Installation Guide for Nutanix Deployment

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![Uila logo]

Introduction

Scope and Purpose

This document describes the system requirements, installation and configuration steps for the Uila Virtual Information Controller(vIC) and Virtual Smart Tap(vST) in the Nutanix environment.

It is assumed that the reader has already installed Nutanix Prism Central or Prism Element and is familiar with the configurations and operations of Nutanix AHV.

Note: Please Consult Uila Support, if you need to deploy Uila in a mixed AHV and VMware Data Center Environment.

Architecture Overview

The diagram below shows the Uila Management and Analytics System architecture (UMAS) and its relationship to Virtual Information Controller(vIC) and Uila Virtual Smart Taps(vST).
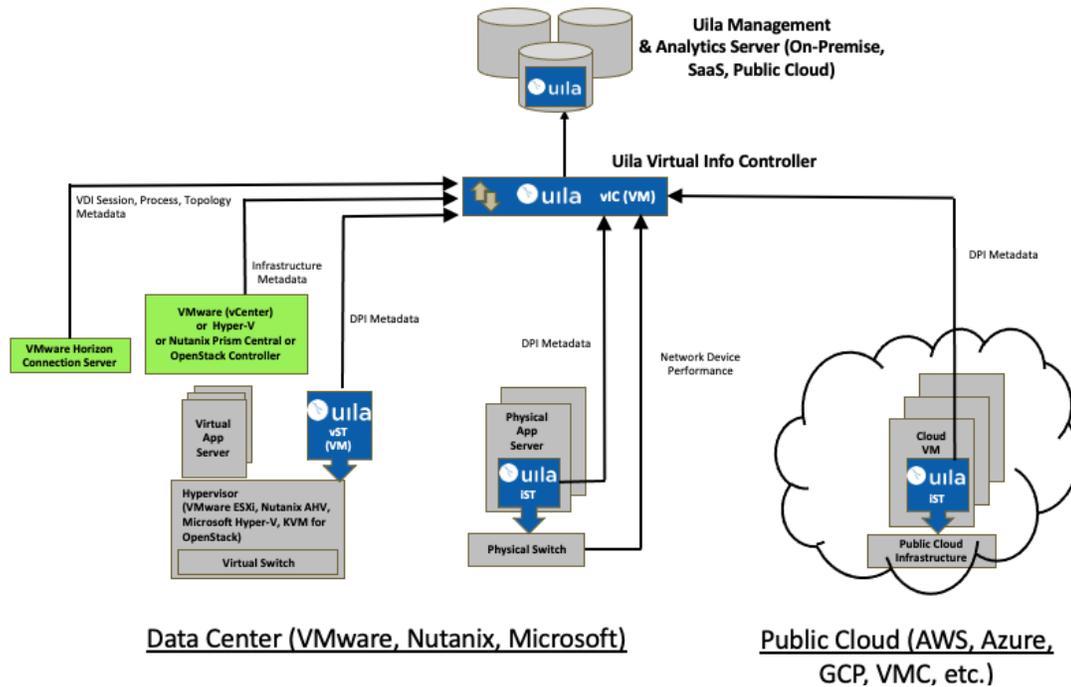
Uila consists of three major components –

● *Management and Analytics system (UMAS)* – The core of the Uila virtual infrastructure architecture is a big data store and analytics engine that is designed from ground up to scale-out to accommodate large data center deployments with thousands of servers, to scale-in to record data in high resolution, maintain historical data while maintaining real time responsiveness. Built-in redundancy offers high availability, mitigates downtime, and reduces maintenance overhead. UMAS can be installed in the Private, Public or SaaS Cloud.

The analytics engine is the brain that correlates application to infrastructure performance metric by providing the smarts to pinpoint the infrastructure root cause behind application performance degradation. The trending reports generated from the historical data helps identify infrastructure hotspots, and maintains optimal application performance.

● *Virtual Information Controller(vIC)* - The vIC can be installed in either the Private or Public Cloud. In the Private Cloud, Virtual Information Controller (vIC) is the integration conduit to the VMware Horizon VDI infrastructure & Virtualization Management System e.g., VMware vCenter, Microsoft Hyper-V, Nutanix Prism Central or OpenStack Controller. The vIC retrieves your infrastructure configuration as a template to build Uila monitoring domain and to streamline deployment. The vIC collects network, storage and compute performance metrics that are maintained by vCenter (or equivalent from Microsoft, Nutanix, OpenStack) and combines it with the application and network metadata from all deployed vSTs. In the Public Cloud, the vIC collects the Instance & VM level networking, application, compute statistics from the vSTs. In both cases, the vIC securely transmits it to the Uila Management and Analytics System, either on-premise or in the cloud.

● *Virtual Smart Tap(vST)* – vST is deployed at the host as a small footprint guest VM that utilizes Deep Packet Inspection (DPI) technology to identify unique applications and its attributes. The vST measures application response time and collects network performance data. No packet payload is examined or stored, thus removing the risk of exposing sensitive data.

In a cloud deployment, the VST, also collects the network and performance metrics from the IST and utilizes the Deep Packet inspection technology to identify applications.

Getting Started

uila

System Requirements

Always refer to the Uila website for updated system requirements as the first step:
https://www.uila.com/products/uila-system-requirements

- Internet Browser for your monitoring console
    - Firefox, Chrome on Windows platform
    - Safari, Firefox, Chrome on OS X platform
    - Firefox, Chrome on CentOS, Ubuntu Linux platform
- Nutanix version requirements
    - Prism Central pc.2020.9, pc.2022.4, or higher

- Uila Virtual Smart Tap (vST) requirements -
    - Installed as a guest VM
    - 1 vCPU (1 Core)
    - 1Gb memory
    - 3Gb Storage

    Note: For each Nutanix hypervisor node, it requires a nutanix account login to hypervisor node CVM to configure vST network function chain.

- Uila VIC for Nutanix
    - Installed as a guest VM
    - 4 vCPU
    - Memory:

    Small VIC 24 GB RAM allocated, 12GB RAM reserved, 50GB storage, thin provisioned: <1000 VMs, less than 200 Network Monitoring ports, less than 100 nodes for server monitoring

    Medium VIC 32 GB RAM allocated, 16GB RAM reserved, 100GB storage, thin provisioned: 1000~2000 VMs, 200~400 Network Monitoring ports, 100~200 nodes for server monitoring

    Large VIC 48 GB RAM allocated, 24GB RAM reserved, 200GB storage, thin provisioned: 2000~5000VMs, 400~600 Network Monitoring ports, 200-400 nodes for server monitoring

Proper Nutanix Prism Central access right is required for vIC to collect structural information and CPU, memory and storage metrics from Nutanix Prism Central, make configuration changes, deploy and setup vST VM. You must have one of the two options pre-configured before vIC deployment:

1. Prism Central Admin Role:

2. Create a custom role with the following table of privileges enabled (checked).

Privilege Categories	Privilege Items
App	● Full Access
VM Recovery Point	● View Only
VM	● Full Access ● Allow VM creation is automatically checked.
Blueprint	● Basic Access ● Allow Blueprint creation is automatically checked.
Marketplace Item	● No Access
Report	● View Only
Cluster	● Full Access
Network	● Full Accesss
Image	● Full Access
OVA	● No Access

Hardware	● View Access

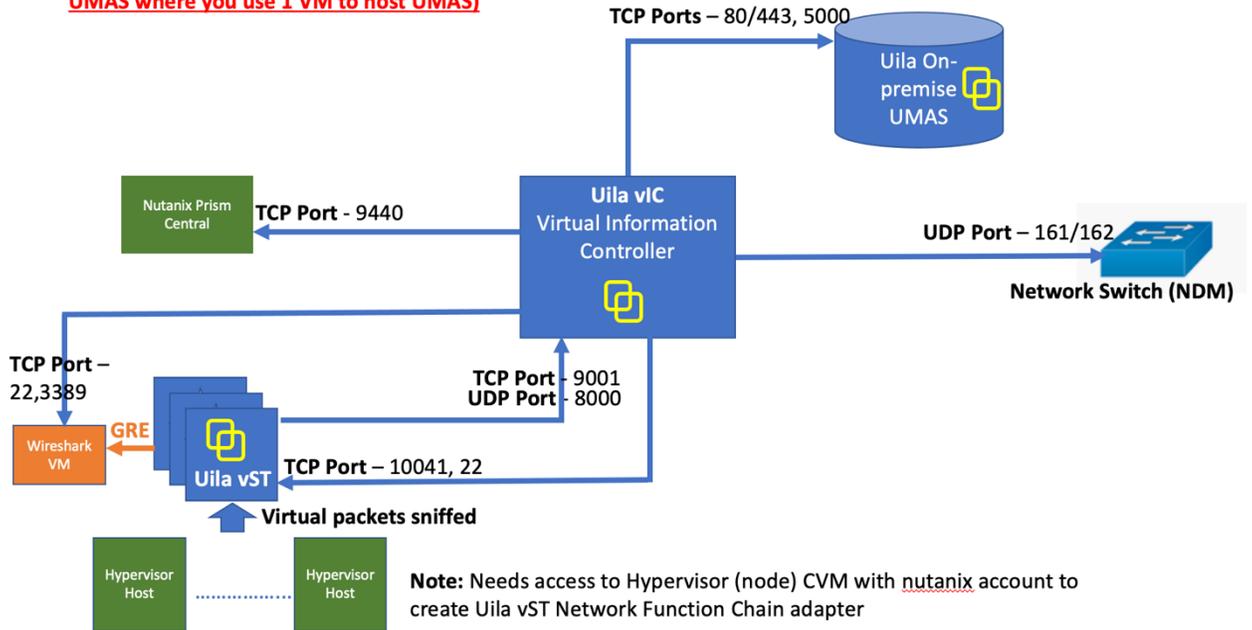<div align="center">

Table 4.2: Prism Central Administration Role

</div>

- **UMAS (Uila Management & Analytics System) for Nutanix**

  o For small scale deployment (under 1000 devices including VM and external device): One-box UMAS (1 VM to host UMAS) with 4 vCPU, 48GB RAM allocated and 32GB reserved, 1TB for 1 month data retention

  o For medium scale deployment (1000~2000 devices including VM and external device) One-box UMAS (1 VM to host UMAS) with 4 vCPU, 64GB RAM allocated and 48GB reserved, 2TB for 1 month data retention

  o For large scale deployment (2000~5000 devices including VM and external device) you need a Two-box UMAS (2 VMs to host UMAS):
  Web UMAS: 4 vCPU, 48GB RAM allocated and 32GB reserved, 800GB
  DB UMAS: 4 vCPU, 48GB RAM allocated and 32GB reserved, 5TB

  o For super-large scale deployment (greater than 5000 devices including VM and external device) Contact Uila to get customized System Requirements for your deployment
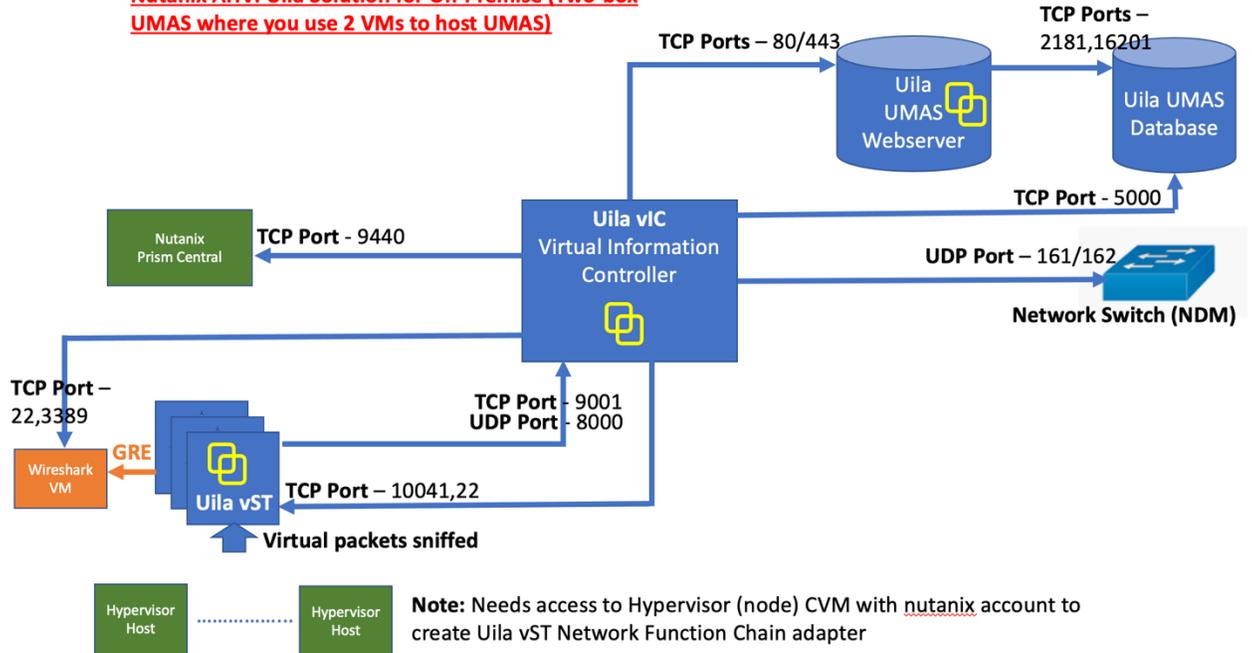
Users can add multiple Prism Central and enjoy a single pane of glass into the infrastructure, network and applications.

- **Network requirements**

  o Pre-allocate one IP address for each of the vST's, which can be either static IP address or allocated via DHCP, prior to deployment

  o Pre-allocate one static IP address for vIC prior to deployment

  o Pre-configure your network to open TCP and UDP ports to allow communications between Uila sub-systems as illustrated in the chart below.

  o UMAS – If Cloud UMAS is being used, add ugw1s.uila.com/38.99.127.15 as permitted site on the firewall.

  Pre-allocate one static IP if the on premise UMAS is used.

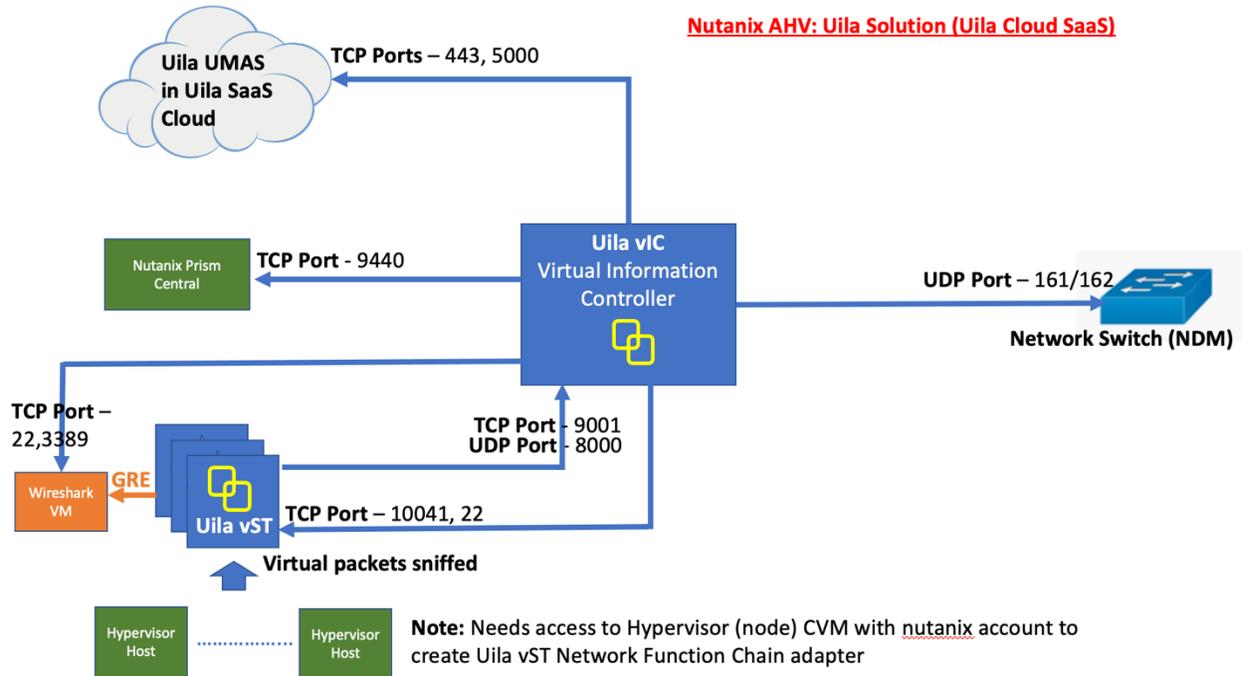**Nutanix AHV: Uila Solution for On-Premise (One-box UMAS where you use 1 VM to host UMAS)**

TCP Ports – 80/443, 5000

Uila On-premise UMAS

Nutanix Prism Central ← TCP Port - 9440 — Uila vIC Virtual Information Controller

UDP Port – 161/162 → Network Switch (NDM)

TCP Port – 22,3389

GRE

Wireshark VM

Uila vST

TCP Port - 9001
UDP Port - 8000

TCP Port – 10041, 22

▲ Virtual packets sniffed

Hypervisor Host .... Hypervisor Host

Note: Needs access to Hypervisor (node) CVM with nutanix account to create Uila vST Network Function Chain adapter

Nutanix AHV: Uila Solution for On-Premise (Two-box UMAS where you use 2 VMs to host UMAS)

TCP Ports – 80/443

TCP Ports – 2181,16201

Uila UMAS Webserver

Uila UMAS Database

Nutanix Prism Central ← TCP Port - 9440 — Uila vIC Virtual Information Controller

TCP Port - 5000

UDP Port – 161/162 → Network Switch (NDM)

TCP Port – 22,3389

GRE

Wireshark VM

Uila vST

TCP Port - 9001
UDP Port - 8000

TCP Port – 10041,22

▲ Virtual packets sniffed

Hypervisor Host .... Hypervisor Host

Note: Needs access to Hypervisor (node) CVM with nutanix account to create Uila vST Network Function Chain adapter

Network connection overview for On-Premise Datacenter

Nutanix AHV: Uila Solution (Uila Cloud SaaS)

Uila UMAS in Uila SaaS Cloud — TCP Ports – 443, 5000

Nutanix Prism Central — TCP Port - 9440

Uila vIC Virtual Information Controller

UDP Port – 161/162 — Network Switch (NDM)

TCP Port – 22,3389 — Wireshark VM — GRE

TCP Port - 9001 UDP Port - 8000

Uila vST — TCP Port – 10041, 22

Virtual packets sniffed

Hypervisor Host .... Hypervisor Host

Note: Needs access to Hypervisor (node) CVM with nutanix account to create Uila vST Network Function Chain adapter

Network connection overview with use with Uila SaaS Cloud

Deploy Uila UMAS/Vic/VST on Nutanix Prism Central

1. Upload Uila Images
1.1 Download and uncompress Uila UMAS/vIC/vST images ZIP file. For vST's image, there're 4 files in uncompress vST folder: vST binary image, MD5 checksum, vST configuration yaml files (to use later during vST deployment).
1.2 Use md5sum or similar command to verify the Uila image file:


```
--------> dnguyen@rhel-devel <--------
~/Downloads » md5sum -c  nutanix-vst-image-4.5.0-65.MD5
nutanix-vst-image-4.5.0-65: OK
```

```
#md5sum -c nutanix-vst-image-MD5
```

1.3 Upload Uila image by navigating to **Settings > Image Configuration > +Upload Image.** Enter Image name, select Image Type **DISK**, select Storage Container from the list of Nutanix Storage Containers, and choose Uila VST Image to upload image file:

Uila– © 2022   Uila Installation guide for Nutanix June 2022
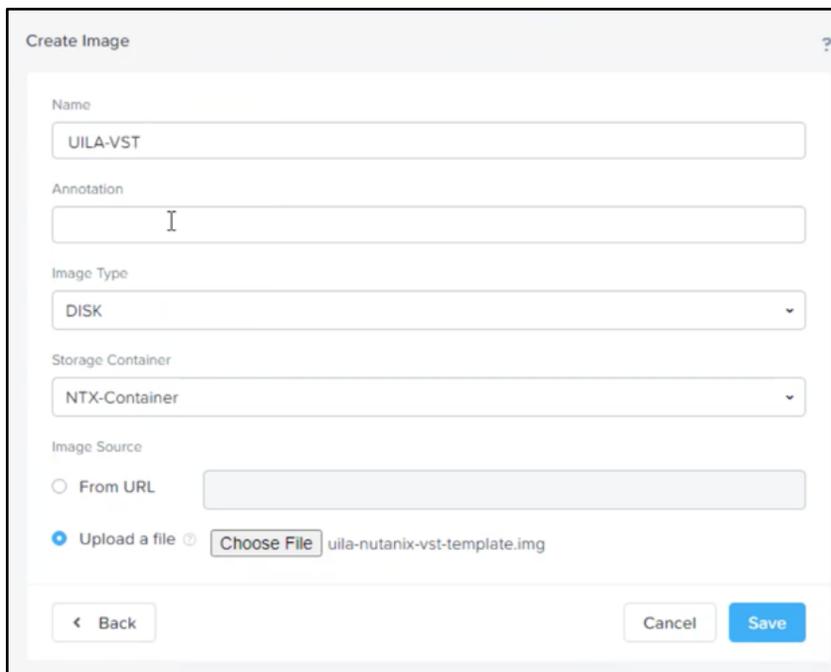
1.4 Wait until Prism Central completes uploading image and the Uila Image is in ACTIVE state to continue VM deployment:
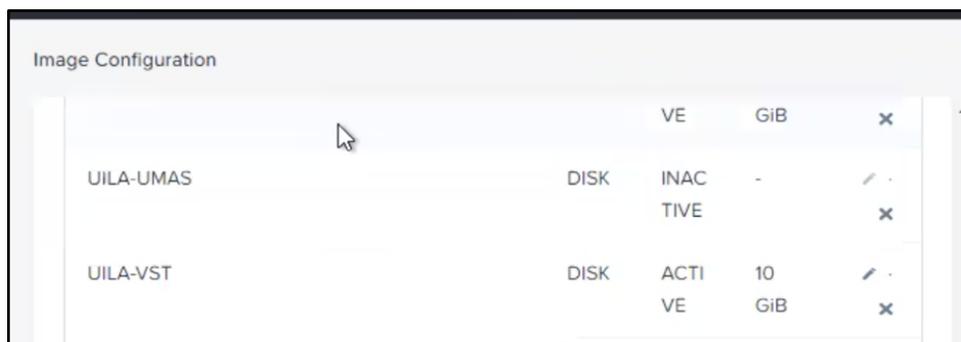
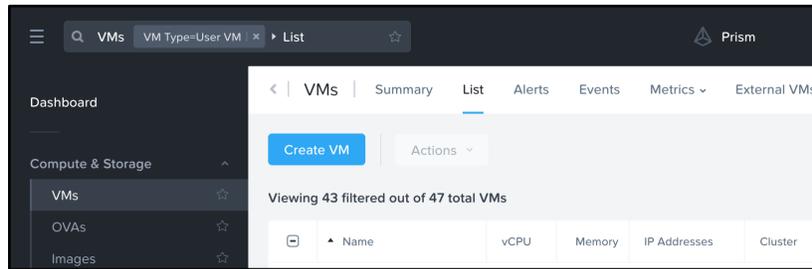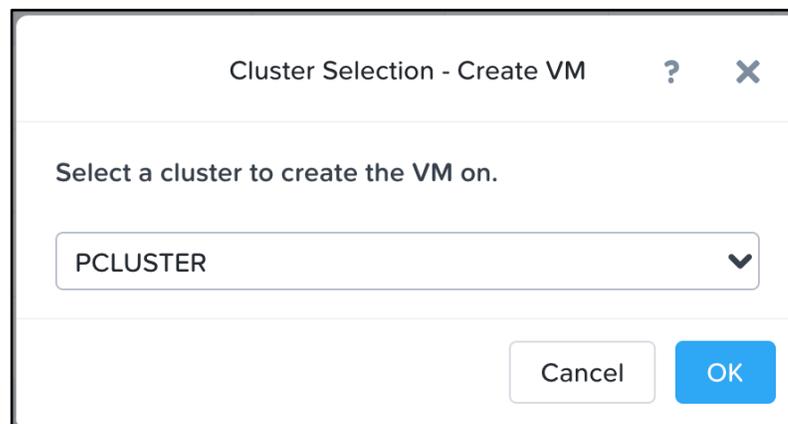## 2. Uila UMAS/vIC Deployment
1. Upload Uila UMAS / vIC image.
2. Login to Nutanix Prism Central.
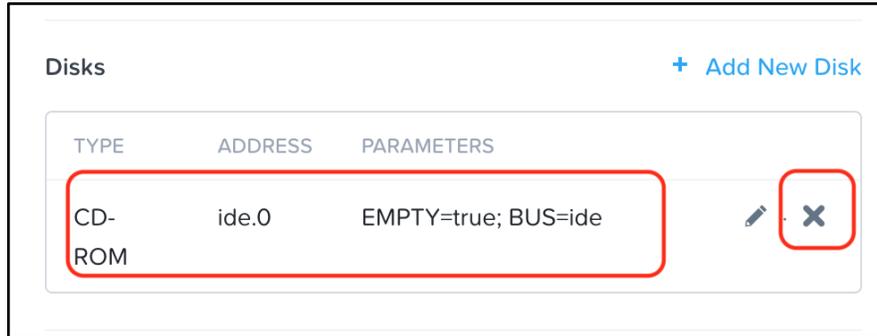3. Navigate to Menu > Virtual Infrastructure > VMs > Create VMs

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4. Select Nutanix Cluster if Prism Central has multiple cluster environments

5. Provide Uila vIC/UMAS VM Name, Timezone, VM CPU/Memory resources

Uila– © 2022   Uila Installation guide for Nutanix June 2022
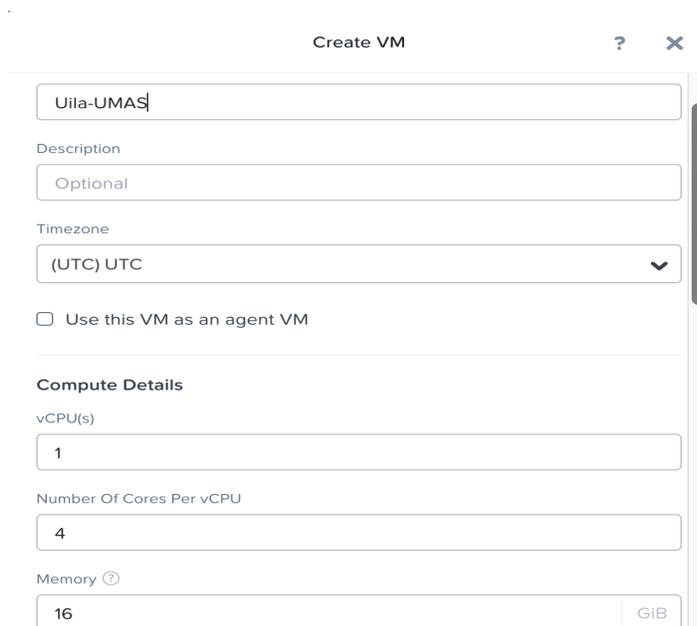
6. Remove CD-ROM disk:

7. Select Add New Disk, DISK Type, Clone from Image Service" Operation, SATA Bus Type, select Uila vIC/ UMAS image uploaded from steps above

Uila– © 2022   Uila Installation guide for Nutanix June 2022
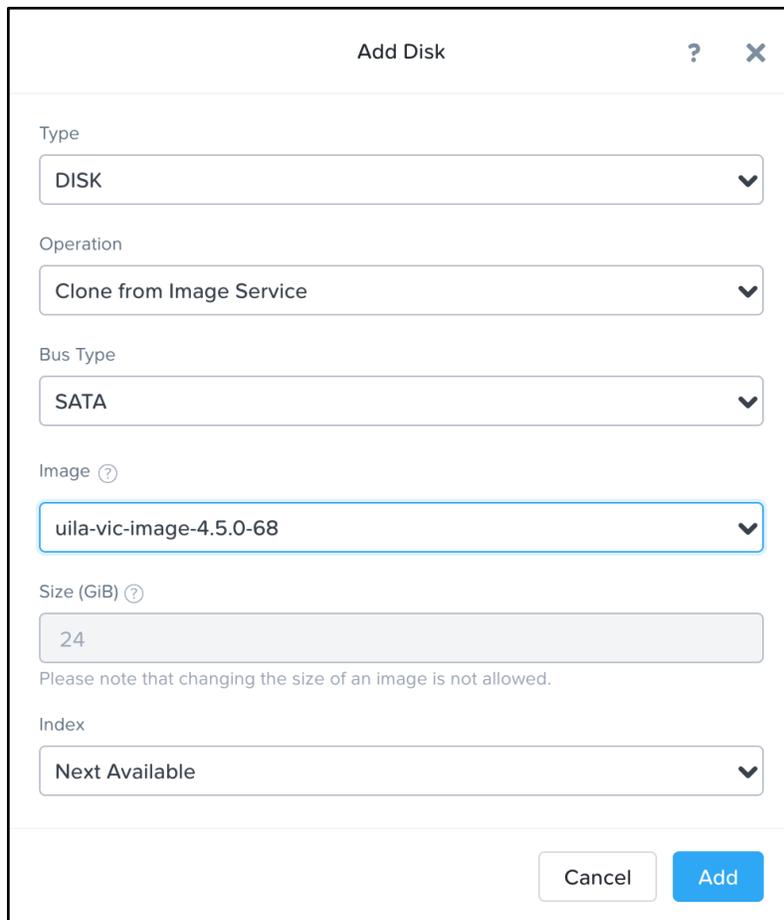
8. For Uila UMAS deployment, add second data vdisk with capacity from UMAS deployment requirement, Allocate on Storage Container Operation, SATA Bus Type, select valid cluster Storage Container, and provide UMAS vdisk size accordingly

9. It will take several minutes to create a new Uila vIC/UMAS. Once VM is deployed, power on the vIC/UMAS, open the VM console and follow Uila vIC/UMAS initial configuration:
   o Press "Y" to agree to the Software License Agreement
   o Go through the setup wizard to setup IP configuration

```
Setup Network Configuration for Interface eth0
Setup DHCP for interface eth0 [y/n]? n
Enter IP address: 192.168.1.221
Enter Subnet mask: 255.255.254.0
Enter Gateway: 192.168.0.1
Enter DNS IP (comma separated list): 192.168.0.5, 192.168.0.20
Enter NTP Server: 192.168.0.5


Setup Static Network Information:
   IP      : 192.168.1.221
   MASK    : 255.255.254.0
   GATEWAY: 192.168.0.1
   DNS     : 192.168.0.5, 192.168.0.20
   NTP     : 192.168.0.5
Confirm? (y/n):_
```

10. Go through the setup wizard setup Uila login account (This is the administrator account)

```
Setup Uila Software ...

Setup Uila Login ID ...

On-Premise Uila Management and Analytics System (UMAS) login ID and password can be used for deploying
virtual Information Controller (vIC) and accessing UMAS for performance analytics.
Uila Login: admin
Uila Password:
Confirm Password:
```

11. The initial configuration will automatically reboot once complete and you will see the login screen on the console

```
   Uila Management and Analytics System (UMAS) - OVA Version 4.0.0
   uila-umas login: _
```
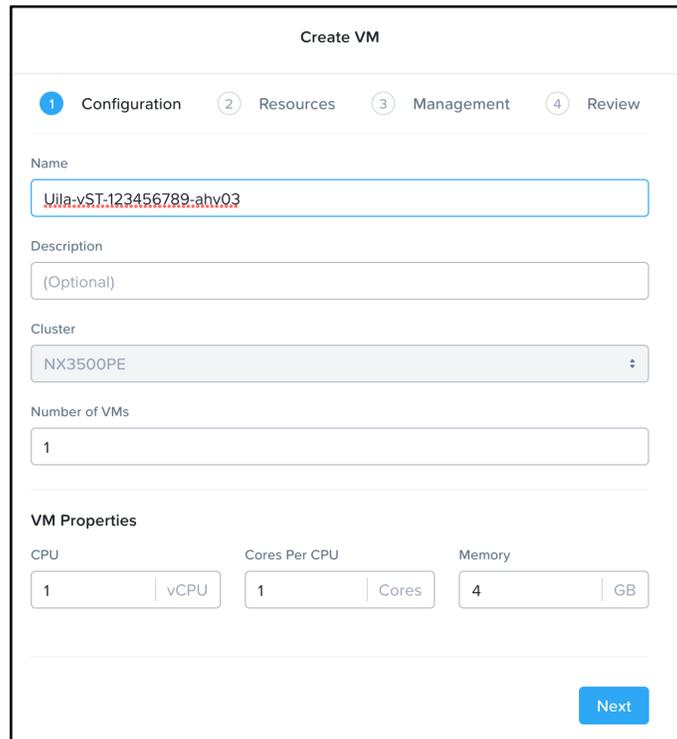
3. Uila VST Deployment in Nutanix Prism Central

3.1 Navigate to **Compute & Storage > VMs > Create VM** to create a Uila VST VM:
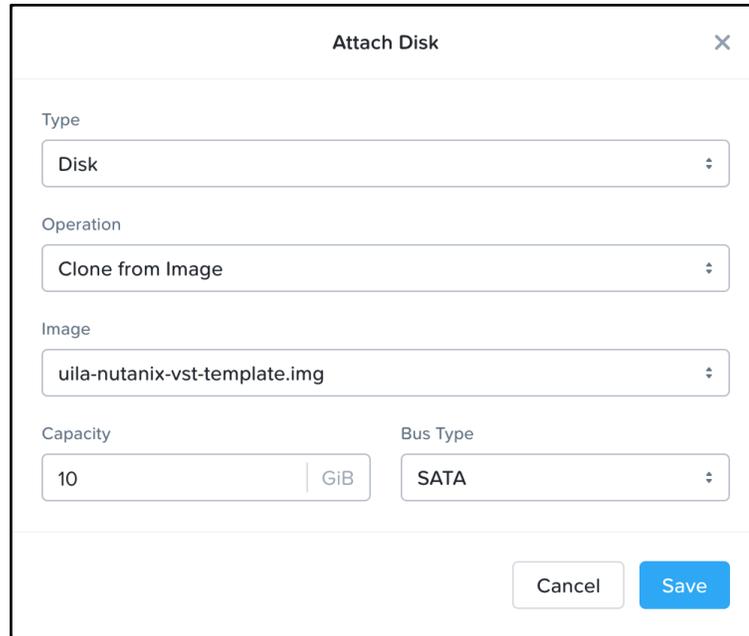
- Provide Uila vST name in conventional naming: Uila-vST-<9-digit-customer-id>-<host-name>, select Time Zone, and select "Use this VM as an agent VM"

3.2 Enter VM's name in Uila conventional naming format: Uila-vST-<9-digit-customer-id>-<host-name>, select Time Zone, and select "Use this VM as an agent VM". Enter VM Properties CPU and Memory resources

3.3 Create new Uila vST disk, Select Type Disk, **Clone from Image** operation, select uila vST image upload in 1.1, and select **SATA** Bus Type

3.4 Create a single management network interface for Uila vST with correct Subnet from the Subnet list

3.5 Under **Guest Customization**, select Script Type **Cloud-init (Linux)**, and upload **Custom Script** uila-vst-network-static-config.yml file from Uila vST Image uncompress folder

Note: You can upload the Uila configuration file, or open the file and paste the content. Also can edit the configuration file before uploading the file.

3.6 Edit address, netmask, gateway, and dns to correct network configuration for vST

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3.7 Edit the vIC address in Uila software configuration section

3.8 Right-click on the newly created Uila vST and select **Configure VM Host Affinity** to configure Uila vST to stay at affinity host
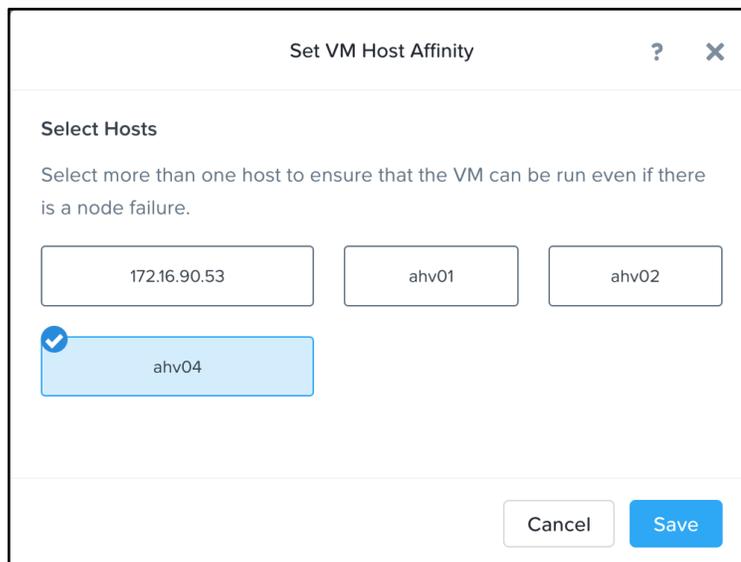
Notes: Nutanix Prism Central release 2022.1 with new Policies profile, you can configure VM Host Affinity by login to Host CVM, or running command directly from Host CVM console (during creating Network Function Chain NIC below)

```
<acropolis>vm.affinity_set <Uila vST Name> host_list=<Nutanix
Host IP/Name>
```

3.9 **Keep the Uila vST powered off.** Login to Nutanix AHV host CVM console (where Uila vST is configured Host Affinity rule) using **nutanix** account credentials, run the following commands to create Nutanix Network Function Chain interface

```
$acli
<acropolis>vm.update <Uila vST Name> agent_vm=true
extra_flags=is_system_vm=true
<acropolis>vm.nic_create <Uila vST Name>
type=kNetworkFunctionNic network_function_nic_type=kTap
```

```
<acropolis> vm.update Uila-vST-123456789-ahv03 agent_vm=true extra_flags=is_system_vm=true
Uila-vST-123456789-ahv03: complete
<acropolis>  vm.nic_create Uila-vST-123456789-ahv03 type=kNetworkFunctionNic network_function_nic_type=kTap
NicCreate: complete
<acropolis> 
```

Note: Requires login to Nutanix Hypervisor IP with NUTANIX account to create Network Function Chain

3.10 Verify the new Network Function Chain interface has been created from VM's NICs Summary Page

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VLAN ID	Subnet	Network Connection State	VPC	Virtual Switch	MAC Address
-	-	Connected	-	-	50:6b:8d:e1:b4:ab
1002	Nutanix_Lab_Public_1002	Connected	-	vs_nutanix_lab	50:6b:8d:98:f6:2d

3.11 Login to Uila vIC console and run command uila-network-function-service to add Uila vST to Uila Network Function Chain
```
#uila-network-function-service add-nfc -s <prism central server>
-v <Uila vST Name>
```
Notes: the <prism central server> is Nutanix Prism Central IP in NutanixConfig.xml file.

```
[root@uila-vic VIC]# /opt/uila/VIC/bin/uila-network-function-service add-nfc -s 172.16.90.72 -v Uila-vST-123456789-ah01
loading Nutanix configuration file ...
Add Nutanix Configuration Entry: Nutanix Entry [server=172.16.90.72, user=sti, password=UEBzc3cwcmQxMjM=, type: central]
configure network function chain service ...
found network function provider category network_function_provider
found network function provider vendor UilaNetworks
skip cluster with no hypervisor node, cluster Unnamed, state COMPLETE
Found cluster for vm Uila-vST-123456789-ah01
configureNetworkFunctionChain. cluster: NX3500PE, id: 0005c3fc-e47f-ba3b-3639-002590c84ba4
nfc node, name: UILA_FW_CHAIN cluster: NX3500PE [0005c3fc-e47f-ba3b-3639-002590c84ba4] compare to UILA_FW_CHAIN, cluster: NX3
500PE, cluster id: 0005c3fc-e47f-ba3b-3639-002590c84ba4
found network function chain UILA_FW_CHAIN, status COMPLETE
set network function category for vm Uila-vST-123456789-ah01
configure network function chain category for vm Uila-vST-123456789-ah01 successfully.
[root@uila-vic VIC]#
```

3.12 Verify Uila vST NIC has been successfully added to Uila Network Function Chain using acli command vm.get and look for extra_flags output

```
    }
    extra_flags {
        key: "system_vm_base_name"
        value: "UilaNetworks"
    }
```

```
<acropolis>vm.get <Uila vST Name>
```

3.13 Power on Uila vST VM. System will automatically install Uila software and configure the network based on the cloud-init configuration file in step 4.6 and 4.7

4. Enable vST Transaction Analysis
1. Login to Uila UI, navigate to VST Configuration, and select vST Configuration to enable Transaction Analysis
2. Enable Transaction Analysis

3. Login to Nutanix Prism Central, select vST where you enable Transaction Analysis above, power off and browse to vST Update option to add vST data vdisk for Transaction Analysis
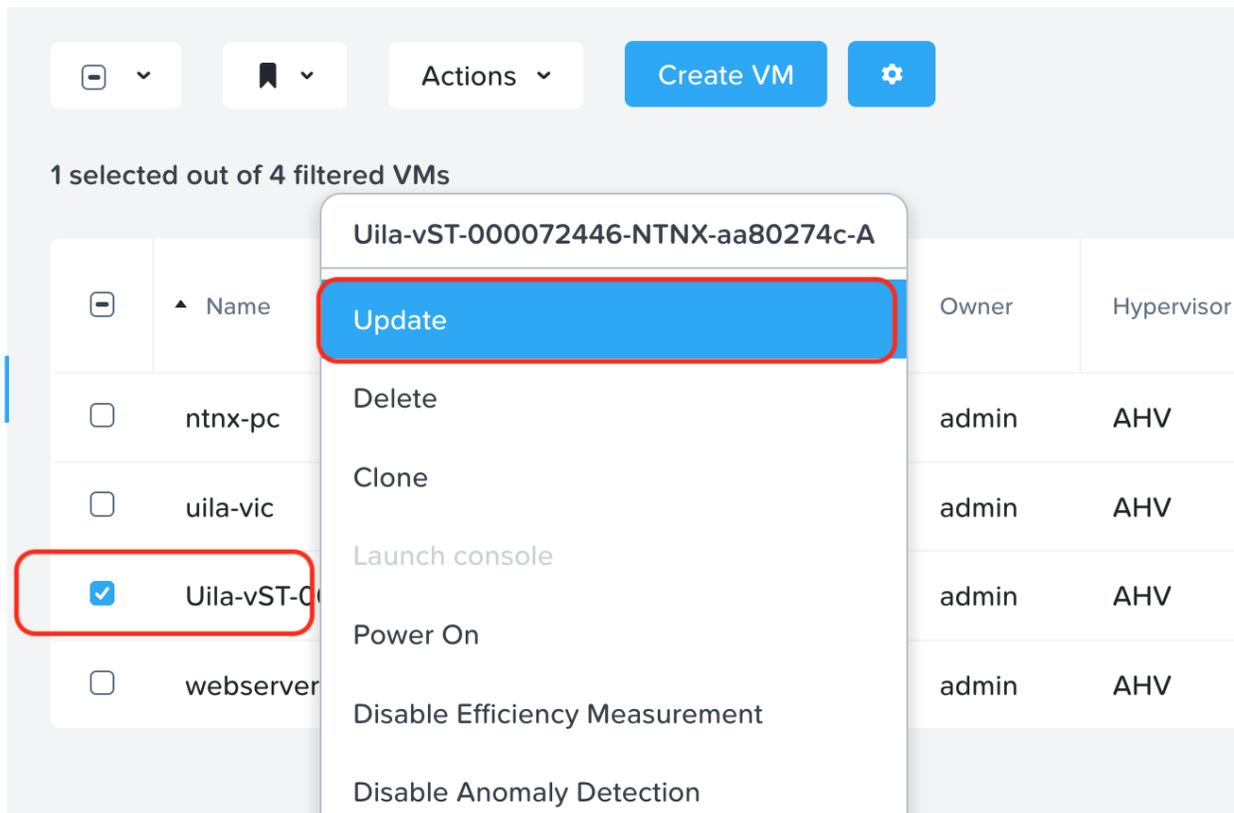
4. Select Add New Disk, DISK Type, Allocate on Storage Container Operation, SATA Bus Type, select valid cluster Storage Container, and provide Transaction Analysis storage capacity, i.e. 50 GB

5. Power on Uila vST

5. Uninstall Uila VST and cleanup Network Service Chains in Nutanix Prism Central
It's important that uninstall and cleanup Network Service Chains are removed in the proper orderto avoid failed tasks.
4.1 Login to Prism Central and Navigate to VM to power off and delete all Uila vST VMs in cluster
4.2 Login to Uila vIC console and run command uila-network-function-service to delete Uila Networks Function Chain
```
#uila-network-function-service delete-nfc -s <prism central
server> -c <Nutanix Cluster>
```

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```
[root@uila-vic VIC]# /opt/uila/VIC/bin/uila-network-function-service delete-nfc -s 172.16.90.72 -c NX3500PE
loading Nutanix configuration file ...
Add Nutanix Configuration Entry: Nutanix Entry [server=172.16.90.72, user=sti, password=UEBzc3cwcmQxMjM=, type: central]
Delete Network Function Service from Subnets ...
   Delete Network Function Service for subnet Netfos_101 completed.
   Delete Network Function Service for subnet Nutanix_Lab_DMZ_1000 completed.
   Delete Network Function Service for subnet Netfos_101-DHCP completed.
   Delete Network Function Service for subnet Netfos_90_Access completed.
   Delete Network Function Service for subnet Nutanix_Lab_Internal_1003 completed.
   Delete Network Function Service for subnet Netfos_90_Access_DHCP completed.
   Delete Network Function Service for subnet Nutanix_Lab_Client_1001 completed.
   Delete Network Function Service for subnet testlibra completed.
   Delete Network Function Service for subnet Netfos_100 completed.
   Delete Network Function Service for subnet Netfos_103 completed.
   Delete Network Function Service for subnet Nutanix_Lab_Public_1002 completed.
nfc node, name: UILA_FW_CHAIN cluster: NX3500PE, compare to UILA_FW_CHAIN, cluster: NX3500PE
   Delete Network Function Chain UILA_FW_CHAIN completed.
Remove Network Function Provider Category ...
delete Network Function Provider Vendor Value
   Delete Network Function CategoryUilaNetworks completed.
[root@uila-vic VIC]#
```

4.3 Verify the Uila Network Function Chain has been removed from Prism Central
`#uila-network-function-service list-nfc -s <prism central server> -c <Nutanix Cluster>`

```
[root@uila-vic VIC]# /opt/uila/VIC/bin/uila-network-function-service list-nfc -s 172.16.90.72 -c NX3500PE
loading Nutanix configuration file ...
Add Nutanix Configuration Entry: Nutanix Entry [server=172.16.90.72, user=sti, password=UEBzc3cwcmQxMjM=,
Nutanix Network Functions and Service Chain Status:
   Network Function Provider          : network_function_provider
   Network Function Provider Category: NOT FOUND
   Network Function Chain             : NOT FOUND
[root@uila-vic VIC]#
```

4.4 Continue Uila vIC/UMAS uninstall

Contact Uila Support

Uila software solutions are designed with ease of installation and simplified maintenance in mind. The Uila team is dedicated to exceeding your expectations and knows that any downtime is too much in today's competitive world. Our goal is to keep your applications running 24 X 7. We offer a simple and effective support program to meet your needs.
Customers who purchased Uila products and under support contract will receive the following benefits:

- Unlimited support via email or phone call
- Free software minor release update
- Free software major release upgrade

Email: support@uila.com
Phone: (408) 400-3706

About Uila

Uila resolves Complex IT Disruptions for Enterprise Organizations with its Intelligent Full-Stack Observability Platform, that correlates Application and Infrastructure Performance to isolate and remediate issues before business impact. With Uila, IT teams can visualize application workload dependencies across cloud platforms, rightsize infrastructure resources, troubleshoot disruptions for any onsite or remote VDI user due to application/network/infrastructure challenges, plan workload migration strategies for Cloud deployments and use AIOps to streamline troubleshooting and reduce MTTR with remediation actions. And most importantly, this is done WITHOUT any agents. Uila also allows security teams to combat advanced cyber threats, by providing comprehensive application anomaly insights, cyber threats & Data Exfiltration activities. Organizations use Uila to align themselves with their IT teams and cut MTTR from days to minutes to always keep End-User Experience at peak performance & secure, across cloud boundaries.