealize vRealize Observability Operations Log Insigh Agent Manager	ıt
	ESXi Hypervisor		
	Physical Server		



Terminology

The following is a list of VMware terms commonly used in this document:

- VMware ESXi An enterprise-level Bare Metal hypervisor to create and run virtual machines.
- VMware Realize Operations (vROps) A tool that helps in operating and monitoring the capacity, health, and performance of your hosted infrastructure. It provides a user interface to monitor metrics, create dashboards and graphs, and receive alerts and notifications.
- A10 vThunder A fully operational, software-based Application Delivery Controller (ADC) solution that can run on VMware ESXi. vThunder ADC provides a robust, flexible, and easy-to-deploy application delivery and server load balancing service.
- A10 Thunder Observability Agent (TOA) An external plugin that is installed on CentOS, Linux, or Ubuntu. This agent sends Thunder metrics and logs to vROps and vRLI respectively.
- vRealize Log Insight (vRLI) A tool that helps in troubleshooting issues related to the hosted infrastructure using the log files. It provides a user interface to analyze, collect, manage, and view logs.

Prerequisites

The following tables list the prerequisites for installing vThunder on VMware ESXi:

Hardware Dependencies

Table 1 :	Hardware	Dependencies

Requirement	Description
A10 vThunder Virtual Machine	For trial purposes, the minimum requirements are 4 GB RAM, 4 CPU, 32 GB. To view the available installation options, see <u>A10</u> <u>Support Portal</u> .
For Monitoring	
A10 Thunder Observability Agent (TOA) Virtual Machine	The minimum requirements are 2 GB RAM, 1 CPU, 4 GB.

Software Dependencies

Table 2 : Software Dependencies

Requirement	Version	Description
A10 vThunder	ACOS version	To download the A10 vThunder image on your machine:
		1. Log in to the <u>A10 Support Portal</u> and go to Software and
		Documentation > Thunder & AX
		Series > vThunder Installation -
		ADC/SLB > X.X.X Release >
		vThunder Appliance for VMware or
		vThunder Appliance for KVM.

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Table 2	2 :	Software	Dependencies	
---------	-----	----------	--------------	--

Requirement	Version	Description
		 Select the vThunder OVA <acos_ vThunder_xxx.ova> or ISO image <acos_vthunder_xxx.iso>.</acos_vthunder_xxx.iso></acos_
VMware ESXi	<u>7.0</u>	To install VMware ESXi on your Bare Metal instance, see <u>VMware ESXi</u> <u>Installation and Setup</u> .
For Monitoring		
VMware vRealize Operations (vROps)	<u>v8.6</u>	To install vROps on the ESXi host, see vROps installation.
VMware vRealize Log Insight (vRLI)	<u>v8.8</u>	To install vRLI on the ESXi host, see vRLI installation.
A10 Thunder Observability Agent (TOA)	<u>1.0.0</u>	To install TOA, see <u>Online</u> or <u>Offline</u> documentation.

Compatibility Matrix

The following table provides the compatibility matrix for ACOS version, TOA version, and VMware template.

ACOS Version	VMware Template	TOA Version
64-bit Advanced Core OS (ACOS) version 6.0.0-P2-SP1, build 6	1.0.0	1.0.0
64-bit Advanced Core OS (ACOS) version 6.0.0-P1, build 47	1.0.0	1.0.0
64-bit Advanced Core OS (ACOS) version 5.2.1-P7, build 160	1.0.0	1.0.0
64-bit Advanced Core OS (ACOS) version 5.2.1-P6, build 74	1.0.0	1.0.0
64-bit Advanced Core OS (ACOS) version 5.2.1-P5, build 114	1.0.0	1.0.0

Table 3 : ACOS-TOA-VMware Support Matrix



	Table 3	: ACOS-TOA-VN	/ware Supp	oort Matrix
--	---------	---------------	------------	-------------

ACOS Version	VMware Template	TOA Version
64-bit Advanced Core OS (ACOS) ver-	1.0.0	1.0.0
sion 4.1.4-GR1, build 34		

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To manually install vThunder on the VMware ESXi cloud using the OVA or ISO image, perform the following steps:

- 1. Upload vThunder Image
- 2. Create Two Data Interfaces
- 3. <u>Create Two Port Groups</u>
- 4. Create a Virtual Machine for vThunder
- 5. <u>Verify Installation</u>

Upload vThunder Image

To upload the vThunder OVA or ISO image instance on the VMware ESXi cloud, perform the following steps:

- 1. Log in to your VMware ESXi host system.
- 2. From the VMware ESXi console, go to Navigator > Storage for the selected host.

The <*your_host*> - Storage window is displayed.

Figure 2 : Storage window

vmware [®] Esxi [®]					
Navigator	localhost.px	e.example.com	- Storage		
▶ 🗐 Host	Datastores	Adapters	Devices	Persistent Memory	
Virtual Machines 13 Storage 2	智 New datas	store 🖭 Incre	ease capacity	🗗 Register a VM	

3. Under the **Datastores** tab, select your storage name.

The selected storage window is displayed.



Figure 3 : Selected Storage

vm ware [®] ESXi [®]						
" Navigator		datastore1				
✓ ☐ Host Manage		🚏 Register a VM	1 🟹 Datastore bro	owser 📔 Increase capacit	y CRefresh	🛟 Actions
Monitor			datastore1			
🕨 🔂 Virtual Machines	12		Type:	VMFS6		
	2		Location:	/vmfs/volumes/624e7799	-dab4c5c0-b0cd-246e	968139e0
■ datastore1			UUID:	624e7799-dab4c5c0-b0c	d-246e968139e0	
			Hosts:	1		
Monitor			Virtual Machines:	8		
More storage						
▶ <u> Networking</u>	3	▼ VMFS details				
		· · ·		0.00		

- 4. Click the **Datastore browser** to open the datastore file browser.
- 5. From the **Datastore browser** window, select the **images** folder.
- 6. Click **Upload** to browse to the location where you have saved the vThunder OVA or ISO image.

Figure 4 : Datastore browser

C Datastore browser			
🛉 Upload 🖺 Download	📑 Delete 🛛 🔒 Move	🕒 Сору	造 Create directory 🛛 🥑 Refresh
Data2	늘 .sdd.sf		
📑 datastore1	images		
		-	

 Select the required version of the vThunder image and click **Open**. The selected image is uploaded to the VMware ESXi cloud and listed under the images folder.



Figure 5 : Browse vThunder ISO image

atastore browser			
🛉 Upload 📑 Download	🙀 Delete 🛛 🔒 Move 👔 Co	by 🎦 Create directory	C Refresh
datastore1	 images vgautamAgent VMware vCenter S VMware-vRealize-L vRealize-Automation vRealize-Operation vRopsMgr863 vThunder_4_33_a VMware-VCSA-all 	ACOS_vThunder_5	 ACOS_vThunder_5 913.28 MB Friday, April 22, 2022,
[datastore1] images/ACC	S_vThunder_5_3_0-d_112.iso		
			Select Cancel

8. Ensure that the image is successfully uploaded and then close the **Datastore Browser** window.

Create Two Data Interfaces

To create the data interfaces on the ESXi host using a virtual switch, perform the following steps:

1. Go to **Navigator** > **Networking** for the selected host.

The <*your_host*> - Networking window is displayed.

....



Figure 6 : Networking window

vm ware [®] ESXi [®]					
Navigator		🧕 localhost.pxe.	.example.com - Netw	orking	
▶ 📱 Host		Port groups	Virtual switches	Physical NICs	VMkernel N
Given Storage	14 2	<u> S</u> Add port gr	oup 🥒 Edit settings	Refresh	🐥 Actions
🛯 🔮 Networking	3	Name		✓ Active ports	~ VLAN ID

2. Select the Virtual switches tab.

The <*your_host*> - Virtual switches window is displayed.

Figure 7 : Virtual switches tab

vm ware [®] ESXi [®]							
Navigator		ocalhost.pxe	.example.com - Netwo	orking			
🕨 🗐 Host		Port groups	Virtual switches	Phys	ical NICs	VMker	nel NICs
 ▶	12 2	浩 Add standa	ard virtual switch 📃	Add uplin	k 🥜 Edit	settings	C Refr
🛛 🔮 Networking	3	Name		~	Port groups	6	

3. Click Add standard virtual switch to add a new switch.

The **Add standard virtual switch -** *<New switch>* window is displayed.

Figure 8 : Add new virtual switch

2 Add standard virtual switch - data1	
🔜 Add uplink	
vSwitch Name	data1
MTU	1500
Uplink 1	vmnic6 - Up, 100000 mbps 🗸 🗸 🛇
Link discovery	Click to expand
▶ Security	Click to expand
	Add Cancel

4. Enter the appropriate values in the following fields:



Table 4 · Add	standard	virtual	switch		switch
Table 4 . Auu	Stanuaru	viituai	SWILLII	- 116.00	SWILLII

Field Name	Description	
vSwitch Name	Enter the data interface name.	
	Example	
	In the Figure 8, data1 is the data interface.	
MTU	Select the value as 1500 or above.	
Uplink 1	Select the uplink.	

5. Click Add.

The data interface 1 is listed under the Virtual switches tab.

6. Perform the above steps to create data2 for data interface 2.

Create Two Port Groups

To create the port groups on the ESXi host, perform the following steps:

1. From the **Networking** window, select the **Port groups** tab.

The <*your_host*> - Port groups window is displayed.

Figure 9 : Ports groups tab

vmware ESXi							
Navigator		🧕 localhost.pxe.e	example.com - Netwo	orkin	g		
🕨 📱 Host		Port groups	Virtual switches	Ρ	hysical NICs		٧N
 Intual Machines Intual Storage 	12 2	<u> 8</u> Add port gro	pup 🥒 Edit settings		C Refresh	\$	Ac
Networking	3	Name		~	Active ports	~	VI

2. Click Add port group.

The **Add port group -** *<New port group>* window is displayed.



Figure 10 : Add new port group

Name	Data1 Network	
VLAN ID	0	
Virtual switch	data1 ~	
Security	Click to expand	

3. Enter or select the appropriate values in the following fields:

Field Name	Description	
Name	Enter the port group name. Example	
	In the Figure 10, Datal Network is the port group	
	name.	
VLAN ID	Enter the VLAN ID for port group.	
	Example: In the Figure 10, 0 is the VLAN ID.	
Virtual switch	Select the data interface name created in Create	
	Two Data Interfaces.	

Table 5 : Add port group - New port group

4. Click Add.

The port group is listed under the **Port groups** tab.

5. Perform the above steps to create Data2 Network for port group 2.

Create a Virtual Machine for vThunder

To create a virtual machine for vThunder, perform the following steps:

1. From the VMware ESXi console, go to Navigator > Virtual Machines for the selected host.

The <*your_host*> - Virtual Machines window is displayed.



Figure 11 : Virtual Machines window

vm ware [®] ESXi [™]				
Peee Navigator		🔁 localhost.pxe.example.com - Virtual Machines		
		Treate / Register VM Pc	wer on 📃	Pov
Monitor		Virtual machine ~	Status 🗸	Us
🔻 🚰 Virtual Machines	14	. 🗗 VMware vCenter Server	🕑 Nor	80
▼		🗋 🚠 vRopsMgr863	📀 Nor	29

2. Click Create / Register VM to create a new virtual machine.

The New virtual machine window is displayed.

Figure 12 : New virtual machine

1 Select creation type 2 Select a name and guest OS 3 Select storage	Select creation type How would you like to create a Virtual Machine?	
4 Customize settings 5 Ready to complete	Create a new virtual machine	This option guides you through creating a new virtual machine. You will be able to customize processors,
	Deploy a virtual machine from an OVF or OVA file Register an existing virtual machine	memory, network connections, and storage. You will need to install a guest operating system after creation.
vm ware		

3. Depending on the image file type, perform the corresponding steps:

OVA

To create a virtual machine for vThunder using OVA file, perform the following steps:

a. Under the Select creation type tab, select Deploy a virtual machine from an OVF or OVA file and click Next.



The Select OVF and VMDK files tab is displayed.

Figure 13 : Select OVF and VMDK files tab

10 New virtual machine - ACOS_vThunder_5_2_1-P6_74.ova				
 1 Select creation type 2 Select OVF and VMDK files 3 Select storage 	Select OVF and VMDK files Select the OVF and VMDK files or OVA for the VM you would like to deploy			
4 License agreements	Enter a name for the virtual machine.			
6 Additional settings	ACOS_vThunder_5_2_1-P6_74.ova			
7 Ready to complete	Virtual machine names can contain up to 80 characters and they must be unique within each ESXi instance.			
vm ware [*]	× matrix ACOS_vThunder_5_2_1-P6_74.ova			
	Back Next Finish Cancel			

- b. Enter the name of the virtual machine.
- c. Browse to the OVA image from the designated area and then click **Open**.

The Select storage tab is displayed.

Figure 14 : Select storage tab

1 New virtual machine - ACOS_vThun	der_5_2_1-P6_74.ova					
 1 Select creation type 2 Select OVF and VMDK files 3 Select storage 4 License agreements 5 Deployment options 6 Additional settings 7 Ready to complete 	es and all of its'	virtual disks.				
	Name ~	Capacity 🗸	Free v	Туре	Thin pro ~	Access ~
	4TB	3.64 TB	2.9 TB	VMFS6	Supported	Single
	Data2	930.75 GB	405.13 GB	VMFS6	Supported	Single
	datastore1	765.5 GB	173.3 GB	VMFS6	Supported	Single
	3 items					
vm ware [,]						
			E	Back	Next	nish Ca

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d. Select your storage name and then click Next.

The License agreements tab is displayed.

Figure 15 : License agreements tab

1 New virtual machine - ACOS_vThun	der_5_2_1-P6_74.ova
 1 Select creation type 2 Select OVF and VMDK files 3 Select storage 4 License agreements 5 Deployment options 6 Additional settings 7 Ready to complete 	 a) Cramster, assign or sublicense its license rights to any other person or entity, or use the sortw b) make error corrections to or otherwise modify or adapt the Software or create derivative works ba c) reverse engineer or decompile, decrypt, disassemble or otherwise reduce the Software to human rea d) disclose, provide, or otherwise make available trade secrets contained within the Software and Do e) deploy, install and/or use in any way this Software and Documentation if you are employee or agen Software, Upgrades and Additional Products or Copies. For purposes of this Agreement, "Software" and "Pro OTHER PROVISIONS OF THIS AGREEMENT: a) CUSTOMER HAS NO LICENSE OR RIGHT TO USE ANY ADDITIONAL COPIES OR UPGRADES UNLESS CUSTOMER, AT THE b) USE OF UPGRADES IS LIMITED TO A10 NETWORKS SOFTWARE AND EQUIPMENT FOR WHICH CUSTOMER IS THE ORIGI c) THE MAKING AND USE OF ADDITIONAL COPIES IS LIMITED TO NECESSARY BACKUP PURPOSES ONLY.
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	Back Next Finish Cancel

e. Scroll to the bottom of the license to click I Agree and then click Next.

The **Deployment options** tab is displayed.

Figure 16 : Deployment options tab

 1 Select creation type 2 Select OVF and VMDK files 3 Select storage 	Deployment options Select deployment options	
 4 License agreements 5 Deployment options 6 Additional settings 7 Ready to complete 	Network mappings	Mgmt VM Network > Ethernet 1 Data1 Network > Ethernet 2 Data2 Network >
	Disk provisioning	● Thin ○ Thick
	Power on automatically	
vm ware		
		Back Next Finish Cancel

• • • • • •



f. Enter or select the appropriate values in the following fields:

Field Name	Description
Network mappings	Select the appropriate values in the Ethernet 1 , Ethernet 2 , and Mgmt fields.
Disk provisioning	Select the appropriate option as per your setup.
Power on automatically	Select the check box.

g. Click Next.

h. In the Additional settings tab, click Next to skip.

The Ready to complete tab is displayed.

Figure 17 : Ready to complete tab

1 Select creation type 2 Select OVF and VMDK files 3 Select storage	Ready to complete Review your settings selection bef	fore finishing the wizard
4 License agreements 5 Deployment options	Product	vThunder_5.2.1-P6.74
6 Additional settings	VM Name	ACOS_vThunder_5_2_1-P6_74.ova
7 Ready to complete	Files	ACOS_vThunder_5_2_1-P6_74-disk1.vmdk
	Datastore	Data2
	Provisioning type	Thin
	Network mappings	Mgmt: VM Network,Ethernet 1: Data1 Network,Ethernet 2: Data2 Network
	Guest OS Name	Unknown
	Properties	Click to expand
vm ware	Do not refresh you	ir browser while this VM is being deployed.

i. Review the VM properties and click Finish.

The vThunder virtual machine instance is created using OVA image.

ISO

To create a virtual machine for vThunder using ISO file, perform the following steps:



a. Under the **Select creation type** tab, select **Create a new virtual machine** and click **Next**.

The Select a name and guest OS tab is displayed.

Figure 18 : Select a name and guest OS tab

1 New virtual machine - vth-inst1 (ES	Xi 7.0 U2 virtual machine)		
 1 Select creation type 2 Select a name and guest OS 3 Select storage 	Select a name and guest OS Specify a unique name and OS	\$	
4 Customize settings 5 Ready to complete	characters and they must be unique within each ESXI instance. allows the wizard to provide the appropriate defaults for the operating	g system	
	Installation. Compatibility Guest OS family	ESXi 7.0 U2 virtual machine Linux	~
vm ware [.]	Guest OS version	CentUS / (64-bit)	~
		Back Next Finish	Cancel

b. Enter or select the appropriate values in the following fields:

Field Name	Description
Name	Enter the virtual machine name.
	Example
	In the Figure 13, the virtual machine is vth -
	instl.
Compatibility	Select ESXi 7.0 U2 virtual machine.
Guest OS family	Select Linux.
Guest OS Version	Select CentOS 7 (64-bit).

Table 7 : Select a name and guest OS tab

c. Click Next.

The Select storage tab is displayed.



Figure 19 : Select storage tab

1 New virtual machine - vth-inst1 (E	SXi 7.0 U2 virtual machine)								
 1 Select creation type 2 Select a name and guest OS 3 Select storage 4 Customize settings 5 Ready to complete 	Select storage Select the storage type and datast Standard Persistent Memory Select a datastore for the virtual	y machine's o	configuration file	es and all of it	s' virtual dis	ks.			
	Name datastore1	~	Capacity ~ 765.5 GB	Free <	TypeVMFS6	✓ Th Su	in pro 🗸	Access Single 1 it	~ ems
vmware									
					Back	Next	Fin	ish	Can

d. Select your storage name and click Next.

The **Customize settings** tab is displayed.

Figure 20 : Customize settings tab

New virtual machine - vth-inst1 (E	SXi 7.0 U2 virtual machine)					
1 Select creation type 2 Select a name and guest OS 3 Select storage 4 Customize settings	Customize settings Configure the virtual machine hardware a	nd virtual machine additional options				
5 Ready to complete	Virtual Hardware VM Options					
	Add hard disk 🔳 Add network a	dapter 🚍 Add other device				
	CPU	2 ~ ()				
	Memory	4 GB ~				
	▶ 🚐 Hard disk 1	32 GB ~	8			
	SCSI Controller 0	LSI Logic Parallel~	\otimes			
	SATA Controller 0		8			
	USB controller 1	USB 2.0 ~	\otimes			
	▼ MM Network Adapter 1	VM Network ~	\otimes			
	Status	Connect at power on				
	Adapter Type	E1000e ~				
vm ware	MAC Address	Automatic ~ 00:00:00:00:00				
		Back Next Finish	Cance			



e. Enter or select the appropriate values for Virtual Hardware in the following fields:

Table 8 : Customize settings tab

Field Name	Description
CPU	Enter the number of CPUs required.
	The minimum requirement is 2 CPUs.
Memory	Enter the required RAM.
	The minimum requirement is 4 GB.
Hard disk	Enter the required Hard disk memory.
	The minimum requirement is 32 GB.
SCSI Controller 0	Select LSI Logic Parallel.
Network Adapter 1	Select VM Network.
Status	Select the Connect at power on check box.
Adapter Type	Select E1000e.
MAC Address	Select Automatic.

f. From the Customize Settings tab, click Add network adapter.

The fields for the new network adapter are added.



Figure 21 : Customize settings tab

Select creation type Select a name and guest OS Select storage	Customize settings Configure the virtual machine hardware	and virtual machine additional options	
Customize settings	Virtual Hardware VM Options		
	🔜 Add hard disk 🛛 🛤 Add network	adapter 🗧 Add other device	
	► 🔲 CPU	2 ~	
	Memory	4 GB ~	
	► → Hard disk 1	32 GB ~	\otimes
	► 🚱 SCSI Controller 0	LSI Logic Parallek	\otimes
	SATA Controller 0		\otimes
	🚭 USB controller 1	USB 2.0 ~	\otimes
	► Max Network Adapter 1	VM Network VM Connect	\otimes
	✓ ■■ New Network Adapter	Data1 Network 🗸	8
	Status	Connect at power on	
	Adapter Type	VMXNET 3 ~	
	MAC Address	Automatic v 00:00:00:00:00:00	
vm ware	► 💿 CD/DVD Drive 1	Datastore ISO file	\otimes

g. Continue to enter or select the appropriate values for Virtual Hardware in the following fields:

Table 9 : Customize settings tab

Field Name	Description
New Network Adapter	Select Data1 Network.
Status	Select the Connect at power on check box.
Adapter Type	Select VMXNET3.
MAC Address	Select Automatic.
CD/DVD Drive 1	Select Datastore ISO file.

On selecting **CD/DVD Drive 1**, the Datastore browser window is displayed. Browse and select the uploaded vThunder ISO image from the **images** folder.

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Figure 22 : Browse vThunder ISO image

🔁 New virtual m	🟹 Datastore browser								
1 Select creati	摿 Upload 🛛 🗎 Download	🛃 Delete 🔒 Move 👔 Co	ру	造 Create directory 🛛 🧲	Ref	resh			
 2 Select a nam 3 Select storage 4 Customize s 5 Ready to construct the select storage 	turimages	 .sdd.sf images vgautamAgent VMware vCenter S VMware-vRealize-L vRealize-Automation vRealize-Operation vRopsMgr863 vThunder_4_33_a VMware-VCSA-all 	1	ACOS_VThunder_5 CentOS-7-x86_64 Windows10edu.iso		© ACOS_VThunder_5 913.28 MB Friday, April 22, 2022,		© ect	
vm		111							
	[datastore1] images/ACC	S_vThunder_5_3_0-d_112.iso							
						Select Cance	el		anc

h. Click Next.

The **Ready to complete** tab is displayed.

Figure 23 : Ready to complete tab

1 Select creation type 2 Select a name and guest OS	Ready to complete	e finishing the wizard
3 Select storage		- ··········
4 Customize settings	Name	vth-inst1
5 Ready to complete	Datastore	datastore1
	Guest OS name	CentOS 7 (64-bit)
	Compatibility	ESXi 7.0 U2 virtual machine
	vCPUs	2
	Memory	4 GB
	Network adapters	2
	Network adapter 1 network	VM Network
	Network adapter 1 type	E1000e
	Network adapter 2 network	Data1 Network
	Network adapter 2 type	VMXNET 3
vm ware*	IDE controller 0	IDE 0
	IDE controller 1	IDE 1

i. Click Finish.

The vThunder virtual machine instance is created using ISO image.

4. Go to Navigator > Virtual Machines and select your vThunder instance.

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The vThunder virtual machine browser console is displayed.

Figure 24 : Browser console

T Navigator	6 vth-inst1
✓ ☐ Host Manage	😴 Console 🔤 Monitor 🕨 Power off 🔢 Suspend 😋 Restart 🦯 Edit 🤁 Refresh 🎄 Actions
Monitor	Vihi-inst1 CPU CPU Guest OS CentOS 7 (64-bit) CPU Compatibility ESX 7 0.02 vitual machine 0 MHz
- A vth-Inst1 Monitor	Vitware Tools No MEMORY WILL CPUS 2 0B Memory 4 GB
 VMware-vRealize-Log-I More VMs 	STORAGE 32 GB
Image 1 Image 2	VMware Tools is not installed in this virtual machine. VMware Tools allows detailed guest information to be displayed as well as allowing you to perform operations on the guest OS, e.g. graceful shutdown, reboot, etc. You should install VMware Tools. The Actions
	General Information Hardware Configuration
	* Resource Consumption

5. Click Power on.

NOTE: The system may take a few minutes to power on the vThunder instance.

When the vThunder instance is ready, a command prompt window is displayed.

Figure 25 : Launch Console

Console Monitor	Power on 📮 Power	off 🔢 Suspend 🧐 Reset 🥒 Edit 🧲 Refresh 🔅 Actions		
beatheat boyler _	vth-inst1		CPU	-
	Guest OS	CentOS 7 (64-bit)		
	Compatibility	ESXi 7.0 U2 virtual machine		
	VMware Tools	No		
	CPUs	2		
	Memory	4 GB		
e			MEMORY	
			0 B	

6. Click **Console** to launch the vThunder instance.

The vThunder instance opens in the command line interface.

- 7. Log in to the vThunder virtual machine instance using the following credentials:
 - localhost login: install
 - **Password**: password
- 8. Type **YesS** at the prompt to verify the installation.



```
localhost login: install
Password:
Last login: Wed Feb 15 00:49:15 on tty1
Automated install script for netXTM
Please backup your data before attempting re-installation
This will delete all partitions in your harddrive - type YesS to
continue
Caution::Installing netXTM application - continue [No/YesS]: YesS
```

9. Log in using the default credentials provided by A10 Networks Support and change the default password immediately after the first login.

```
login as: xxxx <---Enter username provided by A10 Networks Support--->
Using keyboard-interactive authentication.
Password: xxxx <---Enter password provided by A10 Networks Support-->
Last login: Day MM DD HH:MM:SS from a.b.c.d
System is ready now.
[type ? for help]
vThunder(NOLICENSE)> enable <---Execute command--->
Password:<---just press Enter key--->
vThunder(NOLICENSE)#config <---Configuration mode--->
vThunder(config)(NOLICENSE)#admin <admin_username> password <new_
password>
```

NOTE: It is highly recommended to change the default password when you log in for the first time.

10. Run the following command to configure the management interface on vThunder:

```
vThunder(config)(NOLICENSE)#interface management
vThunder(config-if:management)(NOLICENSE)#ip address <ip-
address>/<subnet mask>
vThunder(config-if:management)(NOLICENSE)#enable
vThunder(config-if:management)(NOLICENSE)#ip default-gateway <gateway-
ip-address>
vThunder(config-if:management)(NOLICENSE)#exit
```

11. Run the following command to configure the data interface on vThunder:



```
vThunder(NOLICENSE)#config
vThunder(config)(NOLICENSE)#interface ethernet 1
vThunder(config-if:management)(NOLICENSE)#ip address <ip-
address>/<subnet mask>
vThunder(config-if:management)(NOLICENSE)#enable
vThunder(config-if:management)(NOLICENSE)#write memory
```

The virtual machine for vThunder is ready.

Verify Installation

To verify the installation, perform the following steps:

1. Run the following command to verify the running configuration:

vThunder(config-if:ethernet:1)(NOLICENSE)#**show running-config**

If the installation is successful, the following configuration is displayed:

```
!Current configuration: 103 bytes
!Configuration last updated at 17:36:35 GMT Wed Feb 15 2023
!Configuration last saved at 17:35:40 GMT Wed Feb 15 2023
!64-bit Advanced Core OS (ACOS) version 5.2.1, build 112 (Oct-25-
2021,14:34)
!
!
interface management
ip address 10.67.4.12 255.255.255.0
ip default-gateway 10.67.4.1
enable
interface ethernet 1
enable
ip address 10.10.4.5 255.255.255.0
!
!
end
```

2. Run the following command to verify if vThunder is reachable from the local



instance.

C:\Users\<user>> ping <management-interface-ip>

Example:

C:\Users\<user>> ping 10.67.4.12

3. Verify if a response is received.

```
Pinging 10.67.4.12 with 32 bytes of data:
Reply from 10.67.4.12: bytes=32 time=262ms TTL=61
Reply from 10.67.4.12: bytes=32 time=261ms TTL=61
Reply from 10.67.4.12: bytes=32 time=263ms TTL=61
Reply from 10.67.4.12: bytes=32 time=263ms TTL=61
Ping statistics for 10.67.4.12:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 261ms, Maximum = 263ms, Average = 261ms
```

Thunder Observability Agent (TOA) is a lightweight autonomous data processing engine that can be externally installed and configured for any Thunder device.

The TOA offers the following capabilities for Thunder[®] Application Delivery Controller (ADC):

- Collects, processes, and publishes 14 Thunder metrics. The default data collection frequency is 1 minute. The metrics can be published on the same platform where the Thunder instance is deployed. For more information on Thunder metrics, see *Supported Thunder Metrics*.
- Collects, processes, and publishes Thunder Syslogs. The default data collection frequency is 1 minute. The logs can be published on the same platform where the Thunder instance is deployed. Additionally, logs can also be sent to any AWS, Azure, or VMware platforms. For more information on Thunder logs, see Supported Thunder Logs.
- Manages the data collection, processing, aggregation, and publishing internally.
- Provides multitasking capabilities to collect and process data from multiple Thunder instances and their partitions simultaneously. By default, it collects data from a shared partition.
- TOA supports Shared and L3V partitions. The maximum number of partitions supported per Thunder is 20.
- Installs on any orchestration platform such as public cloud compute instances, private cloud physical or virtual machines, hypervisor VMs, and on-premise physical hardware and is self-driven.
- Supports Linux, CentOS, and Ubuntu platforms as a Python Plugin installation package and Docker containerization.
- Supports single or multiple Thunder instances.
- Supports Thunder instances running under AWS auto scaling group or Azure Virtual machine scale set (VMSS).

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- Collects data from any type of Thunder device installed on public cloud compute instances, private cloud physical or virtual machines, hypervisor VMs, and on-premise physical hardware installation.
- Publishes data to Azure Cloud, AWS Cloud, and VMware ESXi.

To install TOA on the VMware ESXi cloud using an ISO image, perform the following steps:

- 1. Upload ISO Image
- 2. Create Virtual Machine for TOA
- 3. Verify TOA Virtual Machine
- 4. Install TOA

Upload ISO Image

To upload a <u>CentOS</u> or <u>Ubuntu</u> ISO image instance on the VMware ESXi cloud, perform the following steps:

- 1. Log in to your VMware host system.
- 2. From the VMware ESXi console, go to Navigator > Storage for the selected host.

The <your_host> - Storage window is displayed.

Figure 26 : Storage window

vmware [®] ESXi ^{®®}		
Navigator	localhost.pxe.example.com -	Storage
▶ 📱 Host	Datastores Adapters	Devices Persistent Memory
▶ Image: Storage	3 2 New datastore 🛃 Increas	e capacity \mid 🗗 Register a VM 🛛 🤯

3. Under the **Datastores** tab, select your storage name.

The selected storage window is displayed.

30



Figure 27 : Selected Storage

vmware ESXi"		
Navigator	datastore1	
✓ ☐ Host Manage	🚏 Register a VM 🙀 Datastore brows	er 🛃 Increase capacity 🤁 Refresh 🏟 Actions
Monitor	datastore1	
Virtual Machines	Туре:	VMFS6
▼ Storage 2	Location:	/vmfs/volumes/624e7799-dab4c5c0-b0cd-246e968139e0
✓	UUID:	624e7799-dab4c5c0-b0cd-246e968139e0
	Hosts:	1
Monitor	Virtual Machines:	8
More storage		
▶ 👰 Networking 3	▼ VMFS details	
	1	0.00

- 4. Click **Datastore browser** to open the datastore file browser.
- 5. From the **Datastore browser** window, select the **images** folder.
- 6. Click **Upload** to browse to the location where you have saved the CentOS ISO image.

Figure 28 : Datastore browser

C Datastore browser			
🛉 Upload 🖺 Download	📑 Delete 🛛 🔒 Move	🕒 Сору	造 Create directory 🛛 🧲 Refresh
Data2	isdd.sf		
I datastore1	images		
		-	

7. Select the CentOS ISO image of the required version to be uploaded and click **Open**.

The selected image is listed under the **images** folder.



Figure 29 : Browse CentOS ISO image

	Datastore browser		
1	Upload 隆 Download 📑	elete 🕒 Move 👔 Copy 🎦 Create directory 🥑 R	Refresh
	isdd.sf	ACOS_vThunder_5iso	
	 Images vgautamAgent VMware vCenter S VMware-vRealize-L vRealize-Automation vRealize-Operation vRopsMgr863 vth-inst1 vThunder_4_33_a VMware-VCSA-all 	Windows10edu.iso	CentOS-7-x86_64-Mini 942 MB Friday, April 22, 2022,
	[datastore1] images/CentOS-	86_64-Minimal-1908.iso	Select Cancel

8. Ensure that the image is successfully uploaded and then close the **Datastore Browser** window.

Create Virtual Machine for TOA

To create a virtual machine for TOA, perform the following steps:

1. From the VMware ESXi console, go to Navigator > Virtual Machines for the selected host.

The <your_host> - Virtual Machines window is displayed.



Figure 30 : Virtual Machines window

vm ware [®] ESXi [™]				
Navigator		🔁 localhost.pxe.example.com - Virtual Machines		
▼ Host Manage Monitor		Treate / Register VM	wer on	Pov
Virtual Machines	14	Winder machine	Nor	80
▼ → vRopsMgr863		🗖 👘 vRopsMgr863	🕑 Nor	29

2. Click Create / Register VM to create a new virtual machine.

The New virtual machine window is displayed.

Figure 31 : New virtual machine

Select creation type	Select creation type	
Select storage	How would you like to create a Virtual Machine?	
Customize settings Ready to complete	Create a new virtual machine	This option guides you through creating a new virtual machine. You will be able to customize processors,
	Deploy a virtual machine from an OVF or OVA file	memory, network connections, and storage. You will need to install a guest operating system after creation.
	Register an existing virtual machine	
vm ware		

3. Under the Select creation type tab, select Create a new virtual machine and click Next.

The Select a name and guest OS tab is displayed.



Figure 32 : Select a name and guest OS tab

1 New virtual machine - toa(ESXI 7.0 U2 virtual machine)					
 1 Select creation type 2 Select a name and guest OS 3 Select storage 4 Successive address 	Select a name and guest OS Specify a unique name and OS				
5 Ready to complete	Name toa Virtual machine names can contain up to 80 Identifying the guest operating system here a installation.	characters and they must be unique within each	ESXi instance. ults for the operating system		
	Compatibility	ESXi 7.0 U2 virtual machine	~		
	Guest OS family	Linux	~		
	Guest OS version	CentOS 7 (64-bit)	~		
vm ware					
		Back Ne	ext Finish Cancel		

4. Enter or select the appropriate values in the following fields:

Table	10 :	Select a	а	name	and	guest	OS	tab
i aoic	_ .	001000	~	manne		Bacor	00	

Field Name	Description	
Name	Enter the virtual machine name.	
	Example	
	In the Figure 32, toa is the virtual machine.	
Compatibility	Select ESXi 7.0 U2 virtual machine.	
Guest OS family	Select Linux.	
Guest OS Version	Select CentOS 7 (64-bit).	

5. Click Next.

The **Select storage** tab is displayed.



Figure 33 : Select storage tab

🔁 New virtual machine - toa(ESXi 7.0 U2 virtual machine)							
 1 Select creation type 2 Select a name and guest OS 3 Select storage 4 Customize settings 5 Ready to complete 	Select storage Select the storage type and datastore Standard Persistent Memory Select a datastore for the virtual machine's of	onfiguration file:	s and all of its' v	irtual disks.			
	Name ~	Capacity 🗸	Free v	Type ~	Thin pro v	Access	~
	Data2	930.75 GB	222.91 GB	VMFS6	Supported	Single	
	datastore1	765.5 GB	253 MB	VMFS6	Supported	Single	
						2 i	tems
vm ware							
			Ba	ck N	ext Finis	h C	Cancel

6. Select your storage name and click Next.

The **Customize settings** tab is displayed.



Figure 34 : Customize settings tab

' 1 Select creation type ' 2 Select a name and guest OS ' 3 Select storage	Customize settings Configure the virtual machine hardware and virtual machine additional options			
4 Customize settings 5 Ready to complete	Virtual Hardware VM Options			
	Add nard disk Add network			
	► Memory	2 GB ~		
	▶ 🛄 Hard disk 1	4 GB ~	8	
	▶ SCSI Controller 0	LSI Logic Parallel~	8	
	SATA Controller 0		8	
	USB controller 1	USB 2.0 ~	8	
	✓ M Network Adapter 1	VM Network ~	8	
	Status	Connect at power on		
	Adapter Type	E1000e ~		
vm ware	MAC Address	Automatic ~		

7. Enter or select the appropriate values for Virtual Hardware in the following fields:

Field Name	Description	
CPU	Enter the number of CPU required.	
	The minimum requirement is 1 CPU.	
Memory	Enter the required RAM.	
	The minimum requirement is 2 GB.	
Hard disk	Enter the required Hard disk memory.	
	The minimum requirement is 4 GB.	
SCSI Controller 0	Select LSI Logic Parallel.	
Network Adapter 1	Select VM Network.	
Status	Select the Connect at power on check box.	

Table 11 : Customize settings tab

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.
Field Name	Description
Adapter Type	Select E1000e .
MAC Address	Select Automatic.
CD/DVD Drive 1	Select Datastore ISO file.

Table 11 : Customize settings tab

On selecting **CD/DVD Drive 1**, the Datastore browser window is displayed. Browse and select the uploaded vThunder ISO image from the **images** folder.

Figure 35 : Browse TOA ISO image



8. Click Next.

The Ready to complete tab is displayed.



Figure 36 : Ready to complete tab

🎦 New virtual machine - toa (ESXi 7.0	U2 virtual machine)	
 1 Select creation type 2 Select a name and guest OS 	Ready to complete Review your settings selection before fi	nishing the wizard
✓ 3 Select storage		
4 Customize settings 5 Ready to complete	Name	toa
	Datastore	Data2
	Guest OS name	CentOS 7 (64-bit)
	Compatibility	ESXi 7.0 U2 virtual machine
	vCPUs	1
	Memory	2 GB
	Network adapters	1
	Network adapter 1 network	VM Network
	Network adapter 1 type	E1000e
	IDE controller 0	IDE 0
	IDE controller 1	IDE 1
	SCSI controller 0	LSI Logic Parallel
	SATA controller 0	New SATA controller
	Hard disk 1	
	Capacity	4GB
viiiware	Datastore	[Data2] toa/
		Back Next Finish Cancel

9. Click Finish.

The TOA virtual machine instance is created.

10. Go to Navigator > Virtual Machines and select your TOA instance.

The TOA virtual machine browser console is displayed.

Figure 37 : Browser console

Navigator	Toa		
▼ 🗐 Host	Concele III Manifer D Dawar of III Support O Destart C Edit C Defrech S Antione		
Manage			
Monitor	toa	CPU	a I
- P Virtual Machines	Guest US CentOS (04-bit) Compatibility ESX 7.0 U2 vitual machine	0 MHz	- I
	VMware Tools No	MEMORY	2005
Monitor	CPUs 1	0 B	
historia	Nemory 4 GB	STORAGE	8
 VMware-vRealize-Log-L 		16 GB	_

11. Click Power on.

NOTE: The system may take a few minutes to power on the TOA instance.

When the TOA instance is ready, a command prompt window is displayed.

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Figure 38 : Launch Console

"Havigator	😚 toa		
✓ ☐ Host Manage	🚰 Console 🔤 Monitor 🕨 Power on 📮 Powe	r off 🔢 Suspend 😋 Reset 🥒 Edit 🧭 Refresh 🏠 Actions	
Monitor	tna Guest OS	CentOS 7 (64-bit)	CPU
▼	Compatibility	ESXi 7.0 U2 virtual machine	0 MINZ
👻 🎒 toa	VMware loois VMware loois CPUs	No 1	0 B
Monitor	New to be full endperior at the endperior of the Memory	4 GB	STORAGE
th-inst1 Mware-vRealize-Log-l	Accessive to the seconds		16 GB

12. Click **Console** to launch the TOA instance.

The CentOS 7 boot menu is displayed.



Figure 39 : CentOS 7 boot menu

13. Select **Install CentOS 7** and press **Enter** to launch the CentOS 7 Installation wizard.

The Welcome panel is displayed.



Figure 40 : Welcome panel

CENTOS 7 INSTALL CENTOS 7 INSTALL CENTOS WELCOME TO CENTOS 7. What language would you like to use during the installation process?	ATION Help!
CentOS WELCOME TO CENTOS 7. What language would you like to use during the installation process?	
What language would you like to use during the installation process?	
English English (United States)	
Afrikaans Afrikaans English (United Kingdom)	
মণ্যরেই Amharic English (India)	
العربية Arabic English (Australia)	
অসমীয়া Assamese English (Canada)	
Asturianu Asturian English (Jehnmark)	
Беларуская Belarusiar English (New Zealand)	
Български Bulgariari English (Nigeria)	
বাংলা Bengali English (Hong Kong SAR China)	
Eastisk /Okiliasiasa	

14. Select the language and region to be used during the installation process and click **Continue**.

The Installation Summary panel is displayed.

Figure 41 : Installation Summary panel







15. Click Installation Destination.

The Installation Destination panel is displayed.

Figure 42 : Installation Destination panel

🔳 tna	🖬 🖬 🛄 🌼 Actions 🛞
	CENTOS 7 INSTALLATION us Help!
"Begin Installation" button. Local Standard Disks	AND THE ATTENT OF AND A THE TRANSPORT OF A
16 GiB	
VMware Virtual disk	
sda / 16 GiB free	
	Disks left unselected here will not be touched.
Specialized & Network Disks	
☐ Add a disk	
	Disks left unselected here will not be touched.
Other Storage Options	
Partitioning Automatically configure partitioning.	
Encryption Encrypt my data. You'll set a passphrase next.	
Full disk summary and boot loader	1 disk selected; 16 GiB capacity; 16 GiB free Refresh

16. Select the target disk.

A check mark is displayed next to the selected target and the selected disk is partitioned automatically.

17. Click **Done** to save the changes.

The Installation Summary panel is displayed.



Figure 43 : Installation Summary panel

🔳 toa				🖬 🖬 🗖 🔜 🛟 Actions	• 🕲
	INSTALLAT	ION SUMMARY		CENTOS 7 INSTALLATIO	DN
				🖽 us Helpi	!
CentOS	9	DATE & TIME Americas/New York timezone	**	KEYBOARD English (US)	
	á	LANGUAGE SUPPORT English (United States)			
	SOFTWAR	E			
	0	INSTALLATION SOURCE		SOFTWARE SELECTION Minimal Install	
	SYSTEM				
	Ś	INSTALLATION DESTINATION Automatic partitioning selected	Q	KDUMP Kdump is enabled	
	₹	NETWORK & HOST NAME Not connected		SECURITY POLICY No profile selected	
				Quit Begin Installatio	n
			We won't touch yo	our disks until you click 'Begin Installa	G

18. Click Begin Installation to start the installation.

The **Configuration** panel is displayed.

Figure 44 : Configuration panel







19. Click Root Password under User Settings.

The Root Password panel is displayed.

Figure 45 : Root Password panel

🖬 🖬 🛄 🎇 Actions 🛞 🗌
CENTOS 7 INSTALLATION
🖼 us Help!
stering the system. Enter a password for the root user.
••••••
Strong
••••••

- 20. Enter the password for the root user and re-enter to confirm it.
- 21. Click **Done** to save the changes.

The **Configuration** panel is displayed.

Figure 46 : Configuration panel - Finish configuration

🔳 tna					🕻 Actions 🛞
M A	CONFIGUE	RATION		CENTOS 7 INST	
1				e us	пефі
CentOS	USER SET	TINGS			
	C =	ROOT PASSWORD Root password is set		ER CREATION user will be creat	ed
	Complete!				
		CentOS is now successfu Fi	ully installed, but some nish it and then click th	configuration still ne e Finish configuratio	eeds to be done. In button please.
				Finish	configuration
					C

22. Click Finish configuration to install CentOS.



A message 'CentOS is now successfully installed and ready for you to use' is displayed.

Figure 47 : Configuration panel - Reboot



- 23. Click **Reboot** to reboot the virtual machine.
 - **NOTE:** The system may take a few minutes to reboot and restart the TOA virtual machine.

The TOA instance opens in the command line interface.

- 24. Log in to the TOA virtual machine instance using the following credentials:
 - localhost login: root
 - Password: <your_configured_password>

```
CentOS Linux 7 (Core)
Kernel 3.10.0-1062.e17.x86_64 on an x86_64
localhost login: root
Password:
```

25. Run the following command to add the management interface to the TOA virtual



machine using the NetworkManager tool:

[root@localhost ~] # nmtui

The **NetworkManager TUI** text user interface is displayed.

NOTE: Use the arrow keys or the **Tab** key to select any option in the text user interface.

26. Select the Edit a connection menu entry and press Enter.



27. Select the required connection, press the tab to select **Edit**, and press **Enter**.



28. Select IPv4 CONFIGURATION and press Enter.

Edit Connection	
Profile name ens160 Device ens160 (00:0C:29:01:A8:DA)	
= ETHERNET	<show></show>
= IPv4 CONFIGURATION = IPv6 CONFIGURATION [] Automatically co [X] Available to all	<show> <show></show></show>
~C2	ancel> <ok></ok>



- 29. Change the connection from Automatic to Manual.
- 30. Select **<Show>** corresponding to the IPv4 CONFIGURATION and press **Enter**.
- 31. Verify the current IPv4 configuration and update the IP address and Gateway IP accordingly.

Edit Connection	
Profile name <mark>ens168</mark>	
- ETHERNET	<show></show>
<pre>IPo4 CONFIGURATION </pre> (Manual) Addresses IB.67.4.14/24 (Remove) (Add) Gateway IB.67.4.1 DNS servers <add) <add="" domains="" search=""> Bouting (No custom routes) <edit)< td=""><td><hide></hide></td></edit)<></add)>	<hide></hide>
[] Never use this network for default route [] Ignore automatically obtained routes [] Ignore automatically obtained DNS parameters [] Require IPv4 addressing for this connection	
= IPv6 CONFIGURATION <automatic></automatic>	<show></show>
[] Automatically connect [X] Available to all users	
	<cancel> <ok></ok></cancel>

- 32. Select **OK** and press **Enter** to save the changes.
- 33. Select **Back** and press **Enter** to open the option menu.

Install Thunder Observability Agent





34. Select Activate a connection menu entry and press Enter.



35. Select Activate and press Enter.



36. Verify if the interface is activated.

An asterisk (*) is prefixed to the interface name to indicate that it is activated.





- 37. Select **Back** and press **Enter** to open the option menu.
- 38. Select OK and press Enter.



39. Run the following command to edit the *ifcfg* file:

```
[root@localhost ~]# vi /etc/sysconfig/network-scripts/ifcfg-<interface-
name>
```

40. Update the following entry:

ONBOOT=yes

41. Add the following entry:

DNS1=8.8.8.8





42. Save the changes.

43. Run the following command to edit the CentOS-Base.repo file:

[root@localhost ~]# vi /etc/yum.repos.d/CentOS-Base.repo

44. Uncomment the following line:

baseurl=http://mirror.centos.org/centos/\$releasever/os/\$basearch



45. Run the following command to restart the network service on your TOA VM:

[root@localhost ~]# systemctl restart NetworkManager

46. Re-run the following command:

[root@localhost ~]# yum update

The virtual machine for TOA is created.

Verify TOA Virtual Machine

To verify the TOA VM creation, perform the following steps:

1. Run the following command to verify the interface status:

[root@localhost ~]# nmcli d

The following configuration is displayed:

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```
DEVICE TYPE STATE CONNECTION
ens160 ethernet connected ens160
lo loopback unmanaged --
```

2. Run the following command to verify the IP address:

[root@localhost ~]# ip a

The following configuration is displayed:

```
1: lo: <LOOPBACK,UP,<LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN
group default qlen 1000
    link/loopback 00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
        valid_lft forever preferred_lft forever
2: ens160: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc mq state UP
group default qlen 1000
    link/ether 00:0c:29:01:a8:da brd ff:ff:ff:ff:ff
    inet 10.67.4.14/24 brd 10.67.4.255 scope global noprefixroute
ens160
    valid_lft forever preferred_lft forever
inet6 fe80::bd4f:9987:e034:aee9/64 scope link noprefixroute
    valid_lft forever preferred_lft forever
```

3. Run the following command to verify if the TOA is reachable from the local instance.

C:\Users\<user>> ping <toa-ip>

Example:

C:\Users\<user>> ping 10.67.4.14

4. Verify if a response is received.



```
Pinging 10.67.4.14 with 32 bytes of data:
Reply from 10.67.4.14: bytes=32 time=388ms TTL=61
Reply from 10.67.4.14: bytes=32 time=351ms TTL=61
Reply from 10.67.4.14: bytes=32 time=359ms TTL=61
Reply from 10.67.4.14: bytes=32 time=386ms TTL=61
Ping statistics for 10.67.4.14:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 351ms, Maximum = 388ms, Average = 371ms
```

Install TOA

To install TOA, see A10 Thunder Observability Agent documentation.



Configure VMware vROps

To monitor the Thunder metrics on vROps, perform the following steps:

- 1. Start vROps VM
- 2. Create a Dashboard
- 3. Create an Alert
- 4. Create a Notification
- 5. <u>View Thunder Metrics</u>

Start vROps VM

To start the vROps virtual machine, perform the following steps:

1. From the VMware ESXi console, go to Navigator > Virtual Machines > <your_ vROps_VM> and click Power on.

Figure 48 : Start vROps VM

Navigator	🚯 vRopsMgr863	
▼ 🗐 Host	Console III Monitor Power on Power off III Suspend IIC Restart / Frit C Refresh Actions	
Manage		
Monitor	VRopsMgr863 Guest OS Other 3 x or later Linux (84-bit) Compatibility ESX 8 0 using machine	CPU 🔲
Virtual Machines	VMware Tools Yes	MEMORY
• 📑 vRopsmgraos	CPUs 4	0 B
Monitor	Memory 16 GB	STORAGE
▶ magent		274 GB
Image: Second State S		
More VMs	General Information Hardware Configuration	
▼ 🗐 Storage 🔹 2		
- □ Data2	* Resource Consumption	

NOTE: The system may take a few minutes to start the vROps virtual machine.

2. Click **Console** to launch vROps virtual machine.

The vROps virtual machine is powered on and is reachable.



Figure 49 : vRealize Operations Appliance



3. Log in to the vRealize Operations Web UI with your admin credentials.

The vRealize Operations Home page is displayed.

vm vRealize Opera	itions		Q	C	Ĺ	Ő
	«	Home				
A Home		Quick Start Operations Overview				_
읍 Data Sources	>	Optimize Performance		0	otimize C	Capacit
🗈 Environment	>	O DATACENTERS REQUIRING OPTIMIZATION				
🖸 Visualize	>					
🖏 Troubleshoot	>	Workload Optimization Run workload optimization to ensure consistent performance in your datacenters			Assess Ca Determine if capacity in y	apacity f there is su your enviro

Figure 50 : vRealize Operations - Home page

Create a Dashboard

The dashboard can be created using either of the following options:

• Import a dashboard template

To import a dashboard using JSON file, see Import a Dashboard.

• Create a dashboard manually

To create a dashboard manually, perform the following steps:



1. From the vRealize Operations Web UI, go to Home > Visualize > Dashboards and click Create to add a new dashboard.

The New Dashboard window is displayed.

Figure 51 : New Dashboard window

vm vRealize Oper	ations		
	~	New Dashboard cancel save actions - s	SHOW INTERACTIONS
份 Home			
습 Data Sources	>		
🕼 Environment	>	creating your dashboa	ard
► Visualize	~		
Dashboards			
Views			

- 2. Provide a name to the new dashboard and double-click or drag the following widgets:
 - Object List
 - Metric Picker
 - Metric Chart

Figure 52 : Dashboard widgets

>>	ļ	Thunder Metrics	CANCEL SAV		ACTIONS ~ SHOW INTERACTI	DNS			
ŵ	Ľ	Object List			Metric Picker		Metric Chart		
	Ŀ	Name	Adapter Type	Obje -					
٢÷ ›	Ĵ	vRealize Operations Manage	vRealize Operations	vR					
DA >	Ľ	vrealize-identity-manager	vCenter Adapter	Vir					
		vSphere World	vCenter Adapter	vs .					
	l	VMware Private Cloud	Container	VN .					
e) >	-	Filter	Wantar Adaptar	D				Views 🚺 V	Vidgets
:J× >		Chipot Liat. Nere: Auguri Type Organ Type	Retric Polar Graphit From		Best Out	Sumbard Workland 53,19 Work	tead 89.58 s	Theorem	
÷ 🗄	L	Ubsty vilke vilketer Adapter Vilketerbalter deterband Vilketer Adapter Ubstetre en an 3008 (will) vilketerbalterbalter Vilketerbalterbalter Stor Vilketerbalterbalter Vilketerbal				Worktow 98.36 s Cor Second 2008, 1774	restand 7.47 us		
© >		dealer Operators Honge, elezing Operators - elezing Operators Operators (0000,010), elezing Operators Operators			Statement (c)	Consumed 250.62 vs Unit	ped 2.52 m		
		Object List	Metric Pick	er	Metric Chart	Scorebo	ard	Heatmap	



3. Click **Show Interactions** to create interactions.

Figure 53 : Interactions



- 4. Drag the connectors and create interactions as shown in the Figure 53.
- 5. Click **Save** to save the changes.

A dashboard for Thunder metrics is created.

Create an Alert

The alert definition can be created using either of the following options:

• Import an alert definition template

To import an alert definition using XML file, see Import an Alert Definition.

• Create an alert definition manually

To create an alert definition manually, perform the following steps:

- 1. From the vRealize Operations Web UI, go to Home > Configure > Alerts and click Alert Definitions.
- 2. Click Add in the Alert Definitions window.

The **Create Alert Definition** panel with **Alert** tab is displayed.



Figure 54 : Create Alert Definition window

Create Alert Def ☆ / Alerts / Alert Def	finition (Virtual Mach	ine
1 - Alert		2 - Symptoms / Conditions New
Name	ThunderAlert	
Description	reate description for alert	
Base Object Type	rtual Machine	× ~
∽Advanced Settings		
Impact	Health	~
Criticality	Critical	~
Alert Type & Subtype	Application : Performan	ce 🗸
Wait Cycle	1 \$	
Cancel Cycle	1 \$	

3. Enter or select the appropriate values in the following fields:

Field Name	Description		
Name	Enter the alert name.		
	Example		
	In the Figure 54, the alert definition name is		
	ThunderAlert.		
Base Object Type	Select vCenter Adapter > Virtual Machine.		
Under the Advanced Settings:			

Table 12 : Alert tab fields



Table 12 : Alert tab fields

Field Name	Description
Impact	Select Health .
Criticality	Select Critical.
Alert Type & Subtype	Select Application : Performance.

4. Click Next.

The Symptoms / Conditions tab is displayed.

Figure 55 : Symptoms / Conditions tab

Create Alert Definitio	ON Virtual Machine		?
1 - Alert	2 - Symptoms / Conditions 🔰 3 - Recomme	endations 4 - Policies	5 - Notifications
Drag and drop metric to alert here to create a new	specify its condition or symptom into your w set	Defined On: Self	<u>×</u> ×
		Conditions New Sympton	ns
		Select Specific Object	▼ Filter
		> 🔝 Favorites	
		 > Metrics > Properties 	

5. Click **Select Specific Object** to select your Thunder instance.

The **Select Object** window is displayed.

Figure 56 : Select Object window

Page Size: 50 🗸			vth-inst1	~
Name	Adapter Type	Object Type	Policy	
vth-inst1	vCenter Adapter	Virtual Machine	vSphere Sol	ution's D

6. Select your Thunder instance and click **Select**.

The selected Thunder instance is listed under **Conditions**.



Figure 57 : Selected Thunder instance



7. Select **Metrics** > **Thunder** and drag the required metrics to the left-side panel.

.....



Figure 58 : Drag metric

Alert	2 - Symptoms / Conditions	3 - Recommendations	4 - Policies
J. Self - Virtual Machine			Defined On: Self V
		~	
Conditions		<u>^</u>	Conditions New Symptoms
> If Thunder CPU Usage Percentage (Data) >	🗘 mark as 🚯 Info 🗸		(uth_inst1 ×
Drag an additional symptom / condition in to your set			
			> 🚠 Favorites
			Canacity Analytics Generated
Drag and drop metric to specify its condition or sympt	om into your alert here to create a new set		Configuration
programa arop meane to specify its condition or sympt	on into your discriment to create a new set		> 🔝 CPU
			CPU Utilization for Resources
			> 🛃 Datastore
			> 🔝 Disk Space
			> 🔝 Disk Space Usage on Datastore
			> 🔝 Guest
			> 🔝 Memory
			> 🔝 Memory Usage on Host
			> 🔝 Network
			> 🔝 Performance
			> 🛃 Physical Disk
			> 🔝 Power
			> 🛃 Storage
			> 🔝 Summary
			> 🔝 System
			> 🔝 Thunder
			> 🛃 Virtual Disk
			> Realize Operations Generated
			V 🚵 Thunder
			 CPU Usage Percentage (Data)
			 Disk Usage Percentage
			 Interface Down Count (Data) Manage Linear Downstram
			Memory Usage Percentage
			 Packet Drop Rate (Sec) Daduct Pate (Sec)
			Packet Rate (Sec)
			Server Down Count
			Server Down Percentage
			 Server Errors Count

8. Specify the appropriate alert condition.

Figure 59 : Alert condition

1 - Alert	2 - Symptoms / Conditions New	3 - Recommendations
1. Self - Virtual Machine		
Conditions		×
> If Thunder CPU Usage Percentage (Data)	> \sim 75 $\stackrel{\circ}{\sim}$ mark as (i) info \sim	
Drag an additional symptom / condition in to you	ır set	

- 9. Click Next.
- 10. Add the appropriate recommendations in the **Recommendations** tab, if needed.
- 11. Click Next.

.



- 12. Select appropriate policy in the **Policies** tab, if needed.
- 13. Click Next.

The **Notification** tab is displayed. The notification can be created after the alert definition is created. For more information, see <u>Create a Notification</u>.

Create Alert Definition ☆ / Alerts / Alert Definition	N Virtual Machine				?
1 - Alert	2 - Symptoms / Conditions	3 - Recommendations	4 - Policies	5 - Notifications	
	You hav tri	ve no notification rules with n riggers defined by alert defini	otification tion.		
PREVIOUS	CREATE CANCEL				

14. Click Create in the Notification tab.

An alert definition is created and is listed in the **Alert Definition** window.

Figure 60 : Verify Alert Definition

Alert Definitions	ons		?
ADD ····		Name : Thunder ×	ALL FILTERS - Touck filter
Name 1	Adapt Obj Alert Type	Alert Subtype Criticality Impact	Define Last Modified Modified By
ThunderAlert	vCe Vir Application	Performance / 🦲 Health	User 5:31 PM admin

Create a Notification

The notification can be created using either of the following options:

• Import a notification template

To import a notification using JSON file, see Import a Notification.

• Create a notification manually



To create a notification manually, perform the following steps:

- 1. From the vRealize Operations Web UI, go to Home > Configure > Alerts and click Notifications.
- 2. Click Add in the Notifications window.

The Notifications panel with Notification tab is displayed.

Figure 61 : Notifications tab

Notification	2 - Define Criteria	3 - Set Outbound Method	4 - Select Payload Template
me _	(hunder AlertNotification		
scription	Create description for notification		
tification Status	D		

3. Enter or select the appropriate values in the following fields:

Field Name	Description
Name	Enter the notification name.
	Example
	In the Figure 61, notification name is
	ThunderAlertNotification.
Notification Status	Select Enable.

Table 13 : Notifications tab

4. Click Next.

The **Define Criteria** tab is displayed.



Figure 62 : Define Criteria tab

Nouncations	>			
☆ / Alerts / N	otifications			
1 - Notification	2 - Define Criteria	- Set Outbound Method	4 - Select Payload	Template
Object Scope:	Select set of Objects you would like to receive notifications	about.		
Criteria	Object Type $ imes$ $ imes$	Select an Object Type	× ~	CLEAR
		Tanzu Kubernetes cluster		
		vCenter Server		
		Virtual Machine		
Alert Scope:	Select set of Alerts you would like to receive notifications ab	Virtual Machine Folder		
		vSphere Distributed Port Grou	up	

5. In the Criteria field, select Object Type from the drop-down.

A field appears to select the object type.

6. Expand vCenterAdapter and select Virtual Machine from the drop-down.

The selected object type is listed under Criteria.

Figure 63 : Criteria defined

	2 - Denne Griena			
ject Scope:	Select set of Objects you would like to receive no	otifications	about.	
Criteria	Object Type	×	Select an Object Type	×
Criteria The alert trigo	Object Type	×	Select an Object Type	×

7. In the **Category** field, select **Alert Definition** from the drop-down created in the <u>Create an Alert</u>.

An Alert Definition pop-up is displayed.



Figure 64 : Alert Definition pop-up

Alert Definitions						×* ×
The notification will be sent when ANY of the selected ale	ert dei	finitions triggers an alert.				
Drag an alert definition to add as criteria.		Name 🕇	Object	ALL FILTERS	Criticality	Nodified By
	::	A fatal error occured on a PCI	Host	Hardware (()	admin
Drop alert definition here	::	A fatal memory error was det	Host	Hardware (()	admin
	::	A node may be down and it is	vRea	Administrati	<u>/10</u>	admin
	::	A PCIe error occurred during	Host	Hardware (!	admin
			1 - 50 of	530 items 🔇	1 2 3	4 5 11 >
					CANCE	LOK

8. Search your alert definition.

Figure 65 : Search alert definition

Alert Definitions			×* ×
The notification will be sent when ANY of the selected ale	ert definitions triggers an alert.		Quick filter
Drag an alert definition to add as criteria.	Name 1 Name	Object Alert Type Critic	ality Modified By
Drop alert definition here	# ThunderAlert	Virtu Application	admin
			1 - 1 of 1 items
		CAN	CELOK

9. Select your alert definition and drag it to add as the criteria.



Figure 66 : Drag alert definition

Alert Definitions					×* ×
The notification will be sent when ANY of the selected ale	ert definitions triggers an a	alert. me : Thunder ×	ALL FILTERS V	Y Quic	k filter
Drag an alert definition to add as criteria.	Name ↑	Object	Alert Type	Criticality	Modified By
ii ThunderAlert X					
Drop alert definition here					
					1 - 1 of 1 items
			-	CANCEL	ок

10. Click **OK**.

The selected alert definition is listed under Category.

Figure 67 : Selected alert definition

Alert Scope: S	Select set of Alerts you would like to receive	e notifications about.				
Category	Alert Definition	×				
The alert is A	The alert is ANY of the selected (1): \oslash					
ThunderAler	rt X					
Criticality	All Criticality	~				
Control State	All States	~				
PREVIOUS	NEXT CREATE CANCEL					

11. In the **Status** field under **Notify On**, select the alert status for which you want to receive the notifications.

.



Figure 68 : Notify On

Notify On	Select the Alert status change you want to receive notifications of	on.
Status	All Statuses 🗸	

12. Click Next.

The Set Outbound Method tab is displayed.

Figure 69 : Set Outbound Method tab



- 13. In the **Outbound method** field, select **Standard Email Plugin** from the dropdown list.
- 14. Click **Create New Instance** to create a new instance for corresponding Outbound method.

The fields for creating a new instance are displayed.

•••••



Figure 70 : Create New Instance fields

Instance Name:	ThunderNotificationInstance
Use Secure Connection:	
Requires Authentication:	
SMTP Host:	smtp-mail.outlook.com
SMTP Port:	587
Secure Connection Type:	SSL × ×
User Name:	SaaS-Monitor@a10networks.com
Password:	
Sender Email Address:	SaaS-Monitor@a10networks.com
Sender Name:	Saas-Monitor
Receiver Email Address:	
TEST	CANCEL

15. Enter or select the appropriate values in the following fields:

Table 14 : Create New Instance

Field Name	Description
Instance Name	Enter the notification instance name.
	Example
	In the Figure 70, the notification instance name
	is ThunderNotificationInstance.
SMTP Host	Enter the URL or IP address of the email host server.
SMTP Port	Enter the SMTP port number used to connect with the email host server.
Secure Connection Type	Select SSL .
User Name	Enter the username that is used to connect to the email server.
Password	Enter the password for the connection username that appears on the notification message.
Sender Email Address	Enter the email address of the sender.

.



Field Name	Description
Sender Name	Enter the display name of the sender email address.
Receiver Email Address	Enter the email address of the receiver that receives the notification.

16. Click **Save** to save the changes.

The new instance is populated in the **Select Instance** field.

Figure 71 : Selected New Instance



17. Click Next.

The Select Payload Template tab is displayed.

Figure 72 : Select Payload Template tab

1 - Notification	2 - Define Criteria	3 - Set Outbound Method	4 - Select Payload Template
> Default Email Ter	mplate		
Recipient(s)		0	
Cc Recipients	e.g. example@domain.com	0	
Bcc Recipients	e.g. example@domain.com	(1)	
Notify again	e.g. 15 (Optional)	°. ©	
Max Notifications	3	°. ©	
	arl	A	

18. Enter or select the appropriate values in the following fields for the default template:

Field Name	Description
Recipient(s)	Enter the email addresses of the recipient to receive the notification.
Max Notifications	Enter the maximum number of notification to be

Table 15 : Select Payload Template tab

67



Tabla	1 .	Coloct	Day	(laad	Tom		+-h
lable	тэ.	Select	r a	yiuau	remp	ласе	ιaυ

Field Name	Description
	sent for the active alert.
Delay to notify	Enter the delay time in minutes before sending a notification when a new alert is generated.

19. Click Create.

A new notification is created for the selected alert definition and it is listed in the **Notifications** window.

Figure 73 : Verify Notification

		«	Notifications						
ø	Configure	~	$\widehat{\mbox{\ }}$ / Alerts / Notifications	Alerts / Notifications					
	Policies		ADD ····						
	Alerts		Rule Name	Description	Instance	Outbound Method	Payload Template		
	Super Metrics		ThunderAlertNotification		ThunderNotificationI	Standard Email Plugin	Default Email Template		

View Thunder Metrics

To view the Thunder metrics, perform the following steps:

1. From the **vRealize Operations Web UI**, go to **Home** > **Visualize** > **Dashboard** and select your dashboard created for Thunder metrics.

The selected dashboard is displayed.



Figure 74 : Selected dashboard

Dashboards	Thunder Metrics ACT	1H 6H 24H 7D CUSTON		
습 Home	Object List		Metric Picker	Metric Chart
Manage Croato	Name	Adapter Type	> 🔝 Favorites	
+ Create > ☆ Favorites < [©] Recents	Non vSAN Datastores	Container	> A Metrics	
	PoweredOn:vCenter-Server	vCenter Adapte	- New -	
	vth-inst1	vCenter Adapte		
Thunder Metrics	vRealize LCM Appliance	vCenter Adapte		
Capacity	vSAN World	vSAN Adapter		
Reclaim	vSAN Datastores	Container		
Workload Placement	1 - 50 of 73 item	s < <u>1</u> 2 →		
Rightsize				
Compliance				

- 2. From **Object List**, double-click your Thunder instance.
- From Metric Picker, expand Metrics > THUNDER and double-click the following common metrics:
 - Memory Usage Percentage
 - Disk Usage Percentage

As the metric is selected, the corresponding data gets populated in the **Metric Chart** panel for the selected the time range.

Figure 2	75 :	THUNDER	Dashboard
----------	------	---------	-----------

vn	vRealize Operations					с С Д В́
»	Dashboards	Thunder Metrics ACTIONS -			1H 6H 24F	1 7D СИSTOM 🔀 😪
	 G Home Ø Manage + Create 	Object List Name 🕹	Adapter Type	Metric Picker v j metrics > j Badge	Metric Chart	* / ? © .*
DA >	> ☆ Favorites ~ © Recents	windows	vCenter Adapter	Capacity Analytics Generated Configuration CPU CPU	•H: 75.1	
	Thunder Metrics	vThunderAdaptor_Management Pa	vRealize Operations	Datastore Disk Space	•L: 61.4	60 E
e) >		vThunderAdaptor (vRealize Operati vthunder_2nic_1vm_demo	vThunderAdaptor vCenter Adapter	 > Disk Space Usage on Datastore > Guest 		
:J. >		vth-inst1	vCenter Adapter	Guest File System Memory Memory	THUNDER Disk Usar	ge Percentage
÷		vthunder-inst1-ha-pd vThunder-File-Upload	vCenter Adapter	Methody obage of Host Methody obage of Host Methody A Performance	•H: 36	36
© >		vThunder-6-pd	vCenter Adapter	> A Physical Disk	•L: 35	35
		vth-agent vSphere World	vCenter Adapter	> 🛃 Storage > 🛃 Summary	02:00 PM 04:0	4:00 PM
ి		vSAN World	vSAN Adapter	> 🔝 System		
		vSAN Datastores	Container 76 items (<u>1</u> 2)	 Memory Usage Percentage Disk Usage Percentage 		

4. From Metric Picker, expand Metrics > THUNDER-SHARED or THUNDER-Px and



double-click the following metrics:

- CPU Usage Percentage (Data)
- Throughput Rate (Global/BPS)
- Interface Down Count (Data)
- Total New Connection (Sec)
- Transactions Rate (Sec)
- Server Down Count
- Server Down Percentage
- SSL Errors Count
- Server Errors Count
- Total Session Count
- Packet Rate (Sec)
- Packet Drop Rate (Sec)

As the metric is selected, the corresponding data gets populated in the **Metric Chart** panel for the selected the time range.

Figure 76 : THUNDER-SHARED Dashboard

vm	vRealize Operations				Q C A A
»	Dashboards	Thunder Metrics ACTIONS ~			1H 6H 24H 7D CUSTOM 🏠 😪
୍ଥି	☆ Home Ø Manage	Object List		Metric Picker	Metric Chart
<u>ن</u>	+ Create	Name 🦆	Adapter Type	 Realize Operations Generated thunder-SHARED 	THUNDER-SHAREDIServer Down Count
0. >	> ☆ Favorites	windows	vCenter Adapter	 CPU Usage Percentage (Data) Interface Down Count (Data) 	•H: 1
	C Recents Thunder Metrics	WIN2016-DHCP	vCenter Adapter	 Packet Drop Rate (Sec) Packet Rate (Sec) 	1
		vThunderAdaptor_Management Pa	vRealize Operations	Server Down Count	eL:1
\$ >		vThunderAdaptor (vRealize Operati	vThunderAdaptor	Server Down Percentage Server Errors Count	02:00 PM 04:00 PM 06:00 PM
		vthunder_2nic_1vm_demo	vCenter Adapter	 SSL Errors Count 	a) vth-inst1
<i></i>		vth-inst1	vCenter Adapter	 Throughput Rate (Global/BPS) Total New Connection (Per Sec) 	THUNDER-SHAREDIServer Down Percentage
÷,		vthunder-inst1-ha-pd	vCenter Adapter	Total New Connection (Sec)	•H: 100
		vThunder-File-Upload	vCenter Adapter	Total Session Count Transactions Date (See)	100
© >		vThunder-6-pd	vCenter Adapter	> Properties	•L: 100
		vth-agent	vCenter Adapter		02:00 PM 04:00 PM 06:00 PM
		vSphere World	vCenter Adapter		04:00 PM

To view multiple metrics data, select each of those metrics. The data corresponding to each metric is displayed in the **Metric Chart** panel. For the list of available Thunder metrics, see <u>Supported Thunder Metric</u>.

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Import vROps Template

The vRealize Operations Manager (vROps) creates a dashboard and a notification by importing a JSON files. It also creates alert definition by importing an XML file.

The following topics are covered:

- Import a Dashboard
- Import an Alert Definition
- Import a Notification

Import a Dashboard

To import a dashboard using the JSON file, perform the following steps:

- 1. Download and open the <u>dashboard-template</u> JSON file.
- 2. Edit the following parameter values in the JSON file:
 - id
 - name
- 3. Save the changes in the JSON file.
- From the vRealize Operations Web UI, go to Home > Visualize > Dashboards and click Manage.

The Manage window is displayed.



Figure 77 : Manage window

V	m vRealize Operation	ons		
		«	Dashboards	Manage
Ŷ	Data Sources	>	☆ Home ⑦ Manage	ADD ····
	Environment Visualize	> ~	+ Create > ☆ Favorites ~ ◎ Recents	Auto-rotate De Import ds Manage Summary Dashboards Manage Dashboard Folders Manage Dashboard Sharing
	Dashboards		vGautam-Test- Dashboard	
	Views		Metric- Dashboard-PD	

5. Click ... > Import in the Manage panel.

The Import Dashboard window is displayed.

Figure 78 : Import Dashboard window

Import Dashboard		\times
Select a Dashboard ZIP, PAK or JSON file to import		BROWSE
The import process begins when you click on the Import but	ton.	
In case of a conflict:		
○ Overwrite		
• Rename		
	CANCEL	IMPORT

6. Browse and select the **dashboard-template.json** file.

7. Click Import.

The new dashboard is imported and listed in the **Dashboards** window.


Import an Alert Definition

To import an alert definition using the XML file, perform the following steps:

- 1. Download and open the <u>alert-template</u> file.
- 2. Enter the following parameter values in the XML file as appropriate:
 - id
 - name

NOTE: The id and name must have unique values.

- 3. Save the changes in the XML file.
- From the vRealize Operations Web UI, go to Home > Configure > Alerts and click Alert Definitions.

The Alert Definitions window is displayed.

Figure 79 : Alert Definitions window

	m vRealize Operati	ions			
		«	Alert De	efinition	S
¢	Configure	~	命 / Alert	s / Alert I	Definitions
	Policies		ADD]
	Alerts			Delei Expo	ort
	Super Metrics		□ : v	Import	
	Application Discovery				

5. Click ... > Import in the Alert Definition window.



The Import Alert Definition window is displayed.

Figure 80 : Import Alert Definition window

Import Alert Definition	\times
Select an Alert Definition XML file to import. The import process begins when you click on the Import button.	BROWSE
In case of a conflict: Overwrite existing Alert Definition Skip import	
CANCE	LIMPORT

6. Browse and select the alert-template.json.

7. Click Import.

The new alert definition is imported and listed in the **Alert Definitions** window.

Import a Notification

To import a notification using the JSON file, perform the following steps:

- 1. Download and open the notification-template JSON file.
- 2. Update the alert definition id in the following parameter:





NOTE: The AlertDefinitionID must have the same value as provided in the alert-template.json.

3. Update the sender and recipient email address values in the following parameter:

- 4. Save the changes in the JSON file.
- 5. From the vRealize Operations Web UI, go to Home > Configure > Alerts and click Notifications.

The Notifications window is displayed.

••••



Figure 81 : Notifications window

	m vRealize Operati	ons					
		«	Notifica	tions			
ф	Configure	~	☆ / Alerts / Notifications				
	Policies		ADD)		
	Alerts		R	Dele [.] Disal	te ole		Description
	Super Metrics		П : Т	Enab Expo	ole ort	tion	
	Application Discovery			Impo	ort		
	Application Monitoring				Impo	ort Not	ification Settings

6. Click ... > Import in the Notifications panel.

The Import Notification Settings window is displayed.

Figure 82 : Import Notification Settings window



- 7. Browse and select the notification-template.json file.
- 8. Click Import.



The new notification is imported and listed in the **Notifications** window.



Configure VMware vRLI

To monitor the Thunder logs on the VMware vRLI, perform the following steps:

- 1. Start vRLI VM
- 2. View Logs

Start vRLI VM

To start the vRLI virtual machine, perform the following steps:

1. From the VMware ESXi console, go to Navigator > Virtual Machines > <your_vRLI_ VM> and click Power on.

Figure 83 : Start vRLI VM

Ta Navigator	VMware-vRealize-Log-Insight-8.8		
* 🗒 Host Manage	😴 Console 🧱 Monitor 🍺 Power on 🍙 Sh	ut down 🔢 Suspend 🧔 Restart 🦯 Edt 🥑 Refresh -	C Actions
Monitor	Competibility VMeaner Tools	alize-Log-Insight-8.8 Other 3 x or later Linux (54-bit) ESSG 6.0 writiwit machine Yos	5 GHz
Monitor Mon	Electrony Biological Anti- Biological Anti- Host name	4 8 GB localhost	MENORY XXX 8.06 GB

NOTE:

The system may take a few minutes to start the vRLI virtual machine.

2. Click **Console** to launch vRLI virtual machine.

The vRLI virtual machine is powered on and reachable.

Figure 84 : VMware vRealize Log Insight



View Logs

••••



1. From the **vRealize Log Insight Web UI**, go to **Home** > **Explore Logs** to view the logs.

The **Logs** window is displayed.

Figure 85 : vRealize Log Insight - Overview window

vm	Log Insight	٥) admi
>> (2) (2) (2) (2) (3) (4) (4) (4) (4) (4) (4) (4) (4	+ NEW DASHBOARD Custom Dashboards & My Dashboards plore Logs ed Dashboards	Latest 5 minutes of d_ v c Display legend on all widgets 0 0 + ADD FILTER	< ►
& > &	Content Pack Dashboards	Number of events by i i i i i i i i i i i i i i i i	5ı i \$∽
	Overview Problems		
ۍ ۵	Event Types Statistics		M
†8† >	Log Insight Agents Syslog Agents	** Number of error even_ \$\$ i \$* Number of error even_ \$\$ i \$* Unique error event ty_ \$\$ ** • • •	51 i \$≁
	VMware - vROps 6.7+ VMware - vSAN		

- 2. Click **Add Filter** and add the following filter criteria to search all the logs received from a specific Thunder IP:
 - _index: ip
 - condition: is
 - value: <Thunder_IP>



Figure 86 : vRealize Log Insight - Add Filter



- 3. Add the following filter criteria to search all logs received from TOA:
 - _index: source
 - condition: is
 - value: <TOA_IP>
- 4. Verify if the logs are generated.

Figure 87 : Logs on vRealize Log Insight

vn	n Log Insight	() admin ∨
»	May 29, 2023 634 02 PM (5 minutes 30 seconds)	Go to Snapshots 📑 Add to Dashboard 🔶
ø		
0,		
8	125 127 123	conds • Chart Turne 4. Automatic • *
8,	the second se	
6	May 29, 2023, 18:34-02, 486 to May 29, 2023, 18:34000000000000000000000000000000000000	1852
<i>ය</i> කා	CONTENT PACKS / (Extract all fields)	
14 >	Events Field Table Event Types Event Trends 110 50 out of 61 events View * Sort Newest First *	Manage Fields 🥒 >
	Wey 29 2023 Way 29 2021 14:05:57 Info [SYSTD0:Local authentication successful (user: advin). 830:02:485 source agent appriate event,type hostname io (obid log_type paintion priority]]]]]]]]]]]]]]]]] [Station of the second of the	agent appname event_type
	6 May 29, 2023 Ney 29 2021 M-05:57 Notice [SYSTED]:A aVPI session for user "adulin" from 10.44.25.12 has been opened. Session ID assigned is 25. 10:30:02:405 source agent appname even_type hostname to jobid log_type partition priority	hostname ip jobid
	4e-May 28, 2023 May 29 3923 14-65-57 Notice (S93590)-Session ID 29 is now closed. 19.39.02.485 source agent apprume event_type hostname to polid log_type partition priority	log_type partition priority
	6-May 20,2023 Nay 29 3023 14:65:57 Info 1932/02.485 source agent apprame event_type hostmame is jobid log_type partition priority	source
	Way 20, 2023 Ney 25 3023 H-65:57 Notice [S15170]:A aVMPI session for user "admin" from 16.44.25:12 has been opened. Session 1D assigned is 30. 1039102.485 source agent appname event_type hostmame ip jobid log_type partition priority	
	May 28, 2023 Nay 29 3023 14:65:57 Notice (DIST0):Session ID 38 is now closed. R290:02:485 source agent apname event_type hostname ip jobid log_type partition priority	
	e-May 29, 2023 May 29 2021 14-86-59 Info (S9ST00):Local authentication successful (user: adtin). 18:39:02:401 source agent appname even_type hostname ip jobid log_type partition priority	-

The following table lists the Thunder Logs filter options:

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Filter	Description
Log_data	Specifies the actual log entry.
hostname	Displays the Thunder resource id.
log_type	Displays the Thunder system logs.
appname	Displays the application name.
ip	Displays the Thunder IP address.
agent	Displays the agent name.
jobid	Displays the JOB ID provided in TOA agent.log file.
priority	Displays the Notice, Info, or Error and so on as per actual log
	entry.
partition	Displays the Thunder partition name.

.....

Troubleshooting

During the installation process, you might encounter some errors or issues. The common errors and issues with the troubleshooting steps are listed below:

Could not resolve host: mirrorlist.centos.org; Unknown error

Cause

This error is encountered when you run the yum update command and your DNS server is not configured properly.

Solution

To configure the DNS server, perform the following steps on your agent VM:

1. Run the following command to edit the ifcfg file:

vi /etc/sysconfig/network-scripts/ifcfg-<interface-name>

2. Add the following entry:

DNS1=8.8.8.8



- 3. Save the changes.
- 4. Run the following command to edit the CentOS-Base.repo file:

```
vi /etc/yum.repos.d/CentOS-Base.repo
```

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5. Uncomment the following line:

baseurl=http://mirror.centos.org/centos/\$releasever/os/\$basearch



6. Run the following command to restart the network service on your agent VM:

systemctl restart NetworkManager

7. Re-run the following command:

yum update

Could not find a version that satisfies the requirement <package>

Cause

This error is encountered when you run the pip3 install -r requirements.txt command.

Solution

To resolve this error, perform the following steps:

1. Open the **requirements.txt** from the **VMwarevThunderMetrics** folder on your agent VM.

vi requirements.txt

2. Remove the corresponding entry for the respective package:

<package>==<version>

where the <package> Can be asgiref, djando, Of requests.

Troubleshooting





3. Run the following commands to re-install the package:

```
pip3 install <package>
pip3 install -r requirements.txt
```

If the ESXi host has incorrect datetime

Cause

This issue is encountered when Network Time Protocol (NTP) service is stopped.

Solution

To enable the NTP Daemon service, perform the following steps:

- 1. From the VMware ESXi console, go to Navigator > Manage > Services tab.
- 2. Verify if the **ntpd** service is stopped.

Figure 88 : Services tab

"T Navigator	📄 📋 localhost.pxe.example.com - Manage						
✓		System	Hardware Licensi	ing Packages Services	Security & users		
Manage		Start	📕 Stop 🛛 👩 Restart	CRefresh 🔅 Actions			Q Search
		Name 🔺	~	Description ~	Status ~	Source ~	Firewall rules ~
Storage		DCUI		Direct Console UI	Running	Base system	None
Networking	3	dpd		dpd	Stopped	vmware-dp	None
		kmxd		kmxd	Stopped	Base system	None
		lbtd		Load-Based Teaming Daemon	Running	Base system	None
		lwsmd		Active Directory Service	Stopped	Base system	None
		ntpd		NTP Daemon	Running	Base system	ntpClient
		pcscd		PC/SC Smart Card Daemon	Stopped	Base system	None
		ptpd		PTP Daemon	Stopped	Base system	ptpd
							18 items 🦼

3. Start the **ntpd** service.



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